DEPARTMENT OF THE INTERIOR

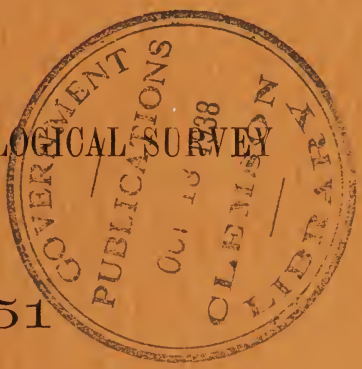
WATER-SUPPLY

AND

IRRIGATION PAPERS

OF THE

UNITED STATES GEOLOGICAL SURVEY



No. 51

OPERATIONS AT RIVER STATIONS, 1900.—PART V

WASHINGTON
GOVERNMENT PRINTING OFFICE
1901

IRRIGATION REPORTS.

The following list contains titles and brief descriptions of the principal reports relating to water supply and irrigation prepared by the United States Geological Survey since 1890:

1890.

First Annual Report of the United States Irrigation Survey, 1890; octavo, 123 pp.

Printed as Part II, Irrigation, of the Tenth Annual Report of the United States Geological Survey, 1888–89. Contains a statement of the origin of the Irrigation Survey, a preliminary report on the organization and prosecution of the survey of the arid lands for purposes of irrigation, and report of work done during 1890.

1891.

Second Annual Report of the United States Irrigation Survey, 1891; octavo, 395 pp.

Published as Part II, Irrigation, of the Eleventh Annual Report of the United States Geological Survey, 1889–90. Contains a description of the hydrography of the arid region and of the engineering operations carried on by the Irrigation Survey during 1890; also the statement of the Director of the Survey to the House Committee on Irrigation, and other papers, including a bibliography of irrigation literature. Illustrated by 29 plates and 4 figures.

Third Annual Report of the United States Irrigation Survey, 1891; octavo, 576 pp.

Printed as Part II of the Twelfth Annual Report of the United States Geological Survey, 1890–91. Contains "Report upon the location and survey of reservoir sites during the fiscal year ended June 30, 1891," by A. H. Thompson; "Hydrography of the arid regions," by F. H. Newell; "Irrigation in India," by Herbert M. Wilson. Illustrated by 93 plates and 190 figures.

Bulletins of the Eleventh Census of the United States upon irrigation, prepared by F. H. Newell; quarto.

No. 35, Irrigation in Arizona; No. 60, Irrigation in New Mexico; No. 85, Irrigation in Utah; No. 107, Irrigation in Wyoming; No. 153, Irrigation in Montana; No. 157, Irrigation in Idaho; No. 163, Irrigation in Nevada; No. 178, Irrigation in Oregon; No. 193, Artesian wells for irrigation; No. 198, Irrigation in Washington.

1892.

Irrigation of western United States, by F. H. Newell; extra census bulletin No. 23, September 9, 1892; quarto, 22 pp.

Contains tabulations showing the total number, average size, etc., of irrigated holdings, the total area and average size of irrigated farms in the subhumid regions, the percentage of number of farms irrigated, character of crops, value of irrigated lands, the average cost of irrigation, the investment and profits, together with a résumé of the water supply and a description of irrigation by artesian wells. Illustrated by colored maps showing the location and relative extent of the irrigated areas.

1893.

Thirteenth Annual Report of the United States Geological Survey, 1891–92, Part III, Irrigation, 1893; octavo, 486 pp.

Consists of three papers: "Water supply for irrigation," by F. H. Newell; "American irrigation engineering"; and "Engineering results of the Irrigation Survey," by Herbert M. Wilson; "Construction of topographic maps and selection and survey of reservoir sites," by A. H. Thompson. Illustrated by 77 plates and 119 figures.

A geological reconnoissance in central Washington, by Israel Cook Russell, 1893; octavo, 108 pp., 15 plates. Bulletin No. 108 of the United States Geological Survey; price, 15 cents.

Contains a description of the examination of the geologic structure in and adjacent to the drainage basin of Yakima River and the great plains of the Columbia to the east of this area, with special reference to the occurrence of artesian waters.

1894.

Report on agriculture by irrigation in the western part of the United States at the Eleventh Census, 1890, by F. H. Newell, 1894; quarto, 283 pp.

Consists of a general description of the condition of irrigation in the United States, the area irrigated, cost of works, their value and profits; also describes the water supply, the value of water, of artesian wells, reservoirs, and other details; then takes up each State and Territory in order, giving a general description of the condition of agriculture by irrigation, and discusses the physical conditions and local peculiarities in each county.

Fourteenth Annual Report of the United States Geological Survey, 1892–93, in two parts; Part II, Accompanying papers, 1894; octavo, 597 pp.

Contains papers on "Potable waters of the eastern United States," by W J McGee; "Natural mineral waters of the United States," by A. C. Peale; and "Results of stream measurements," by F. H. Newell. Illustrated by maps and diagrams.

(Continued on third page of cover.)

DEPARTMENT OF THE INTERIOR

WATER-SUPPLY

AND

IRRIGATION PAPERS

OF THE

UNITED STATES GEOLOGICAL SURVEY

No. 51

WASHINGTON
GOVERNMENT PRINTING OFFICE
1901

UNITED STATES GEOLOGICAL SURVEY
CHARLES D. WALCOTT, DIRECTOR

OPERATIONS AT RIVER STATIONS, 1900

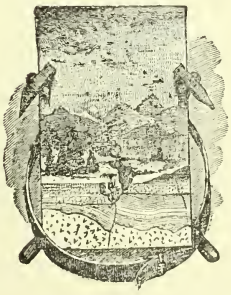
A REPORT OF THE

DIVISION OF HYDROGRAPHY

OF THE

UNITED STATES GEOLOGICAL SURVEY

PART V



WASHINGTON
GOVERNMENT PRINTING OFFICE
1901

CONTENTS.

OPERATIONS AT RIVER STATIONS, 1900.

PART V.

MEASUREMENTS AT RIVER STATIONS.[1]

NORTH FORK OF HUMBOLDT RIVER NEAR PEKO, NEVADA.

This station, established March 25, 1898, is on the Southern Pacific Railroad bridge about 2 miles west of Peko and a short distance above the mouth of the river. It is described in Water-Supply Paper No. 38, page 325. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 389. The station was discontinued March 3, 1900, and no measurements of discharge were made during the year.

Daily gage height, in feet, of North Fork of Humboldt River near Peko, Nevada, for 1900.

Day.	Jan.	Feb.	Mar.	Day.	Jan.	Feb.	Mar.	Day.	Jan.	Feb.	Mar.
1	2.3	3.3	3.5	12	3.1	3.3	.....	23	3.1	3.5	.....
2	2.4	3.3	3.5	13	3.2	3.3	.....	24	3.2	3.5	.....
3	2.5	3.3	3.5	14	3.1	3.3	.....	25	3.2	3.5	.....
4	2.5	3.3	.....	15	3.2	3.3	.....	26	3.2	3.5	.....
5	2.5	3.3	.....	16	3.2	3.4	.....	27	3.2	3.5	.....
6	2.5	3.3	.....	17	3.2	3.4	.....	28	3.2	3.5	.....
7	3.0	3.3	.....	18	3.3	3.3	.....	29	3.2	.....	.....
8	3.0	3.4	.....	19	3.3	3.4	.....	30	3.2	.....	.....
9	3.0	3.4	.....	20	3.3	3.4	.....	31	3.3	.....	.....
10	3.0	3.4	.....	21	3.1	3.4	.....				
11	3.1	3.3	.....	22	3.1	3.4	.....				

HUMBOLDT RIVER NEAR ELKO, NEVADA.

This station, established by L. H. Taylor on June 17, 1895, is at the highway bridge 1 mile southwest of the town. It is described in Water-Supply Paper No. 38, page 326. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 390. During 1900 the following measurements of discharge were made by L. H. Taylor:

July 6: Gage height, 2 feet; discharge, 22 second-feet.
August 31: Gage height, 1.75 feet; discharge, 4 second-feet.

[1] Continued from Water-Supply and Irrigation Paper No. 50.

Daily gage height, in feet, of Humboldt River near Elko, Nevada, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.38	2.90	3.09	2.85	3.70	4.55	3.00	1.95	1.80	1.85	1.92	2.30
2	2.40	2.95	3.00	2.90	3.70	4.60	3.00	1.90	1.80	1.85	1.94	2.30
3	2.41	3.00	3.10	3.00	3.65	4.70	2.10	1.85	1.79	1.86	1.92	2.30
4	2.42	3.00	3.25	2.95	3.65	4.75	2.80	1.80	1.80	1.87	1.95	2.30
5	2.43	2.95	3.20	2.87	3.75	4.80	2.60	1.75	1.80	1.85	1.94	2.30
6	2.45	2.85	3.15	2.85	3.60	4.85	2.40	1.70	1.80	1.85	2.00	2.30
7	2.48	2.70	3.10	2.90	3.55	4.88	2.20	1.65	1.79	1.85	2.04	2.30
8	2.49	2.67	3.13	2.95	3.55	4.90	3.30	1.60	1.80	1.85	2.05	2.30
9	2.50	2.65	3.07	3.00	3.50	4.95	3.75	1.55	1.80	1.90	2.10	2.30
10	2.52	2.60	3.05	2.95	3.55	5.30	2.75	1.55	1.79	1.85	2.10	2.30
11	2.54	2.65	3.00	2.98	3.60	5.25	2.60	1.55	1.80	1.90	2.05	2.30
12	2.55	2.55	3.05	3.01	3.65	5.20	2.75	1.50	1.80	1.90	2.10	2.34
13	2.54	2.58	3.05	2.95	4.25	5.15	2.80	1.50	1.79	1.90	2.14	2.34
14	2.65	2.66	3.10	2.80	4.35	5.05	2.60	1.45	1.80	1.90	2.15	2.35
15	2.75	2.68	3.15	3.00	4.45	5.07	2.50	1.50	1.80	1.90	2.18	2.35
16	2.90	2.75	3.25	3.15	4.75	5.10	2.45	1.55	1.86	1.94	2.18	2.30
17	3.10	2.85	3.20	3.20	4.85	5.10	2.45	1.60	1.78	1.94	2.20	2.35
18	3.30	2.75	3.20	3.25	4.65	5.05	2.45	1.60	1.78	1.93	2.30	2.35
19	3.20	2.80	3.15	3.30	4.45	5.10	2.45	1.60	1.80	1.94	2.30	2.35
20	3.00	2.85	3.10	3.35	4.30	4.95	2.43	1.55	1.82	1.90	2.30	2.35
21	3.00	2.90	2.95	3.35	4.58	4.90	2.40	1.55	1.84	1.90	2.30	2.37
22	2.90	2.98	2.80	3.25	4.55	4.80	2.35	1.55	1.85	1.94	2.30	2.40
23	2.85	3.00	2.95	3.30	4.53	4.75	2.30	1.50	1.85	1.93	2.25	2.40
24	2.75	3.08	2.95	3.35	4.53	4.40	2.25	1.45	1.87	1.92	2.25	2.40
25	2.80	3.00	2.85	3.36	4.53	4.15	2.15	1.40	1.90	1.90	2.30	2.40
26	3.15	3.15	2.80	3.40	4.47	4.00	2.10	1.45	1.87	1.90	2.30	2.40
27	3.20	3.20	2.85	3.45	4.45	3.90	2.05	1.50	1.86	1.90	2.25	2.40
28	3.10	3.15	2.90	3.55	4.50	3.85	2.05	1.55	1.87	1.90	2.25	2.40
29	3.00	.....	2.85	3.60	4.45	3.90	2.05	1.60	1.90	1.90	2.28	2.40
30	2.95	.....	2.85	3.85	4.35	3.85	2.00	1.65	1.87	1.90	2.29	2.37
31	2.85	.....	2.80	.....	4.25	.....	2.00	1.75	.....	1.92	.....	2.35

SOUTH FORK OF HUMBOLDT RIVER AT MASON'S RANCH, NEVADA.

This station, established August 29, 1896, is 10 miles southwest of the town of Elko. It is described in Water-Supply Paper No. 38, page 327. Results of measurements will be found as follows: For 1896, Eighteenth Annual Report, Part IV, page 311; for 1897, Nineteenth Annual Report, Part IV, page 430; for 1898, Twentieth Annual Report, Part IV, page 440; for 1899, Twenty-first Annual Report, Part IV, page 391. During 1900 the following measurements were made by L. H. Taylor:

July 6: Gage height, 1.45 feet; discharge, 150 second-feet.
August 31: Gage height, 0.30 foot; discharge, 0.60 second-foot.

Daily gage height, in feet, of South Fork of Humboldt River at Mason's ranch, Nevada, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.95	0.70	1.10	1.35	1.60	3.50	1.85	0.55	0.30	0.40	0.75	0.95
2	.95	.70	1.10	1.35	1.65	3.50	1.70	.50	.30	.45	.75	.90
3	.95	.70	1.10	1.35	1.70	3.20	1.70	.45	.30	.45	.75	.90
4	.95	.70	1.10	1.35	1.70	3.30	1.60	.45	.30	.50	.75	.90
5	.95	.70	1.10	1.35	1.80	3.30	1.55	.40	.30	.50	.75	.85
6	.95	.80	1.10	1.35	1.95	3.35	1.45	.40	.30	.50	.75	.85
7	.95	.85	1.10	1.35	2.00	3.40	1.40	.40	.30	.50	.75	.85
8	.95	.85	1.10	1.45	2.20	3.50	1.35	.35	.30	.50	.75	.85
9	.95	.90	1.10	1.50	2.30	3.50	1.35	.35	.30	.50	.75	.80
10	.95	.90	1.10	1.50	2.50	3.60	1.30	.35	.30	.50	.75	.80
11	.95	.90	1.10	1.60	2.60	3.40	1.25	.35	.30	.50	.75	.80
12	.95	.90	1.10	1.60	2.75	3.30	1.20	.35	.30	.50	.75	.80
13	.95	.90	1.20	1.60	2.80	3.20	1.20	.35	.30	.50	.75	.80
14	1.00	.95	1.20	1.60	2.80	3.10	1.15	.35	.30	.55	.75	.80
15	1.20	.95	1.20	1.60	2.75	3.10	1.10	.35	.30	.55	.75	.80
16	1.20	.90	1.25	1.60	2.75	3.10	1.00	.35	.30	.55	.75	.80
17	1.30	.90	1.25	1.55	2.75	2.90	.90	.35	.30	.60	.75	.80
18	1.30	.95	1.25	1.50	2.80	2.60	.90	.35	.35	.60	.80	.80
19	1.30	.95	1.25	1.50	2.80	2.50	.85	.30	.35	.65	.80	.80
20	1.10	1.00	1.30	1.50	2.75	2.50	.80	.30	.35	.65	.90	.80
21	.90	1.00	1.30	1.50	2.75	2.50	.80	.30	.35	.65	.90	.80
22	.90	1.10	1.35	1.50	2.75	2.45	.75	.30	.35	.65	.90	.80
23	.90	1.10	1.35	1.50	2.80	2.40	.70	.30	.35	.70	.90	.70
24	.90	1.10	1.35	1.45	2.85	2.30	.70	.30	.35	.70	.90	.70
25	.80	1.10	1.35	1.45	2.85	2.20	.70	.30	.40	.70	.95	.65
26	.80	1.10	1.35	1.45	2.90	2.10	.70	.30	.40	.70	.95	.65
27	.80	1.10	1.35	1.45	3.35	2.10	.70	.30	.40	.70	.95	.65
28	.75	1.10	1.35	1.45	3.40	2.10	.70	.30	.40	.75	.95	.60
29	.75	.....	1.35	1.50	3.40	2.00	.65	.30	.40	.75	.95	.60
30	.70	.....	1.35	1.60	3.40	1.90	.65	.30	.40	.75	.95	.60
31	.70	.....	1.35	.....	3.50	.....	.60	.30	.....	.75	.....	.60

HUMBOLDT RIVER NEAR GOLCONDA, NEVADA.

This station is near the great northern bend of Humboldt River, and below the central valley. It is about 12 miles above the mouth of Little Humboldt River. It was established October 24, 1894, and is described in Water-Supply Paper No. 38, page 329. The results of measurements will be found as follows: For 1896, Eighteenth Annual Report, Part IV, page 306; for 1897, Nineteenth Annual Report, Part IV, page 427; for 1898, Twentieth Annual Report, Part IV, page 438; for 1899, Twenty-first Annual Report, Part IV, page 392. During 1900 the following measurements were made by L. H. Taylor:

April 14: Gage height, 1.75 feet; discharge, 102 second-feet.
May 25: Gage height, 3.83 feet; discharge, 385 second-feet.
July 13: Gage height, 1.50 feet; discharge, 66 second-feet.
August 30: Gage height, 0.20 foot; discharge, 2.5 second-feet.

Daily gage height, in feet, of Humboldt River near Golconda, Nevada, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.25	2.90	3.30	2.65	1.80	3.80	2.90	0.45	0.20	0.20	0.20	0.15
2	2.25	2.90	3.30	2.60	1.80	3.75	2.80	.45	.20	.20	.20	.15
3	2.25	2.90	3.30	2.50	1.80	3.75	2.70	.40	.20	.20	.20	.20
4	2.30	2.90	3.35	2.20	1.75	3.75	2.50	.40	.20	.20	.20	.20
5	2.40	2.90	3.35	2.00	1.70	3.80	2.30	.40	.20	.20	.20	.20
6	2.40	2.95	3.35	1.85	1.60	3.82	2.20	.35	.20	.20	.20	.20
7	2.45	2.95	3.35	1.75	1.50	3.90	2.10	.35	.20	.20	.20	.20
8	2.45	2.95	3.30	1.65	1.50	4.10	2.00	.30	.20	.20	.20	.25
9	2.45	2.95	3.25	1.65	1.50	4.10	2.00	.30	.20	.20	.20	.25
10	2.50	3.00	3.20	1.70	1.50	3.95	1.90	.25	.20	.20	.20	.30
11	2.50	3.00	3.20	1.75	1.50	4.05	1.70	.20	.20	.20	.20	.35
12	2.50	3.00	3.20	1.70	1.50	4.10	1.60	.20	.20	.20	.20	.35
13	2.55	3.05	3.15	1.75	1.50	4.20	1.50	.20	.20	.20	.20	.40
14	2.55	3.05	3.15	1.75	1.50	4.25	1.40	.20	.20	.20	.20	.50
15	2.55	3.10	3.10	1.75	1.50	4.30	1.30	.20	.20	.20	.20	.55
16	2.60	3.10	3.10	1.75	1.80	4.30	1.20	.20	.20	.20	.20	.60
17	2.60	3.15	3.10	1.75	2.10	4.10	1.10	.20	.20	.20	.20	.60
18	2.65	3.15	3.10	1.75	2.25	3.90	1.00	.20	.20	.20	.20	.70
19	2.65	3.15	3.05	1.75	2.45	3.70	.90	.20	.20	.20	.20	.75
20	2.70	3.20	3.00	1.75	3.30	3.50	.80	.20	.20	.20	.20	.80
21	2.70	3.20	3.00	1.75	3.45	3.40	.80	.20	.20	.20	.20	.90
22	2.70	3.20	2.90	1.75	3.55	3.40	.80	.20	.20	.20	.20	.90
23	2.75	3.25	2.90	1.75	3.60	3.30	.70	.20	.20	.20	.20	.95
24	2.75	3.25	2.85	1.80	3.70	3.30	.70	.20	.20	.20	.20	.95
25	2.80	3.25	2.85	1.80	3.83	3.30	.60	.20	.20	.20	.15	.95
26	2.80	3.25	2.85	1.80	3.85	3.20	.60	.20	.20	.20	.15	.95
27	2.80	3.30	2.80	1.80	3.90	3.10	.60	.20	.20	.20	.15	.95
28	2.80	3.30	2.80	1.80	3.90	3.00	.50	.20	.20	.20	.15	1.00
29	2.85	.....	2.75	1.80	3.90	2.90	.50	.20	.20	.20	.15	1.00
30	2.85	.....	2.70	1.80	3.90	2.90	.50	.20	.20	.20	.15	1.00
31	2.85	.....	2.70	.....	3.85	.....	.45	.20	.....	.20	.....	1.00

HUMBOLDT RIVER NEAR OREANA, NEVADA.

This station, established January 27, 1896, is 1½ miles above the old Oreana highway bridge. It is 12 miles northeast of Lovelocks and above all of the canals diverting water in the vicinity of that town. It is described in Water-Supply Paper No. 38, page 330. Results of measurements will be found as follows: For 1896, Eighteenth Annual Report, Part IV, page 307; for 1897, Nineteenth Annual Report, Part IV, page 428; for 1898, Twentieth Annual Report, Part IV, page 439; for 1899, Twenty-first Annual Report, Part IV, page 393. During 1900 the following measurements of discharge were made by L. H. Taylor:

Discharge measurements of Humboldt River near Oreana, Nevada.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-feet.*	1900.	*Feet.*	*Sec.-feet.*
March 2	1.95	267	May 23	0.20	26
April 4	1.50	157	June 29	1.65	190
April 7	1.30	124	July 8	2.00	283
May 1	.40	47			

Daily gage height, in feet, of Humboldt River near Oreana, Nevada, for 1900.

Day	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.40	1.90	2.00	1.60	0.40	0.70	1.50	0.90	0.20	0.20	0.40	0.30
2	2.40	1.80	2.00	1.60	.40	.80	1.70	.70	.20	.20	.40	.30
3	2.40	1.80	2.00	1.50	.40	.20	1.90	.80	.20	.20	.40	.30
4	*a*2.60	1.90	2.00	1.50	.40	.20	2.00	.80	.20	.50	.40	.30
5	*a*2.60	1.90	2.00	1.50	.40	.20	2.10	.80	.10	.40	.40	.30
6	*a*2.60	2.00	2.00	1.30	.40	.30	2.20	.80	.10	.40	.40	.30
7	*a*2.60	2.00	2.10	1.30	.40	.40	2.00	.70	.10	.30	.50	.30
8	*a*2.60	2.00	2.10	1.40	.40	.50	2.00	.60	.10	.40	.50	.30
9	*a*3.00	1.90	2.10	1.40	.40	.50	2.00	.60	.10	.40	.40	.30
10	*a*3.00	1.90	2.10	1.30	.40	.80	1.90	.60	.10	.40	.40	.30
11	*a*3.80	1.90	2.10	1.30	.35	.80	1.80	.50	.10	.30	.40	.40
12	*a*4.00	1.90	2.10	1.00	.35	.80	1.80	.50	.10	.30	.40	.50
13	1.80	1.80	2.00	.90	.35	1.50	1.70	.50	.10	.30	.50	.50
14	2.00	1.70	2.00	.90	.30	1.20	1.70	.50	.60	.30	.50	.30
15	2.00	1.70	2.00	.90	.30	1.10	1.70	.50	.50	.30	.50	.30
16	1.80	1.70	1.90	.90	.25	1.10	1.70	.50	.40	.40	.50	.30
17	1.80	1.70	1.90	.80	.25	1.10	1.60	.50	.40	.40	.40	.30
18	1.80	1.90	1.90	.80	.25	1.10	1.60	.50	.40	.40	.40	.30
19	1.70	1.90	1.90	.50	.20	1.30	1.50	.50	.30	.30	.40	.30
20	1.60	1.90	1.90	.50	.20	1.40	1.30	.40	.30	.30	.50	.30
21	1.80	2.00	1.80	.50	.20	1.70	1.30	.40	.30	.30	.60	.30
22	1.80	2.00	1.80	.50	.20	1.70	1.30	.30	.20	.30	.60	.30
23	1.80	2.00	1.80	.50	.20	1.50	1.30	.30	.20	.30	.60	.30
24	1.80	1.90	1.80	.40	.20	1.50	1.30	.30	.20	.40	.50	.30
25	1.70	1.90	1.80	.40	.20	1.50	1.20	.30	.20	.40	.50	.70
26	1.70	1.90	1.80	.40	.20	1.70	1.20	.30	.20	.40	.50	.70
27	1.70	1.90	1.60	.40	.20	1.90	.90	.30	.20	.40	.50	1.00
28	1.80	2.00	1.60	.40	.20	2.00	.80	.30	.20	.40	.40	1.00
29	1.90	.....	1.60	.40	.20	1.80	1.40	.30	.20	.40	.40	1.40
30	1.90	.....	1.30	.40	.40	1.50	1.30	.20	.20	.40	.30	1.40
31	1.90	.....	1.30	.....	.50	.....	1.30	.20	.....	.40	.....	1.40

a Ice gorge below gage; actual height should be 2.40.

The following table gives the discharge measurements of the canals diverting water from Humboldt River near Lovelocks:

Discharge measurements of canals near Lovelocks, Nevada.

Date.	Canal.	Locality.	Hydrographer.	Discharge.
1900.				*Sec.-ft.*
March 16	Old Channel ditch	At head gate	L. H. Taylor	94
March 19	do	do	do	80
June 29	do	250 yards below head gate.	do	60
March 16	Last Chance ditch	About 1 mile below head.	do	41
March 19	do	do	do	39
April 7	do	do	do	8
June 29	do	do	do	17
March 16	Southwest ditch	do	do	32
March 19	do	do	do	34
April 7	do	do	do	34
June 29	do	do	do	30
March 8	Marker or Rodgers ditch.	At flume across Humboldt River.	do	49
March 16	do	do	do	56
March 19	do	do	do	60
April 7	do	do	do	56
June 29	do	do	do	55
March 17	Union canal	At head gate	do	31
March 19	do	do	do	28
April 7	do	do	do	31
June 29	do	do	do	28

EAST FORK CARSON RIVER NEAR GARDNERVILLE, NEVADA.

This branch of Carson River has its source in the high Sierra of California, and flows northward, crossing the Nevada-California

boundary line and entering Carson Valley at Rodenbah's ranch, about 20 miles a little east of south from Carson. There it turns to the northwest, and a short distance above the town of Genoa unites with the West Fork, forming Carson River. The drainage area above Rodenbah's is 414 square miles in extent, and is mapped on the Markleeville and Dardanelles atlas sheets of the United States Geological Survey. The gaging station was established by L. H. Taylor on October 17, 1900, at the place where measurements were made in the years 1890, 1891, and 1892, the results of which are given in the Thirteenth Annual Report, Part III, page 95. The rod is an inclined timber securely fastened to posts set in the right bank of the stream. The bench mark is on a basalt rock in the edge of the stream, 20 feet from the gage, and is at an elevation of 6.3 feet above gage datum. The channel at the station is straight and the banks are high. The stream bed is of cobbles and gravel, and is quite stable. Measurements are made from a cable and suspended car.

Daily gage height, in feet, of East Fork Carson River near Gardnerville, Nevada, for 1900.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1	.....	2.4	2.4	12	.....	2.4	2.3	23	2.6	2.7	2.4
2	.....	2.4	2.4	13	.....	2.4	2.4	24	2.5	2.7	2.4
3	.....	2.4	2.4	14	.....	2.4	2.4	25	2.5	2.7	2.4
4	.....	2.3	2.4	15	.....	2.4	2.4	26	2.5	2.6	2.4
5	.....	2.3	2.4	16	.....	2.3	2.4	27	2.4	2.4	2.4
6	.....	2.3	2.4	17	2.3	2.4	2.4	28	2.4	2.4	2.4
7	.....	2.3	2.3	18	2.3	2.4	2.4	29	2.3	2.4	2.4
8	.....	2.6	2.3	19	2.3	2.5	2.4	30	2.4	2.4	2.4
9	.....	2.5	2.3	20	2.5	2.5	2.4	31	2.4	.....	2.4
10	.....	2.5	2.3	21	2.6	2.9	2.4				
11	.....	2.4	2.3	22	2.6	2.9	2.4				

WEST FORK CARSON RIVER AT WOODFORDS, CALIFORNIA.

This stream rises on the eastern slope of the Sierra Nevada in California, immediately to the southeast of the source of Truckee River, and flowing in a general northeast direction crosses the State line into Nevada and joins the East Fork near Genoa, in Carson Valley. The drainage area is mapped on the Markleeville atlas sheet of the United States Geological Survey. The gaging station, established by L. H. Taylor on October 18, 1900, is about three-fourths of a mile above the post-office at Woodfords, near the point where measurements were made in 1890, 1891, and 1892, the results of which are given in the Thirteenth Annual Report, Part III, page 96. The gage at present in use is a vertical timber, but it is only temporary, the equipment of the station being incomplete. The channel at the station is straight, the banks are high and rocky, and the bed is of rock and gravel and not likely to shift. Measurements are made from a car suspended on a steel cable across the stream.

Daily gage height, in feet, of West Fork Carson River at Woodfords, California, for 1900.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1		2.55	2.55	12		2.45	2.50	23	2.40	2.35	2.65
2		2.50	2.50	13		2.40	2.45	24	2.40	2.45	2.70
3		2.45	2.50	14		2.40	2.50	25	2.30	2.60	2.67
4		2.40	2.45	15		2.45	2.48	26	2.30	2.50	2.65
5		2.40	2.40	16		2.50	2.35	27	2.20	2.50	2.70
6		2.40	2.50	17		2.40	2.40	28	2.20	2.45	2.65
7		2.50	2.35	18	2.40	2.45	2.35	29	2.35	2.50	2.60
8		2.60	2.40	19	2.50	2.50	2.40	30	2.40	2.55	2.60
9		2.60	2.50	20	2.70	2.50	2.50	31	2.50		2.60
10		2.55	2.45	21	2.70	2.55	2.70				
11		2.50	2.50	22	2.50	2.40	2.60				

CARSON RIVER NEAR EMPIRE, NEVADA.

This river has its source on the slopes of the Sierra Nevada in eastern California, and flows northward into the State of Nevada. At Empire, 3 miles east of Carson, after having traversed the upper Carson Valley, it turns to the northeast and enters a deep canyon, through which it flows for several miles, emerging into a second smaller valley a short distance above the town of Dayton. After leaving this valley it passes through two other shorter canyons and through one rather large valley before entering Lower Carson Valley, or Carson Sink Valley, as it is also known, and discharging its waters into the Carson Sink. The drainage area is mapped on the Dardanelles, Markleeville, Carson, and Wabuska atlas sheets of the United States Geological Survey. On October 21, 1900, a gaging station was established about 2 miles below the town of Empire and about three-fourths of a mile below the point where measurements were made by Mr. Taylor in 1895, the results of which are given in Bulletin of United States Geological Survey No. 140 (Report of progress of the Division of Hydrography of the United States Geological Survey for the calendar year 1895). The gage, a temporary one, is vertical, driven into the stream bed, and spiked to a timber set firmly in the left bank. The bench mark is on a stone wall 10 feet from the gage and at an elevation of 7.5 feet above gage datum. The channel is straight, the banks are rather high, and the bed is composed of cobbles and gravel and is not likely to shift or corrode.

Daily gage height, in feet, of Carson River near Empire, Nevada, for 1900.

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1		2.40	2.55	12		2.50	2.60	22	2.60	3.05	2.70
2		2.40	2.50	13		2.50	2.60	23	2.50	2.90	2.60
3		2.40	2.50	14		2.50	2.55	24	2.50	2.70	2.60
4		2.40	2.50	15		2.50	2.50	25	2.50	2.60	2.60
5		2.45	2.50	16		2.50	2.50	26	2.50	2.60	2.60
6		2.40	2.50	17		2.50	2.60	27	2.50	2.60	2.60
7		2.40	2.50	18		2.50	2.60	28	2.50	2.60	2.55
8		2.50	2.50	19		2.50	2.60	29	2.40	2.60	2.55
9		2.65	2.50	20		2.50	2.60	30	2.40	2.60	2.40
10		2.50	2.50	21	2.60	2.65	2.60	31	2.40		2.40
11		2.50	2.60								

TRUCKEE RIVER AT TAHOE, CALIFORNIA.

Truckee River, the natural outlet of Lake Tahoe, leaves the lake at the city of Tahoe. About 500 feet from the lake there is a timber dam across the river, which has been maintained for more than twenty years, for the purpose of controlling the discharge from the lake. During the early part of the year 1900 the gates in this dam were kept closed, not being opened until June 17, when a gage was placed in the stream for the purpose of recording the height of the water in the river. The gage is a vertical timber driven into the stream bed at the left bank about 300 feet below the dam, and is spiked to the root of a tree growing on the bank. The bench mark is cut in the side of the tree and is 4 feet above gage datum. The measurements are made from a cable and suspended car about one-fourth mile below the gage, which was placed as near the city of Tahoe as possible for the convenience of the observer. At the point of measurement the right bank is low and is subject to overflow at very high stages of the stream, but the left bank is rather high. The channel is nearly straight for a short distance above and below the station, and the bed of the river, which is of gravel and coarse sand, is smooth and stable. The purpose of the station is to ascertain the actual outflow from Lake Tahoe, with a view to determining its real value as a storage reservoir. The following measurements were made during 1900:

Discharge measurements of Truckee River at Tahoe, California.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-ft.*	1900.	*Feet.*	*Sec.-ft.*
June 18	0.75	92	October 23	0.40	52
June 30	1.45	240	Do	.95	130
July 12	1.60	277	Do	1.15	158
September 7	1.40	225			

Daily gage height, in feet, of Truckee River at Tahoe, California, for 1900.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	(a)	1.55	1.35	1.20	1.10	(a)
2	.....	1.45	1.55	1.35	1.15	1.10	0.80
3	.....	1.45	1.55	1.30	1.15	1.10	.80
4	.....	(a)	1.50	1.30	1.15	1.10	.60
5	.....	1.45	1.55	1.30	1.20	1.10	.60
6	.....	1.45	1.50	1.30	1.20	1.10	.80
7	.....	1.45	1.50	1.40	1.15	1.10	.80
8	.....	(a)	1.50	1.35	1.15	1.10	.80
9	.....	1.45	1.45	1.35	1.15	1.10	.80
10	.....	1.45	1.45	1.35	1.10	1.10	.80
11	.....	1.45	1.45	1.30	1.10	1.10	.80
12	.....	1.45	1.45	1.30	1.10	1.10	.80
13	.....	1.45	1.45	1.30	1.10	1.10	.80
14	.....	1.45	1.45	1.30	1.10	1.10	.80
15	.....	.75	1.45	1.30	1.10	1.10	.80
16	.....	1.50	1.45	1.25	1.10	1.10	.80
17	0.75	1.45	1.45	1.20	1.10	1.10	.60
18	.75	1.50	1.45	1.35	1.10	1.10	.60
19	.75	1.45	1.40	1.30	1 10	1.10	.60
20	.75	1.50	1.45	1.35	1.10	1.10	.60
21	(a)	1.50	1.40	1.30	1.10	1.20	.60
22	.80	1.50	1.40	1.30	1.10	1.30	.60
23	(a)	1.50	1.40	1.20	1.10	.90	.60
24	(a)	1.50	1.40	1.20	1.10	.90	.60
25	1.10	1.50	1.40	1.20	1.10	.90	.60
26	(a)	1.50	1.40	1.20	1.10	.90	.60
27	1.45	1.45	1.40	1.20	1.10	.90	.60
28	1.45	1.45	1.40	1.20	1.10	(a)	.60
29	1.45	1.50	1.40	1.20	1.10	(a)	.60
30	1.45	1.50	1.35	1.20	1.10	(a)	.60
31	.....	1.55	1.35	.....	1.10	.....	.60

a All gates closed; no water flowing from lake.

TRUCKEE RIVER AT NEVADA-CALIFORNIA STATE LINE.

This station is described in Water-Supply Paper No. 38, page 331. During 1900 the following measurements were made by L. H. Taylor:

Discharge measurements of Truckee River at Nevada-California State line.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-ft.*	1900.	*Feet.*	*Sec.-ft.*
April 10	2.90	753	July 1	2.50	534
May 15	4.10	1,493	July 14	2.50	551
May 22	4.30	1,629	September 6	2.30	447
June 1	3.70	1,112	October 2	1.90	318
June 15	3.20	961			

Daily gage height, in feet, of Truckee River at Nevada-California State line, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.90	1.90	2.00	3.40	4.00	3.70	2.50	2.10	2.40	2.30	2.30	1.60
2	2.00	1.90	1.90	3.20	4.00	3.70	2.50	2.10	2.00	2.00	2.00	1.60
3	2.80	1.90	1.90	3.00	3.80	3.60	2.50	2.10	1.80	2.10	2.00	1.60
4	3.20	1.90	2.00	3.00	4.00	3.60	2.40	2.10	2.40	2.10	2.40	1.80
5	2.80	1.90	2.00	3.20	4.30	3.50	2.40	2.10	2.20	2.20	2.40	1.80
6	2.70	1.80	2.00	3.20	4.00	3.70	2.40	2.10	2.30	2.20	2.40	1.80
7	2.30	1.80	2.30	3.20	4.10	3.70	2.40	2.10	2.20	2.30	2.70	2.00
8	2.10	1.80	2.40	3.20	4.30	4.00	2.40	2.10	2.10	2.20	2.50	2.20
9	2.00	1.80	2.60	3.20	4.40	4.00	2.40	2.10	2.10	2.20	2.40	2.20
10	2.00	1.80	2.60	3.20	4.60	3.70	2.40	2.10	2.10	2.10	2.40	2.20
11	2.00	1.80	2.60	3.10	4.60	3.70	2.40	2.10	2.10	2.00	2.40	2.20
12	2.00	1.90	2.90	3.00	4.00	3.60	2.40	2.10	2.20	2.00	2.40	2.20
13	2.10	2.00	3.00	2.90	3.80	4.00	2.40	2.10	2.20	2.00	2.40	2.20
14	2.30	2.00	3.40	2.90	3.80	3.70	2.40	2.10	2.30	2.00	2.30	2.00
15	2.20	2.00	3.60	2.90	4.30	3.20	2.40	2.10	2.30	2.00	2.20	2.00
16	2.20	2.00	3.40	2.90	4.40	3.20	2.40	2.10	2.30	2.30	2.20	2.00
17	2.20	2.00	3.40	3.00	4.40	3.20	2.30	2.10	2.30	1.70	2.20	2.00
18	2.20	2.00	3.20	3.00	4.50	3.20	2.20	2.10	2.30	2.00	2.20	2.20
19	2.20	2.00	3.40	3.40	4.50	3.10	2.20	2.20	2.30	2.30	2.20	2.40
20	2.20	2.10	3.40	3.60	4.60	3.00	2.30	2.20	2.30	3.20	2.20	3.60
21	2.00	2.10	3.60	3.60	4.40	3.00	2.30	2.20	2.10	3.10	2.50	3.00
22	2.00	2.10	3.50	3.50	4.50	2.90	2.30	2.40	2.00	3.00	3.20	3.00
23	1.90	2.10	3.40	3.10	4.40	3.00	2.30	2.40	2.00	2.90	3.00	2.90
24	1.90	2.10	3.40	3.00	4.00	2.90	2.30	2.40	1.60	2.90	2.80	2.00
25	1.90	2.10	3.40	3.30	4.00	2.70	2.30	2.40	1.60	2.80	2.50	2.20
26	1.90	2.10	3.60	3.50	4.00	2.70	2.20	2.00	1.60	2.80	2.50	2.20
27	1.90	2.10	3.60	3.10	3.80	2.60	2.20	2.20	2.00	2.70	2.30	2.00
28	1.90	2.10	3.40	3.00	3.80	2.60	2.20	2.20	1.70	2.70	2.00	2.00
29	1.90	.....	3.40	3.40	3.80	2.60	2.20	2.40	1.90	2.40	2.00	2.00
30	1.90	.....	3.40	4.00	3.70	2.60	2.20	2.40	2.10	2.00	2.00	2.20
31	1.90	.....	3.40	.....	3.70	.....	2.20	2.40	.....	2.40	.....	2.00

TRUCKEE RIVER AT VISTA, NEVADA.

This station is described in Water-Supply Paper No. 38, page 331. During 1900 the following measurements were made by L. H. Taylor:

Discharge measurements of Truckee River at Vista, Nevada.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-ft.*	1900.	*Feet.*	*Sec.-ft.*
April 25	3.30	757	June 28	2.70	372
May 14	3.80	989	July 2	2.20	207
May 23	4.30	1,326	July 10	2.05	138
June 9	3.80	967	July 24	2.00	99
June 14	4.10	1,150	August 22	2.30	198
June 19	2.90	471	September 28	2.25	226

Daily gage height, in feet, of Truckee River at Vista, Nevada, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.85	2.70	2.75	3.60	4.50	3.40	2.45	1.85	2.10	2.15	2.80	2.90
2	2.80	2.70	2.80	3.70	4.50	3.60	2.35	1.85	2.00	2.35	2.85	3.00
3	4.15	2.70	2.80	3.60	4.60	3.50	2.20	1.90	2.10	2.40	2.90	2.85
4	3.95	2.60	2.80	3.40	4.30	4.05	2.20	1.85	2.40	2.50	2.50	2.80
5	3.45	2.60	2.80	3.40	4.00	3.60	2.20	1.90	2.40	2.75	2.55	2.90
6	3.20	2.65	2.90	3.30	4.50	3.60	2.20	1.80	2.40	2.75	2.60	2.90
7	3.15	2.70	3.00	3.30	4.55	3.60	2.15	1.85	2.25	2.70	2.65	2.70
8	3.10	2.70	3.15	3.30	4.60	4.20	2.10	1.85	2.20	2.70	2.70	2.85
9	2.80	2.60	3.35	3.20	4.45	3.75	2.10	1.85	2.20	2.70	2.75	2.85
10	2.80	2.60	3.40	3.10	4.60	3.60	2.00	1.90	2.15	2.40	2.80	2.80
11	2.90	2.70	3.45	3.10	4.60	3.55	2.00	1.90	2.10	2.50	2.80	2.80
12	2.90	2.70	3.50	3.10	4.60	3.55	2.00	1.90	2.20	2.55	2.80	2.80
13	3.00	2.75	3.65	3.00	3.80	3.60	1.90	1.90	2.30	2.60	2.80	2.80
14	2.90	2.75	3.80	2.90	3.75	4.00	1.90	2.00	2.15	2.50	2.75	2.75
15	2.95	2.80	3.80	2.90	4.15	3.50	1.95	2.05	2.20	2.50	2.80	2.80
16	2.90	2.85	3.80	2.90	4.55	3.30	1.90	2.10	2.20	2.55	3.00	2.80
17	2.85	2.90	3.90	2.80	4.40	3.10	2.00	2.05	2.30	2.60	2.90	2.80
18	2.80	2.60	3.90	2.80	4.25	3.10	1.90	1.90	2.20	2.75	2.90	2.75
19	2.80	2.60	3.90	2.80	4.40	2.90	1.80	2.20	2.20	2.70	2.85	2.85
20	2.80	2.60	3.90	2.90	4.55	3.00	1.75	2.10	2.35	4.00	2.90	2.95
21	2.80	2.70	3.95	4.20	4.35	2.85	1.75	2.10	2.30	3.00	4.00	4.25
22	2.85	2.70	3.95	4.20	4.35	2.75	1.75	2.25	2.20	3.00	4.30	4.00
23	2.80	2.75	3.90	3.50	4.25	2.70	1.80	2.30	2.20	2.95	3.90	3.30
24	2.70	2.75	3.80	3.40	4.00	2.70	2.10	2.30	2.10	2.85	3.30	3.00
25	2.70	2.70	3.80	3.40	3.85	2.70	1.90	2.40	2.10	2.80	3.10	2.80
26	2.70	2.70	3.80	3.40	3.80	2.65	1.95	2.20	2.10	2.75	3.25	3.05
27	2.60	2.70	3.70	3.50	3.90	2.65	1.90	2.20	2.10	2.75	3.00	2.90
28	2.60	2.75	3.70	3.60	3.75	2.65	1.90	2.10	2.30	2.60	2.90	2.70
29	2.60	.....	3.70	3.50	3.80	2.35	1.80	2.00	2.20	2.70	2.80	2.85
30	2.70	.....	3.70	4.00	3.80	2.55	1.80	2.10	2.20	2.75	2.80	2.95
31	2.65	.....	3.60	.....	3.50	.....	1.85	2.10	.....	2.75	.....	3.20

MISCELLANEOUS DISCHARGE MEASUREMENTS IN TRUCKEE BASIN.

During the year discharge measurements were made of a number of streams in this basin, as recorded in the following table:

Miscellaneous discharge measurements in Truckee Basin.

Date.	Stream.	Locality.	Hydrographer.	Discharge.
1900.				*Sec.-ft.*
May 5	Ward Creek	Sunnyside, Cal	L. H. Taylor	147
June 16	Deer Creek	Near Truckee River, Cal	C. V. Taylor	25
June 5	Squaw Creek	do	do	81
June 16	do	do	do	46
September 14	do	do	do	3
May 16	Donner Creek	Near Donner Lake, Cal	L. H. Taylor	128
May 29	do	do	C. V. Taylor	73
July 13	do	do	do	1
August 20	do	do	do	69
September 13	do	do	do	19
Do	Cold Creek	At Cold Creek Canyon, Cal	do	1
May 21	Donner Creek	Truckee, Cal	do	324
June 3	do	do	do	127
July 13	do	do	do	15
June 3	Truckee River	do	do	364
June 12	do	do	do	264
May 21	Martis Creek	Martis, Cal	do	25
June 4	do	do	do	18
September 14	do	do	do	9
June 4	Prosser Creek	Two miles above railroad	do	145
September 9	do	Prosser, Cal	do	10
July 27	do	do	do	25
September 15	Little Truckee River.	Boca, Cal	do	27
August 16	do	do	do	9
September 15	Juniper Creek	Burkhalter, Cal	do	1
July 28	Jo Gray Creek	Iceland, Cal	do	20
September 15	do	do	do	12
July 25	Alder Creek	Floriston, Cal	do	13
September 10	do	do	do	10
July 26	Dog Creek	Verdi, Nev	do	0.4
September 10	do	do	do	1
June 7	Hunter Creek	Mayberry, Nev	do	41
September 12	do	do	do	6

STEAMBOAT CREEK AT STEAMBOAT SPRINGS, NEVADA.

This stream is the outlet of the Washoe Lake Basin, lying on the eastern slope of the Tahoe range of mountains. The total drainage area above the station at Steamboat Springs is 123 square miles. The station was established May 31, 1900, for the purpose of ascertaining the volume of water entering Reno Valley through this stream. It is at a footbridge across the creek about 200 yards east of the Virginia and Truckee Railroad station at Steamboat, at the point where the stream enters Reno Valley, on the main Truckee River. The gage is a vertical timber driven into a seam in the rock of the stream bed and spiked to the footbridge which spans the creek, from which measurements are made. The channel is straight for a short distance above and below the station, and the banks are high and not subject to overflow. The stream bed is of limestone and is perfectly stable. The bench mark is on a post driven in the ground on the right bank of the stream at the end of the bridge, and is at an elevation of 5 feet above gage datum. The following measurements were made during 1900:

May 31: Gage height, 1.06 feet; discharge, 23 second-feet.
June 9: Gage height, 1.30 feet; discharge, 34 second-feet.
July 2: Gage height, 0.75 foot; discharge, 12 second-feet.
July 11: Gage height, 0.55 foot; discharge, 6 second-feet.
August 21: Gage height, 0.35 foot; discharge, 3 second-feet.
September 16: Gage height, 0.35 foot; discharge, 3 second-feet.

Daily gage height, in feet, of Steamboat Creek at Steamboat Springs, Nevada, for 1900.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1.05	0.60	0.40	0.30	0.30	0.60	0.60
2	.....	1.05	.60	.40	.30	.35	.60	.60
3	.....	1.02	.60	.40	.30	.40	.60	.60
4	.....	1.08	.60	.40	.30	.40	.65	.60
5	.....	1.30	.60	.40	.30	.35	.65	.60
6	.....	1.15	.70	.40	.30	.35	.65	.60
7	.....	1.50	.70	.40	.30	.35	.75	.60
8	.....	1.50	.70	.30	.30	.35	.70	.60
9	.....	1.10	.80	.30	.30	.30	.65	.60
10	.....	1.40	.70	.40	.30	.35	.65	.60
11	.....	1.40	.55	.40	.30	.35	.65	.60
12	.....	1.45	.55	.30	.30	.35	.60	.60
13	.....	1.60	.50	.35	.40	.40	.60	.60
14	.....	1.60	.55	.40	.30	.40	.60	.60
15	.....	1.55	.55	.40	.35	.40	.60	.60
16	.....	1.50	.60	.35	.40	.40	.70	.80
17	.....	1.30	.60	.30	.35	.40	.65	.65
18	.....	1.10	.55	.30	.35	.45	.65	.60
19	.....	1.00	.55	.30	.35	.80	.65	.60
20	.....	.90	.50	.30	.30	.60	.70	.60
21	.....	.90	.50	.30	.30	.50	2.00	.60
22	.....	.80	.50	.30	.35	.50	.70	.60
23	.....	.60	.50	.30	.40	.50	.65	.60
24	.....	.50	.45	.30	.40	.60	.60	.60
25	.....	.50	.45	.30	.40	.60	.60	.60
26	.....	.40	.45	.30	.25	.60	.60	.60
27	.....	.40	.50	.32	.30	.60	.60	.60
28	.....	.40	.50	.30	.30	.60	.60	.60
29	.....	.50	.50	.30	.35	.60	.60	.60
30	1.06	.55	.45	.32	.30	.60	.60	.60
31	1.06	.....	.45	.35	.....	.60	.....	.60

WILLOW CREEK NEAR STANDISH, CALIFORNIA.

This stream, which is tributary to Susan River about 12 miles east of the town of Susanville, has its source among the outlying spurs of the Sierra Nevada to the northeast of the watershed of that river. It is more regular in its discharge than is Susan River, and although its waters are employed for the irrigation of considerable land in Willow Creek Valley, on its upper course, during the latter part of the irrigating season it is the main reliance for the water supply for the lands bordering Honey Lake on the northwest. The gaging station, established by L. H. Taylor on June 4, 1900, is at the highway bridge about 4 miles west of north from the post-office at Standish and about 1½ miles north of Susan River. As in the case of the latter stream, a temporary gage is being used. Measurements are made from the bridge. The channel at the station is straight for a short distance. The left bank is high, but the right bank is low and is subject to overflow at extreme high water, which does not, however, occur oftener than once in five or six years. The stream bed is sandy and shifts some.

Ravenscroft ditch diverts water from the creek near the station. During 1900 its discharge was measured three times, as follows: June 4, discharge, 1.5 second-feet; July 30, discharge, 1 second-foot; October 10, discharge, 0.3 second-foot.

During the year the following discharge measurements were made at the main station by L. H. Taylor:

June 4: Gage height, 2.60 feet; discharge, 16 second-feet.
July 30: Gage height, 2.85 feet; discharge, 26 second-feet.
October 10: Gage height, 2.80 feet; discharge, 20 second-feet.

Daily gage height, in feet, of Willow Creek near Standish, California, for 1900.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	2.70	3.10	2.90	3.10	3.40	3.70
2	.....	2.70	3.20	2.90	3.10	3.40	3.70
3	.....	3.00	3.10	2.90	3.10	3.40	3.70
4	2.60	2.80	3.10	2.90	3.00	3.50	3.70
5	2.60	2.80	3.10	2.90	2.90	3.50	3.70
6	2.60	2.65	3.10	2.90	2.75	3.50	3.70
7	2.60	2.65	3.10	2.90	3.10	3.60	3.70
8	2.60	2.63	3.00	2.90	3.00	3.60	3.70
9	2.60	2.70	3.00	2.90	2.80	3.60	3.70
10	2.60	2.70	2.95	2.90	3.40	3.60	3.70
11	2.65	2.70	2.95	2.95	3.90	3.60	3.70
12	2.65	2.70	2.95	2.95	3.30	3.60	3.70
13	2.65	2.70	2.95	3.00	3.20	3.60	3.75
14	2.65	2.70	2.95	3.00	3.30	3.70	4.90
15	2.80	2.70	2.95	3.00	3.30	3.70	5.50
16	2.80	2.70	2.90	3.00	3.30	3.80	5.50
17	2.80	2.70	2.90	3.00	3.30	3.80	5.50
18	2.80	2.70	2.80	3.00	3.30	3.80	5.50
19	2.70	2.70	2.90	3.00	3.30	3.80	8.00
20	2.70	2.70	2.90	3.00	3.30	3.85	8.00
21	2.70	2.70	2.90	3.00	3.30	3.95	8.60
22	2.70	2.70	2.90	3.00	3.30	4.00	8.50
23	2.70	2.70	2.90	3.00	3.30	4.10	8.20
24	2.70	2.70	2.90	2.90	3.40	4.10	7.90
25	2.70	2.80	3.00	3.00	3.40	4.20	7.60
26	2.70	2.80	2.80	3.00	3.40	4.20	7.50
27	2.70	2.90	2.80	3.00	3.40	4.10	7.20
28	2.70	3.00	2.80	3.10	3.40	4.00	6.70
29	2.70	3.10	2.80	3.10	3.40	3.90	6.50
30	2.70	3.10	2.80	3.10	3.40	3.80	5.80
31	.....	3.10	2.80	.....	3.40	.....	4.60

SUSAN RIVER NEAR SUSANVILLE, CALIFORNIA.

This river has its source in the Sierra Nevada in northeastern California, and flowing eastward discharges into Honey Lake—one of the land-locked lakes of the Great Basin—of which it is the principal feeder. A considerable area of land is irrigated from the waters of the river below the gaging station, and during the last ten or twelve years several projects have been started for irrigating other very extensive areas by the storage of its waters both above and below the town of Susanville. The gaging station is about three-fourths of a mile southwest of the town, at the electric-light plant. It was established June 3, 1900, by L. H. Taylor, a temporary gage being placed in the right bank of the river. The station is designed to be equipped with a cable and suspended car from which to make measurements of the discharge, but these and the permanent gage have not yet been put into place. The channel is straight for a distance above and below the station, and the banks are high. The stream bed is of gravel and cobbles, and is rather stable.

A short distance above the station a small irrigating ditch, known as the Masten ditch, is taken out on the right bank of the stream. Near its head is a flume in which a gage has been placed and measurements are made. On July, 5, 1900, this ditch was discharging 7 second-feet. During 1900 two measurements were made of the discharge of the river at Susanville, under the direction of L. H. Taylor, as follows:

June 3: Gage height, 3.20 feet; discharge, 46 second-feet.
July 5: Gage height, 2.60 feet; discharge, 8 second-feet.

Daily gage height, in feet, of Susan River near Susanville, California, for 1900.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	2.70	2.45	2.40	2.40	2.65	3.00
2	.....	2.65	2.40	2.40	2.40	2.65	3.00
3	.....	2.65	2.40	2.40	2.70	2.65	3.00
4	3.20	2.60	2.40	2.40	2.60	2.65	2.95
5	3.15	2.60	2.35	2.40	2.60	2.65	2.95
6	3.10	2.60	2.35	2.40	2.60	2.60	2.90
7	3.10	2.55	2.40	2.40	2.60	2.70	2.90
8	3.05	2.55	2.45	2.40	2.65	2.70	2.90
9	3.00	2.55	2.40	2.40	2.65	2.70	2.90
10	3.00	2.50	2.40	2.40	2.50	2.70	2.90
11	3.00	2.45	2.40	2.40	2.50	2.70	2.90
12	2.95	2.40	2.40	2.40	2.50	2.70	2.90
13	3.10	2.40	2.40	2.35	2.50	2.70	2.90
14	3.10	2.40	2.40	2.35	2.55	2.70	2.90
15	3.10	2.40	2.40	2.35	2.60	2.70	2.90
16	3.15	2.40	2.40	2.35	2.60	2.90	2.90
17	3.10	2.40	2.45	2.35	2.60	2.90	3.00
18	3.05	2.40	2.45	2.35	2.60	2.90	3.00
19	3.05	2.40	2.45	2.35	2.90	2.90	3.10
20	3.05	2.40	2.40	2.35	3.10	2.90	4.80
21	3.05	2.40	2.40	2.35	2.90	4.60	4.40
22	3.00	2.40	2.40	2.35	2.80	3.80	3.80
23	3.00	2.40	2.40	2.35	2.80	3.50	3.50
24	3.00	2.45	2.40	2.35	2.80	3.30	3.40
25	2.95	2.45	2.35	2.40	2.75	3.80	3.30
26	2.90	2.45	2.40	2.40	2.60	3.40	3.20
27	2.75	2.45	2.40	2.40	2.60	3.30	3.20
28	2.80	2.45	2.45	2.40	2.65	3.30	3.20
29	2.70	2.45	2.40	2.40	2.65	3.20	3.10
30	2.60	2.45	2.40	2.40	2.70	3.10	3.10
31	.....	2.45	2.40	.....	2.65	.....	3.10

Daily gage height, in feet, of Masten ditch near Susanville, California, for 1900.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		0.75	0.50	0.55	0.75	0.60	0.60
2		.75	.50	.50	.80	.60	.50
3		.75	.50	.60	1.00	.60	.50
4		.75	.50	.60	.85	.60	.45
5		.75	.45	.60	.90	.60	.45
6		.70	.55	.60	.85	.60	.40
7		.65	.55	.60	.80	.55	.40
8		.60	.50	.65	.75	.55	.40
9		.60	.50	.65	.75	.55	.40
10		.65	.50	.65	.70	.55	.40
11		.65	.50	.70	.70	.55	.40
12		.65	.50	.70	.70	.55	.40
13		.65	.50	.80	.70	.50	.40
14		.65	.50	.80	.65	.50	.40
15		.65	.50	.75	.60	.50	.40
16		.65	.50	.75	.60	.60	.40
17		.65	.45	.75	.60	.60	.50
18		.65	.45	.75	.60	.60	.50
19		.65	.45	.75	.80	.60	.60
20		.65	.60	.75	.90	.60	.90
21		.65	.60	.75	.70	.90	.90
22		.60	.55	.75	00	.70	.80
23		.60	.55	.80	.00	.70	.60
24		.55	.55	.80	.00	.60	.60
25	0.30	.55	.55	.85	.00	.70	.60
26	.65	.55	.50	.85	.70	.60	.60
27	.85	.55	.50	.75	.70	.60	.40
28	.85	.55	.50	.75	.65	.60	.00
29	.85	.55	.50	.75	.65	.60	.00
30	.80	.55	.50	.75	.65	.60	
31		.55	.55		.60		

BEAR RIVER AT BATTLECREEK, IDAHO.

This station, established October 11, 1889, is about 10 miles north of the Utah-Idaho boundary line. It is described in Water-Supply Paper No. 38, page 332. There are two bench marks to which the gage is referred; the first is a nail in the bridge floor beam close to the gage, and the second is three nails in the east side of the north post which supports the station cable. Both of these bench marks are 11.118 feet above the gage datum. Results of measurements will be found as follows: For 1896, Eighteenth Annual Report, Part IV, page 315; for 1897, Nineteenth Annual Report, Part IV, page 432; for 1898, Twentieth Annual Report, Part IV, page 459; for 1899, Twenty-first Annual Report, Part IV, page 394. During 1900 the following measurements of discharge were made by George L. Swendsen:

Discharge measurements of Bear River at Battlecreek, Idaho.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-ft.*	1900.	*Feet.*	*Sec.-ft.*
February 12	1.75	958	August 31	1.40	487
March 26	2.95	1,880	September 26	1.60	604
April 23	2.88	1,585	October 20	1.70	627
May 28	3.50	2,232	November 5	1.75	662
June 26	2.15	973	December 22	1.85	664
July 27	1.57	543			

Daily gage height, in feet, of Bear River at Battlecreek, Idaho, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.90	2.00	1.85	2.70	3.35	3.40	1.95	1.50	1.35	1.60	1.75	1.80
2	1.90	1.90	1.90	2.70	3.40	3.40	1.90	1.50	1.35	1.60	1.75	1.80
3	1.90	1.90	1.95	2.80	3.40	3.45	1.90	1.50	1.35	1.60	1.75	1.80
4	2.10	1.90	1.95	2.80	3.45	3.45	1.85	1.50	1.35	1.60	1.75	1.80
5	2.10	1.80	2.05	2.80	3.45	3.40	1.85	1.50	1.35	1.60	1.75	1.80
6	2.00	1.80	2.05	2.80	3.50	3.40	1.89	1.50	1.35	1.60	1.75	1.80
7	2.00	1.70	2.05	2.83	3.50	3.35	1.80	1.50	1.35	1.60	1.75	1.80
8	2.00	1.60	2.23	2.85	3.50	3.35	1.80	1.50	1.35	1.60	1.75	1.80
9	2.00	1.35	2.23	2.90	3.50	3.30	1.80	1.48	1.35	1.60	1.75	1.80
10	2.00	1.70	2.35	2.90	3.50	3.20	1.80	1.45	1.35	1.60	1.75	1.80
11	1.90	2.45	2.48	2.90	3.55	3.10	1.75	1.45	1.35	1.60	1.75	1.80
12	1.95	1.80	2.58	2.90	3.70	3.00	1.75	1.45	1.35	1.60	1.75	1.80
13	2.10	1.73	2.60	2.90	3.70	2.90	1.70	1.45	1.35	1.60	1.75	1.80
14	2.20	1.75	2.75	2.90	3.75	2.80	1.70	1.45	1.35	1.60	1.75	1.75
15	2.23	1.83	2.83	2.85	3.70	2.75	1.70	1.40	1.35	1.60	1.75	1.75
16	2.00	1.75	2.95	2.85	3.60	2.75	1.70	1.40	1.35	1.60	1.75	1.75
17	2.15	2.00	3.08	2.78	3.60	2.60	1.70	1.35	1.35	1.60	1.75	1.75
18	2.10	1.85	3.28	2.70	3.55	2.55	1.70	1.35	1.35	1.60	1.75	1.75
19	2.10	1.78	3.35	2.70	3.55	2.50	1.70	1.35	1.40	1.60	1.75	1.75
20	2.00	1.88	3.50	2.70	3.50	2.50	1.70	1.35	1.40	1.70	1.75	1.75
21	2.00	1.88	3.65	2.80	3.43	2.43	1.70	1.35	1.40	1.70	1.80	1.80
22	2.00	1.90	3.35	2.95	3.35	2.40	1.70	1.35	1.40	1.70	1.85	1.85
23	1.90	1.80	3.20	2.90	3.35	2.35	1.75	1.35	1.50	1.70	1.80	1.55
24	1.90	1.80	3.05	2.90	3.35	2.30	1.75	1.35	1.50	1.80	1.90	1.55
25	1.80	1.80	2.95	2.90	3.38	2.25	1.70	1.35	1.60	1.80	1.90	1.55
26	2.10	1.85	3.00	3.00	3.45	2.15	1.70	1.35	1.60	1.80	1.90	1.55
27	2.10	1.80	3.00	3.13	3.50	2.00	1.60	1.35	1.60	1.80	1.80	1.55
28	2.00	1.85	2.95	3.28	3.45	2.00	1.60	1.35	1.60	1.80	1.80	1.55
29	1.90	------	2.85	3.30	3.45	2.00	1.55	1.35	1.60	1.75	1.80	1.55
30	1.80	------	2.80	3.30	3.40	1.95	1.50	1.35	1.60	1.75	1.80	1.55
31	1.90	------	2.75	------	3.40	------	1.50	1.35	------	1.75	------	1.55

CUB RIVER AT FRANKLIN, IDAHO.

Cub River rises in the southern part of Idaho, and flowing in a southwesterly direction into Utah discharges its waters into Bear River. Six canals are supplied from this stream, the total area irrigated being about 7,000 acres, part of which is in Idaho and part in Utah. During the irrigation season the supply of water in the river is considerably below the needs of the lands, but in the early spring the discharge exceeds 500 second-feet, and already some consideration has been given to the storage of this surplus by the construction of a reservoir at a very favorable site near the headwaters of the river. The gaging station, established July 23, 1900, is a short distance above the head gates of the Lewiston canal. Daily readings are made on a vertical gage graduated to feet and tenths. The bench mark is a cross cut in the top of a cedar stump 95 feet west of the gage, and is 6.95 feet above the gage datum. During 1900 the following measurements of discharge were made by George L. Swendsen:

May 29: Gage height, —— feet; discharge, 462 second-feet.
July 23: Gage height, 2.20 feet; discharge, 74 second-feet.
August 30: Gage height, 1.80 feet; discharge, 67 second-feet.
September 22: Gage height, 1.65 feet; discharge, 55 second-feet.
October 27: Gage height, 1.82 feet; discharge, 61 second-feet.
November 19: Gage height, 1.41 feet; discharge, 43 second-feet.
December 24: Gage height, 1.50 feet; discharge, 46 second-feet.

Daily gage height, in feet, of Cub River at Franklin, Idaho, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	2.2	1.8	1.9	1.7	1.2	17	.....	1.9	1.9	1.8	1.3	1.2
2	.....	2.2	1.8	1.9	1.7	1.4	18	.....	1.9	1.8	1.8	1.3	1.2
3	.....	2.1	1.8	1.8	1.7	1.4	19	.....	1.9	1.7	1.8	1.3	1.2
4	.....	2.1	1.8	1.8	1.6	1.6	20	.....	1.9	1.8	1.7	1.3	1.2
5	.....	2.1	1.8	1.8	1.6	1.6	21	.....	1.9	1.8	1.6	1.3	1.2
6	.....	2.1	1.8	1.8	1.7	1.5	22	.....	1.9	1.8	1.6	1.3	1.2
7	.....	2.1	1.8	1.7	1.7	1.5	23	2.2	1.8	1.8	1.7	1.2	1.4
8	.....	2.1	1.8	1.7	1.7	1.7	24	2.2	1.8	1.8	1.6	1.3	1.5
9	.....	2.1	1.8	1.8	1.8	1.8	25	2.2	1.8	1.8	1.6	1.4	1.5
10	.....	2.0	1.8	1.7	1.8	1.7	26	2.2	1.8	1.8	1.6	1.4	1.4
11	.....	2.0	1.8	1.7	1.5	1.6	27	2.2	1.8	1.8	1.8	1.4	1.3
12	.....	2.0	1.8	1.8	1.3	1.5	28	2.2	1.8	1.8	1.8	1.3	1.2
13	.....	2.0	1.8	1.8	1.4	1.4	29	2.2	1.8	1.8	1.7	1.2	1.2
14	.....	2.0	1.8	1.7	1.4	1.4	30	2.2	1.8	1.9	1.7	1.2	1.3
15	.....	1.9	1.8	1.6	1.3	1.3	31	2.2	1.8	.....	1.7	.....	1.4
16	.....	1.9	1.8	1.8	1.3	1.3							

LOGAN RIVER NEAR LOGAN, UTAH.

This station, established June 1, 1896, is in the river canyon about 2 miles east of Logan. It is described in Water-Supply Paper No. 38, page 334. During the low-water season the entire supply of the river is used for irrigation. Within the last two years it has become very prominent as a source of water power, and there is in course of construction a very large plant intended to utilize the low-water supply. Results of measurements will be found as follows: For 1896, Eighteenth Annual Report, Part IV, page 316; for 1898, Nineteenth Annual Report, Part IV, page 434; for 1898, Twentieth Annual Report, Part IV, page 462; for 1899, Twenty-first Annual Report, Part IV, page 397. During 1900 the following discharge measurements were made by George L. Swendsen:

Discharge measurements of Logan River near Logan, Utah.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-ft.*	1900.	*Feet.*	*Sec.-ft.*
January 8	2.71	272	May 31	4.00	849
February 16	2.55	243	June 30	3.32	449
March 19	2.65	222	July 28	2.85	279
March 28	2.80	252	August 25	2.70	168
April 16	2.81	241	September 21	2.65	180
April 25	3.10	371	October 26	2.65	173
May 10	3.88	782	November 15	2.65	162
Do	3.88	758	December 27	2.55	162

Daily gage height, in feet, of Logan River near Logan, Utah, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.65	2.60	2.60	2.80	3.30	4.05	3.30	2.85	2.70	2.65	2.65	2.60
2	2.65	2.65	2.60	2.85	3.30	4.00	3.25	2.80	2.70	2.65	2.65	2.60
3	2.70	2.65	2.60	2.90	3.35	4.10	3.25	2.80	2.70	2.65	2.65	2.60
4	2.70	2.65	2.60	2.85	3.40	4.05	3.20	2.80	2.70	2.65	2.65	2.60
5	2.70	2.60	2.60	2.80	3.55	4.00	3.20	2.80	2.70	2.65	2.65	2.60
6	2.70	2.60	2.60	2.85	3.65	4.00	3.15	2.80	2.70	2.65	2.65	2.60
7	2.70	2.60	2.60	2.90	3.70	4.00	3.15	2.80	2.70	2.65	2.65	2.60
8	2.70	2.60	2.60	2.90	3.75	3.95	3.15	2.80	2.70	2.65	2.65	2.60
9	2.65	2.60	2.60	2.90	3.80	4.10	3.15	2.80	2.70	2.65	2.65	2.60
10	2.65	2.60	2.60	2.85	3.90	3.95	3.15	2.75	2.70	2.65	2.65	2.60
11	2.65	2.60	2.60	2.80	4.00	3.90	3.10	2.75	2.70	2.65	2.65	2.60
12	2.70	2.55	2.65	2.80	4.00	3.85	3.10	2.75	2.70	2.65	2.65	2.60
13	2.70	2.60	2.65	2.80	3.80	3.80	3.10	2.75	2.65	2.65	2.65	2.60
14	2.70	2.60	2.65	2.80	3.70	3.80	3.10	2.75	2.65	2.65	2.60	2.60
15	2.70	2.60	2.70	2.80	3.65	3.75	3.05	2.75	2.65	2.65	2.60	2.60
16	2.70	2.55	2.60	2.80	3.65	3.70	3.00	2.75	2.65	2.65	2.60	2.60
17	2.70	(*a*)	2.70	2.80	3.65	3.65	3.00	2.75	2.65	2.65	2.60	2.60
18	2.70	(*a*)	2.70	2.85	3.65	3.60	2.95	2.75	2.65	2.65	2.60	2.60
19	2.70	2.60	2.70	2.90	3.70	3.60	2.95	2.75	2.65	2.65	2.60	2.60
20	2.65	2.60	2.70	2.95	3.70	3.55	2.90	2.75	2.65	2.70	2.60	2.60
21	2.65	2.60	2.70	3.00	3.75	3.55	2.90	2.75	2.65	2.65	2.70	2.60
22	2.65	2.60	2.75	3.05	3.80	3.55	2.90	2.75	2.65	2.65	2.65	2.60
23	2.65	2.55	2.75	3.05	3.85	3.50	2.90	2.75	2.65	2.65	2.65	2.60
24	2.65	2.55	2.80	3.00	3.90	3.50	2.90	2.75	2.65	2.65	2.60	2.60
25	2.60	2.60	2.80	3.05	3.95	3.45	2.90	2.75	2.65	2.65	2.60	2.60
26	2.60	2.60	2.80	3.10	4.05	3.45	2.90	2.75	2.65	2.65	2.60	2.60
27	2.60	2.60	2.80	3.15	4.15	3.40	2.85	2.75	2.65	2.65	2.60	2.50
28	2.65	2.55	2.75	3.20	4.20	3.40	2.85	2.75	2.65	2.65	2.60	2.40
29	2.65	.....	2.75	3.25	4.15	3.35	2.85	2.75	2.65	2.65	2.60	2.55
30	2.65	.....	2.75	3.30	4.10	3.30	2.85	2.70	2.65	2.65	2.60	2.60
31	2.65	.....	2.75	.....	4.05	.....	2.85	2.70	.....	2.65	.....	2.60

a Gage out.

BLACKSMITH FORK AT HYRUM, UTAH.

This river is formed by the junction of several streams rising in the high mountains forming the southeastern boundary of Cache Valley. For the first 25 miles its course is in a northwesterly direction, through a precipitous canyon affording excellent water-power facilities. On leaving the canyon the stream enters Cache Valley, and finally joins Logan River a few miles above the junction of that river with Bear River. Six irrigation canals and one large power canal are supplied by this river, and during the irrigation season the entire supply is utilized. The present gaging station was established July 19, 1900, by George L. Swendsen. It is near the tollgate at the mouth of the canyon. Daily readings are made on a vertical gage. The bench mark, a line of red paint on the top of a short cedar post near the north post of the tollgate, is 8.29 feet above gage datum. During 1900 the following discharge measurements were made by Mr. Swendsen:

Discharge measurements of Blacksmith Fork at Hyrum, Utah.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-ft.*	1900.	*Feet.*	*Sec.-ft.*
June 28	.....	240	October 19	3.10	126
July 19	3.20	147	November 16	3.05	129
August 29	3.10	122	December 27	2.90	115
September 25	3.12	129			

Daily gage height, in feet, of Blacksmith Fork at Hyrum, Utah, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	3.20	3.10	3.10	3.10	3.05	17	.....	3.10	3.10	3.10	3.05	3.00
2	.....	3.20	3.10	3.10	3.10	3.05	18	.....	3.10	3.10	3.10	3.05	3.00
3	.....	3.20	3.10	3.10	3.10	3.05	19	3.20	3.10	3.10	3.10	3.10	3.00
4	.....	3.20	3.20	3.10	3.10	3.05	20	3.20	3.10	3.10	3.10	3.10	3.00
5	.....	3.20	3.20	3.10	3.10	3.05	21	3.20	3.10	3.10	3.20	3.10	3.00
6	.....	3.20	3.50	3.10	3.10	3.05	22	3.20	3.10	3.10	3.20	3.10	3.00
7	.....	3.20	3.50	3.10	3.10	3.05	23	3.20	3.10	3.10	3.20	3.10	3.00
8	.....	3.20	3.50	3.10	3.05	3.05	24	3.20	3.10	3.10	3.50	3.10	3.00
9	.....	3.10	3.10	3.10	3.05	3.05	25	3.20	3.10	3.10	3.10	3.05	3.00
10	.....	3.10	3.10	3.10	3.05	3.05	26	3.20	3.10	3.10	3.10	3.05	3.00
11	.....	3.15	3.10	3.10	3.05	3.05	27	3.20	3.10	3.10	3.10	3.05	2.90
12	.....	3.15	3.10	3.10	3.05	3.00	28	3.20	3.10	3.10	3.10	3.05	2.90
13	.....	3.15	3.10	3.10	3.05	3.00	29	3.20	3.10	3.10	3.10	3.05	2.90
14	.....	3.15	3.10	3.10	3.05	3.00	30	3.20	3.10	3.10	3.10	3.05	2.90
15	.....	3.10	3.10	3.10	3.05	3.00	31	3.20	3.10	.....	3.10	.....	2.80
16	.....	3.10	3.10	3.10	3.05	3.00							

LITTLE BEAR RIVER, UTAH.

This stream has its source on the northern slopes of the mountains forming the southern boundary of Cache County, Utah. It flows in a northerly direction and enters Bear River a few miles below the mouth of Blacksmith Fork. On June 27, 1900, the east branch of Little Bear River was measured by George L. Swendsen, above all canal diversions, and a discharge of 37 second-feet was found. The south branch of the river was also measured on the same day, above all canal diversions, and a discharge of 40 second-feet was found.

BEAR RIVER NEAR COLLINSTON, UTAH.

This station, established July 1, 1889, is about 4 miles above the railroad station at Collinston, 2 miles east of the town of Fielding, Utah, and below the headworks of the Bear River canal. It is described in Water-Supply Paper No. 38, page 335. The record during the summer of 1900 shows the lowest discharge since the establishment of the station. A large canal is in process of construction, which will divert water a considerable distance above the Battlecreek station, to irrigate a large tract of land on the west side of Cache Valley. Its operation will greatly modify the discharge at the Collinston station during the next season. Results of measurements will be found as follows: For 1896, Eighteenth Annual Report, Part IV, page 320; for 1897, Nineteenth Annual Report, Part IV, page 435; for 1898, Twentieth Annual Report, Part IV, page 460; for 1899, Twenty-first Annual Report, Part IV, page 395. The following discharge measurements were made during 1900:

Discharge measurements of Bear River near Collinston, Utah.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-ft.*	1900.	*Feet.*	*Sec.-ft.*
February 17	1.90	1,567	July 26	0.80	627
March 5	2.50	.....	August 28	.89	542
March 31	2.90	2,228	September 24	1.25	831
April 30	3.91	3,671	October 29	1.29	819
May 30	4.00	3,775	November 12	1.85	1,336
June 29	1.72	1,158	December 26	1.40	862

Daily gage height, in feet, of Bear River near Collinston, Utah, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.10	2.20	2.20	2.80	4.00	3.90	1.60	0.90	0.90	1.40	1.95	1.90
2	2.20	2.20	2.20	2.70	4.00	3.80	1.40	.90	.80	1.45	1.90	1.90
3	2.00	2.10	2.30	2.80	3.90	3.80	1.40	.80	.80	1.50	1.90	2.00
4	1.90	2.20	2.30	2.90	3.90	3.70	1.40	.80	.80	1.50	1.90	1.95
5	1.90	2.10	2.50	2.90	3.90	3.50	1.40	.80	.80	1.50	1.85	1.95
6	1.90	2.10	2.60	2.90	4.00	3.40	1.40	.80	.80	1.55	1.90	1.95
7	2.30	2.10	2.50	2.90	4.10	3.30	1.40	.80	.80	1.50	1.85	1.95
8	2.20	2.10	2.60	2.90	4.10	3.30	1.20	.70	.80	1.55	1.85	1.95
9	2.30	2.00	2.60	3.00	4.10	3.30	1.20	.70	.90	1.55	1.85	1.95
10	2.30	2.00	2.60	3.10	4.20	3.20	1.00	.70	1.00	1.55	1.85	2.00
11	2.20	1.90	2.60	3.10	4.20	3.30	.80	.80	1.15	1.60	1.85	2.00
12	2.20	2.00	2.70	3.00	4.30	3.30	.90	.80	1.25	1.60	1.85	2.00
13	2.30	2.10	2.80	3.10	4.50	3.10	.90	.80	1.20	1.60	1.85	1.90
14	2.40	2.10	2.90	3.00	4.60	2.90	.90	.80	1.10	1.60	1.85	1.90
15	2.70	2.00	2.90	3.00	4.60	2.90	.80	1.00	1.00	1.65	1.85	1.90
16	2.80	1.90	3.00	3.00	4.50	2.90	.80	1.00	1.00	1.65	1.85	1.85
17	2.80	1.90	3.10	2.90	4.40	2.80	.70	.90	1.00	1.65	1.85	1.85
18	2.70	1.80	3.20	2.90	4.30	2.50	.70	.90	1.00	1.65	1.95	1.85
19	2.60	1.90	3.30	2.80	4.20	2.40	.80	.90	1.05	1.65	2.00	1.85
20	2.60	2.10	3.40	2.80	4.00	2.30	.60	.90	1.10	1.65	2.00	1.85
21	2.50	2.30	3.60	2.80	3.90	2.30	.60	.90	1.15	1.95	2.00	1.90
22	2.40	2.20	3.60	3.00	3.90	2.20	.50	.90	1.15	1.75	2.60	1.90
23	2.20	2.20	3.40	3.10	3.80	2.00	.50	.90	1.20	1.90	2.40	1.90
24	2.30	2.20	3.30	3.10	3.80	2.00	.60	.90	1.25	1.90	2.25	1.85
25	2.30	2.10	3.10	3.10	3.80	1.90	.70	.90	1.30	1.85	2.15	1.85
26	2.20	2.20	3.10	3.20	3.80	1.90	.80	1.10	1.40	1.85	2.10	1.80
27	2.20	2.30	3.10	3.40	3.90	1.80	1.00	1.10	1.55	1.95	2.00	1.70
28	2.00	2.40	3.00	3.70	4.00	1.80	.90	1.00	1.50	1.95	2.05	1.60
29	2.00	.....	3.10	3.90	4.00	1.70	.90	.90	1.90	1.90	2.00	1.50
30	2.10	.....	3.00	3.90	4.00	1.70	.90	.90	1.40	1.95	1.95	1.40
31	2.10	.....	2.90	.....	4.00	.....	.90	.90	.....	1.95	.....	1.35

WEBER RIVER NEAR UINTA, UTAH.

This station, established in October, 1899, is in the canyon 5 miles east of Uinta, on the Union Pacific Railroad, immediately above the narrows known as Devils Gate. It is described in Water-Supply Paper No. 38, page 337. There are a number of good reservoir sites on the upper tributaries of the river, and within the last few years some of them have been utilized by the construction of notable storage works. Results of measurements will be found as follows: For 1896, Eighteenth Annual Report, Part IV, page 324; for 1897, Nineteenth Annual Report, Part IV, page 440; for 1898, Twentieth Annual Report, Part IV, page 466; for 1899, Twenty-first Annual Report, Part IV, page 398. The following measurements were made during 1900:

July 16: Gage height, 1.15 feet; discharge, 76 second-feet.
August 22: Gage height, 1.05 feet; discharge, 75 second-feet.
September 29: Gage height, 1.35 feet; discharge, 172 second-feet.
October 22: Gage height, 1.70 feet; discharge, 401 second-feet.
November 12: Gage height, 1.73 feet; discharge, 426 second-feet.
December 29: Gage height, 1.50 feet; discharge, 356 second-feet.

Daily gage height, in feet, of Weber River near Uinta, Utah, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1.40	1.10	1.30	1.70	1.60	17	1.10	1.20	1.20	1.50	1.70	1.50
2	.....	1.20	1.10	1.30	1.70	1.50	18	1.10	1.20	1.20	1.50	1.80	1.50
3	.....	1.15	1.10	1.30	1.70	1.50	19	1.10	1.20	1.25	1.50	1.85	1.50
4	.....	1.10	1.10	1.30	1.70	1.50	20	1.10	1.20	1.30	1.50	1.90	1.50
5	.....	1.15	1.10	1.30	1.70	1.50	21	1.10	1.20	1.30	1.60	2.40	1.50
6	.....	1.20	1.10	1.30	1.70	1.50	22	1.10	1.20	1.30	1.65	2.50	1.50
7	.....	1.20	1.10	1.30	1.60	1.50	23	1.10	1.20	1.30	1.70	2.50	1.50
8	.....	1.20	1.10	1.30	1.60	1.50	24	1.10	1.20	1.30	1.70	2.45	1.50
9	.....	1.20	1.20	1.30	1.60	1.50	25	1.10	1.20	1.30	1.70	2.20	1.50
10	.....	1.20	1.20	1.30	1.60	1.50	26	1.10	1.10	1.30	1.70	1.75	1.50
11	.....	1.20	1.20	1.30	1.60	1.50	27	1.10	1.10	1.30	1.70	1.60	1.50
12	.....	1.20	1.20	1.30	1.60	1.50	28	1.10	1.10	1.30	1.70	1.60	1.50
13	.....	1.20	1.20	1.30	1.60	1.50	29	1.25	1.10	1.30	1.70	1.60	1.50
14	.....	1.20	1.20	1.30	1.50	1.50	30	1.30	1.10	1.30	1.70	1.60	.....
15	.....	1.20	1.20	1.35	1.50	1.50	31	1.40	1.10	.....	1.70	.....	.....
16	1.10	1.20	1.20	1.45	1.60	1.50							

SPANISH FORK NEAR MAPLETON, UTAH.

This station, established by C. C. Babb on May 23, 1900, is in the canyon of the river 3 miles above the Rio Grande Western Railroad station at Mapleton, and a short distance above the head of the upper canal diverting water from the river. The gage rod consists of a vertical post driven firmly into the bed of the stream. The bench mark is at the top of the fourth large post, 4 rods northwest of the gate into the field west of the railroad track. The post is blazed on the north side and marked in pencil "U. S. G. S. Gage B. M." The bench mark is 250 feet northeast of the gage rod, and its elevation above the zero of the gage is 32.86 feet. The channel is straight for a short distance above and below the station. Both banks are high and are not subject to overflow. The bed of the stream is of gravel and is not likely to shift during high stages. Measurements were made by wading. The observer is Levi Thorpe, section foreman. During 1900 two measurements of discharge were made by C. C. Babb and W. P. Hardesty, as follows:

May 23: Gage height, 2.50 feet; discharge, 188 second-feet.
July 14: Gage height, 1.88 feet; discharge, 49 second-feet.

Daily gage height, in feet, of Spanish Fork near Mapleton, Utah, for 1900.

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1.90	1.90	1.90	1.95	2.00	1.95
2	.....	1.90	1.85	1.90	1.95	2.00	1.90
3	2.35	2.00	1.85	1.90	1.95	2.00	2.00
4	2.35	2.00	1.85	1.90	1.95	.....	1.95
5	2.35	1.90	1.90	1.90	1.95	.....	1.95
6	2.25	1.90	1.90	1.90	1.95	.....	1.90
7	2.25	1.90	1.90	1.90	1.95	.....	1.95
8	2.25	1.90	1.90	1.90	1.95	.....	1.95
9	2.25	1.90	1.90	1.90	1.95	.....	.....
10	2.25	1.90	1.90	1.90	1.95	.....	.....
11	2.20	1.90	1.90	1.95	1.95	1.95	.....
12	2.50	1.90	1.90	1.95	1.95	1.95	.....
13	2.50	1.90	1.90	1.95	1.95	1.95	.....
14	2.50	1.90	1.90	1.90	1.95	1.95	.....
15	2.50	1.90	1.90	1.90	1.95	1.95	.....
16	2.50	1.90	1.90	1.90	1.90	2.00	.....
17	2.15	1.90	1.90	1.90	1.90	2.10	.....
18	2.10	1.90	1.90	1.90	1.90	2.05	.....
19	2.10	1.90	1.90	1.90	1.90	2.05	.....
20	2.10	1.90	1.90	1.95	1.95	2.00	.....
21	2.50	1.90	1.90	1.95	1.95	2.05	.....
22	2.50	1.90	1.90	1.95	1.95	2.00	.....
23	2.50	1.95	1.90	1.95	1.95	2.00	.....
24	2.00	1.95	1.90	2.05	1.95	2.00	.....
25	2.00	1.95	1.90	2.00	1.95	2.00	.....
26	2.00	1.90	1.90	2.00	1.95	2.00	.....
27	2.00	1.90	1.90	2.00	1.95	1.95	.....
28	2.00	1.90	1.90	2.00	1.95	1.95	.....
29	2.00	1.90	1.90	2.00	1.95	1.90	.....
30	2.00	1.90	1.90	1.95	1.95	2.00	.....
31	.....	1.90	1.90	.....	1.98	.....	.....

PROVO RIVER NEAR PROVO, UTAH.

This station, established July 27, 1889, is in the canyon about 6 miles from Provo, and above the head of most of the irrigation canals of Utah Valley. The observer is Henry V. Smith. The station is described in Water-Supply Paper No. 38, page 338. The results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 399. During 1900 the following measurements were made by C. C. Babb and W. P. Hardesty:

May 22: Gage height, 5.65 feet; discharge, 834 second-feet.
July 13: Gage height, 4.23 feet; discharge, 174 second-feet.
September 5: Gage height, 4.16 feet; discharge, 162 second-feet.
November 14: Gage height, 4.50 feet; discharge, 257 second-feet.

Daily gage height, in feet, of Provo River near Provo, Utah, for 1900.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		6.2	4.3	4.2	4.2	4.3	4.5	4.8
2		5.9	4.3	4.2	4.1	4.3	4.5	4.8
3		5.7	4.3	4.2	4.1	4.3	4.5	4.8
4		5.5	4.3	4.2	4.1	4.3	4.5	4.7
5		5.4	4.3	4.2	4.1	4.3	4.5	4.6
6		5.3	4.3	4.2	4.1	4.3	4.5	4.6
7		5.2	4.3	4.2	4.1	4.3	4.5	4.6
8		5.2	4.2	4.2	4.1	4.3	4.5	4.6
9		5.1	4.2	4.2	4.2	4.3	4.5	
10		5.1	4.2	4.2	4.2	4.3	4.5	
11		4.1	4.2	4.2	4.2	4.3	4.5	
12		4.9	4.2	4.1	4.2	4.3	4.5	
13		4.9	4.2	4.1	4.2	4.3	4.5	
14		4.8	4.2	4.1	4.2	4.3	4.5	
15		4.7	4.2	4.1	4.2	4.3	4.5	
16		4.6	4.2	4.1	4.2	4.3	4.8	
17		4.5	4.2	4.1	4.2	4.3	4.8	
18		4.5	4.2	4.1	4.2	4.3	4.8	
19		4.4	4.2	4.2	4.2	4.4	5.0	
20		4.4	4.2	4.2	4.2	4.4	5 6	
21	5.5	4.4	4.2	4.2	4.2	4.4	5 6	
22	5.7	4.4	4.2	4.2	4.2	4.4	5.6	
23	5.7	4.4	4.2	4.2	4.2	4.4	5.2	
24	6.0	4.3	4.2	4.2	4.3	4.5	5.0	
25	6.0	4.3	4.2	4.2	4.3	4.5	4.8	
26	6.1	4.3	4.2	4.2	4.3	4.5	4.8	
27	6.6	4.3	4.2	4.2	4.3	4.5	4 8	
28	6.5	4.3	4.2	4.2	4.3	4.5	4.8	
29	6.5	4.3	4.2	4.2	4.3	4.5	4.8	
30	6.4	4.3	4.2	4.2	4.3	4.5	4.8	
31	6.3		4.2	4.2		4.5		

AMERICAN FORK NEAR AMERICAN FORK, UTAH.

This station, established by C. C. Babb on May 21, 1900, is 6 miles northeast of the town of American Fork, at the power plant which has been under course of construction during the last season. An old vertical rod, driven solidly into the bed of the river, was found here, and as it was in good condition it was used for recording heights. The rod is just above the tailrace of the new power plant, and observations were taken there until December 17, 1900, when the water wheels of the power company were started. After that the gage heights did not give the true flow, necessitating a change of location. About 200 feet below the tailrace of the power company is the three-partition measuring weir for dividing the water of the stream between the towns of Pleasant Grove, Lehi, and American Fork. On December 18, 1900, a rail was driven in the face of the weir structure, just south of the south opening and level with the crest of the weir, by which heights are recorded. This is not a sharp-edged weir, as the crest is 4 inches wide; but it is considered that the results will have an accuracy within 4 per cent. It is in good condition and seems to leak very little.

The following table gives the division of the water of the stream at the weir, according to court decrees, the data being furnished by the water master for the Lehi district:

Table showing division of waters of American Fork.

Season.	Town.	Width of opening.
		Feet.
September 20 to April 15	Pleasant Grove	2.5
Do	Lehi	5.5
Do	American Fork	25.0
		33.0
April 15 to July 1	Pleasant Grove	10.0
Do	Lehi	7.0
Do	American Fork	25.0
		42.0
July 1 to September 20	Pleasant Grove	8.0
Do	Lehi	14.0
Do	American Fork	20.0
		42.0

On December 18 levels were taken on the crest of the flashboards, and also on nails (one for each end of each opening) driven into the face of the longitudinal cap resting on the posts of the openings. By measuring down from these to the crest of the boards the elevation of the crest with reference to the gage point can be found without further use of the level. The reference nail for gaging is 0.012 foot too high for the present arrangement of the planks (division for September 20 to April 15), so that the gage readings by the observer are corrected by +0.01 foot. On December 27, 28, and 29 the river was frozen above the new gage, and observations were taken at the old stake. Readings were resumed at the new gage, however, on December 30, and during 1901 they will be taken at the weir gage.

During 1900 the following measurements of discharge were made by C. C. Babb and W. P. Hardesty:

May 21: Gage height, 0.70 foot; discharge, 138 second-feet.
July 13: Gage height, 0.39 foot; discharge, 42 second-feet.
September 5: Gage height, 0.25 foot; discharge, 26 second-feet.
November 14: Gage height, 0.29 foot; discharge, 24 second-feet.

Daily gage height, in feet, of American Fork near American Fork, Utah, for 1900.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		0.80	0.50	0.31	0.25	0.30	0.33	0.32
2		.85	.50	.30	.25	.30	.33	.33
3		.83	.50	.30	.26	.30	.33	.33
4		.80	.50	.30	.28	.30	.33	.33
5		.75	.50	.30	.27	.30	.33	.33
6		.70	.48	.30	.27	.30	.33	.33
7		.70	.48	.30	.27	.30	.33	.33
8		.78	.42	.30	.27	.30	.33	.33
9		.78	.40	.30	.30	.30	.33	.33
10		.65	.40	.30	.30	.30	.33	.33
11		.60	.40	.29	.30	.30	.32	.33
12		.60	.40	.29	.30	.30	.32	.33
13		.60	.40	.29	.30	.30	.32	.33
14		.60	.40	.29	.30	.80	.30	.33
15		.60	.40	.29	.30	.30	.30	.33
16		.58	.40	.28	.25	.30	.30	.33
17		.56	.40	.28	.24	.30	.30	.33
18		.58	.40	.28	.24	.30	.30	*a*.37
19		.51	.40	.24	.24	.30	.30	.37
20		.53	.36	.24	.27	.35	.30	.37
21	0.73	.55	.33	.24	.30	.33	.30	.37
22	.75	.50	.34	.24	.30	.33	.30	.36
23	.76	.45	.35	.24	.30	.33	.30	.36
24	.85	.43	.35	.25	.38	.33	.30	.36
25	.90	.53	.35	.25	.30	.33	.32	.37
26	1.03	.50	.35	.25	.30	.33	.32	.36
27	1.03	.50	.35	.28	.30	.33	.32	*b*.30
28	.98	.50	.35	.28	.30	.33	.32	*b*.28
29	.90	.50	.34	.28	.30	.33	.32	*b*.28
30	.90	.50	.34	.27	.30	.33	.32	*a*.34
31	.80		.34	.26		.33		*a*.34

a At new station on weir. *b* At old station on stake.

UTAH LAKE, UTAH.

A station for recording the rise and fall of this body of water was established November 6, 1896, by C. C. Babb, at Geneva, Utah. It was discontinued October 14, 1899. A description of it will be found in Water-Supply Paper No. 38, page 341. The city of Salt Lake has erected a new station at the outlet of the lake, plans and section of which will be found in the Twenty-first Annual Report, Part IV, pages 400 and 401. Observations were first started here on February 6, 1900, under the direction of the city engineer of Salt Lake, F. C. Kelsey, by whom the following record was supplied. To the figures given there should be added 4,500 feet in order to obtain the elevation of the surface of the water above sea level. The compromise level of this lake, as established by the lake commissioners, is at an elevation of 4,515.80 feet above the sea.

Daily gage height, in feet, of Utah Lake, Utah, near its outlet, for 1900.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		15.37		15.38	15.11						13.12
2				15.38		14.47	13.82				
3				15.38				13.16		12.83	
4											13.14
5					15.07						
6	15.37					14.38					13.19
7					15.06			13.08		12.80	
8					15.05				12.76		13.19
9					15.02	14.33	13.66				
10			15.34			14.32				12.82	13.19
11			15.34						12.75		
12	15.26				14.97	14.28		13.00			
13	15.20										13.21
14						14.26		12.95			
15				15.15					12.74	12.85	13.22
16			15.34						12.75	12.85	
17			15.34				13.48		12.79		
18			15.34	15.13	14.87	14.14	13.46		12.80		13.28
19		15.34	15.34		14.85			12.88			13.30
20	15.31	15.34				14.05					13.30
21		15.34				14.03					
22		15.34	15.34		14.80		13.35		12.80		
23			15.32			14.02					
24											13.40
25				15.10			13.28		12.79		
26		15.37		15.10				12.85			
27									12.76		
28		15.37									
29		15.36						12.84			
30		15.36	15.36		14.57						
31		15.40				13.85	13.52		12.76		13.40

CITY CREEK NEAR CITY OF SALT LAKE, UTAH.

This station is maintained by the engineering department of the city of Salt Lake, in connection with the water supply of that city, under the direction of Mr. F. C. Kelsey, city engineer, by whom the following record for 1900 was furnished:

Daily mean discharge, in second-feet, of City Creek near city of Salt Lake, Utah, for 1900.

[Drainage area, 19.15 square miles.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	8	8	8	9	14	24	12	8	7	6	7	6
2	8	7	8	9	15	23	11	8	7	6	7	6
3	8	7	8	10	15	22	12	8	7	6	6	6
4	10	7	8	10	15	20	12	8	7	6	7	6
5	8	7	8	10	17	21	11	8	7	7	6	6
6	8	8	8	10	19	20	11	8	7	7	6	6
7	8	8	8	10	19	19	11	8	6	6	6	6
8	8	8	8	10	21	19	11	8	6	6	6	6
9	8	8	8	10	23	18	11	8	6	6	6	6
10	8	8	8	10	25	18	10	8	6	6	6	6
11	8	7	9	10	27	17	10	8	6	6	6	6
12	8	7	10	10	31	16	10	8	6	6	6	6
13	8	8	11	10	31	16	10	8	6	6	6	6
14	8	8	11	10	31	16	10	7	6	6	6	6
15	8	8	11	10	29	16	10	7	6	6	6	6
16	8	8	10	10	27	15	10	7	6	6	6	6
17	8	7	10	10	26	15	10	7	6	6	7	6
18	8	7	10	10	25	14	9	7	6	6	7	6
19	8	7	11	11	25	14	9	7	6	6	7	6
20	8	7	------	11	24	14	9	7	6	7	7	6
21	8	7	------	12	24	13	9	7	6	7	7	6
22	8	7	------	13	25	13	10	7	6	6	7	6
23	8	7	------	12	25	13	10	7	6	7	7	5
24	8	7	------	12	25	13	9	8	7	7	7	5
25	8	7	------	12	26	13	9	7	7	7	7	5
26	8	7	------	13	26	12	9	7	7	7	7	5
27	8	8	------	13	27	12	9	7	7	7	6	5
28	8	8	------	13	27	12	8	7	7	6	6	5
29	8	------	9	14	27	12	8	7	7	7	6	5
30	8	------	9	14	26	11	8	7	7	7	6	5
31	8	------	9	------	25	------	8	7	------	7	------	------
Mean	8	7	9	11	24	16	10	7	6	6	6	6

PARLEYS CREEK NEAR CITY OF SALT LAKE, UTAH.

This station was established by the engineering department of the city of Salt Lake in connection with the water supply of that city. It is in the canyon of the stream. Measurements are made over a double Cippoletti weir, which is so controlled that the entire weir can be lifted, allowing the gravel and deposit from above to be washed out from time to time. The following record for 1900 was furnished by Mr. F. C. Kelsey, city engineer of Salt Lake:

Daily mean discharge, in second-feet, of Parleys Creek near city of Salt Lake, Utah, for 1900.

[Drainage area, 50.14 square miles.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	12	10	11	------	30	24	14	6	6	8	8	9
2	13	10	12	------	29	21	12	7	6	8	7	9
3	13	10	13	------	29	20	12	10	4	8	7	9
4	16	10	13	------	31	20	13	10	5	7	7	9
5	14	10	13	------	39	20	13	10	5	8	7	9
6	13	10	13	19	39	18	11	8	6	10	7	9
7	13	10	13	21	------	17	11	8	6	8	7	9
8	12	10	13	23	------	18	11	8	6	8	7	9
9	12	10	13	23	------	20	11	9	7	9	7	7
10	11	9	14	21	------	18	10	8	7	9	7	8
11	11	11	16	20	------	17	11	8	7	9	7	9
12	13	11	17	20	------	17	10	8	7	9	7	8
13	15	11	19	21	------	16	9	7	7	9	6	7
14	13	11	19	20	------	16	9	7	7	8	6	6
15	14	9	18	19	29	16	9	7	7	8	6	8
16	13	9	19	18	28	15	8	6	6	8	5	7
17	12	9	19	15	29	15	8	6	7	8	7	8
18	12	12	18	15	27	15	9	6	7	8	6	8
19	12	11	19	15	27	15	9	6	7	8	9	8
20	11	11	19	18	27	15	8	6	7	12	8	8
21	11	11	18	21	27	15	8	6	7	10	10	8
22	11	11	18	23	26	13	9	6	7	9	12	8
23	12	10	19	21	25	13	9	6	7	9	12	6
24	11	11	19	20	24	13	8	8	10	11	10	7
25	8	11	19	18	23	12	8	8	9	10	10	9
26	9	12	20	21	23	13	8	8	9	10	10	8
27	11	12	20	23	22	13	7	7	9	9	9	8
28	10	12	16	25	25	11	7	7	9	9	8	3
29	11	------	16	31	29	10	6	7	9	11	8	3
30	11	------	16	31	27	11	6	6	8	10	8	4
31	10	------	16	------	25	------	6	7	------	8	------	3
Mean	12	10	16	22	29	16	9	7	7	9	8	7

MILL CREEK NEAR CITY OF SALT LAKE, UTAH.

This station was established September 8, 1898, by the engineering department of the city of Salt Lake, in connection with the water supply of that city. Measurements are made over a Cippoletti weir in the canyon. The following record for 1900 was furnished by Mr. F. C. Kelsey, city engineer:

Daily mean discharge, in second-feet, of Mill Creek near city of Salt Lake, Utah, for 1900.

[Drainage area, 21.29 square miles.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	13	10	11	12	14	23	14	10	9	8	9	8
2	13	10	11	12	14	21	14	10	9	8	9	8
3	13	10	11	12	15	21	14	10	9	8	9	8
4	10	10	10	12	15	20	13	10	9	8	9	8
5	12	10	11	12	16	20	13	10	9	8	9	8
6	13	8	11	12	17	18	13	10	9	8	9	8
7	13	10	11	13	19	18	10	10	9	8	8	8
8	13	10	11	13	19	17	10	10	8	8	8	8
9	13	10	13	13	19	18	9	10	8	8	8	8
10	13	10	13	13	21	18	9	10	8	8	8	8
11	13	10	11	12	21	17	9	10	8	8	8	8
12	13	10	11	12	23	17	10	10	8	8	8	8
13	13	10	11	13	23	15	------	10	8	8	8	8
14	13	10	12	12	21	15	10	10	8	8	8	8
15	13	10	12	12	20	15	10	9	8	8	8	8
16	13	11	12	12	22	15	10	9	8	8	8	8
17	13	11	12	12	22	14	10	9	8	8	9	8
18	13	11	12	12	21	14	10	9	8	8	9	8
19	13	9	12	12	20	14	10	9	8	8	9	8
20	12	9	12	12	20	14	10	9	------	9	9	8
21	11	9	12	14	22	14	10	9	8	9	9	8
22	13	9	12	14	25	18	11	10	8	8	8	6
23	13	11	12	13	28	18	10	10	8	8	8	6
24	13	11	12	13	31	14	10	10	9	9	8	6
25	8	11	12	13	28	14	10	9	9	9	8	6
26	9	11	13	14	30	14	10	9	9	8	8	6
27	10	11	12	14	30	13	10	9	9	8	10	5
28	10	11	12	14	26	13	10	9	9	8	10	3
29	10	------	12	14	26	13	10	9	8	8	10	3
30	10	------	11	14	23	13	10	9	8	8	8	3
31	10	------	11	------	23	------	10	9	------	9	------	1
Mean	12	10	12	13	22	16	11	10	8	8	9	7

BIG COTTONWOOD CREEK NEAR CITY OF SALT LAKE, UTAH.

This station was established October 30, 1898, by the city engineer of the city of Salt Lake, in connection with the water supply of that city. Measurements are made over a rectangular weir 16 feet long.

The following record for 1900 was furnished by Mr. F. C. Kelsey, city engineer:

Daily mean discharge, in second-feet, of Big Cottonwood Creek near city of Salt Lake, Utah, for 1900.

[Drainage area, 48.47 square miles.]

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	282	84	39	26	26	31	28
2	.....	277	75	33	26	25	32	28
3	.....	276	75	36	25	25	33	28
4	.....	255	78	37	27	27	30	28
5	.....	240	71	37	28	27	28	29
6	.....	237	71	36	24	28	31	29
7	.....	233	68	34	27	25	27	27
8	.....	250	65	35	25	26	27	26
9	.....	218	63	35	25	26	27	27
10	.....	190	64	33	25	27	27	27
11	.....	175	62	35	24	26	29	28
12	.....	168	60	33	25	25	26	26
13	.....	171	60	35	23	25	27	27
14	128	165	59	30	23	25	28	25
15	127	154	55	37	24	26	29	25
16	146	155	56	34	25	25	26	26
17	163	152	58	32	23	25	30	26
18	170	145	56	31	25	25	30	25
19	169	140	54	33	25	30	30	25
20	162	135	55	32	25	29	29	25
21	180	134	55	29	24	29	30	25
22	218	133	56	31	23	30	30	24
23	239	130	59	33	23	30	31	23
24	264	113	52	36	27	31	32	23
25	273	104	.....	38	27	27	28	22
26	288	107	.....	35	28	31	31	24
27	298	97	39	36	27	27	28	23
28	301	95	39	32	28	29	29	18
29	280	94	42	28	26	30	29	23
30	265	89	38	29	25	29	27	25
31	278	.....	38	30	.....	28	.....	14
Mean	219	170	59	34	25	27	29	25

SALINA CREEK NEAR SALINA, UTAH.

This stream drains a portion of the eastern part of Sevier County. It flows westerly and enters Sevier River near the town of Salina, Utah. A considerable portion of its waters is used for irrigation. The station, established by Caleb Tanner on July 2, 1900, is in the canyon of the creek, about 5 miles southeast of Salina. The gage consists of a vertical post driven into the bed of the creek and firmly braced on the downstream side. The bench mark is the top of a rock, set 12 inches in the ground, 80 feet northeast of the gage. Its elevation is 8.80 feet above gage datum. The bed of the stream is rough, containing bowlders, but it is fairly permanent. During 1900 the following measurements of discharge were made by Caleb Tanner:

July 2: Gage height, 1.05 feet; discharge, 11 second-feet.
July 23: Gage height, 1.08 feet; discharge, 12 second-feet.
September 8: Gage height, 1.02 feet; discharge, 8 second-feet.

Daily gage height, in feet, of Salina Creek near Salina, Utah, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.05	1.02	.....	1.10	1.15	1.10	17	1.08	1.00	1.05	1.12	1.10	1.15
2	1.05	1.02	.....	1.10	1.15	1.10	18	1.08	1.00	1.05	1.12	1.10	1.15
3	1.20	1.02	.....	1.10	1.15	1.10	19	1.05	(*a*)	1.05	1.15	1.10	1.15
4	1.20	1.02	.....	1.10	1.12	1.10	20	1.05	.....	1.05	1.15	1.10	1.15
5	1.10	1.02	.....	1.07	1.12	1.10	21	1.05	.....	1.05	1.15	1.10	1.15
6	1.08	1.03	.....	1.07	1.12	1.10	22	1.10	.....	1.05	1.15	1.10	1.10
7	1.08	1.03	.....	1.07	1.12	1.10	23	1.08	.....	1.05	1.15	1.10	1.10
8	1.12	1.03	.....	1.07	1.12	1.15	24	1.10	.....	1.05	1.15	1.10	1.10
9	1.12	1.03	1.10	1.07	1.12	1.15	25	1.08	.....	1.12	1.15	1.10	1.10
10	1.08	1.03	1.10	1.07	1.12	1.15	26	1.08	.....	1.12	1.15	1.10	1.10
11	1.08	1.03	1.05	1.07	1.10	1.15	27	1.05	.....	1.15	1.15	1.10	1.10
12	1.08	1.02	1.05	1.07	1.10	1.15	28	1.05	.....	1.15	1.15	1.10	1.10
13	1.05	1.02	1.05	1.07	1.10	1.15	29	1.02	.....	1.10	1.15	1.10	(*b*)
14	1.05	1.02	1.05	1.12	1.10	1.15	30	1.02	.....	1.10	1.15	1.10	1.20
15	1.08	1.00	1.05	1.12	1.10	1.15	31	1.02	.....	.....	1.15	.....	1.20
16	1.08	1.00	1.05	1.12	1.10	1.15							

a August 19 to September 9 no gage observer. *b* Frozen.

MANTI CREEK NEAR MANTI, UTAH.

This stream drains a small area in the southern portion of Sanpete County, Utah. It flows westerly and enters San Pitch River near the town of Manti. The station, as originally established by Caleb Tanner on August 2, 1900, was 1 mile southeast of the town. The rod consisted of a vertical timber driven firmly into the bed of the creek and wired to a large bowlder near by. The bench mark was the top of a large rock 40 feet northwest of the gage, marked with chisel "U. S. G. S." Its elevation is 7.14 feet above gage datum. On December 26, 1900, the station was moved one-fourth mile above the old gage. It is 15 feet above the second bridge in the canyon. Observations for 1901 will be made on the new rod. During 1900 three measurements of discharge were made by Caleb Tanner. The first two were made at the old station; the last one was made at the new station.

August 2: Gage height, 1.58 feet; discharge, 9 second-feet.
September 7: Gage height, 1.52 feet; discharge, 6 second-feet.
December 26: Gage height, 1.08 feet; discharge, 5 second-feet.

Daily gage height, in feet, of Manti Creek near Manti, Utah, for 1900.

Day.	Aug.	Sept.	Oct.	Day.	Aug.	Sept.	Oct.	Day.	Aug.	Sept.	Oct.
1	.....	.....	.....	12	1.58	1.58	.....	23	1.58	1.55	.....
2	1.58	1.55	1.55	13	1.55	1.55	.....	24	1.58	1.70	.....
3	1.58	1.60	.....	14	1.55	1.55	.....	25	1.73	1.68	.....
4	1.60	1.55	1.55	15	1.55	1.53	.....	26	(*a*)	1.65	.....
5	1.75	1.53	.....	16	1.55	1.53	.....	27	.....	1.70	.....
6	1.58	1.53	1.55	17	1.55	1.55	.....	28	.....	1.68	.....
7	1.58	1.53	.....	18	1.55	1.53	.....	29	.....	1.60	.....
8	1.58	1.55	1.55	19	1.60	1.55	.....	30	.....	1.58	.....
9	1.58	1.55	.....	20	1.58	1.55	.....	31	.....	.....	.....
10	1.58	1.70	.....	21	1.58	1.58	.....				
11	1.58	1.60	.....	22	1.58	1.55	.....				

a August 26 to September 2 no readings.

SAN PITCH RIVER NEAR GUNNISON, UTAH.

This stream drains the major portion of Sanpete County, Utah. Its general course is southerly. It enters Sevier River near the town of Gunnison. The station, established by Caleb Tanner on June 30, 1900, is 4 miles northeast of the town of Gunnison, at the ranch of the observer, J. P. Jensen. The gage consists of a vertical post driven firmly into the bed of the stream and strongly braced. The bench mark is the top of a cedar post 1 foot in diameter, set firmly in the ground, 40 feet west of the gage rod. Its elevation is 5.96 feet above gage datum. During 1900 the following measurements were made by Caleb Tanner:

June 30: Gage height, 2.35 feet; discharge, 88 second-feet.
July 24: Gage height, 2.15 feet; discharge, 58 second-feet.
August 5: Gage height, 1.85 feet; discharge, 18 second-feet.
September 9: Gage height, 1.80 feet; discharge, 15 second-feet.
December 27: Gage height, 1.73 feet; discharge, 12 second-feet.

Daily gage height, in feet, of San Pitch River near Gunnison, Utah, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.35	1.86	1.80	1.82	1.86	1.92	17	2.25	1.80	1.78	1.80	1.84	1.70
2	2.40	1.84	1.80	1.80	1.86	1.86	18	2.20	1.92	1.80	1.80	.....	1.70
3	2.30	1.80	1.80	1.90	1.84	1.86	19	2.15	1.86	1.78	1.80	.....	1.70
4	2.35	1.80	1.84	1.82	1.84	1.90	20	2.00	1.80	1.78	1.90	.....	1.70
5	2.30	1.90	1.90	1.80	1.86	1.90	21	2.00	1.80	1.80	1.88	.....	1.68
6	2.30	1.90	1.94	1.78	1.84	1.90	22	2.16	1.78	1.80	1.84	.....	1.68
7	2.30	1.80	1.80	1.78	1.82	1.90	23	2.10	1.78	1.80	1.84	.....	1.70
8	2.25	1.78	1.90	1.80	1.84	1.88	24	2.18	1.76	1.86	1.84	.....	1.70
9	2.25	1.80	1.90	1.80	1.84	1.86	25	2.18	1.80	1.90	1.84	1.88	1.70
10	2.25	1.78	1.78	1.80	1.86	1.86	26	2.16	1.90	1.84	1.82	1.88	1.70
11	2.25	1.78	1.78	1.80	1.86	1.86	27	2.14	1.78	1.84	1.82	1.86	1.70
12	2.25	1.80	1.76	1.94	1.86	1.86	28	2.14	1.80	1.86	1.84	1.86	1.70
13	2.25	1.80	1.88	1.80	1.86	1.84	29	2.12	1.78	1.96	1.84	1.86	1.70
14	2.25	1.78	1.80	1.80	1.84	1.80	30	2.10	1.78	1.82	1.84	1.86	1.70
15	2.25	1.80	1.80	1.80	1.84	1.70	31	2.10	1.80	.....	1.84	.....	1.70
16	2.25	1.80	1.80	1.80	1.84	1.70							

SEVIER RIVER NEAR GUNNISON, UTAH.

This stream drains a large area in the southwestern part of Utah. It flows northerly until it enters Juab County; then it makes a short bend and flows southwesterly until its waters are lost in the Sevier Sink. The station, established by Caleb Tanner on June 29, 1900, is at the bridge which crosses the stream 4 miles west of the town of Gunnison. The gage, which is vertical, is nailed to one of the bridge piles. The bench mark consists of a post at the southeast corner of the bridge, marked, in pencil, "U. S. G. S. gage B. M.," and its elevation is 13.23 feet above gage datum. During 1900 the following measurements were made by Caleb Tanner:

Discharge measurements of Sevier River near Gunnison, Utah.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-ft.*	1900.	*Feet.*	*Sec.-ft.*
June 29	0.50	10	August 8 *a*	.....	20
July 25	.66	22	September 10	0.62	18
August 7	.62	20	December 26	1.00	49

a Thirty miles downstream from gage.

Daily gage height, in feet, of Sevier River near Gunnison, Utah, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.50	0.63	0.63	0.80	0.90	0.95	17	0.73	0.60	0.63	0.81	0.85	0.98
2	.50	.63	.63	.80	.88	.95	18	1.10	.60	.63	.80	.93	.98
3	.55	.63	.63	.80	.88	.95	19	.83	.60	.63	.88	.93	.95
4	.63	.63	.80	.78	.85	.83	20	.78	.60	.63	.88	.90	.90
5	.75	.63	.70	.78	.85	.90	21	.80	.60	.63	.88	.90	1.10
6	.73	.63	.65	.78	.83	.90	22	.80	.60	.63	.85	.90	.88
7	.73	.63	.65	.78	.83	.88	23	.80	.60	.63	.85	.93	.83
8	.73	.63	.63	.78	.83	.88	24	.80	.60	.70	.85	.93	1.13
9	.73	.63	.63	.78	.83	.98	25	.65	.60	.75	.85	.93	1.00
10	.73	.63	.63	.78	.83	1.05	26	.70	.60	.75	.85	.93	1.00
11	.70	.63	.63	.78	.83	1.03	27	.70	.60	.75	.83	.93	1.13
12	.73	.63	.63	.78	.83	1.00	28	.65	.60	.80	.83	.93	1.13
13	.76	.63	.63	.78	.83	1.00	29	.65	.63	.80	.85	.93	1.15
14	.76	.60	.63	.78	.83	.95	30	.65	.63	.80	.85	.88	.....
15	.73	.60	.63	.80	.83	.95	31	.63	.63	.....	.90	.....	.....
16	.73	.60	.63	.83	.85	.95							

SNAKE RIVER AT MONTGOMERY FERRY, IDAHO.

This station, established October 5, 1895, is on the stage road from Minidoka to Albion. It is described in Water-Supply Paper No. 38, page 351. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 405. No records of gage heights were kept during 1900, and only one discharge measurement was made during the year, by N. S. Dils, as follows:

August 25: Gage height, 1.50 feet; discharge, 2,801 second-feet.

MALADE RIVER, IDAHO.

During 1899 stations were maintained on this river at Toponis and at Bliss, as described in Water-Supply Paper No. 38, pages 354 and 355. Results of measurements for that year will be found in the Twenty-first Annual Report, Part IV, pages 408 and 409. No stations were maintained on this river during 1900 and no discharge measurements were made. It is reported, however, that the low-water flow for that year did not vary greatly from that of 1899.

BRUNEAU RIVER NEAR GRANDVIEW, IDAHO.

This station, established by Mr. A. J. Wiley for the Owyhee Land and Irrigation Company, immediately below the headworks of the canal system of that company, 10 miles east of Grandview, is described in Water-Supply Paper No. 38, page 356. Records of measurements will be found as follows: For 1896, Eighteenth Annual Report, Part IV, page 341; for 1897, Nineteenth Annual Report, Part IV, page 450; for 1898, Twentieth Annual Report, Part IV, page 482; for 1899, Twenty-first Annual Report, Part IV, page 410. No measurements of discharge were made at this station during 1900.

Daily gage height, in feet, of Bruneau River near Grandview, Idaho, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.65	1.65	1.85	2.00	2.15	2.70	1.55	1.15	1.10	1.20	1.50	1.50
2	1.70	1.65	1.85	2.05	2.20	2.75	1.55	1.15	1.05	1.20	1.50	1.60
3	1.75	1.65	1.85	2.05	2.25	2.75	1.55	1.15	1.05	1.20	1.50	1.60
4	1.80	1.65	1.95	2.20	2.20	2.80	1.50	1.15	1.05	1.25	1.50	1.60
5	1.80	1.65	1.90	2.20	2.25	2.70	1.45	1.20	1.10	1.25	1.50	1.60
6	1.80	1.65	1.95	2.15	2.70	2.65	1.45	1.20	1.20	1.30	1.50	1.60
7	1.80	1.60	1.85	2.20	2.60	2.65	1.40	1.20	1.20	1.30	1.50	1.60
8	1.75	1.60	1.85	2.30	2.65	2.65	1.35	1.20	1.25	1.30	1.50	1.60
9	1.75	1.60	1.80	2.25	2.65	2.60	1.35	1.15	1.20	1.35	1.50	1.60
10	1.75	1.60	1.80	2.25	2.75	2.60	1.35	1.15	1.20	1.35	1.50	1.55
11	1.70	1.65	1.85	2.25	2.90	2.55	1.30	1.15	1.15	1.35	1.50	1.55
12	1.70	1.65	2.00	2.25	3.00	2.40	1.30	1.15	1.15	1.35	1.50	1.60
13	1.70	1.65	2.10	2.25	3.10	2.35	1.30	1.15	1.15	1.35	1.50	1.60
14	1.75	1.65	2.25	2.15	3.00	2.30	1.30	1.10	1.15	1.35	1.50	1.55
15	1.80	1.60	2.30	2.20	3.20	2.25	1.25	1.10	1.15	1.40	1.50	1.55
16	1.85	1.60	2.30	2.20	2.85	2.25	1.25	1.10	1.15	1.40	1.50	1.55
17	1.85	1.60	2.25	2.10	2.80	2.20	1.20	1.10	1.15	1.40	1.50	1.60
18	1.90	1.55	2.25	2.15	2.85	2.20	1.20	1.10	1.15	1.40	1.50	1.60
19	1.80	1.60	2.25	2.15	2.20	2.10	1.20	1.10	1.20	1.40	1.50	1.60
20	1.75	1.65	2.25	2.15	2.80	2.00	1.20	1.10	1.20	1.40	1.50	1.60
21	1.75	1.70	2.25	2.25	2.75	2.00	1.20	1.05	1.20	1.40	1.55	1.60
22	1.70	1.75	2.25	2.25	2.70	1.95	1.15	1.05	1.15	1.40	1.55	1.60
23	1.65	1.90	2.25	2.25	2.80	1.90	1.15	1.05	1.15	1.40	1.55	1.55
24	1.65	2.00	2.20	2.25	2.75	1.90	1.15	1.05	1.15	1.50	1.55	1.55
25	1.65	1.85	2.20	2.20	2.80	1.85	1.15	1.00	1.20	1.50	1.60	1.55
26	1.60	1.80	2.25	2.15	2.80	1.80	1.15	1.00	1.20	1.50	1.60	1.55
27	1.60	1.90	2.25	2.15	2.80	1.70	1.15	1.00	1.20	1.50	1.60	1.55
28	1.50	1.90	2.20	2.10	2.85	1.65	1.15	1.05	1.20	1.50	1.50	1.50
29	1.50	.....	2.20	2.15	2.80	1.65	1.15	1.05	1.20	1.50	1.55	1.50
30	1.55	.....	2.15	2.10	2.75	1.60	1.15	1.05	1.20	1.50	1.55	.....
31	1.60	.....	2.15	.....	2.70	.....	1.15	1.05	.....	1.50	.....	.....

BOISE RIVER NEAR BOISE, IDAHO.

This station is described in Water-Supply Paper No. 38, page 356. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 411. During 1900 the New York Canal Company built a wing dam of timber and loose rock, headed about 150 feet below the station and extending from the north bank diagonally down and across the stream a distance of about 50 feet, in order to protect the north bank from erosion. The construction of this wing dam did not seem to interfere with the flow of the river at the station. During the year new cable supports were set, bench marks were carefully verified, and the following discharge measurements were made by N. S. Dils:

Discharge measurements of Boise River near Boise, Idaho.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-feet.*		*Feet.*	*Sec.-feet.*
April 18	4.30	5,701	July 28	1.30	1,108
June 6	4.95	7,853	August 7	1.05	871
June 14	3.80	5,391	September 20	.98	797
June 28	2.60	2,371	September 27	.98	810
July 13	1.85	1,644			

Daily gage height, in feet, of Boise River near Boise, Idaho, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.90	2.10	2.20	3.90	4.40	4.30	2.40	1.10	.85	1.00	1.40	1.30
2	2.00	2.10	2.30	4.50	4.50	4.30	2.30	1.08	.85	1.10	1.40	1.30
3	2.00	2.10	2.30	4.80	4.60	4.50	2.25	1.05	.83	1.10	1.40	1.20
4	1.90	2.10	2.40	4.60	4.80	4.60	2.20	1.05	.85	1.10	1.40	1.30
5	2.00	2.06	2.30	4.50	4.80	4.70	2.00	1.03	1.10	1.30	1.40	1.30
6	2.00	1.85	2.50	4.70	5.30	4.95	1.95	1.05	1.20	1.40	1.40	1.30
7	2.00	1.90	2.75	4.90	5.50	4.80	1.90	1.03	1.05	1.20	1.30	1.30
8	1.90	1.90	2.90	4.80	5.80	4.60	1.80	1.03	.95	1.15	1.30	1 30
9	1.70	2.00	3.40	4.50	5.90	4.60	1.80	1.03	.95	1.10	1.30	1 30
10	1.70	1.90	3.55	4.50	6.30	4.30	1.85	.90	.98	1.10	1.25	1.20
11	1.90	1.80	3.80	4.20	6.50	4.00	1.85	.88	1.05	1.10	1.20	1.20
12	2.20	1.80	4.25	4.40	6.50	3.85	1.85	.95	.88	1.10	1.15	1.10
13	2.20	1.80	4.25	4.70	5.20	3.85	1.80	.98	.88	1.08	1.20	1.10
14	2.60	1.80	4.20	4.30	5.20	3.85	1.75	1.00	.85	1.08	1.20	1.20
15	3.50	1.80	4.20	4.10	5.30	3.80	1.60	.93	.90	1.05	1.20	1.30
16	3.40	1.80	4.30	4.30	5.30	4.15	1.60	.90	.85	1.05	1.20	1.30
17	3.20	1.70	4.30	4.20	5.20	3.80	1.55	.93	.88	1.00	1.20	1.40
18	2.80	1.80	4.40	4.30	5.10	3.55	1.50	.90	.90	1.05	1.30	1.30
19	2.50	1.80	4.40	4.30	5.20	3.55	1.45	.88	.98	1.25	1.30	1.30
20	2.45	1.80	4.30	4.30	5.10	3.55	1.45	.90	.95	1.25	1.15	1.30
21	2.40	2.00	4.30	4.30	5.00	3.65	1.35	.88	.93	1.70	1.10	1.80
22	2.30	2.60	4.30	4.30	4.90	3.60	1.35	.88	.90	1.50	1.15	1.70
23	2.30	2.50	4.50	4.30	4.80	3.40	1.30	.95	.93	1.75	1.20	1.40
24	2.30	2.40	4.50	4.30	4.80	3.30	1.30	1.00	.90	1.55	1.30	1.30
25	2.00	2.30	4.50	4.30	4.70	3.20	1.40	1.05	.95	1.40	1.30	1.40
26	2.00	2.40	4.60	4.20	4.70	3.10	1.40	.98	.98	1.40	1.35	1.30
27	2.00	2.30	4.50	4.20	4.60	2.90	1.30	.95	1.00	1.40	1.40	1.30
28	2.00	2.30	4.00	4.20	4.60	2.80	1.30	.95	1.00	1.33	1.20	1.10
29	2.00	.....	4.00	4.20	4.50	2.60	1.20	.88	.98	1.35	1.10	1.00
30	2.00	.....	3.90	4.30	4.50	2.50	1.18	.90	1.00	1.30	1.20	1.10
31	2.00	.....	3.90	.....	4.40	.....	1.15	.90	.....	1.30	.....	1.20

MISCELLANEOUS DISCHARGE MEASUREMENTS IN BOISE VALLEY, IDAHO.

A series of miscellaneous measurements of Boise River and of canals taking water from it was also made by N. S. Dils, from September 25 to 29, 1900. A similar series of measurements was made in 1899 (see Water-Supply Paper No. 38, page 358) and in 1898 (see Twentieth Annual Report, Part IV, pages 485 to 488).

Miscellaneous discharge measurements of Boise River and other streams and canals in Boise Valley, Idaho.

Date.	Stream.	Locality.	Discharge.
1900.			*Sec.-feet.*
July 30	Boise River	Near Caldwell	65
September 25	Sebree canal	Near head	190
Do	Seitenburg slough	do	16
Do	Riverside canal	Caldwell road bridge	9
Do	Waste east of Caldwell	Near river	3
Do	Waste from Tenmile Creek	Lower road	15
Do	Boise River	Star Bridge	171
Do	Waste south of Star Bridge	Near river	20
September 26	Eureka canal	Fifty feet below head gate	26
Do	Phyllis canal	Five hundred feet below head gate.	46
Do	Settlers' canal	One thousand feet below head gate.	48
Do	Davis canal	Near head	28
Do	McCarty canal	One hundred feet below head	38
Do	Waste from Rossi canal	Near river	42
Do	Waste from electric-light works		25
Do	Rossi canal	Below waste gate	50
Do	Payne canal	do	4
Do	Ellis canal	Near head	37
September 27	Perault canal	Below waste gate	85
Do	Boise River	U. S. G. S. gaging station	810
Do	New York canal	Opposite gaging station	*a* 10
Do	Costin canal	Near head	7
Do	Ridenbaugh canal	Two hundred feet below head	252
Do	Lamburger & Ryan canal	Flume	1
Do	Waste from Cottonwood Creek	Near river	3
Do	Front street canal	Below waste gate	30
September 28	Waste from Carline power house	Road bridge	33
Do	Farmers' Union canal	Near head	67
Do	Waste	Below Soldiers' Home	7
Do	Dry Creek canal	Near head	26
Do	Waste from Dry Creek	Road bridge	5
Do	Middleton canal	Near head	70
Do	Middleton Mill slough	do	100
Do	Davis & Hart canal	Eagle Island	6
Do	Conway canal	do	6
Do	Pioneer canal	Near head	3
September 29	Middleton Water Company	do	32
Do	Waste	East Middleton Road bridge	86
Do	Waste from Willow Creek	Road bridge	8
Do	Waste	East of Caldwell, near river	4
Do	Boise River	Three hundred feet below Caldwell road bridge.	240

a Not used in computations.

Summary of miscellaneous discharge measurements in Boise Valley, Idaho.

	Second-feet.	
In river at Caldwell, below all canals	240	
Taken out by canals	1,177	
Total		1,417
In river above canals	810	
Return waters	251	
Total		1,061
Gain in 34 miles		356
Gain per mile, 1900		11
Gain per mile, 1899		11
Gain per mile, 1898		8

WEISER RIVER NEAR WEISER, IDAHO.

This station, established December 6, 1894, is described in Water-Supply Paper No. 38, page 359. The results of measurements for 1899 are given in the Twenty-first Annual Report, Part IV, page 413. The new gage rod from which observations are now made was located October 31, 1899. During 1900 the following measurements of discharge were made by N. S. Dils:

May 28: Gage height, 3.40 feet; discharge, 2,074 second-feet.
June 19: Gage height, 1.90 feet; discharge, 646 second-feet.
July 23: Gage height, 0.50 foot; discharge, 87 second-feet.
August 15: Gage height, 0.25 foot; discharge, 47 second-feet.

The second measurement on July 23 was made 1 mile above the regular station.

Daily gage height, in feet, of Weiser River near Weiser, Idaho, for 1900.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.0	3.2	3.3	3.1	1.1	0.3	0.4	0.6	1.2	1.3
2	4.6	3.3	3.4	3.1	1.1	.3	.4	.7	1.2	1.3
3	5.0	3.6	3.4	3.0	1.1	.3	.4	.7	1.2	1.4
4	6.0	3.7	3.6	3.0	.9	.3	.4	.7	1.2	1.5
5	5.6	3.7	3.9	2.9	.9	.2	.4	.8	1.2	1.6
6	5.4	3.8	4.2	2.8	.9	.2	.5	.8	1.2	1.7
7	6.0	3.8	4.4	2.8	.9	.2	.5	.9	1.2	1.8
8	8.0	3.7	4.0	2.7	.9	.2	.6	.9	1.2	1.9
9	6.9	3.7	4.1	2.7	.9	.2	.6	.9	1.1	1.8
10	6.1	3.8	4.2	2.6	.9	.3	.6	.9	1.1	1.8
11	5.7	3.9	4.4	2.6	.8	.3	.5	.9	1.1	1.7
12	5.3	4.0	4.6	2.5	.8	.3	.5	.8	1.1	1.7
13	5.2	4.1	4.8	2.5	.8	.3	.5	.8	1.1	1.7
14	4.9	3.8	4.7	2.4	.8	.3	.5	.8	1.1	1.7
15	4.7	3.6	4.8	2.3	.7	.3	.5	.8	1.1	1.8
16	4.5	3.5	4.7	2.2	.7	.3	.5	.8	1.2	2.1
17	4.4	3.4	4.6	2.1	.7	.3	.5	.8	1.2	2.4
18	4.3	3.5	4.4	2.0	.7	.3	.5	.8	1.2	2.1
19	4.2	3.6	4.2	1.9	.6	.3	.5	.8	1.2	2.2
20	4.1	3.6	4.0	1.8	.6	.3	.5	1.0	1.2	2.4
21	4.1	3.7	3.9	1.7	.6	.3	.5	1.6	1.2	5.1
22	4.0	3.7	3.8	1.6	.5	.3	.5	1.6	1.2	4.1
23	4.0	3.6	3.7	1.5	.5	.3	.5	1.5	1.2	3.3
24	4.0	3.5	3.6	1.4	.5	.3	.6	1.5	1.2	2.9
25	3.9	3.4	3.5	1.4	.5	.3	.6	1.4	1.2	2.7
26	3.9	3.4	3.4	1.3	.4	.3	.6	1.4	1.3	2.5
27	3.8	3.3	3.4	1.3	.4	.3	.6	1.2	1.3	2.3
28	3.7	3.3	3.4	1.2	.4	.4	.6	1.2	1.3	2.0
29	3.5	3.3	3.3	1.2	.4	.4	.6	1.1	1.3	1.9
30	3.4	3.3	3.2	1.1	.4	.4	.6	1.1	1.3	1.9
31	3.3	------	3.2	------	.3	.4	-----	1.2	------	1.5

BLACKFOOT RIVER NEAR BONNER, MONTANA.

This station, established July 7, 1898, is at the wagon bridge one-half mile west of Bonner. It is described in Water-Supply Paper No. 38, page 362. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 416. During 1900 the following measurements of discharge were made by Prof. F. D. Smith and George Westby:

March 17: Gage height, 1.05 feet; discharge, 1,094 second-feet.
May 30: Gage height, 3.80 feet; discharge, 4,592 second-feet.
December 15: Gage height, 0.50 foot; discharge, 565 second-feet.

Daily gage height, in feet, of Blackfoot River near Bonner, Montana, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.70	0.60	0.50	1.30	3.20	3.45	1.90	0.95	0.90	0.70	0.60	(a)
2	.70	.50	.50	1.40	3.50	3.55	1.85	.95	.80	.70	.60	.....
3	.80	.50	.55	1.45	3.50	3.55	1.80	.90	.80	.70	.65	.....
4	.75	.50	.40	1.80	3.60	3.55	1.70	.90	.80	.70	.60	.....
5	.65	.55	.15	2.05	4.00	3.35	1.70	.90	.80	.70	.65	.....
6	.55	.45	.20	2.35	4.30	3.50	1.60	.90	.80	.70	.70	1.00
7	.70	.50	.30	2.50	4.35	3.35	1.60	.90	.80	.60	.65	.90
8	.65	.40	.55	2.60	4.30	3.20	1.55	.90	.80	.60	.65	.70
9	.65	.35	.80	2.65	4.10	3.20	1.50	.85	.70	.70	.65	.60
10	.65	.45	1.55	2.55	4.35	3.10	1.50	.95	.70	.70	.70	.55
11	.65	.55	2.15	2.55	4.60	2.95	1.40	.90	.80	.60	.65	.65
12	.55	.55	2.85	2.50	5.15	2.85	1.40	.80	.80	.60	.60	.55
13	.85	.40	2.95	2.45	6.90	2.80	1.40	.80	.80	.60	.65	.55
14	.80	.40	2.15	2.35	6.40	2.85	1.40	.80	.80	.60	.55	.55
15	.75	.35	1.85	2.45	5.90	2.85	1.30	.80	.70	.60	.60	.50
16	.75	.25	1.65	2.50	5.40	2.95	1.35	1.00	.70	.70	.60	.50
17	.65	.45	1.70	2.50	5.55	3.25	1.35	.80	.70	.85	.65	.40
18	.75	.35	1.35	2.50	5.50	3.20	1.25	1.00	.80	.65	.50	.45
19	.75	.55	1.40	2.70	5.35	2.95	1.20	.80	.70	.55	.55	.45
20	.60	.50	1.10	2.85	5.00	2.80	1.25	.75	.70	.55	(a)	.50
21	.65	.50	1.05	3.00	4.85	2.85	1.20	.80	.80	.50	.....	.75
22	.70	.55	1.05	3.05	4.80	2.75	1.15	.80	.70	.60	.....	.80
23	.60	.55	1.15	3.25	4.50	2.65	1.05	.80	.70	.55	.....	.65
24	.50	.50	1.25	3.35	4.50	2.60	.95	.80	.70	.65	.....	.70
25	.55	.50	1.20	3.30	4.30	2.50	.95	.80	.70	.55	.....	.65
26	.60	.40	1.15	3.30	4.05	2.35	1.10	.80	.60	.60	.....	.70
27	.50	.45	1.25	3.30	4.00	2.25	1.20	.80	.60	.70	.....	.65
28	.55	.45	1.30	3.15	3.95	2.15	1.00	.80	.70	.65	.....	.55
29	.55	.....	1.15	3.10	3.95	2.10	1.00	.75	.70	.60	.....	.55
30	.60	.....	1.20	3.05	3.85	1.95	1.05	.85	.70	.65	.....	.55
31	.60	.....	1.30	.....	3.50	.....	1.05	.75	.....	.60	.....	.40

a November 20 to December 6 slush ice blocking channel.

RATTLESNAKE CREEK AT MISSOULA, MONTANA.

This station, established May 27, 1899, is at the Ivy street bridge in the center of the city. It is described in Water-Supply Paper No. 38, page 363. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 417. During the blizzard in the latter part of November, 1900, the wire gage was broken, and readings were discontinued. During 1900 the following measurements of discharge were made by Prof. F. D. Smith:

May 19: Gage height, 4.27 feet; discharge, 704 second-feet.
June 18: Gage height, 4.13 feet; discharge, 645 second-feet.

Daily gage height, in feet, of Rattlesnake Creek at Missoula, Montana, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	2.60	2.63	2.40	3.20	3.95	3.68	3.05	2.18	2.35	2.53	2.45
2	2.60	2.60	2.40	3.43	4.15	3.65	2.98	2.20	2.35	2.55	2.45
3	2.60	2.45	2.40	3.63	4.40	3.75	2.90	2.20	2.35	2.53	2.48
4	2.60	2.43	2.40	4.05	4.88	3.85	2.90	2.18	2.35	2.58	2.65
5	2.53	2.43	2.45	3.95	4.85	3.90	2.90	2.20	2.33	2.58	2.60
6	2.55	2.75	2.40	3.83	4.78	3.88	2.85	2.20	2.33	2.58	2.60
7	2.53	2.35	2.45	3.85	4.68	3.88	2.78	2.18	2.30	2.60	2.55
8	2.55	2.35	2.43	3.73	4.70	3.83	2.75	2.20	2.30	2.55	2.55
9	2.53	2.40	2.50	3.63	4.83	3.63	2.68	2.20	2.30	2.55	2.58
10	2.50	2.43	2.50	3.50	4.93	3.58	2.53	2.18	2.30	2.55	2.55
11	2.53	2.45	2.58	3.30	5.23	3.53	2.48	2.18	2.30	2.58	2.53
12	2.55	2.38	.....	3.40	6.00	3.53	2.38	2.20	2.28	2.55	2.50
13	2.80	(*a*)	.....	3.38	5.60	3.53	2.35	2.18	2.25	2.55	2.50
14	2.85	(*a*)	2.95	3.43	4.73	3.48	2.35	2.15	2.25	2.55	2.50
15	2.85	(*a*)	2.95	3.40	4.40	3.53	2.33	2.15	2.25	2.53	2.50
16	2.83	(*a*)	2.95	3.45	4.40	3.70	2.35	2.15	2.25	2.50	2.50
17	2.80	(*a*)	2.98	3.45	4.50	4.08	2.35	2.15	2.33	2.50	2.55
18	2.73	(*a*)	3.05	3.60	4.43	4.53	2.30	2.15	2.53	2.48	(*b*)
19	2.70	(*a*)	3.13	3.80	4.17	4.03	2.25	2.15	2.53	2.48	.....
20	2.63	(*a*)	3.15	3.83	4.20	3.83	2.30	2.15	2.50	2.48	.....
21	2.68	2.40	3.08	3.80	4.13	3.88	2.25	2.18	2.53	2.50	.....
22	2.63	2.35	3.10	4.03	4.17	3.78	2.25	2.20	2.55	2.58	.....
23	2.58	2.40	3.18	3.90	4.00	3.58	2.23	2.20	2.70	2.60	.....
24	2.55	2.40	3.18	3.83	4.00	3.60	2.23	2.25	2.80	2.55	.....
25	2.60	2.45	3.20	3.80	3.93	3.63	2.20	2.30	2.78	2.53	.....
26	2.75	2.43	3.25	3.85	3.98	3.60	2.25	2.50	2.73	2.55	.....
27	2.58	2.40	3.18	3.70	4.03	3.35	2.28	2.45	2.68	2.53	.....
28	3.15	2.40	3.13	3.70	3.93	3.30	2.23	2.35	2.63	2.53	.....
29	2.50	.....	3.13	3.70	3.78	3.18	2.20	2.33	2.58	2.58	.....
30	2.55	.....	3.05	3.85	3.68	3.13	2.20	2.35	2.55	2.50	.....
31	2.58	.....	3.00	.....	3.70	.....	2.20	2.35	.....	2.45	.....

a Ice.

b Gage broken; readings discontinued.

MISSOULA RIVER AT MISSOULA, MONTANA.

Missoula River is generally regarded as formed by the junction of Blackfoot and Hellgate rivers at Bonner, Montana. Hellgate River was measured by Prof. F. D. Smith on June 21, 1900, below Bonita, at the wagon bridge a short distance above the mouth of Rock Creek, and a discharge of 1,028 second-feet was found. Rock Creek is an important tributary of Hellgate River, entering it a few miles below Bonita. It was measured by Professor Smith on June 21, 1900, about 6 miles above its mouth and about 3 miles below Quigley, and a discharge of 1,670 second-feet was found. This creek is about 100 miles long, and in spring is a fierce torrent. At all times it probably carries more water than Hellgate River.

The Missoula River station at Missoula was originally established July 10, 1898, at the Higgins avenue bridge in the city. Owing to the occurrence of two channels in this section, on May 27, 1899, the station was moved, being placed below the junction of the two branches and 150 yards east of the railroad bridge. During 1900 observations of gage heights were taken on this lower rod. The station is described in Water-Supply Paper No. 38, page 364. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 418. During 1900 the following measurements of discharge were made by Prof. F. D. Smith and George Westby:

June 18: Gage height, 6.25 feet; discharge, 8,164 second-feet.
December 22: Gage height, 3.80 feet; discharge, 1,710 second-feet.

Daily gage height, in feet, of Missoula River at Missoula, Montana, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	(a)	(a)	3.58	4.23	5.98	6.80	4.68	3.48	3.38	3.50	3.60	(a)
2	(a)	(a)	3.60	4.33	6.08	6.70	4.63	3.43	3.35	3.55	3.60	(a)
3	(a)	(a)	3.55	4.63	6.25	6.70	4.53	3.48	3.40	3.53	3.60	(a)
4	(a)	(a)	3.45	4.83	6.45	6.65	4.40	3.43	3.38	3.68	3.65	(a)
5	(a)	(a)	3.10	5.08	6.73	.....	4.35	3.35	3.48	3.63	3.68	3.83
6	(a)	(a)	3.15	5.20	6.95	.....	4.35	3.35	3.48	3.60	3.65	3.85
7	(a)	(a)	3.45	5.40	7.10	6.45	4.33	3.30	3.55	3.68	3.65	3.80
8	(a)	(a)	3.60	5.30	6.98	6.45	4.25	3.30	3.50	3.65	3.65	3.80
9	(a)	(a)	4.30	5.33	6.90	6.33	4.20	3.35	3.48	3.60	3.63	3.70
10	(a)	(a)	4.85	5.23	7.23	6.28	4.13	3.25	3.45	3.60	3.65	3.63
11	(a)	(a)	5.63	5.20	7.65	6.05	4.08	3.40	3.45	3.58	3.58	3.53
12	(a)	(a)	6.10	5.20	9.45	5.88	4.03	3.35	3.40	3.55	3.50	3.45
13	3.70	(a)	5.90	5.13	9.45	5.78	3.98	3.35	3.38	3.55	3.50	3.40
14	3.90	(a)	5.05	5.18	9.05	5.65	3.95	3.33	3.35	3.53	3.53	3.40
15	3.73	(a)	4.75	5.15	8.63	5.70	3.90	3.30	3.38	3.55	3.50	3.45
16	3.68	(a)	4.27	5.23	8.30	5.78	3.85	3.30	4.15	3.55	3.50	3.43
17	3.58	2.55	4.40	5.23	8.43	6.05	3.83	3.20	3.63	3.53	3.63	3.45
18	3.60	3.05	4.33	5.20	8.40	6.28	3.80	3.23	3.65	3.50	(a)	3.43
19	3.60	(a)	4.07	5.33	8.23	5.93	3.75	3.23	3.70	3.53	(a)	3.40
20	3.66	(a)	4.15	5.48	8.15	5.80	3.65	3.20	3.68	3.53	(a)	3.43
21	3.63	(a)	4.18	5.58	7.85	5.65	3.58	3.15	3.65	3.50	(a)	3.68
22	3.58	3.55	4.23	5.75	7.68	5.63	3.53	3.35	3.60	3.60	(a)	3.85
23	3.58	3.58	4.35	5.85	7.63	5.50	3.58	3.38	3.60	3.60	(a)	3.60
24	3.55	3.68	4.25	5.90	7.48	5.45	3.55	3.43	3.65	3.60	(a)	3.50
25	3.33	3.68	4.23	5.90	7.33	5.40	3.58	3.48	3.60	3.58	.....	3.43
26	2.95	3.65	4.28	5.95	7.17	5.40	3.58	3.50	3.60	3.55	(a)	3.40
27	3.10	3.65	4.28	5.95	7.18	5.20	3.55	3.50	3.60	3.53	(a)	3.43
28	2.85	3.65	4.28	5.90	7.20	5.05	3.55	3.43	3.58	3.55	(a)	3.30
29	(a)	.....	4.20	5.90	7.10	4.90	3.58	3.40	3.58	3.63	(a)	3.13
30	(a)	.....	4.10	5.90	6.95	4.78	3.50	3.45	3.50	3.58	(a)	3.10
31	(a)	.....	4.15	.....	6.85	.....	3.50	3.43	.....	3.60	.....	(a)

a Ice.

BITTERROOT RIVER AT MISSOULA, MONTANA.

This station, established July 6, 1898, is at the Buckhouse wagon bridge. The gage was verified June 19, 1900, and the length of cable was found to be 22.83 feet. On December 1, 1900, the wire was again tested, and was found to measure 22.95 feet, showing a stretch of 0.12 foot, which was not corrected. The station is described in Water-Supply Paper No. 38, page 368. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 420. During 1900 the following measurements of discharge were made by Prof. F. D. Smith and George Westby:

March 17: Gage height, 2.40 feet; discharge, 1,875 second-feet.
December 15: Gage height, 1.60 feet; discharge, 1,185 second-feet.

Lolo Creek is a tributary of Bitterroot River, entering it from the west, about 12 miles above its mouth. On June 18, 1900, it was measured by Professor Smith, at Littleman's bridge, 5 miles above the Lolo post-office and above all ditches, and a discharge of 609 second-feet was found.

Daily gage height, in feet, of Bitterroot River at Missoula, Montana, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.70	1.70	(b)	2.40	(b)	5.30	3.60	1.30	1.50	1.60	2.35	1.55
2	1.60	1.70	(b)	2.50	(b)	5.35	3.40	1.30	1.50	1.50	2.40	1.55
3	1.55	1.70	(b)	2.90	5.00	5.60	3.30	1.25	1.40	1.50	2.40	1.55
4	1.55	1.60	1.20	3.25	5.25	5.90	3.00	1.20	1.30	1.60	2.20	1.55
5	1.60	1.45	1.25	3.60	5.80	6.10	2.90	1.15	1.30	1.60	2.10	1.60
6	1.60	1.40	1.25	3.75	6.10	6.30	2.85	1.10	1.40	1.55	2.10	1.60
7	1.60	1.35	1.35	3.85	6.50	6.45	2.85	1.10	1.45	5.60	1.90	1.70
8	1.60	1.30	1.45	3.70	6.40	6.00	2.85	1.10	1.45	5.65	1.80	1.80
9	1.55	1.30	1.50	3.55	6.15	5.80	2.70	1.10	1.40	5.65	2.00	1.70
10	1.50	1.35	1.50	3.50	6.55	5.50	2.65	1.10	1.40	5.60	1.80	1.70
11	1.50	(a)	1.70	3.45	7.10	5.00	2.65	1.10	1.40	5.60	1.70	1.60
12	1.55	(a)	1.75	3.40	7.65	4.90	2.40	1.05	1.35	5.60	1.65	1.55
13	1.60	(a)	1.80	3.45	8.50	4.90	2.30	1.05	1.35	5.50	1.65	1.50
14	1.80	(a)	1.90	3.40	7.80	4.80	2.30	1.05	1.30	1.45	1.60	1.50
15	2.00	(a)	1.95	3.40	6.80	4.80	2.20	1.05	1.30	1.45	1.60	1.50
16	2.00	(a)	2.15	3.50	6.30	5.80	2.10	1.05	1.30	1.40	1.60	1.50
17	1.90	(a)	2.30	3.70	6.35	5.65	2.00	1.05	1.80	1.40	1.60	1.60
18	1.85	(a)	2.40	3.95	6.40	5.50	1.90	1.05	1.80	1.45	1.60	1.60
19	1.80	(a)	2.45	4.00	6.45	5.40	1.85	1.00	1.80	1.45	(a)	1.70
20	1.80	(a)	2.50	4.05	6.10	5.15	1.85	1.00	1.70	1.50	(a)	1.70
21	1.70	(a)	2.50	4.10	5.70	5.30	1.70	.90	1.70	1.60	(a)	1.70
22	1.65	(a)	2.55	4.20	5.80	5.40	1.65	.90	1.70	1.70	(a)	1.70
23	1.65	(a)	2.55	4.10	5.70	5.45	1.60	.90	1.65	1.80	(a)	1.70
24	1.65	(a)	2.60	4.00	5.65	5.40	1.60	1.00	1.70	1.90	(a)	1.60
25	1.55	(a)	2.60	3.90	5.60	5.50	1.55	1.00	1.70	1.60	1.70	1.60
26	1.55	(a)	2.70	3.90	5.60	5.10	1.55	1.00	1.80	2.00	1.60	1.60
27	1.55	(a)	2.60	3.85	5.65	4.70	1.55	1.05	1.80	2.20	1.60	1.50
28	1.60	(a)	2.50	3.85	5.65	4.30	1.55	1.10	1.80	2.25	1.60	1.40
29	1.60	(a)	2.55	(b)	5.65	4.00	1.55	1.10	1.70	2.25	1.60	1.30
30	1.60	(a)	2.40	(b)	5.35	3.90	1.40	1.30	1.70	2.30	1.55	1.30
31	1.70	(a)	2.40	(b)	5.15	.....	1.35	1.40	.....	2.35	.....	1.30

a Frozen. *b* No record.

FLATHEAD LAKE, MONTANA.

On the western slope of the Rocky Mountains in northwestern Montana, in the vicinity of Columbia Falls, three large streams combine to form the upper Flathead River, which flows through a rich, fertile valley for a distance of about 40 miles, and empties into the northern end of Flathead Lake. The several tributaries of the river drain a large area, a portion of which extends northward into Canada. The drainage basin is entirely mountainous, and is in a region of heavy snowfall. Swan River flows northwardly behind the Mission range of mountains, which rise abruptly on the eastern shore of the lake, until it finally rounds the northern end of the range and empties into the lake within 3 miles of the mouth of Flathead River. These two rivers supply nearly all of the water which flows into Flathead Lake, the other sources being small creeks.

Flathead Lake is a large body of fresh water, its north-south length about 30 miles, its width varying from 6 to 15 miles. It is said to be very deep, although probably no reliable soundings have been made. At its northern end Flathead River, which carries immense quantities of silt, has formed a delta or bar. Swan River, on the contrary, is a clear stream, and carries little silt into the lake. At the southern end the outlet of the lake is Flathead River, a tributary of Clark Fork of the Columbia.

The valley of Flathead River requires no irrigation, its rich, alluvial soil producing abundant crops without the aid of water. On the

contrary, it often suffers from too much water, by inundation from the river when, after a winter of heavy snowfall, a mild spring, with its accompaniment of chinook winds, causes too rapid melting of the snow to produce overflow. The river has very little fall, causing a slow current; its course is sinuous; its banks are not high, and behind them the valley is quite level; and with its mouth partially dammed by its own deposits of silt it is not surprising that overflows have occurred and will continue to occur until some method is adopted to allow the flood waters to escape before rising to the top of the banks. Several plans have been suggested to remedy the evil, but until measurements have been obtained of the flow of the water in the lake, and particularly of the amount of flood water to be provided against, it is impossible to arrive at a conclusion. It will also be necessary to determine the quantity of water passing out of the lake and the amount of evaporation. Level lines should be run and a topographic map of the area be prepared, after which it may be possible to determine a feasible plan for the relief of the farming land in the valley of the river.

During the summer of 1900 a reconnaissance trip encircling Flathead Lake was made by Prof. F. D. Smith. Besides the two main streams at the head of the lake—Flathead River and Swan River—a number of minor streams discharge into this body of water. Among these are Dayton Creek, which drains a small area on the west side of the lake, discharging into it south of the town of Dayton. There is a considerable body of agricultural land located in the valley of this creek, most of it within the Flathead Indian Reservation, and not at present available for settlement by whites. Lake Ronan, which is 3 miles long and a half mile wide, is within the drainage area of Dayton Creek, and is reported to be a good reservoir site. Dayton Creek was measured on June 26, 1900, immediately above its mouth, and a discharge of 31 second-feet was found. It is reported that this stream is often dry during September.

Big Creek enters the lake from the west, about halfway between the upper end of the lake and the northern boundary line of the Flathead Indian Reservation. It was measured on June 26, 1900, and a discharge of 38 second-feet was found. It is reported that this is the average amount of water that this stream carries during the remaining months of the year. Dayton Creek and Big Creek are the only streams of importance entering Flathead Lake from the west. The first stream of importance on the east side of the lake and south of Swan River is Glen Creek, which on June 28, 1900, had a discharge of 4 second-feet near its mouth.

Continuing southward, the next stream of importance on the east side enters the lake near the ranch of H. N. Chapman, just below the northern boundary of the Indian reservation. Its discharge on June 29, 1900, was found to be 19 second-feet. Four miles to the south of

this stream there is a creek which on June 29 was carrying 10 second-feet. It enters the lake at the foot of the north end of the Blue Grade, a dangerous graded road along the lake shore. Four miles still farther south is another small stream, which on June 29, 1900, was discharging 20 second-feet. It enters the lake immediately north of the peninsula in the southeastern corner of the lake. The only stream of importance which enters the lake south of this peninsula was discharging 24 second-feet on June 29, 1900.

During this trip Professor Smith made measurements of a number of streams which enter the lower Flathead (Pend Oreille) River. They all are included within the Flathead Indian Reservation. Crow Creek was measured on June 30, 1900, at the highway bridge on the lower lake road, about 16 miles from St. Ignatius Mission, and was found to have a discharge of 180 second-feet. This stream, with Post and Mission creeks, will be of great value when the reservation is thrown open to settlement, as they carry a considerable amount of water throughout the year, and the many acres of arable lands can thus be served from them. Post Creek enters the lower Flathead River 10 miles south of Crow Creek. On June 30 it was measured about 2 miles above the mouth of Mission Creek, and a discharge of 473 second-feet was found. It has its source in a small lake 2 miles long and a half mile wide, locally known as McDonald Lake. This body of water could easily be transformed into a large reservoir to hold waters for all lands below. At the time of measurement Post Creek was carrying more than its normal summer discharge. Mission Creek is a tributary of Post Creek. It was measured on June 30 at the highway bridge in the limits of the village of St. Ignatius, and a discharge of 412 second-feet was found. This stream is used for irrigation more than the other two creeks, its waters serving the lands around the mission. The principal ditch is taken out about 1,000 feet above the highway bridge. It is 4.7 feet wide, with a capacity of 100 second-feet. At the time of the visit the ditch was carrying 24 second-feet. Jocko River, a tributary of lower Flathead River, was measured on June 30, at the Northern Pacific Railway bridge, and a discharge of 660 second-feet was found. Water from this stream is used to a limited extent for irrigation purposes in Jocko Valley, and also at the Indian agency near Arlee, where a ditch has been constructed by the Government for the use of the Indians.

SWAN RIVER NEAR HOLT, MONTANA.

This river lies in the basin or valley in northwestern Montana formed by the Swan Range on the east and the Mission Range on the west. It flows northerly, entering Flathead Lake at its upper end, within a short distance of the mouth of the upper Flathead River. During the season of 1900 private surveys were prosecuted, with the idea of developing the water power of this stream near its mouth and transmitting electric power to Kalispell, 15 miles distant, in an air

line. The gaging station, which was established by Prof. F. D. Smith on June 28, 1900, is at the highway bridge 3 miles east of Holt and a short distance above the mouth of the river. A wire gage was placed with a pulley distance of 1.23 feet and a length of cable from the end of the weight to the index marker of 21.65 feet. The bed of the river is rocky and gravelly. Above the station the stream has a considerable fall for a mile or more, making a long course of beautiful rapids. On June 28 a measurement of discharge was made by Professor Smith, and a gage height of 4.10 feet and discharge of 0.39 second-foot were found. The observer is E. L. Sliter, who also has charge of the gage at the lake.

Daily gage height, in feet, of Swan River near Holt, Montana, for 1900.

Day.	June.	July.	Aug.	Day.	June.	July.	Aug.	Day.	June.	July.	Aug.
1	.....	3.60	1.60	12	.....	2.20	.....	23	.....	1.60	.....
2	.....	3.50	1.50	13	.....	2.10	.....	24	.....	1.60	.....
3	.....	3.40	1.50	14	.....	2.00	.....	25	.....	1.60	.....
4	.....	3.30	1.40	15	.....	2.00	.....	26	.....	1.70	.....
5	.....	3.10	1.40	16	.....	1.90	.....	27	.....	1.70	.....
6	.....	2.90	.....	17	.....	1.90	.....	28	4.10	1.70	.....
7	.....	2.80	.....	18	.....	1.80	.....	29	4.00	1.80	.....
8	.....	.....	.....	19	.....	1.70	.....	30	3.70	1.80	.....
9	.....	2.50	.....	20	.....	1.70	.....	31	.....	1.70	.....
10	.....	2.30	.....	21	.....	1.60	.....				
11	.....	2.30	.....	22	.....	1.60	.....				

FLATHEAD LAKE NEAR HOLT, MONTANA.

On April 24, 1900, Prof. F. D. Smith established a station on this lake near its head. The gage is a vertical rod fastened securely to the logs of the boathouse of the Flathead Club, of Helena. It is about 2 miles east of the mouth of Flathead River. Owing to the height of the lake at the time of the erection of the gage, an additional length will have to be added at the lower end when the level is at a lower stage. The lake was calm at the time of the erection of the gage, and read 7.05 feet; forty-four hours later the gage at Polson, at the lower end of the lake, read 7.15 feet. The observer is E. L. Sliter.

Daily gage height, in feet, of Flathead Lake near Holt, Montana, for 1900.

Day.	Apr.	May.	June.	July.	Aug.	Day.	Apr.	May.	June.	July.	Aug.
1	.....	7.70	10.05	8.80	4.50	17	.....	12.60	9.00	6.40	.....
2	.....	7.80	9.80	8.60	4.40	18	.....	12.20	8.90	6.00	.....
3	.....	7.90	9.70	8.30	4.20	19	.....	12.00	8.85	6.20	.....
4	.....	7.95	9.70	8.10	4.00	20	.....	11.70	8.90	6.00	.....
5	.....	8.05	9.60	8.00	4.00	21	.....	11.50	9.00	5.90	.....
6	.....	8.30	9.53	7.80	.....	22	.....	11.30	9.00	5.80	.....
7	.....	8.50	9.50	7.60	.....	23	.....	11.10	9.00	5.70	.....
8	.....	9.00	9.40	.....	.....	24	7.00	11.00	9.03	5.50	.....
9	.....	9.20	9.30	7.40	.....	25	7.10	10.90	9.00	5.30	.....
10	.....	9.50	9.30	7.30	.....	26	7.20	10.80	9.00	5.20	.....
11	.....	10.80	9.20	7.20	.....	27	7.40	10.90	9.00	5.00	.....
12	.....	10.60	9.20	7.10	.....	28	7.50	10.60	8.90	4.80	.....
13	.....	10.60	9.10	6.90	.....	29	7.60	10.50	8.80	4.80	.....
14	.....	10.80	9.00	6.80	.....	30	7.65	10.20	8.90	4.70	.....
15	.....	11.30	9.00	6.60	.....	31	.....	10.10	.....	4.60	.....
16	.....	12.00	9.00	6.50	.....						

FLATHEAD LAKE AT POLSON, MONTANA.

This station, which is at the lower end of the lake, at the Polson post-office, was established by Prof. F. D. Smith on April 20, 1900 The gage is a 16-foot rod, graduated to feet and tenths, and nailed to a double pile of the abandoned steamboat pier near the outlet of the lake. From year to year the lake has a variation in height of perhaps 15 feet, and overflows much land at both ends. At the time of the erection of the gage the level of the low water was about 5 feet above the low-water mark of 1899 and 1890, and measurements made at an old submerged pier showed the water to be about 6 feet above the lowest stage remembered. The observer is Henry Therriault, postmaster and Indian trader at Polson.

Daily gage height, in feet, of Flathead Lake at Polson, Montana, for 1900.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	7.70	10.05	8.75	5.40	4.00	4.10	5.10	3.50
2	.....	7.80	9.85	8.70	5.30	4.10	4.10	5.10	3.60
3	.....	7.90	9.70	8.60	5.20	4.10	4.10	5.10	3.70
4	.....	7.95	9.60	8.60	5.20	4.20	4.20	5.00	3.80
5	.....	8.25	9.50	8.50	5.20	4.30	4.20	4.90	3.80
6	.....	8.40	9.50	8.30	5.10	4.30	4.20	4.80	3.80
7	.....	8.60	9.50	8.05	5.10	4.30	4.20	4.80	3.80
8	.....	8.95	9.45	7.75	5.00	4.30	4.20	4.70	3.80
9	.....	9.15	9.40	7.60	4.90	4.30	4.10	4.60	3.90
10	.....	9.30	9.40	7.55	4.90	4.30	4.10	4.50	3.90
11	.....	9.45	9.40	7.35	4.80	4.20	4.10	4.50	3.90
12	.....	9.65	9.40	7.20	4.80	4.20	4.00	4.40	4.00
13	.....	10.05	9.30	7.05	4.70	4.20	4.00	4.40	4.00
14	.....	10.60	9.30	6.85	4.70	4.10	4.00	4.30	4.00
15	.....	11.10	9.20	6.70	4.60	4.10	4.00	4.20	4.00
16	.....	11.40	9.05	6.70	4.60	4.10	4.00	4.10	4.00
17	.....	11.65	8.95	6.70	4.50	4.10	4.00	4.00	4.00
18	.....	11.60	9.00	6.60	4.50	4.10	4.10	4.00	4.00
19	.....	11.55	9.00	6.50	4.50	4.10	4.10	4.00	4.00
20	6.50	11.60	9.00	6.35	4.40	4.00	4 20	3.90	4.00
21	6.65	11.60	9.05	6.15	4.30	4.00	4.20	3.80	4.00
22	.....	11.55	9.10	6.00	4.20	4.00	4.30	3.70	4.00
23	6.85	11.45	9.15	5.95	4.10	4.00	4.30	3.70	4.00
24	6.95	11.35	9.15	5.90	4.00	4.00	4.40	3.60	4.00
25	7.15	11.20	9.00	5.80	4.00	4.00	4.40	3.60	4.00
26	7.40	11.10	9.00	5.70	4.00	4.00	5.00	3.50	4.00
27	7.40	10.80	8.95	5.60	4.00	4.00	5.00	3.50	3.90
28	7.50	10.75	8.90	5.60	4.00	4.00	5.00	3.50	3.90
29	7.60	10.55	8.90	5.50	4.00	4.10	5.10	3.40	3.90
30	7.60	10.40	8.90	5.40	4.00	4.00	5.10	3.40	3.90
31	.....	10.20	.....	5.40	4.00	.....	5.10	.....	3.90

SPOKANE RIVER AT SPOKANE, WASHINGTON.

This station, established October 17, 1896, by C. C. Babb, is a short distance above the Spokane Falls, at the bridge of the Oregon Railway and Navigation Company. It is described in Water-Supply and Irrigation Paper No. 38, page 370. The results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 424. During 1900 three measurements of discharge were made by D. L. Huntington, general manager of the Washington Water Power Company, at the Division street bridge, within the limits of the city and a short distance below the bridge at which the regular gaging station is located. On September 15, when the height on the United

States Geological Survey rod was 1.6 feet, the water level at the Division street bridge, referred to the bottom of a certain I beam of the bridge, was 16.245 feet, and the discharge, as measured by a Price meter, was 2,029 second-feet. On October 13 the gage height was 1.80 feet, the water level at the Division street bridge, referred to the same datum, was 16.14 feet, and the discharge was 2,233 second-feet. On October 20 the gage height was 1.8 feet, the water level at the Division street bridge 16.09 feet, and the discharge 2,287 second-feet. During 1900 the following measurements of discharge were made at the regular station by Sydney Arnold:

May 17: Gage height, 6.5 feet; discharge, 13,613 second-feet.
June 14: Gage height, 4.1 feet; discharge, 7,493 second-feet.

Daily gage height, in feet, of Spokane River at Spokane, Washington, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.70	5.50	3.95	7.20	6.45	5.35	3.40	2.05	1.70	1.75	2.70	3.55
2	4.70	5.35	3.90	7.10	6.40	5.25	3.30	2.05	1.70	1.75	2.80	3.65
3	4.70	5.20	3.90	7.10	6.40	5.15	3.25	2.00	1.70	1.70	2.80	3.75
4	4.65	5.05	3.95	7.10	6.35	5.05	3.15	1.95	1.70	1.70	3.10	3.90
5	4.65	4.95	4.00	7.20	6.30	4.90	3.15	1.95	1.70	1.70	3.30	4.15
6	4.70	4.80	4.05	7.25	6.30	4.85	3.10	1.90	1.70	1.70	3.45	4.40
7	4.70	4.70	4.15	7.40	6.35	4.75	3.05	1.90	1.65	1.70	3.50	4.70
8	4.75	4.55	4.50	7.50	6.40	4.65	3.00	1.90	1.65	1.75	3.50	4.95
9	4.75	4.45	5.00	7.60	6.35	4.60	2.95	1.85	1.65	1.75	3.50	5.10
10	4.80	4.40	5.50	7.60	6.35	4.50	2.90	1.80	1.60	1.80	3.50	5.20
11	5.00	4.30	5.75	7.60	6.35	4.40	2.85	1.80	1.60	1.80	3.50	5.20
12	5.10	4.25	6.10	7.60	6.40	4.30	2.80	1.75	1.60	1.80	3.45	5.20
13	5.30	4.20	6.35	7.55	6.45	4.20	2.75	1.75	1.60	1.80	3.40	5.20
14	6.10	4.10	6.65	7.45	6.50	4.10	2.70	1.75	1.60	1.80	3.40	5.15
15	6.80	4.00	6.85	7.40	6.50	4.00	2.65	1.75	1.60	1.80	3.35	5.10
16	7.10	3.90	6.90	7.35	6.50	3.90	2.60	1.75	1.60	1.80	3.30	5.10
17	7.20	3.80	6.95	7.25	6.50	3.90	2.60	1.75	1.55	1.80	3.25	5.10
18	7.20	3.70	7.00	7.20	6.50	3.85	2.50	1.70	1.55	1.80	3.30	5.10
19	7.20	3.60	7.00	7.10	6.50	3.90	2.45	1.70	1.55	1.80	3.35	5.10
20	7.10	3.60	7.00	7.10	6.50	3.90	2.45	1.70	1.55	1.80	3.35	5.20
21	7.10	3.60	7.05	7.10	6.45	3.85	2.40	1.70	1.60	1.85	3.35	5.35
22	7.00	3.60	7.10	7.10	6.40	3.80	2.35	1.70	1.60	2.00	3.35	5.85
23	6.90	3.70	7.15	7.05	6.35	3.75	2.30	1.70	1.60	2.20	3.35	6.20
24	6.80	3.70	7.20	7.05	6.20	3.70	2.30	1.65	1.65	2.30	3.30	6.60
25	6.65	3.80	7.25	7.00	6.05	3.70	2.25	1.65	1.65	2.45	3.30	6.70
26	6.50	3.85	7.25	6.90	6.00	3.65	2.25	1.65	1.70	2.50	3.30	6.70
27	6.35	3.85	7.35	6.85	5.85	3.60	2.20	1.70	1.70	2.60	3.35	6.65
28	6.25	3.90	7.35	6.75	5.70	3.50	2.15	1.70	1.75	2.60	3.35	6.45
29	6.10	.....	7.35	6.60	5.60	3.45	2.10	1.70	1.75	2.65	3.40	6.30
30	5.85	.....	7.30	6.45	5.50	3.40	2.10	1.70	1.75	2.70	3.45	6.15
31	5.60	.....	7.25	.....	5.45	.....	2.05	1.70	.....	2.70	.....	6.00

LAKE CHELAN AT LAKESIDE, WASHINGTON.

This station is described in Water-Supply Paper No. 38, page 371. The gage was established by Capt. Charles Johnson on September 1, 1897, at the base of the rock pier on the lake shore north of his house, about a half mile from the steamboat landing. The bench mark is a United States Geological Survey iron post, with the elevation—1,121 feet above the sea level—stamped on the top. It is just 21 feet above the datum of the gage, so that to obtain the elevation of the surface of the lake above sea level 1,100 feet should be added to the rod readings. No records of the height of the lake were taken during 1900.

NACHES RIVER AT NORTH YAKIMA, WASHINGTON.

The original station on this river was established August 14, 1893, was abandoned in 1897, and another was established February 1, 1898. Measurements are made from the downstream side of the highway bridge about 300 feet above the Northern Pacific Railroad bridge. The river has considerable fall, and the water can easily be diverted by means of comparatively short canals. On this account it is of great value for irrigation and power purposes, and is the source of water supply and power for the Yakima Water, Light and Power Company. Results of measurements will be found as follows: For 1896, Eighteenth Annual Report, Part IV, page 355; for 1898, Twentieth Annual Report, Part IV, page 503; for 1899, Twenty-first Annual Report, Part IV, page 426. During 1900 the following measurements were made by Sydney Arnold:

Discharge measurements of Naches River at North Yakima, Washington.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-feet.*	1900.	*Feet.*	*Sec.-feet.*
April 27	6.80	2,000	June 4	6.85	1,995
May 8	8.10	4,914	July 17	5.70	670
May 24	7.00	1,988	August 1	5.45	494
May 29	6.85	1,955			

Daily gage height, in feet, of Naches River at North Yakima, Washington, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.20	6.60	6.20	a7.40	7.00	6.60	a6.10	5.50	5.20	5.30	6.00	6.60
2	7.10	6.50	6.20	7.50	7.30	6.60	6.00	5.50	a5.20	5.30	6.10	a6.65
3	7.00	6.50	6.20	7.80	7.60	a6.65	6.00	5.40	5.20	5.30	6.20	6.70
4	6.90	a6.45	a6.20	7.70	8.00	6.70	5.90	5.40	5.20	5.30	a6.25	7.10
5	6.80	6.40	6.20	7.60	8.00	6.90	5.90	5.35	5.20	5.30	6.30	7.90
6	6.60	6.40	6.20	7.60	8.00	7.40	5.90	5.30	5.20	5.30	6.20	8.20
7	a6.60	6.30	6.20	8.20	8.00	7.20	5.80	5.30	5.20	a5.30	6.10	8.00
8	6.60	6.30	6.40	a8.05	8.20	7.10	a5.75	5.30	5.20	5.30	6.20	7.80
9	6.60	6.20	6.50	7.90	8.10	7.10	5.70	5.30	a5.25	5.30	6.30	a7.60
10	6.50	6.20	6.70	7.80	8.00	a6 90	5.70	5.30	5.30	5.30	6.30	7.40
11	6.50	a6.35	a7.30	7.50	8.00	6.70	5.70	5.30	5.30	5.30	a6.25	7.20
12	6.50	6.50	7.90	7.40	8.00	6.70	5.70	5.75	5.30	5.20	6.20	6.90
13	9.70	6.40	7.90	7.40	7.80	6.70	5.60	5.20	5.30	5.20	6.20	6.90
14	a9.10	6.30	7.80	7.30	7.60	6.70	5.60	5.20	5.30	a5.20	6.20	6.80
15	8.50	6.20	7.70	a7.25	7.40	6.70	a5.55	5.20	5.30	5.20	6.30	6.80
16	8.10	6.10	7.60	7.20	7.40	6.70	5.50	5.20	a5.45	5.20	6.40	a6.80
17	7.90	6.10	7.50	7.20	7.30	a6.65	5.50	5.10	5.60	5.20	6.40	6.80
18	7.80	a6.10	a7.55	7.20	7.30	6.60	5.50	5.10	5.60	5.20	a6.40	6.70
19	7.70	6.10	7.60	7.40	7.20	6.60	5.40	5.10	5.50	5.30	6.40	6.60
20	7.60	6.10	7.60	7.30	7.20	7.10	5.40	5.10	5.50	5.30	6.40	6.90
21	a7.50	6.10	7.70	7.30	7.20	7. 0	5.40	5.10	5.40	a6.00	6.40	8.40
22	7.40	6.20	7.70	a7.20	7.10	7.20	a5.50	5.10	5.40	6.70	6.30	8.10
23	7.30	6.40	7.70	7.10	7.00	6.90	5.60	5.20	a5.40	6.90	6.30	a7.85
24	7.20	6.40	7.60	7.00	7.00	a6.75	5.60	5 20	5.40	6.80	6.30	7.60
25	7.10	a6.35	a7.60	6.90	6.90	6.60	5.60	5.30	5.40	6.60	a6.40	7.40
26	7.00	6.30	7.60	6.90	7.10	6.50	5.60	5.40	5.40	6.40	6.50	7.20
27	6.90	6.30	7.50	6.80	7.05	6.40	5.50	5.50	5.40	6.20	6.50	7.10
28	a6.85	6.20	7.40	6.70	7.00	6.30	5.50	5.40	5.30	6.10	6.40	6.90
29	6.80	.....	7.20	a6.75	6.80	6.30	5.50	5.30	5.30	6.00	6.30	6.80
30	6.80	.....	7.20	6.80	6.70	6.20	5.50	5.20	5.30	6.00	6.30	a6.60
31	6.70	.....	7.30	.....	6.60	.....	.....	5.20	.....	5.90	.....	6.40

a Estimated.

YAKIMA RIVER AT UNION GAP, WASHINGTON.

This river has its source in Keechelus Lake, on the eastern slope of the Cascade Mountains, in Kittitas County, Washington. A short distance down it receives the waters of Kachess Lake, and 2½ miles above Clealum it receives the outlet of the last of the three large headwater lakes, namely Lake Clealum. The valley of the river is comparatively narrow until the vicinity of Ellensburg, where considerable irrigation is practiced, is reached. There it widens, and at the lower end of that valley it enters a canyon 20 miles long. After entering Yakima County it flows into Selah Valley, a plain 4 miles in length, at the lower end of which it passes through a narrow gap to enter Yakima Valley. This section is extensively irrigated, being served principally by canals from Naches River. Six miles below North Yakima the river passes through what is known as Union Gap, and then enters its lower valley—comprising the Parker and Sunnyside districts and the Yakima Indian Reservation—which extends to Kiona. Yakima River enters Columbia River 23 miles below this point, and just above the town of Pasco.

The gaging station at Union Gap was established August 14, 1893. It is 6 miles below North Yakima, about 1,000 feet below the highway bridge, and about 3 miles above the head gate of the Sunnyside canal. The gage rod is inclined, and is attached to a willow stump and to posts set in the ground. The bench mark is the highest point of a large rock mound 25 feet north of the gage and 10 feet east of the fence, and is at an elevation of 17.52 feet above gage datum. The equipment consists of cable, car, and tagged wire. The station is of value in determining the amount of water available for the extensive irrigable lands below. The results of measurements will be found as follows: For 1896, Eighteenth Annual Report, Part IV, page 358; for 1897, Nineteenth Annual Report, Part IV, page 479; for 1898, Twentieth Annual Report, Part IV, page 500; for 1899, Twenty-first Annual Report, Part IV, page 427. During 1900 the following measurements of discharge were made by Sydney Arnold:

May 25: Gage height, 6.45 feet; discharge, 4,728 second-feet.
May 30: Gage height, 6.20 feet; discharge, 4,110 second-feet.
August 1: Gage height, 4.40 feet; discharge. 1,051 second-feet.
September 1: Gage height, 4.40 feet; discharge, 1,066 second-feet.

Daily gage height, in feet, of Yakima River at Union Gap, Washington, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.2	6.5	6.0	7.2	6.7	6.0	5.6	4.4	4.4	4.5	5.9	6.4
2	7.1	6.4	6.0	7.4	6.9	6.0	5.5	4.4	4.3	4.4	5.9	6.4
3	6.8	6.3	6.0	7.9	7.1	6.0	5.5	4.4	4.2	4.4	6.1	6.5
4	6.7	6.2	6.0	8.0	7.8	6.1	5.4	4.3	4.2	4.4	6.2	6.6
5	6.6	6.2	6.0	8.1	8.2	6.2	5.4	4.3	4.3	4.4	6.3	6.9
6	6.5	6.1	6.1	7.9	8.3	6.1	5.3	4.3	4.3	4.4	6.3	8.9
7	6.4	6.1	6.2	8.3	8.2	6.2	5.3	4.2	4.3	4.5	6.3	9.1
8	6.4	6.0	6.3	8.6	8.1	6.2	5.2	4.2	4.4	4.5	6.3	8.7
9	6.3	6.0	6.4	8.4	8.0	6.3	5.2	4.2	4.4	4.5	6.2	8.2
10	6.2	6.0	6.5	8.0	8.0	6.4	5.1	4.2	4.4	4.4	6.2	7.8
11	9.2	6.2	6.6	7.8	8.0	6.2	5.0	4.3	4.4	4.4	6.1	7.4
12	10.7	6.2	7.0	7.6	8.0	6.2	5.0	4.3	4.4	4.4	6.0	7.1
13	9.6	6.1	8.0	7.5	7.8	6.1	4.9	4.2	4.4	4.4	6.0	7.0
14	10.7	6.1	8.4	7.5	7.6	6.2	4.9	4.2	4.4	4.4	5.9	6.9
15	10.7	6.0	8.5	7.4	7.4	6.1	4.9	4.1	4.4	4.3	5.8	6.8
16	9.6	5.9	8.3	7.4	7.3	6.1	4.8	4.1	4.5	4.3	5.7	6.8
17	9.0	5.9	8.1	7.3	7.3	6.1	4.8	4.1	4.5	4.3	5.7	6.9
18	8.5	5.9	8.0	7.4	7.1	6.1	4.8	4.1	4.5	4.3	5.9	6.8
19	8.2	5.8	8.1	7.4	7.0	6.1	4.7	4.1	4.5	4.5	6.0	6.7
20	8.1	5.9	8.2	7.3	6.9	6.2	4.7	4.1	4.4	4.6	6.0	6.6
21	8.0	5.9	8.3	7.3	6.8	6.3	4.7	4.1	4.4	5.1	5.9	7.8
22	7.8	6.2	8.2	7.3	6.8	6.5	4.7	4.0	4.4	6.2	5.7	8.3
23	7.4	6.2	8.2	7.1	6.7	6.4	4.7	4.0	4.5	7.1	5.8	8.0
24	7.2	6.2	8.1	6.9	6.6	6.2	4.6	4.0	4.6	6.9	5.8	7.6
25	7.1	6.2	7.9	6.8	6.5	6.1	4.6	4.0	4.7	6.8	5.9	7.4
26	7.0	6.2	7.8	6.6	6.5	6.1	4.6	4.2	4.7	6.6	5.9	7.2
27	6.9	6.2	7.6	6.5	6.5	6.0	4.6	4.3	4.6	6.4	6.0	7.0
28	6.7	6.1	7.5	6.5	6.5	5.9	4.5	4.5	4.6	6.2	6.0	6.6
29	6.6	.....	7.4	6.6	6.4	5.8	4.5	4.5	4.6	6.1	5.9	6.4
30	6.6	.....	7.3	6.7	6.2	5.7	4.5	4.5	4.5	6.0	5.9	6.4
31	6.5	.....	7.3	.....	6.1	.....	4.5	4.4	.....	5.9	.....	6.3

YAKIMA RIVER AT KIONA, WASHINGTON.

This station, established August 20, 1895, is on the highway bridge at Kiona. It is described in Water-Supply Paper No. 38, page 375. Results of measurements will be found as follows: For 1896, Eighteenth Annual Report, Part IV, page 359; for 1897, Nineteenth Annual Report, Part IV, page 484; for 1898, Twentieth Annual Report, Part IV, page 502; for 1899, Twenty-first Annual Report, Part IV, page 428. During 1900 the following discharge measurements were made by Sydney Arnold:

May 5: Gage height, 8.56 feet; discharge, 8,312 second-feet.
May 28: Gage height, 6.70 feet; discharge, 4,450 second-feet.
June 7: Gage height, 6.63 feet; discharge, 4,351 second-feet.
June 29: Gage height, 5.60 feet; discharge, 2,987 second-feet.

Daily gage height, in feet, of Yakima River at Kiona, Washington, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.50	6.94	6.43	7.96	7.32	6.14	5.55	3.63	3.59	4.14	5.50	7.24
2	8.02	6.78	6.37	8.03	7.70	6.00	5.43	3.63	3.59	4.20	5.63	7.55
3	7.88	6.68	6.29	8.70	7.98	6.00	5.30	3.63	3.56	4.15	5.75	7.70
4	7.51	6.57	6.33	9.06	8.30	6.10	5.18	3.63	3.55	4.13	5.90	8.00
5	7.28	6.54	6.45	9.00	8.56	6.20	5.05	3.56	3.58	4.10	6.03	8.25
6	7.14	6.38	6.41	8.92	8.60	6.33	4.94	3.53	3.60	4.06	6.20	10.20
7	7.00	6.39	6.38	8.89	8.73	6.41	4.86	3.50	3.62	4.05	6.35	10.93
8	6.91	6.40	6.35	9.55	8.83	6.48	4.80	3.43	3.62	4.03	6.46	10.90
9	6.89	6.32	6.99	9.70	8.92	6.55	4.80	3.73	3.62	4.05	6.55	10.70
10	6.80	6.28	7.09	9.43	8.90	6.50	4.78	3.40	3.63	4.02	6.64	10.25
11	6.72	6.27	7.36	9.03	8.70	6.53	4.70	3.35	3.60	4.00	6.70	9.45
12	6.70	6.50	8.10	8.60	8.65	6.46	4.63	3.40	3.54	3.95	6.76	9.10
13	7.16	6.71	9.27	8.36	8.55	6.30	4.50	3.45	3.49	3.95	6.76	8.75
14	11.50	6.60	9.75	8.35	8.32	6.20	4.50	3.30	3.55	4.04	6.80	8.40
15	12.24	6.56	9.80	8.36	8.13	6.13	4.48	3.28	3.60	4.10	6.86	8.25
16	11.49	6.26	9.50	8.22	7.82	6.00	4.48	3.26	3.61	4.18	6.95	8.20
17	10.52	5.30	9.35	8.07	7.70	5.95	4.40	3.26	3.62	4.26	6.87	8.15
18	9.80	5.90	9.20	8.00	7.70	5.98	4.35	3.20	3.87	4.40	6.80	8.10
19	9.49	6.24	9.12	7.95	7.50	6.00	4.25	3.18	3.80	4.52	6.73	8.16
20	9.30	6.34	9.20	8.03	7.20	6.00	4.24	3.25	3.76	4.55	6.75	8.20
21	9.12	6.33	9.25	8.12	7.10	6.10	4.21	3.15	3.71	4.60	6.80	8.20
22	8.94	6.42	9.20	7.93	7.18	6.05	4.16	3.11	3.63	4.72	6.80	10.20
23	8.68	6.84	9.15	7.70	7.05	6.00	4.10	3.06	3.75	4.78	6.85	10.40
24	8.51	6.86	9.20	7.60	6.85	6.00	4.03	3.05	3.82	4.85	6.85	10.30
25	8.10	6.78	9.08	7.30	6.80	6.00	3.95	3.10	3.90	4.92	6.85	10.05
26	7.84	6.70	8.80	7.25	6.74	6.03	3.95	3.20	3.92	5.02	6.81	9.32
27	7.57	6.62	8.90	7.00	6.65	5.93	3.90	3.25	3.98	5.16	6.90	9.00
28	7.36	6.48	8.73	6.95	6.56	5.80	3.88	3.65	4.05	5.20	7.08	8.75
29	7.16	.....	8.50	6.80	6.40	5.63	3.88	3.65	4.10	5.26	7.06	8.32
30	7.05	.....	8.20	6.93	6.33	5.55	3.85	3.68	4.14	5.32	6.96	8.20
31	7.05	.....	8.10	.....	6.25	.....	3.78	3.64	.....	5.40	.....	8.00

MISCELLANEOUS DISCHARGE MEASUREMENTS IN YAKIMA COUNTY, WASHINGTON.

During the year Mr. Sydney Arnold made miscellaneous discharge measurements of a number of streams in Yakima County, Washington, as described in the following table:

Miscellaneous discharge measurements in Yakima County, Washington.

Date.	Stream.	Locality.	Discharge.
1900.			*Sec.-feet.*
May 7	Wenas Creek	Sec. 33, T. 16 N., R. 17 E.	40
Do	do	Sec. 12, T. 15 N., R. 17 E.	35
July 28	Cowiche Creek	Sec. 36, T. 14 N., R. 16 E.	1
August 15	Atanum River, North Fork	Sec. 18, T. 12 N., R. 16 E.	17
August 24	do	Sec. 12, T. 12 N., R. 15 E.	24
Do	Atanum River, South Fork	Sec. 32, T. 12 N., R. 15 E.	9
August 18	Klickitat River, Gold Fork	Near mouth	48
Do	Klickitat River, Diamond Fork	do	114

PALOUSE RIVER NEAR HOOPER, WASHINGTON.

This station, established September 9, 1897, is opposite the water tank of the railroad company near Hooper. It is described in Water-Supply Paper No. 38, page 360. The discharge measurements are made from a car suspended from a light steel cable about 50 feet above the gage. Results of measurements will be found as follows: For 1897, Nineteenth Annual Report, Part IV, page 460; for 1898, Twentieth Annual Report, Part IV, page 489; for 1899, Twenty-first

Annual Report, Part IV, page 414. During 1900 one discharge measurement was made by Sydney Arnold, as follows:

June 6: Gage height, 2.95 feet; discharge, 233 second-feet.

Daily gage height, in feet, of Palouse River near Hooper, Washington, for 1900.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.80	3.70	3.30	1.90	1.55	1.40	1.35	2.60	3.00
2	4.50	3.65	3.25	1.90	1.55	1.40	1.40	2.50	3.20
3	4.40	3.60	3.20	1.90	1.55	1.35	1.50	2.45	3.40
4	4.30	3.50	3.10	1.90	1.55	1.35	1.70	2.40	3.40
5	4.45	3.45	3.00	1.90	1.50	1.30	1.75	2.80	3.70
6	4.70	3.40	2.90	1.90	1.50	1.30	1.80	3.20	4.10
7	4.60	3.40	2.80	1.80	1.50	1.35	1.90	3.10	4.30
8	5.00	3.50	2.80	1.75	1.50	1.40	2.00	3.00	4.50
9	4.70	3.40	2.80	1.75	1.45	1.45	2.10	1.80	4.60
10	4.60	3.35	2.70	1.75	1.45	1.45	2.15	1.70	4.50
11	4.50	3.35	2.60	1.70	1.45	1.46	2.15	1.60	4.30
12	4.20	3.30	2.55	1.70	1.45	1.40	2.15	1.50	4.10
13	4.10	3.25	2.50	1.70	1.45	1.40	2.10	1.50	3.90
14	3.90	3.20	2.45	1.70	1.45	1.40	2.10	1.40	3.70
15	4.00	3.55	2.45	1.70	1.40	1.40	2.10	1.40	3.60
16	4.30	3.70	2.40	1.70	1.40	1.45	2.10	1.30	3.80
17	4.00	3.90	2.35	1.70	1.40	1.45	2.10	1.40	3.90
18	3.80	4.30	2.30	1.70	1.40	1.45	2.15	1.45	4.20
19	3.70	4.60	2.30	1.70	1.40	1.45	2.15	1.50	4.60
20	3.50	4.20	2.30	1.70	1.40	1.45	2.10	1.40	4.95
21	3.50	3.90	2.30	1.65	1.40	1.45	2.30	1.30	5.30
22	3.50	3.70	2.45	1.65	1.40	1.45	2.35	1.40	5.50
23	3.35	3.60	2.40	1.65	1.40	1.50	2.50	1.50	5.70
24	3.20	3.60	2.30	1.65	1.40	1.50	2.60	1.70	6.40
25	3.10	3.65	2.10	1.65	1.40	1.35	2.70	1.70	5.90
26	3.00	3.60	2.10	1.65	1.40	1.30	2.75	1.80	5.60
27	3.25	3.50	2.05	1.60	1.40	1.25	2.80	1.90	5.20
28	3.30	3.40	2.00	1.55	1.40	1.25	2.80	2.60	4.90
29	3.30	3.50	2.00	1.55	1.40	1.25	2.80	3.40	4.60
30	3.40	3.50	1.90	1.55	1.40	1.30	2.70	3.10	4.00
31	.....	3.40	.....	1.55	1.40	.....	2.60	.....	3.80

UMATILLA RIVER AT GIBBON, OREGON.

This station, established July 26, 1896, is a half mile west of the railroad station. It is described in Water-Supply Paper No. 38, page 376. Results of measurements will be found as follows: For 1896, Eighteenth Annual Report, Part IV, page 361; for 1897, Nineteenth Annual Report, Part IV, page 493; for 1898, Twentieth Annual Report, Part IV, page 515. There were no measurements of discharge made at this station in 1899 and 1900.

Daily gage height, in feet, of Umatilla River at Gibbon, Oregon, for 1900.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	2.70	1.00	0.50	0.30	0.50	0.65	2.00	2.40
2	.....	2.90	.90	.45	.30	.50	.70	2.00	2.50
3	.....	2.90	.85	.45	.30	.50	.70	2.05	2.70
4	.....	2.90	.80	.45	.30	.45	.75	2.10	3.00
5	.....	3.00	.80	.45	.30	.45	1.20	2.00	3.50
6	.....	2.85	.75	.45	.30	.45	1.10	1.90	3.10
7	.....	2.70	.75	.45	.30	.45	1.00	1.85	2.85
8	.....	2.40	.70	.45	.40	.45	1.00	1.80	2.70
9	.....	2.30	.70	.40	.50	.45	1.00	1.70	2.50
10	.....	2.25	.65	.40	.40	.40	.90	1.65	2.35
11	.....	2.30	.65	.40	.40	.40	.85	1.55	2.25
12	.....	2.20	.65	.40	.35	.40	.85	1.50	2.05
13	.....	2.10	.65	.40	.35	.40	.80	1.40	1.95
14	.....	2.00	.65	.35	.35	.40	.80	1.35	1.90
15	3.90	1.95	.70	.35	.30	.45	.80	1.25	1.90
16	3.90	2.35	.70	.35	.30	.45	.75	1.25	1.95
17	3.80	2.20	.65	.35	.30	.45	.75	1.20	1.95
18	3.60	2.10	.65	.35	.30	.50	.75	1.20	1.95
19	3.45	1.95	.65	.35	.30	.50	.80	1.20	2.00
20	3.35	1.85	.65	.35	.30	.50	.85	1.25	2.10
21	3.20	1.75	.65	.35	.50	.50	.90	1.25	2.95
22	3.05	1.65	.60	.35	.40	.55	.90	1.30	2.85
23	2.90	1.60	.60	.35	.40	.55	1.00	1.30	2.80
24	2.80	1.55	.55	.30	.90	1.00	1.05	1.35	2.70
25	2.65	1.45	.55	.30	1.50	1.00	1.15	1.80	2.60
26	2.55	1.45	.55	.30	1.00	.95	1.20	1.80	2.40
27	2.45	1.35	.50	.30	.80	.85	1.20	1.75	2.30
28	2.35	1.25	.50	.30	.50	.85	1.30	1.65	2.15
29	2.25	1.15	.50	.30	.50	.75	1.40	1.65	1.95
30	2.45	1.10	.50	.30	.50	.70	1.60	2.10	1.80
31	.....	1.05	.....	.30	.50	.....	2.00	.....	1.80

DESCHUTES RIVER AT MORO, OREGON.

This station was established October 19, 1897, being 3 miles above what is known as the Free Bridge, and 16 miles east of The Dalles. It is described in Water-Supply Paper No. 38, page 377. Results of measurements for 1898 and 1899 will be found in the Twenty-first Annual Report, Part IV, page 433. The station was discontinued December 31, 1899.

HOOD RIVER AT TUCKER, OREGON.

This station, established October 20, 1897, is 5 miles south of Hood-river, Oregon. It is described in Water-Supply Paper No. 38, page 380. Results of measurements for 1898 and 1899 will be found in the Twenty-first Annual Report, Part IV, page 435. The station was discontinued December 31, 1899.

WHITE RIVER NEAR BUCKLEY, WASHINGTON.

This station, established April 22, 1899, is at the new highway bridge 500 feet above the Northern Pacific Railroad bridge and a half mile north of the town of Buckley. It is described in Water-Supply Paper No. 38, page 381. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 437. Dur-

ing 1900 the following measurements of discharge were made by Sydney Arnold:

May 22: Gage height, 1.73 feet; discharge, 1,826 second-feet.
June 1: Gage height, 1.55 feet; discharge, 1,560 second-feet.
June 28: Gage height, 1.88 feet; discharge, 2,156 second-feet.

Daily gage height, in feet, of White River near Buckley, Washington, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.30	1.30	1.55	1.70	1.60	1.55	1.60	1.30	0.90	0.55	1.75	2.45
2	2.10	1.25	1.55	2.05	1.75	1.55	1.55	1.20	.85	.55	2.80	2.15
3	2.05	1.30	1.55	2.05	1.90	1.60	1.55	1.15	.85	.50	2.20	2.75
4	1.75	1.25	1.50	1.95	2.15	1.60	1.60	1.10	.85	.50	1.75	3.50
5	1.75	1.25	1.50	1.80	2.50	2.15	1.70	1.10	.80	.50	1.60	4.33
6	1.75	1.35	1.45	2.05	2.25	1.90	1.90	1.05	.80	.50	1.45	3.75
7	1.70	1.30	1.60	2.40	2.15	1.80	1.80	1.00	.80	.45	1.35	2.75
8	1.75	1.30	1.80	2.10	2.40	1.90	1.70	1.00	1.00	.45	1.30	2.25
9	1.65	1.40	1.95	1.95	2.35	1.75	1.60	1.00	1.00	.45	1.30	1.95
10	2.00	1.55	2.15	1.80	2.35	1.65	1.55	.95	.90	.60	1.20	1.75
11	2.25	2.30	3.20	1.70	2.30	1.60	1.55	.95	.90	.55	1.10	1.65
12	5.50	2.05	3.30	1.60	2.15	1.60	1.50	.95	.85	.55	1.10	1.60
13	5.20	1.75	2.75	1.75	2.05	1.70	1.50	1.05	.85	.55	1.10	1.40
14	3.38	1.50	2.40	1.70	1.95	1.75	1.40	1.05	.75	.65	1.10	1.65
15	2.90	1.50	2.30	1.95	1.80	1.75	1.35	1.00	.70	.60	1.05	1.60
16	2.70	1.40	2.15	1.95	2.20	1.65	1.35	.90	.65	.55	1.05	1.85
17	2.55	1.35	2.05	1.85	2.05	1.60	1.40	.85	.60	.55	1.25	1.60
18	2.50	1.35	2.05	1.75	1.85	1.55	1.30	.85	.55	.75	1.30	1.50
19	2.50	1.30	2.00	1.75	1.80	1.90	1.30	.85	.55	1.00	1.15	1.45
20	2.25	1.25	1.95	1.70	1.80	2.60	1.30	1.00	.55	1.35	.95	2.50
21	2.10	2.18	1.95	1.60	1.80	3.10	1.40	1.00	.55	2.38	.70	2.90
22	1.85	2.25	1.95	1.55	1.70	2.70	1.40	.90	.55	2.60	1.00	2.45
23	1.70	2.05	1.80	1.45	1.60	2.35	1.35	1.05	1.25	1.90	1.10	2.05
24	1.63	1.80	1.65	1.40	1.55	2.10	1.40	1.20	.95	1.70	1.10	1.95
25	1.55	1.70	1.75	1.40	1.55	2.20	1.50	2.58	.85	2.75	1.85	1.85
26	1.55	1.65	1.70	1.35	2.10	2.35	1.40	1.50	.75	2.10	1.95	1.80
27	1.50	1.60	1.60	1.30	1.85	2.10	1.30	1.25	.60	1.70	1.65	1.65
28	1.60	1.60	1.50	1.25	1.85	1.85	1.20	1.15	.60	1.50	1.55	1.60
29	1.50	.....	1.50	1.25	1.75	1.75	1.15	1.00	.60	1.35	1.75	1.60
30	1.35	.....	1.55	1.25	1.65	1.70	1.20	.90	.60	1.35	2.00	1.45
31	1.35	.....	1.55	.....	1.60	.....	1.30	.90	.....	1.95	.....	1.30

DUNGENESS RIVER AT DUNGENESS, WASHINGTON.

This station as originally established, July 5, 1897, was 9 miles above the mouth of the river. On July 29, 1898, it was moved to the bridge 8½ miles downstream, or near the mouth. Owing to the formation of a sandbar under the rod, the gage was moved July 3, 1900, to another part of the bridge. In its present location the zero end of the rod is exactly opposite the center of the third vertical iron brace from the northwest end of the bridge. The length of the wire gage cable is 24 feet and 11 inches. The station is described in Water-Supply Paper No. 38, page 383. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 438. During 1900 the following measurements of discharge were made by W. J. Ware:

Discharge measurements of Dungeness River at Dungeness, Washington.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-feet.*	1900.	*Feet.*	*Sec.-feet.*
February 22	3.80	324	August 31	3.40	249
March 22	4.20	710	September 24	3.55	274
April 30	4.00	456	October 20	3.95	418
June 2	4.30	483	November 30	3.90	450
July 4	4.50	566	December 24	4.95	880

Daily gage height, in feet, of Dungeness River at Dungeness, Washington, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.40	3.90	3.50	4.45	4.10	4.30	4.50	4.25	3.50	3.15	3.60	4.30
2	4.35	3.85	3.50	4.50	4.20	4.30	4.35	4.20	3.50	3.15	3.55	4.50
3	4.20	3.80	3.45	5.00	4.30	4.40	4.50	4.20	3.50	3.10	3.50	4.80
4	4.10	3.80	3.45	5.50	4.50	5.00	4.60	4.20	3.45	3.10	3.50	5.05
5	4.00	3.75	3.40	5.90	4.70	5.60	4.80	4.15	3.45	3.05	3.45	5.25
6	3.90	3.70	3.35	5.85	5.00	4.40	4.65	4.10	3.40	3.00	3.45	5.25
7	4.50	3.60	3.30	5.80	5.10	4.50	4.50	4.00	3.40	3.05	3.40	5.25
8	5.10	3.55	4.20	4.80	5.25	4.55	4.45	3.90	3.40	3.00	3.40	5.30
9	5.15	3.60	6.60	4.75	5.25	4.60	4.40	3.85	3.35	3.00	3.40	5.50
10	5.20	3.60	9.05	4.75	5.10	4.65	4.40	3.80	3.35	3.05	3.40	5.80
11	5.25	3.60	11.00	4.70	5.00	4.70	4.40	3.75	3.30	3.05	3.45	6.00
12	5.25	3.60	9.10	4.65	4.90	4.80	4.35	3.75	3.30	3.10	3.45	6.20
13	5.35	3.55	7.30	4.60	4.80	4.80	4.30	3.70	3.30	3.10	3.50	6.40
14	5.50	3.55	6.20	4.50	4.70	4.90	4.25	3.70	3.25	3.10	3.50	6.60
15	5.20	3.60	5.00	4.40	4.65	4.90	4.30	3.65	3.30	3.05	3.45	7.00
16	5.00	3.60	4.80	4.30	4.60	5.05	4.30	3.60	3.25	3.00	3.40	7.20
17	4.50	3.55	4.70	4.25	4.60	5.20	4.35	3.65	3.20	3.10	3.30	6.80
18	4.40	3.55	4.60	4.20	4.55	5.50	4.40	3.60	3.15	3.20	3.30	6.60
19	4.30	3.55	4.50	4.20	4.55	6.00	4.40	3.60	3.10	4.00	3.35	5.70
20	4.25	3.60	4.45	4.15	4.50	7.10	4.45	3.60	3.20	4.20	3.35	11.30
21	4.25	3.60	4.40	4.10	4.45	6.20	4.45	3.65	3.30	4.30	3.40	7.30
22	4.25	3.65	4.30	4.00	4.40	5.45	4.50	3.65	3.40	4.25	3.40	5.70
23	4.25	3.65	4.20	3.95	4.30	5.30	4.50	3.70	3.50	4.20	3.45	5.20
24	4.20	3.70	4.10	3.90	4.20	5.20	4.40	3.70	3.55	4.15	3.50	4.90
25	4.20	3.65	4.00	3.90	4.10	5.10	4.35	3.80	3.50	4.10	3.60	4.80
26	4.20	3.65	3.95	3.95	4.05	5.00	4.25	3.75	3.45	4.00	3.70	4.65
27	4.15	3.60	3.90	3.95	4.00	4.95	4.20	3.75	3.35	3.90	3.80	4.50
28	4.10	3.55	3.90	4.00	4.05	4.90	4.20	3.60	3.30	3.85	3.90	4.05
29	4.10	.....	4.15	4.00	4.10	4.80	4.20	3.60	3.20	3.80	4.00	4.00
30	4.05	.....	4.20	4.00	4.15	4.75	4.20	3.55	3.20	3.70	4.15	3.90
31	4.00	.....	4.30	.....	4.25	.....	4.20	3.50	.....	3.65	.....	3.85

ELWHA RIVER AT McDONALD, WASHINGTON.

This station, established October 8, 1897, is at the new county bridge 9 miles southwest of Port Angeles. It is described in Water-Supply Paper No. 38, page 384. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 439. During 1900 the following measurements of discharge were made by W. J. Ware:

Discharge measurements of Elwha River at McDonald, Washington.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-feet.*	1900.	*Feet.*	*Sec.-feet.*
March 15	4.40	3,277	July 20	3.07	1,207
April 28	2.74	1,109	August 22	2.33	645
May 31	3.05	1,261	October 30	3.30	1,471
June 27	3.80	1,677	November 29	3.46	1,807

Daily gage height, in feet, of Elwha River at McDonald, Washington, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.58	2.81	2.59	3.15	3.06	3.08	3.41	3.06	2.29	1.90	3.19	4.02
2	3.40	3.02	2.40	3.15	3.50	3.14	2.80	3.10	2.22	1.74	3.20	4.26
3	3.29	3.26	2.33	3.37	3.74	3.33	2.46	2.95	2.21	1.76	3.18	4.80
4	3.20	2.78	2.30	3.30	3.87	4.10	3.53	2.60	2.16	1.85	3.09	5.67
5	4.05	2.75	2.25	3.28	3.96	5.05	3.50	2.76	2.07	1.72	2.96	6.01
6	3.90	2.70	2.28	6.66	3.90	3.90	3.15	2.66	2.22	1.69	2.64	5.02
7	5.30	2.72	2.54	5.20	4.12	3.76	3.14	2.66	2.28	1.55	2.74	4.20
8	5.35	2.60	3.33	4.19	4.15	3.65	3.00	2.57	2.40	1.48	3.15	3.90
9	5.38	2.55	5.54	3.95	3.80	3.59	3.08	2.57	2.33	1.50	2.86	3.60
10	4.17	2.52	7.90	3.80	3.71	3.65	3.04	2.68	2.21	1.72	2.70	3.58
11	3.87	2.35	11.10	3.55	3.80	3.60	3.14	2.56	2.17	1.88	2.65	3.34
12	6.67	2.32	6.50	3.50	3.82	3.45	3.43	2.63	2.05	1.81	2.70	4.22
13	5.60	2.25	5.15	3.39	3.55	3.64	3.05	2.70	1.97	1.79	2.88	4.24
14	4.40	2.19	4.66	3.36	3.30	4.00	2.94	2.75	1.95	2.65	2.90	5.05
15	4.15	2.19	4.40	3.20	3.28	4.10	3.04	2.74	2.02	2.03	2.95	4.84
16	3.92	2.20	4.42	3.18	3.89	4.16	3.03	2.82	2.00	1.94	3.56	7.89
17	3.90	2.23	4.38	3.19	3.53	3.69	3.00	2.80	1.88	2.03	4.65	5.65
18	3.86	2.26	4.12	3.36	3.45	3.63	2.98	2.82	1.85	3.02	3.60	5.20
19	3.70	2.50	3.95	3.35	3.39	5.50	2.95	2.69	2.08	3.23	3.34	6.55
20	3.50	2.60	3.80	3.12	3.20	7.75	3.07	2.56	2.17	2.98	2.95	9.90
21	3.40	3.20	3.78	3.09	3.00	5.54	3.17	2.55	2.12	5.67	2.87	7.20
22	3.59	3.34	3.75	2.90	2.92	4.82	3.22	2.33	2.42	5.55	3.36	6.22
23	4.15	2.60	3.72	2.84	2.98	4.40	3.42	3.10	2.95	3.55	2.90	5.22
24	3.58	2.48	3.69	2.85	3.63	4.33	3.22	2.50	2.51	3.03	3.04	4.88
25	3.48	2.30	3.79	2.83	3.75	4.18	3.05	3.15	2.05	5.53	5.40	5.08
26	3.27	2.60	3.90	2.80	4.20	3.98	2.96	2.44	1.96	3.40	4.38	4.35
27	2.98	2.61	3.42	2.76	3.62	3.80	2.80	2.42	1.92	3.14	3.45	4.08
28	2.97	2.70	3.25	2.74	3.40	3.71	2.72	2.12	1.89	3.21	3.90	3.90
29	2.86	.....	3.19	2.68	3.25	3.64	2.77	2.23	1.88	3.24	3.46	3.73
30	2.80	.....	3.16	2.63	3.09	3.59	2.45	2.32	1.88	3.30	4.34	3.47
31	2.81	.....	3.17	.....	3.05	.....	2.72	2.30	.....	3.40	.....	3.34

CALOWA RIVER NEAR FORKS, WASHINGTON.

This station, established November 12, 1897, is at the county highway bridge in the southwestern part of Clallam County, near Forks, Washington. It is described in Water-Supply Paper No. 38, page 386. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 441. During 1900 the following measurements of discharge were made by W. J. Ware:

March 2: Gage height, 2.85 feet; discharge, 1,234 second-feet.
May 27: Gage height, 3.50 feet; discharge, 1,608 second-feet.
July 26: Gage height, 1.20 feet; discharge, 295 second-feet.
December 15: Gage height, 6.70 feet; discharge, 4,496 second-feet.

Daily gage height, in feet, of Calowa River near Forks, Washington, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.85	2.05	3.00	1.65	0.60	1.40	1.85	0.40	0.02	0.00	5.20	4.85
2	3.20	2.70	2.85	1.65	.65	1.20	1.80	.40	.02	.05	5.40	4.85
3	3.85	2.25	2.60	1.60	.65	1.20	1.60	.45	.02	.00	5.60	4.25
4	4.00	2.25	2.45	1.65	.65	4.05	1.65	.45	.03	—.05	5.05	4.40
5	5.60	2.20	2.20	2.25	.80	4.70	1.80	.45	.03	—.05	5.25	4.45
6	9.20	2.05	4.00	3.45	1.25	3.20	1.60	.40	.03	.00	5.20	4.60
7	7.85	3.05	5.40	4.65	1.40	2.80	1.40	.40	.03	—.05	4.00	4.65
8	6.30	2.70	4.60	3.85	1.05	2.20	1.40	.25	.03	—.05	3.05	4.80
9	5.45	3.05	14.80	3.20	1.85	2.00	1.45	.25	.03	—.05	2.20	4.20
10	5.85	3.65	14.40	2.65	1.80	1.65	1.25	.20	.03	.00	2.30	4.40
11	5.25	3.20	13.40	2.45	1.60	1.60	1.80	.20	.03	—.05	2.25	4.00
12	10.20	3.05	7.00	2.40	1.65	1.45	1.40	.20	.03	—.05	2.05	4.20
13	7.45	2.40	4.65	2.05	1.65	1.25	1.65	.20	.03	1.00	2.05	4.40
14	5.20	2.25	3.85	2.00	1.60	1.20	1.45	.20	.02	3.00	2.20	6.25
15	4.25	2.20	3.45	1.85	2.00	1.05	1.40	.05	.02	2.00	2.40	7.05
16	5.00	2.05	3.45	1.80	2.00	1.05	1.25	.05	—.30	.65	2.45	10.30
17	4.45	3.60	2.60	1.60	1.80	1.00	1.20	.05	—.40	.60	2.46	7.40
18	4.85	3.85	2.40	1.65	1.80	1.20	1.05	.05	—.40	4.45	2.25	5.45
19	4.85	4.00	2.20	1.45	1.60	3.45	1.00	.05	—.05	3.25	2.40	5.00
20	4.65	4.20	2.05	1.40	2.25	8.80	1.00	.05	—.05	3.00	2.45	4.85
21	5.00	6.45	2.05	1.25	1.80	5.45	.85	.05	.00	10.00	2.60	5.45
22	5.60	7.15	2.00	1.25	1.25	3.80	.80	.00	1.00	6.15	2.65	8.50
23	6.40	7.00	2.80	1.20	1.45	3.20	1.80	.05	1.05	5.45	3.00	8.00
24	5.00	6.45	2.60	1.05	3.50	2.80	1.65	.20	.25	7.80	4.25	7.20
25	4.00	4.45	2.60	1.05	.....	2.25	1.25	1.45	.45	6.50	13.80	6.30
26	3.40	3.05	2.60	1.00	4.20	2.00	1.20	.60	.40	5.80	7.15	5.00
27	3.00	3.05	2.25	1.00	3.50	1.85	1.65	1.05	.25	5.00	6.25	4.25
28	3.45	3.20	2.20	1.85	2.85	1.80	.65	.65	.20	6.00	6.00	3.80
29	2.45	.....	2.05	.80	2.20	1.80	.45	.30	.05	7.15	5.80	4.00
30	2.25	.....	2.00	.65	1.85	1.85	.45	.09	.00	6.30	5.45	3.00
31	2.20	.....	1.80	.....	1.60	.....	.45	.05	.....	5.20	.....	2.80

SOLEDUCK RIVER NEAR QUILLAYUTE, WASHINGTON.

This station was established November 13, 1897, at the county highway bridge 9 miles northeast of Lapush, near Quillayute. On March 31, 1900, it was discontinued temporarily, on account of the destruction of the bridge to make room for a new one. The new bridge was completed on December 23, 1900, and observations of river heights were resumed on that date. The length of the cable of the new gage is 45 feet. The distance from the inside of the pulley wheel to the end of the rod is 49 inches. The station is described in Water-Supply Paper No. 38, page 386. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 443. During 1900 the following measurements of discharge were made by W. J. Ware:

March 2: Gage height, 4.40 feet; discharge, 1,321 second-feet.
July 25: Discharge, 550 second-feet.
December 14: Gage height, 8.70 feet; discharge, 5,964 second-feet.

The measurement on July 25 was made 6 miles above the station.

Daily gage height, in feet, of Soleduck River near Quillayute, Washington, for 1900.

Day.	Jan.	Feb.	Mar.	Dec.	Day.	Jan.	Feb.	Mar.	Dec.
1	5.45	4.00	4.45		17	5.70	4.10	5.40	
2	5.20	4.10	4.40		18	5.80	4.10	5.10	
3	5.10	4.20	4.30		19	5.65	4.15	4.95	
4	4.95	4.10	4.10		20	5.50	4.60	4.70	
5	4.70	3.95	3.90		21	5.60	5.20	4.50	
6	6.40	4.15	3.80		22	6.25	6.40	4.40	
7	6.90	4.25	4.90		23	7.10	5.80	4.35	9.70
8	8.10	4.20	6.50		24	6.45	5.10	4.20	8.30
9	7.50	4.40	9.60		25	5.80	4.90	4.20	7.60
10	7.00	4.65	12.80		26	5.20	4.65	4.15	8.10
11	6.20	4.80	13.60		27	5.10	4.40	4.10	7.40
12	7.50	4.60	10.40		28	4.85	4.50	4.10	6.85
13	8.40	4.20	7.50		29	4.55		4.00	6.60
14	7.10	4.10	6.85	8.70	30	4.20		3.95	6.25
15	6.50	3.90	5.90		31	4.10		3.80	6.00
16	5.80	3.95	5.65						

Note.—No record from April 1 to December 22; new bridge being erected.

MISCELLANEOUS DISCHARGE MEASUREMENTS IN NORTHWESTERN WASHINGTON.

During the year William J. Ware made miscellaneous discharge measurements of a number of streams in northwestern Washington, as follows:

Miscellaneous discharge measurements in northwestern Washington.

Date.	Stream.	Locality.	Discharge.
1900.			*Sec.-feet.*
September 10	Morse River	Near Port Angeles	51
March 15	Little River	Near McDonald	174
May 31	do	do	68
June 27	do	do	54
July 20	do	do	28
August 22	do	do	20
October 30	do	do	52
December 17	Pysht River	Nine miles above mouth	262
July 30	Clallam River	Four miles above mouth	8
December 17	do	Two and one-half miles above mouth.	335

SACRAMENTO RIVER AT JELLYS FERRY, CALIFORNIA.

This station, established April 30, 1895, is 12 miles above the town of Redbluff, at the crossing of the county bridge at Jellys Ferry. It is described in Water-Supply Paper No. 38, page 387. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 446. During 1900 the following measurements of discharge were made under the direction of J. B. Lippincott:

February 17: Gage height, 6.80 feet; discharge, 8,374 second-feet.
April 29: Gage height, 7.10 feet; discharge, 9,586 second-feet.
May 29: Gage height, 6.40 feet; discharge, 7,173 second-feet.
September 20: Gage height, 5 feet; discharge, 4,105 second-feet.
December 18: Gage height, 10 feet; discharge, 18,361 second-feet.

Daily gage height, in feet, of Sacramento River at Jellys Ferry, California, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	19.5	7.4	8.1	7.7	7.2	6.1	5.4	4.9	4.9	4.9	5.9	6.9
2	25.0	7.4	8.0	9.0	7.2	6.1	5.4	4.9	4.9	4.9	5 8	6.8
3	31.1	7.4	8.6	9.9	7.3	6.0	5.4	4.9	4.9	5.9	5.6	6.6
4	18.5	8.1	9.8	8.5	7.2	6.0	5.3	4.9	4.8	6.9	5.6	6.5
5	17.0	7.6	10.2	8.1	10.7	5.9	5.3	4.9	5.6	11.2	5.6	6.4
6	19.0	7.5	11.0	7.9	8.8	5.9	5.3	4.9	5.2	6.7	5.5	6.3
7	19.0	7.4	15.7	8.6	8.3	5.8	5.3	4.9	5.1	5.6	5.5	6.3
8	18.5	7.3	29.0	8.0	8.0	5.8	5.2	4.9	5.1	5.5	5.5	6.2
9	15.4	7.3	20.3	7.8	7.7	5.7	5.2	4.9	5.1	5.3	5.5	6.2
10	13.6	7.1	16.4	7.6	7.5	5.7	5.2	4.9	5.0	5.3	5.4	6.2
11	12.3	7.0	14.3	7.5	8.6	5.7	5.2	4.9	5.0	5.2	5.4	6.1
12	11.6	7.0	13.1	9.6	8.3	5.7	5.1	4.9	5.0	5.2	5.4	6.0
13	10.9	6.9	12.2	9.7	7.9	5.6	5.1	4.9	5.0	5.2	5.4	6.0
14	10.3	6.8	11.3	9.0	7.5	5.6	5.1	4.9	5.0	5.1	5.3	9.9
15	11.1	6.7	11.0	8.7	7.4	5.6	5.1	4.9	5.0	5.1	5.3	8.6
16	10.8	6.9	10.4	8.3	7.2	5.8	5.1	4.9	5.0	5.1	5.4	9.9
17	10.7	6.8	10.0	8.2	7.2	5.7	5.1	4.9	5.0	5.1	8.5	12.7
18	10.3	6.8	9.6	8.0	7.1	5.7	5.1	4.9	5.0	5.2	8.5	9.9
19	10.0	7.9	9.6	7.9	7.0	5.7	5.1	4.9	5.0	9.5	7.0	9.9
20	9.6	9.8	9.2	8.2	6.9	5.6	5.1	4.9	5.0	8.7	6.6	12.3
21	9.3	10.9	9.1	8.8	6.8	5.6	5.0	4.9	5.0	7.8	13.0	22.5
22	9.0	12.1	9.0	9.0	6.7	6.0	5.0	4.9	5.0	6.1	8.1	15.2
23	8.7	10.1	8.8	8.2	6.6	5.8	5.0	4.9	5.0	6.0	7.2	13.2
24	8.4	9.4	8.7	7.8	6.6	5.8	5.0	4.9	4.9	5.8	6.8	11.0
25	8.3	8.8	8.5	7.5	6.5	5.7	5.0	4.9	4.9	5.6	7.5	10.2
26	7.6	9.0	8.5	7.4	6.5	5.7	5.0	4.9	4.9	5.5	8.9	9.1
27	7.9	8.7	8.2	7.3	6.4	5.6	5.0	4.9	4.9	5.5	8.2	8.6
28	7.8	8.3	8.1	7.3	6.3	5.5	4.9	4.9	4.9	5.5	8.5	8.1
29	7.7	.....	7.9	7.1	6.3	5.5	4.9	4.9	4.9	5.5	7.0	7.7
30	7.6	.....	7.8	7.0	6.1	5.4	4.9	4.9	4.9	5.5	6.9	7.6
31	7.7	.....	7.7	.....	6.1	.....	4.9	4.9	.....	5.5	.....	7.4

NORTH YUBA RIVER NEAR NORTH SAN JUAN, CALIFORNIA.

This station, established July 3, 1900, is at the Yuba Power Company's dam. The channel is irregular, composed of gravel, sand, and clay, and is subject to change during flood discharges. During 1900 the following measurements of discharge were made by H. D. H. Connick:

Discharge measurements of North Yuba River near North San Juan, California.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-feet.*	1900.	*Feet.*	*Sec.-feet.*
July 3	2.05	606	July 31	1.60	364
July 6	1.95	567	August 9	1.55	328
July 17	1.70	438	August 10	1.57	322
July 18	1.65	419	August 29	1.48	282
July 27	1.65	366	August 30	1.48	285
July 29	1.60	371			

Daily gage height, in feet, of North Yuba River near North San Juan, California, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1	.....	1.6	1.5	1.5	17	1.7	1.5	1.5	.....
2	.....	1.6	1.5	1.5	18	1.7	1.5	1.5	.....
3	2.1	1.5	1.4	2.2	19	1.7	1.5	1.5	.....
4	2.0	1.6	1.5	2.1	20	1.7	1.5	1.5	.....
5	2.0	1.5	1.5	2.7	21	1.6	1.5	1.5	.....
6	2.0	1.6	1.5	2.0	22	1.7	1.5	1.4	.....
7	2.0	1.5	1.5	1.8	23	1.7	1.5	1.4	.....
8	2.0	1.6	1.5	1.7	24	1.7	1.5	1.4	.....
9	1.9	1.5	1.5	1.7	25	1.6	1.5	1.5	.....
10	1.8	1.6	1.5	1.7	26	1.7	1.5	1.5	.....
11	1.8	1.5	1.5	1.6	27	1.6	1.5	1.5	.....
12	1.8	1.6	1.5	1.7	28	1.6	1.5	1.5	.....
13	1.8	1.5	1.5	1.6	29	1.6	1.5	1.5	.....
14	1.7	1.6	1.6	.....	30	1.6	1.5	1.5	.....
15	1.8	1.5	1.5	.....	31	1.6	1.5	.....	.....
16	1.7	1.5	1.5	.....					

MIDDLE YUBA RIVER NEAR NORTH SAN JUAN, CALIFORNIA.

This station, established July 1, 1900, is at Freeman's bridge. The channel is composed of sand and gravel, recently built up by débris from the mines above, and is subject to change during flood heights. During 1900 the following measurements of discharge were made by H. D. H. Connick:

Discharge measurements of Middle Yuba River near North San Juan, California.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-feet.*	1900.	*Feet.*	*Sec.-feet.*
July 1	2.40	191	August 11	2.17	79
July 3	2.35	180	August 12	2.15	78
July 4	2.30	185	August 29	2.20	69
July 7	2.57	162	August 30	2.20	68
July 29	2.30	109	September 18	2.15	64

Daily gage height, in feet, of Middle Yuba River near North San Juan, California, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1	2.4	2.2	2.1	2.0	17	2.3	2.1	2.2	2.1
2	2.4	2.2	2.1	2.0	18	2.3	2.2	2.1	2.0
3	2.4	2.1	2.0	2.5	19	2.4	2.2	2.2	2.1
4	2.3	2.2	2.0	2.4	20	2.4	2.1	2.1	2.0
5	2.4	2.1	2.1	3.0	21	2.4	2.2	2.0	.....
6	2.5	2.2	2.0	3.0	22	2.4	2.1	2.0	.....
7	2.6	2.1	2.1	2.4	23	2.4	2.2	2.0	.....
8	2.5	2.2	2.0	2.3	24	2.4	2.1	2.0	.....
9	2.5	2.1	2.1	2.2	25	2.3	2.1	2.0	.....
10	2.4	2.2	2.0	2.2	26	2.3	2.1	2.0	.....
11	2.4	2.2	2.0	2.1	27	2.4	2.1	2.0	.....
12	2.4	2.2	2.0	2.0	28	2.3	2.1	2.0	.....
13	2.3	2.1	2.3	2.0	29	2.3	2.1	2.0	.....
14	2.3	2.2	2.3	2.1	30	2.3	2.1	2.0	.....
15	2.3	2.1	2.2	2.0	31	2.2	2.1	.....	.....
16	2.4	2.2	2.2	2.0					

YUBA RIVER NEAR SMARTVILLE, CALIFORNIA.

This station, established June 28, 1900, is at Parks Bar Bridge. During recent years the channel of the river has been filled with sand and gravel, brought down from the hydraulic-mining camps in the mountains above, and thus is subject to change during flood stages. During 1900 the following measurements of discharge were made by H. D. H. Connick:

Discharge measurements of Yuba River near Smartville, California.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-feet.*	1900.	*Feet.*	*Sec.-feet.*
June 28	3.15	1,212	July 24	2.50	673
June 29	2.95	1,086	August 7	2.23	537
July 11	2.65	821	August 8	2.30	571
July 12	2.65	811	August 14	2.25	534
July 13	2.60	774	August 28	2.20	474
July 22	2.42	622	September 14	2.60	736
July 23	2.50	686			

Daily gage height, in feet, of Yuba River near Smartville, California, for 1900.

Day.	June.	July.	Aug.	Sept.	Oct.	Day.	June.	July.	Aug.	Sept.	Oct.
1		2.9	2.3	2.1	2.0	17		2.5	2.1	2.2	
2		2.9	2.3	2.1	2.0	18		2.4	2.2	2.2	
3		3.0	2.2	2.1	3.1	19		2.4	2.2	2.2	
4		2.8	2.2	2.2	3.0	20		2.4	2.2	2.1	
5		2.7	2.2	2.4	2.4	21		2.3	2.3	2.1	
6		2.7	2.2	2.3	1.9	22		2.4	2.4	2.1	
7		2.7	2.3	2.2	1.5	23		2.5	2.2	2.0	
8		2.7	2.2	2.2	1.3	24		2.4	2.3	2.0	
9		2.6	2.3	2.2	1.3	25		2.5	2.1	2.0	
10		2.6	2.1	2.1	1.2	26		2.4	2.1	2.1	
11		2.7	2.2	2.2	1.2	27		2.3	2.2	2.0	
12		2.6	2.2	2.3	1.3	28	3.1	2.3	2.1	2.0	
13		2.6	2.2	2.4	1.2	29	3.0	2.4	2.1	2.0	
14		2.5	2.3	2.6		30	3.0	2.3	2.2	2.0	
15		2.5	2.1	2.4		31		2.3	2.1		
16		2.5	2.2	2.4							

CACHE CREEK, CALIFORNIA.

This stream is the outlet of Clear Lake, in Lake County, California. It flows southeasterly, its flood waters finding their way into Sacramento River between the mouths of Feather and American rivers. In 1889 Clear Lake was segregated as a reservoir site, as described in the Thirteenth Annual Report, Part III, pages 405 to 409. During 1900 a hydrographic examination of the entire basin of Cache Creek was made by A. E. Chandler, whose detailed report has been published as Water-Supply Paper No. 45. During the course of his investigations the following discharge measurements were made of the creek and its tributaries:

Discharge measurements of Cache Creek and its tributaries.

Date.	Stream.	Point of measurement.	Hydrographer.	Discharge.
1900.				*Sec.-ft.*
June 25	Cache Creek	At Rumsey	A. E. Chandler	189.0
June 27	do	At Bear Creek	do	156.0
June 29	do	At North Fork	do	161.4
July 17	do	At Clear Lake	do	106.9
July 20	do	At Rumsey	do	92.6
Do	do	At Tancred	do	89.4
July 21	do	At Capay	do	88.1
July 23	Adams ditch		do	6.8
Do	Cache Creek	At Madison	do	54.6
Do	do	At Moore's dam	do	69.0
July 24	Moore ditch		do	49.4
Do	Cache Creek	At Stevens's bridge	do	20.4
June 29	do	At Rumsey	J. M. Wilson	166.8
Do	do	At Tancred	do	167.5
Do	do	Five miles above Capay	do	173.6
June 28	do	At Capay	do	161.6
June 30	do	At Esparto	do	152.7
Do	do	At Madison bridge	do	140.9
Do	Moore ditch		do	60.5
July 3	Cache Creek	At Stevens's bridge	do	75.8
Do	do	At Nelson's bridge	do	53.0
Do	do	At Cache Creek Sink	do	51.3
Do	Tule canal	Opposite Woodland	do	29.7
Aug. 20	Cache Creek	At Clear Lake	do	39.6
Aug. 27	do	One-fourth mile above Rumsey	do	27.6
June 29	North Fork	At mouth	A. E. Chandler	5.1
June 30	do	Above Long Valley Creek	do	6.4
June 27	Bear Creek	At mouth	do	1.8
June 30	Long Valley Creek	do	do	2.9
Do	Wolf Creek	One mile above mouth	do	0.5
July 2	North Fork	Above Bartlett Creek	do	3.3
Do	Bartlett Creek	At mouth	do	1.4
Do	Stanton Creek	do	do	1.5
July 8	North Fork	At Little Indian Valley	do	2.8
July 12	Scotts Creek	Eight miles above Clear Lake	do	0.5
Do	Middle and Clover creeks.	At Upper Lake	do	1.5
July 16	Kelsey Creek	Two miles above Kelseyville	do	4.6

SALINAS RIVER NEAR SALINAS, CALIFORNIA.

Salinas River rises in San Luis Obispo County, flows in a northwesterly direction through Salinas Valley, and discharges into the Bay of Monterey. The crest of the Coast Range, locally known as the Santa Lucia Mountains, forms the boundary of the watershed on the south and west; the crest of the Gabilan Mountains forms the eastern boundary of the watershed. The total area drained is a little less than 5,000 square miles. The principal tributaries of the river drain the eastern slopes of the Santa Lucia Mountains, and are Nacimento and San Antonio creeks and the Arroyo Seco. The only important stream entering from the east is San Lorenzo Creek, which drains the western slopes of the Gabilan Mountains.

A reconnaissance survey for reservoir sites on Salinas River and its tributaries was made during the period from May 28 to August 31, 1900, under the direction of Prof. Charles D. Marx, of Stanford University. His report will appear in one of the series of Water-Supply Papers.

A gaging station was established on the river January 8, 1900, by D. A. Porter. On account of the shifting nature of the channel during floods, four gage rods were set between January 8 and April 2, 1900, and each was referred to a different datum. On June 8, 1900, a permanent station was established at the county bridge 3¾ miles south of Salinas.

The gage, which is vertical, is attached to one of the piers of the bridge. The bench mark is a nail in the washer in the top of a redwood post, 13 inches by 15 inches in size, on the north bank of the river, at an elevation of 20 feet above gage datum. The gage heights given in the following tables have been adjusted to the rod which was established June 8, 1900. During 1900 a number of measurements of discharge were made of Salinas River at the main gaging station and of Arroyo Seco, a tributary of Salinas River, by D. A. Porter and others. The results are given in the following tables:

Discharge measurements of Arroyo Seco, California.

Date.	Locality.	Discharge.
1900.		*Sec.-feet.*
June 20	The Pools	11.8
Do	do	12.4
June 21	Moore's	10.4
Do	Currier	7.3
Do	Joy's	6.1

Discharge measurements of Salinas River near Salinas, California.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-feet.*	1900.	*Feet.*	*Sec.-feet.*
April 9	4.20	26	June 22	4.00	13
April 12	4.15	15	June 26	4.00	11
April 15	4.10	13	June 30	3.90	11
April 19	4.10	17	July 3	3.65	10
April 22	4.25	34	July 16	3.70	10
April 25	4.15	19	August 1	3.70	10
May 1	4.10	18	August 18	3.65	10
May 4	4.10	16	September 1	3.65	10
May 7	4.10	18	September 26	3.45	2
May 12	4.10	18	October 23	3.45	2
May 16	4.10	18	October 26	------	1
May 19	4.10	16	November 14	3.70	9
May 24	4.10	17	November 16	3.80	21
May 29	4.10	17	November 17	4.20	32
June 2	4.05	13	November 19	6.70	2,056
June 5	4.05	15	November 20	5.90	829
June 8	4.00	15	November 21	5.60	743
June 12	4.05	16	November 22	15.60	33,600
June 15	4.05	15	November 23	9.70	12,851
June 18	4.00	14			

Daily gage height, in feet, of Salinas River near Salinas, California, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	------	5.10	4.40	4.20	4.10	4.05	3.80	3.70	3.60	3.40	3.40	6.00
2	------	5.10	4.30	4.20	4.10	4.05	3.70	3.70	3.70	3.56	3.40	5.90
3	------	5.00	4.30	4.30	4.10	4.05	3.65	3.60	3.60	3.40	3.40	5.80
4	------	4.90	4.50	4.20	4.10	4.05	3.60	3.60	3.70	3.50	3.50	5.70
5	------	4.90	4.60	4.20	4.10	4.05	3.60	3.60	3.60	3.40	3.60	5.60
6	------	5.00	4.60	4.20	4.05	4.05	3.60	3.70	3.70	3.40	3.30	5.50
7	------	5.00	4.50	4.20	4.05	4.05	3.60	3.70	3.60	3.40	3.40	5.40
8	7.10	4.90	4.50	4.20	4.05	4.05	3.70	3.70	3.70	3.40	3.50	5.30
9	6.90	4.90	5.10	4.20	4.05	4.05	3.70	3.70	3.60	3.50	3.40	5.30
10	6.70	4.90	5.00	4.20	4.05	4.05	3.80	3.70	3.70	3.40	3.40	5.20
11	6.50	4.90	5.00	4.10	4.05	4.05	3.80	3.70	3.60	3.40	3.40	5.10
12	6.30	4.90	5.00	4.10	4.05	4.05	3.60	3.70	3.70	3.40	3.50	5.10
13	6.10	4.80	4.90	4.10	4.05	4.05	3.60	3.70	3.70	3.40	3.70	5.00
14	6.00	4.80	4.90	4.10	4.05	4.05	3.70	3.70	3.60	3.45	3.70	5.00
15	5.90	4.70	4.90	4.10	4.05	4.05	3.70	3.70	3.70	3.35	3.70	5.00
16	5.70	4.70	4.80	4.10	4.05	4.00	3.70	3.70	3.60	3.45	3.80	5.00
17	5.70	4.70	4.70	4.10	4.05	4.00	3.70	3.60	3.70	3.35	4.10	5.00
18	5.60	4.60	4.60	4.10	4.05	4.00	3.70	3.70	3.60	3.45	5.50	5.00
19	5.50	4.70	4.60	4.10	4.05	4.00	3.70	3.70	3.70	3.45	6.70	5.00
20	5.50	4.70	4.50	4.10	4.05	4.00	3.70	3.60	3.60	3.45	5.90	4.90
21	5.40	4.60	4.40	4.20	4.05	4.00	3.70	3.70	3.60	3.40	5.70	4.90
22	5.40	4.50	4.40	4.20	4.05	4.00	3.70	3.60	3.50	3.40	15.60	4.90
23	5.30	4.40	4.40	4.20	4.05	4.00	3.70	3.70	3.50	3.40	9.70	4.80
24	5.30	4.40	4.40	4.10	4.05	4.00	3.70	3.60	3.50	3.40	8.60	4.80
25	5.30	4.40	4.30	4.10	4.05	4.00	3.70	3.70	3.50	3.40	7.90	4.80
26	5.20	4.40	4.30	4.10	4.05	4.00	3.70	3.60	3.40	3.40	7.40	4.70
27	5.20	4.40	4.30	4.10	4.05	4.00	3.70	3.70	3.50	3.40	7.00	4.70
28	5.20	4.40	4.30	4.10	4.05	4.00	3.70	3.60	3.40	3.40	6.60	4.70
29	5.20	------	4.20	4.10	4.05	3.90	3.60	3.70	3.40	3.40	6.30	4.70
30	5.20	------	4.20	4.10	4.05	3.90	3.70	3.60	3.40	3.40	6.10	4.70
31	5.10	------	4.20	------	4.05	------	3.70	3.70	------	3.40	------	4.70

STANISLAUS RIVER NEAR OAKDALE, CALIFORNIA.

This station was first established May 3, 1896, and was relocated on July 30, 1898, as described in Water-Supply Paper No. 38, page 391. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 448.

The canal of what was formerly known as the Stanislaus and San Joaquin Water Company diverts water from Stanislaus River 3 miles above Knights Ferry, or approximately 15 miles above Oakdale. During the latter part of the year 1899 the management of the property

changed hands, and a new company was formed, under the name of Stanislaus Water Company. The station described in Water-Supply Paper No. 38 was discontinued in the latter part of 1899, on account of improvements to and enlargements of the canal, and on May 19, 1900, a new gaging station was established near the lower end of flume No. 3. It was rated, as in previous years, by turning various amounts of water into the flume and measuring the same with a meter. Owing to the lack of an observer on the canal, the record for 1900 is not complete. During the year the following measurements of discharge were made at the main station, under the direction of J. B. Lippincott:

April 5: Gage height, 6.82 feet; discharge, 1,703 second-feet.
May 19: Gage height, 9.33 feet; discharge, 4,515 second-feet.
June 21: Gage height, 6.65 feet; discharge, 1,438 second-feet.
August 11: Gage height, 4.38 feet; discharge, 66 second-feet.
September 6: Gage height, 4.25 feet; discharge, 35 second-feet.
December 28: Gage height, 5.66 feet; discharge, 611 second-feet.

Daily gage height, in feet, of Stanislaus River near Oakdale, California, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.0	5.8	5.6	7.5	6.4	8.1	6.0	4.5	4.2	4.4	5.0	6 2
2	7.6	5.9	5.6	7.5	6.7	7.8	5.6	4.5	4.2	4.5	5.0	6.4
3	11.2	5.7	5.8	7.2	7.0	7.6	5.6	4.5	4.2	4.7	5.0	6.3
4	10.9	5.7	6.8	7.0	7.4	7.8	5.5	4.5	4.2	5.0	5.1	6.1
5	8.7	5.6	7.2	6.9	8.2	7.5	5.5	4.5	4.2	5.3	5.0	5.9
6	8.2	5.6	6.8	6.8	8.2	7.9	5.4	4.5	4.2	5.2	5.2	5.9
7	8.0	5.5	6.4	6.7	8.5	7.8	5.4	4.5	4.2	5.2	5.0	5.9
8	8.0	5.6	6.6	6.5	8.7	7.7	5.4	4.5	4.2	5.2	5.0	5.9
9	7.8	5.5	6.8	6.7	8.6	8.0	5.3	4.5	4.2	5.0	5.1	5.9
10	7.5	5.5	6.8	6.6	8.6	7.6	5.2	4.4	4.2	4.9	5.1	5.7
11	7.2	5.4	6.8	6.6	8.7	7.4	5.2	4.4	4.2	4.8	5.1	5.6
12	6.8	5.5	7.0	6.7	8.4	7.4	5.2	4.3	4.2	4.8	5.1	5.6
13	6.5	5.5	7.3	6.5	8.0	7.5	5.2	4.3	4.2	4.7	5.2	5.6
14	6.5	5.4	7.7	6.7	7.4	7.3	5.0	4.3	4.2	4.7	5.2	5.6
15	6.5	5.5	7.3	6.5	7.7	7.0	5.0	4.3	4.2	4.7	5.6	5.7
16	6.4	5.5	7.4	6.4	8.1	6.8	5.0	4.3	4.2	4.8	6.0	5.6
17	6.4	5.4	7.3	6.5	8.9	6.7	5.0	4.2	4.2	4.7	6.7	6.0
18	6.2	5.5	7.3	6.9	8.8	6.4	4.9	4.3	4.3	4.7	5.9	5.9
19	6.2	5.6	6.8	6.9	9.1	6.4	4.8	4.4	4.3	5.1	6.1	5.6
20	6.2	5.5	7.0	7.4	9.0	6.6	4.8	4.3	4.4	7.8	6.5	5.5
21	6.2	6.2	7.3	8.0	8.6	6.6	4.8	4.3	4.4	6.4	10.3	5.8
22	6.0	6.0	7.4	7.1	8.6	6.4	4.6	4.2	4.4	6.0	9.7	6.8
23	6.0	5.9	7.5	7.0	8.6	6.4	4.6	4.2	4.4	5.4	9.1	6.4
24	6.0	5.8	7.2	6.9	8.6	6.4	4.6	4.2	4.4	5.4	7.2	6.0
25	6.0	5.8	7.4	6.8	8.3	6.2	4.6	4.2	4.4	5.3	6.6	5.8
26	5.9	5.6	7.3	7.0	8.6	6.0	4.6	4.3	4.4	5.3	6.5	5.9
27	5.8	5.6	7.2	6.7	8.8	6.0	4.5	4.2	4.4	5.2	6.5	5.8
28	5.9	5.5	7.3	6.6	8.9	6.2	4.6	4.2	4.4	5.1	6.4	5.7
29	6.0	.....	6.9	6.6	8.1	6.0	4.5	4.2	4.4	5.1	6.2	5.6
30	5.9	.....	7.0	7.7	8.2	6.0	4.5	4.2	4.4	5.2	6.2	5.6
31	5.9	.....	7.2	.....	8.3	.....	4.4	4.3	.....	5.0	.....	5.5

TUOLUMNE RIVER AT LAGRANGE, CALIFORNIA.

This station, established August 29, 1895, is at the wagon bridge in Lagrange, and is below the high dam of the Turlock and Modesto irrigation districts, and also below the head of the canal of the Lagrange Hydraulic Mining Company. It is described in Water-Supply Paper No. 38, page 393. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 449. During 1900 the

following measurements of discharge were made under the direction of J. B. Lippincott:

Discharge measurements of Turlock canal.

Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-feet.*
April 6	2.60	129
June 22	.50	10
August 11	1.90	117
September 8	1.15	35

Discharge measurements of Tuolumne River at Lagrange, California.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-feet.*	1900.	*Feet.*	*Sec.-feet.*
April 5	6.08	2,286	August 11	3.50	17.0
May 20	8.40	8,720	September 8	3.40	10.9
June 22	7.09	4,629	December 27	5.32	964.0

Daily gage height, in feet, of Tuolumne River at Lagrange, California, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.3	5.3	5.4	6.5	9.8	8.0	5.6	4.2	3.3	3.9	5.1	5.7
2	6.0	5.2	5.4	6.4	7.0	8.0	5.8	4.2	3.3	3.8	5.1	5.7
3	9.8	5.2	5.3	6.5	7.2	7.9	5.7	4.0	3.3	3.7	5.0	5.7
4	8.1	5.2	6.0	6.4	7.2	7.7	5.4	4.0	3.4	4.9	4.9	5.7
5	7.0	5.2	5.9	6.1	7.4	7.8	5.3	3.9	3.3	6.0	4.8	5.7
6	6.7	5.1	5.8	5.8	6.9	8.0	5.2	3.9	3.2	5.5	4.6	5.6
7	6.4	5.1	5.8	6.0	7.1	8.2	5.1	3.7	3.3	5.2	5.5	5.6
8	6.3	5.1	5.9	5.9	7.4	8.4	5.3	3.6	3.2	5.1	5.6	5.7
9	6.2	5.0	5.9	5.9	7.5	8.0	5.0	3.6	3.4	5.2	5.4	5.7
10	6.0	5.0	6.0	5.9	7.8	7.8	5.0	3.5	3.5	5.3	5.3	5.6
11	5.9	5.0	6.1	5.8	7.7	7.8	5.0	3.5	3.5	5.2	5.3	5.6
12	5.8	5.1	6.2	5.8	7.4	7.4	4.5	3.5	3.4	5.2	5.1	5.5
13	5.8	5.0	6.3	5.7	7.4	7.4	4.8	3.4	3.4	5.2	5.1	5.4
14	5.8	5.1	6.3	5.7	7.4	7.4	4.6	3.5	3.4	5.2	5.0	5.4
15	5.7	5.1	6.4	5.6	7.6	7.3	5.2	4.0	3.4	5.2	4.9	5.4
16	5.7	5.2	6.4	5.8	7.7	6.9	5.0	4.0	3.4	5.2	4.8	5.4
17	5.7	5.1	6.5	5.8	8.5	6.8	5.0	3.9	3.3	5.2	6.1	5.4
18	5.7	5.1	6.4	6.1	8.5	7.0	5.1	3.9	3.3	5.2	6.4	5.6
19	5.7	5.1	6.3	6.4	8.4	7.2	4.8	3.9	3.3	5.2	6.1	5.4
20	5.7	5.3	6.5	7.0	8.6	7.2	4.8	3.8	3.4	7.6	10.2	5.4
21	5.6	5.5	6.4	6.9	8.5	7.3	4.7	3.8	3.4	6.5	9.2	5.4
22	5.6	5.5	6.4	6.6	8.5	7.1	4.6	3.6	3.5	6.0	8.3	5.9
23	5.5	5.4	6.4	6.5	8.3	6.8	4.6	3.6	3.4	5.9	7.1	5.7
24	5.5	5.3	6.3	6.3	8.4	6.8	4.4	3.5	3.3	5.6	6.5	5.6
25	5.5	5.4	6.2	6.2	8.2	6.6	4.5	3.4	3.3	5.5	6.3	5.5
26	5.4	5.3	6.1	6.2	8.1	6.5	4.3	3.4	3.3	5.4	6.1	5.4
27	5.4	5.4	6.1	6.1	8.4	6.4	4.2	3.4	3.5	5.2	6.1	5.3
28	5.4	5.4	6.1	6.0	8.3	6.4	4.2	3.4	4.1	5.3	6.0	5.2
29	5.3	.....	6.0	6.2	8.2	6.2	4.4	3.3	3.9	5.2	5.9	5.2
30	5.3	.....	6.1	6.4	7.8	6.1	4.3	3.3	3.9	5.2	5.8	5.2
31	5.3	.....	6.4	.....	8.2	.....	4.4	3.3	.....	5.0	.....	5.1

Estimated daily discharge, in second-feet, of Turlock canal, California, for 1900.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1	64	64	000	133	133	133	133	28
2	64	64	000	133	133	133	133	36
3	64	64	000	133	133	133	133	36
4	64	64	000	133	133	133	133	36
5	64	64	133	133	133	133	133	36
6	64	64	133	133	133	133	133	36
7	64	64	133	133	133	133	000	36
8	64	64	000	133	133	133	000	36
9	64	64	000	133	133	133	000	36
10	64	64	133	133	9	133	000	36
11	64	64	133	133	9	133	000	36
12	64	133	133	133	9	133	000	36
13	64	133	133	133	9	133	114	36
14	64	85	133	133	9	133	114	36
15	64	85	64	133	9	133	85	36
16	64	85	64	133	9	133	85	36
17	64	85	64	133	9	133	00	36
18	64	64	64	133	9	133	00	36
19	85	64	64	133	9	133	00	36
20	133	85	64	133	9	133	00	28
21	133	85	64	133	9	133	00	28
22	28	85	133	133	9	133	64	28
23	28	85	133	133	9	133	64	28
24	28	85	133	133	9	133	74	00
25	28	85	133	133	133	133	64	00
26	28	85	133	133	133	133	55	00
27	40	85	133	133	133	133	55	00
28	64	85	133	133	133	000	64	00
29	.....	133	133	133	133	000	64	00
30	.....	133	133	133	133	000	28	00
31	.....	133	.....	133	.....	133	28	.....
Mean	62	84	90	133	71	120	57	26

NOTE.—There was no flow during the months of January, October, November, and December.

Miscellaneous discharge measurements of Tuolumne River, California.

Date.	Locality.	Hydrographer.	Discharge.
1899.			*Sec.-feet.*
July 31	Below Rancheria Creek, Hetch Hetchy Valley.	H. Ramel	238
August 5	do	do	230
August 12	do	do	131
August 19	do	do	101
August 23	do	do	69

SAN JOAQUIN RIVER AT HERNDON, CALIFORNIA.

This station, established by the Southern Pacific Railway Company in 1879, is at the iron highway bridge crossing the river at Herndon. The bed of the stream is of sand and gravel, and the section has changed materially several times during 1900. A reconnaissance has been made of the river above Pollasky, with the view to locating a new station where the section will be permanent, and a relocation will probably be made in 1901. The station at Herndon is described in Water-Supply Paper No. 38, page 395. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV,

page 466. During 1900 the following measurements of discharge were made under the direction of J. B. Lippincott:

Discharge measurements of San Joaquin River at Herndon, California.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-feet.*	1900.	*Feet.*	*Sec.-feet.*
April 3	4.66	2,641	September 1	2.50	246
May 15	5.91	4,448	September 28	2.33	197
June 18	5.67	3,710	December 30	3.33	614
August 9	2.83	466			

Daily gage height, in feet, of San Joaquin River at Herndon, California, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.8	3.3	3.2	4.8	4.5	7.2	5.3	3.0	2.6	2.4	2.7	3.8
2	4.7	3.2	3.3	4.6	4.5	7.3	5.0	3.0	2.5	2.4	2.7	3.8
3	9.3	3.3	3.3	4.4	4.5	7.1	4.9	3.0	2.5	2.3	2.6	3.8
4	10.2	3.3	3.6	4.6	4.5	7.0	4.4	3.0	2.5	2.3	2.6	3.7
5	5.8	3.1	4.9	4.4	4.8	6.9	4.3	3.0	2.4	2.7	2.6	3.7
6	4.9	3.1	3.6	4.4	5.1	6.8	4.2	3.0	2.4	3.3	2.5	3.7
7	4.5	3.0	3.1	4.3	5.1	7.4	4.2	2.9	2.5	3.0	2.5	3.7
8	4.2	3.0	3.1	4.1	5.3	7.5	4.2	2.8	2.5	2.8	2.5	3.7
9	4.1	3.0	3.1	4.4	5.4	7.6	4.3	2.8	2.5	2.8	2.5	3.8
10	3.9	3.0	3.1	4.2	6.1	7.4	4.3	2.8	2.5	2.8	2.5	3.8
11	3.1	3.0	4.0	4.4	6.5	6.9	4.1	2.8	2.4	2.8	2.7	3.8
12	3.1	3.0	4.0	4.2	6.3	6.6	4.0	2.7	2.4	2.8	2.7	3.7
13	3.7	3.0	4.1	4.2	5.8	6.3	4.0	2.7	2.4	2.8	2.7	3.6
14	3.7	3.0	4.4	4.2	5.3	6.3	4.0	2.7	2.4	2.8	2.6	3.6
15	3.7	3.0	4.7	4.2	5.2	6.1	3.9	2.7	2.4	2.8	2.6	3.6
16	3.7	3.0	4.7	4.2	6.2	5.8	3.8	2.7	2.4	2.7	2.6	3.5
17	3.7	3.0	4.6	4.1	7.2	5.5	3.8	2.7	2.4	2.8	2.7	3.5
18	3.7	2.9	4.6	4.0	7.2	5.7	3.7	2.7	2.4	2.7	4.1	3.5
19	3.7	3.2	4.6	4.1	7.9	5.8	3.6	2.6	2.4	2.8	3.7	3.5
20	3.7	3.3	4.6	4.6	7.6	5.7	3.6	2.6	2.3	2.8	3.7	3.5
21	3.7	3.3	4.6	4.9	7.4	6.5	3.5	2.6	2.3	3.1	4.9	3.5
22	3.5	3.3	4.6	4.8	7.7	6.4	3.5	2.6	2.3	3.3	12.0	3.5
23	3.5	3.1	4.6	4.7	8.0	6.2	3.5	2.6	2.3	3.1	6.8	3.5
24	3.4	3.0	4.4	4.5	7.5	5.9	3.5	2.6	2.3	3.0	5.6	3.5
25	3.2	3.0	4.3	4.5	7.1	5.9	3.2	2.6	2.3	3.0	4.7	3.4
26	3.3	3.0	4.3	4.5	7.1	5.7	3.2	2.6	2.3	2.8	4.5	3.3
27	3.2	3.0	4.3	4.5	7.4	5.5	3.1	2.6	2.3	2.8	4.2	3.4
28	3.3	3.0	4.3	4.3	7.3	5.6	3.1	2.6	2.3	2.7	4.0	3.4
29	3.3	.....	4.2	4.2	7.1	5.6	3.0	2.6	2.3	2.7	4.0	3.3
30	3.3	.....	4.3	4.2	7.2	5.4	3.0	2.6	2.4	2.6	3.8	3.3
31	3.2	.....	4.4	.....	7.3	.....	3.0	2.6	.....	2.7	.....	3.3

KING RIVER NEAR RED MOUNTAIN, CALIFORNIA.

The waters of King River, coming from a high catchment basin on the western slope of the Sierra Nevada, are probably of greater value for irrigation purposes than those of any other stream in central California. During the summer of 1900 the mountainous basin of the river was explored for reservoir sites and for power possibilities, and although numerous reservoir sites were surveyed, not one of them was considered commercially feasible. A good reservoir site was discovered, however, in Clarks Valley, in the foothills outside of King River Canyon. A reservoir at that place could be filled with water from King River that would run to waste during the fall and winter months, and by utilizing electric power developed from the river for pumping purposes, the amount of irrigated land in the vicinity of Fresno could be doubled.

The gaging station, established September 3, 1895, is southwest of Red Mountain and is 15 miles east of Sanger, at the mouth of the canyon of the river and above all diversions. It is described in Water-Supply Paper No. 39, page 403. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 468. During 1900 the following measurements of discharge were made under the direction of J. B. Lippincott:

Discharge measurements of King River near Red Mountain, California.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-feet.*	1900.	*Feet.*	*Sec.-feet.*
April 4	6.54	2,035	September 4	4.28	405
May 16	9.20	6,436	September 27	3.82	220
June 19	8.59	5,072	December 29	4.65	576
August 10	4.30	427			

Daily gage height, in feet, of King River near Red Mountain, California, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.4	5.0	5.0	7.3	6.6	9.6	7.0	4.6	3.9	3.8	3.9	5.3
2	6.3	5.0	5.0	6.9	6.5	9.7	6.8	4.7	3.9	3.7	4.0	5.3
3	11.3	5.0	5.0	6.8	6.5	9.4	6.5	4.7	3.8	3.8	3.9	5.1
4	8.4	5.0	6.9	6.5	6.7	9.4	6.3	4.7	4.3	4.0	3.9	5.1
5	7.0	5.0	6.1	6.6	7.1	9.3	6.2	4.6	4.5	4.1	3.9	5.1
6	6.6	4.9	5.7	6.5	7.3	9.3	6.1	4.5	4.3	4.2	3.9	5.1
7	6.3	4.9	5.5	6.9	7.5	9.3	6.4	4.8	4.2	4.0	3.8	5.2
8	6.0	4.9	5.3	6.4	7.8	9.2	6.4	4.4	4.2	4.0	3.8	5.2
9	5.9	4.8	5.4	6.1	8.2	8.9	6.3	4.4	4.1	4.0	3.9	5.2
10	5.7	4.8	5.7	6.5	8.6	8.7	6.3	4.3	4.1	3.9	3.9	5.0
11	5.6	4.8	6.0	6.3	8.9	8.5	6.2	4.3	4.0	3.9	3.9	5.0
12	5.5	4.8	6.1	6.2	7.9	8.4	6.1	4.2	4.0	3.9	3.8	4.9
13	5.5	4.8	(*a*)	6.2	7.7	8.5	6.0	4.1	3.9	3.9	3.8	4.9
14	5.5	4.8	.....	6.4	7.9	8.3	5.8	4.1	3.9	3.9	3.8	4.8
15	5.5	4.8	.....	6.0	8.4	8.1	5.7	4.1	3.9	3.9	3.8	5.0
16	5.5	4.8	.....	6.2	9.1	8.0	5.6	4.1	3.9	3.9	4.0	4.8
17	5.4	4.8	.....	6.3	9.8	8.0	5.4	4.9	3.9	3.9	7.3	4.8
18	5.5	4.9	6.7	7.1	10.0	8.3	5.3	4.1	3.9	3.9	4.8	5.0
19	5.4	5.0	6.6	7.0	10.0	8.6	5.3	4.0	3.8	3.9	4.7	4.9
20	5.4	5.1	6.5	7.2	9.9	8.7	5.3	4.0	3.8	3.9	4.7	4.8
21	5.4	5.0	6.5	7.3	9.9	8.6	5.3	4.0	3.8	4.3	12.4	4.8
22	5.3	5.0	6.6	7.0	10.0	8.5	5.4	4.1	3.7	4.2	8.0	4.8
23	5.3	5.0	6.5	6.9	10.2	8.2	5.2	4.0	3.7	4.1	6.5	4.9
24	5.3	5.0	6.5	6.9	9.5	8.1	5.7	4.0	3.8	4.1	6.2	4.9
25	5.3	5.0	6.5	6.8	9.2	8.1	5.0	3.9	3.7	4.0	6.0	.....
26	5.2	5.0	6.8	6.7	10.0	8.2	4.9	3.9	3.8	4.0	5.8	4.7
27	5.1	5.0	6.6	6.8	9.8	8.0	4.8	3.9	3.8	4.0	5.5	4.7
28	5.1	5.0	6.6	6.5	9.8	7.8	4.8	3.9	3.8	4.0	5.5	4.7
29	5.1	.....	6.7	6.5	9.5	7.7	4.7	3.9	3.8	3.9	5.3	4.7
30	5.1	.....	6.8	6.6	10.0	7.4	4.7	3.8	3.8	3.9	5.4	4.6
31	5.1	.....	7.1	.....	10.0	.....	4.6	3.8	.....	3.9	.....	4.6

a March 13 to 17 no readings.

KING RIVER NEAR KINGSBURG, CALIFORNIA.

The Southern Pacific Railroad Company has maintained gage readings at the railroad bridge 1 mile south of Kingsburg since 1879, and it is through their courtesy that the following record of gage heights for 1900 has been furnished to the Survey. Gage heights for 1899 will be found in Water-Supply Paper No. 39, page 405. No measurements of discharge were made here during 1900.

Daily gage height, in feet, of King River near Kingsburg, California, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.58	5.58	4.75	4.50	4.33	8.33	5.50	4.75	3.42	4.00	3.33	5.42
2	6.42	5.50	4.83	4.92	4.42	8.33	5.33	4.67	3.49	3.83	3.42	5.33
3	8.83	5.42	4.92	4.50	4.25	8.25	4.75	4.67	3.42	3.75	3.58	5.25
4	9.50	5.42	5.17	4.00	4.25	8.00	4.25	4.67	3.42	3.75	3.58	5.25
5	7.75	5.33	6.75	3.58	4.67	7.67	3.83	4.67	3.42	3.83	3.58	5.33
6	7.16	5.25	5.25	3.33	6.00	7.67	4.50	4.58	3.67	4.42	3.50	5.33
7	6.92	5.08	4.92	3.58	5.50	8.00	4.50	4.58	3.75	4.50	3.42	5.25
8	6.75	4.83	4.50	5.75	5.83	8.08	4.67	4.58	3.58	4.25	3.42	5.42
9	6.50	4.50	4.25	5.00	6.50	7.83	5.00	4.58	3.58	3.75	3.50	5.42
10	6.42	4.50	4.17	4.92	7.17	7.67	5.50	4.58	3.58	3.25	3.50	5.33
11	6.33	4.33	4.83	4.58	7.50	7.08	5.33	4.58	3.50	3.17	3.50	5.25
12	6.25	4.25	5.17	4.58	7.75	7.33	5.00	4.42	3.42	3.17	3.58	5.17
13	6.17	4.25	5.00	4.67	7.08	6.83	4.83	4.33	3.33	3.17	3.58	5.00
14	6.17	4.50	5.25	4.75	6.75	6.83	5.00	4.25	3.33	3.00	3.50	4.83
15	6.17	4.92	5.50	4.67	6.92	6.58	4.75	4.17	3.25	2.92	3.50	4.75
16	6.17	4.50	5.58	4.58	8.00	6.50	4.50	4.08	3.25	3.08	3.75	5.00
17	6.17	4.25	4.92	4.67	8.75	6.42	4.33	4.00	3.75	3.17	4.58	4.83
18	6.17	4.25	5.00	4.25	9.00	6.33	4.17	3.83	3.92	3.17	7.00	4.83
19	6.12	4.25	5.00	4.25	9.00	6.50	4.25	3.75	3.92	3.17	5.83	4.92
20	6.08	4.50	5.08	4.67	9.25	6.75	4.25	3.67	3.83	3.08	5.50	4.92
21	6.08	4.58	4.50	5.50	9.08	6.83	4.17	3.58	3.33	3.08	8.42	4.83
22	6.08	4.83	4.42	5.50	9.50	6.75	4.33	3.50	3.17	3.83	12.58	4.83
23	6.08	4.83	4.25	5.50	9.17	6.58	4.42	3.50	3.17	3.67	7.17	4.83
24	6.00	4.83	4.17	5.25	9.08	6.42	4.50	3.42	3.08	3.50	6.50	4.58
25	6.00	4.75	4.17	4.67	8.25	6.25	4.50	3.33	3.00	3.50	6.17	4.58
26	5.92	4.75	4.25	4.67	8.50	6.08	4.50	3.58	3.17	3.42	6.00	5.00
27	5.83	4.67	5.00	4.33	8.75	6.08	4.67	3.58	3.33	3.33	5.92	4.83
28	5.75	4.83	4.50	4.00	9.00	6.17	4.67	3.50	3.92	3.33	5.75	4.58
29	5.75	.....	4.17	3.83	8.25	6.08	4.67	3.50	4.17	3.33	5.50	4.58
30	5.67	.....	4.42	4.00	8.50	5.92	4.75	3.42	4.00	3.33	5.42	4.33
31	5.67	.....	4.83	.....	8.50	.....	4.75	3.42	.....	3.42	.....	4.25

KERN RIVER BASIN, CALIFORNIA.

During the summer of 1900 a reconnaissance of the drainage basin of Kern River was made by Mr. Frank H. Olmsted, whose report has been published in Water-Supply Paper No. 46. The following table gives the discharge measurements of the streams which were made during the progress of the investigation, arranged in geographic order, from the head downstream:

Miscellaneous discharge measurements in Kern River Basin.

Date.	Stream.	Locality.	Gage height.	Discharge.
1900.			*Feet.*	*Sec.-feet.*
June 25	Whitney Creek	Tunnel on divide	.....	4.72
June 27	do	Lava bridge	.....	39.11
Do	Creek south of Bald Mountain.	Near mouth	.....	17.64
Do	North Fork of Kern River.	800 feet above Kern Lake	.....	939.60
June 25	Onemile Creek	1 mile below Kern Lake	.....	4.87
Do	Harris Creek	At mouth	.....	8.45
Do	North Fork of Kern River.	3,000 feet above junction with Little Kern River.	0.385	1,154.90
June 24	Little Kern River	At junction with Kern River	.....	81.00
Do	North Needles Creek	At Needles Peak	.....	4.26
June 29	Tibbetts Creek	8,300 feet elevation	.....	1.80
June 25	do	1 mile above mouth	.....	2.87
June 23	South Needles Creek	Needles Peak	.....	5.82
Do	Clark Creek	Dry Meadows	.....	5.19
June 29	Brush Creek	Above North Fork; elevation 5,600	.....	8.22
Do	North Fork of Brush Creek.	Elevation 5,800	.....	1.04
June 23	Jackson Creek	Dry Meadows	.....	5.74
Do	Wade Creek	do	.....	5.07
June 22	Tobias Creek	At mouth	.....	2.92
June 30	Salmon Creek	Horse Meadows	.....	4.05
June 22	do	At mouth	.....	3.45
Do	Ant Creek	do	.....	.18
June 21	Bull Run Creek	Near mouth	.....	2.30

Miscellaneous discharge measurements in Kern River Basin—Continued.

Date.	Stream.	Locality.	Gage height.	Discharge.
			Feet.	*Sec.-feet.*
June 22	Corral Creek	Near mouth		0.32
July 3	Hooper's mill ditch	Gaging station		7.31
June 20	North Fork of Kern River	4,000 feet above junction with South Fork, at Hooper's mill bridge (new gaging station).	4.600	1,333.17
June 30	do	do	4.135	825.25
June 28	South Fork of Kern River	Menache Meadows		3.67
July 2	Powers's ditch	Near head		2.38
Do	South Fork of Kern River	T. 25 S., R. 35 E		11.05
June 20	do	700 feet above junction with North Fork.		14.18
July 3	Neil's ditch	Isabella		1.96
June 19	Basin Creek	Rankins's ranch, Walkers Basin		1.32

The California Power Company maintained observations on the North Fork of Kern River just below the mouth of Tobias Creek from July 21 to October 16, inclusive, 1900, from which daily discharge measurements have been estimated. The following record has been furnished to the Survey through the courtesy of F. C. Finkle, chief engineer of the California Power Company:

Estimated daily discharge, in second-feet, of North Fork of Kern River below the mouth of Tobias Creek, California, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1		334	213	204	18		206	215	
2		338	310	205	19		202	211	
3		306	308	208	20		198	211	
4		253	274	204	21	353	195	211	
5		244	256	203	22	345	194	207	
6		235	253	203	23	340	193	207	
7		231	246	202	24	336	196	207	
8		230	244	201	25	328	195	209	
9		229	244	201	26	319	193	208	
10		229	235	202	27	308	194	208	
11		226	232	202	28	298	186	206	
12		227	233	202	29	291	187	205	
13		226	230	202	30	285	181	207	
14		224	223	201	31	282	178		
15		222	220	201					
16		222	220	200	Mean	317	222	229	203
17		213	214						

KERN RIVER NEAR BAKERSFIELD, CALIFORNIA.

This station, established in 1893 by Mr. Walter Jones, chief engineer of the Kern County Land Company, is located at what is known as First Point of Measurement, 5 miles above Bakersfield, and at the mouth of the canyon of the river. Meter measurements are taken once a week, and an automatic gage records daily fluctuations of the river heights. Mr. A. K. Warren, the engineer in charge of this work for the Kern County Land Company, attends to the discharge measurements with much accuracy and precision, and furnishes the Survey with the final results. The results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 469.

Estimated daily discharge, in second-feet, of Kern River near Bakersfield, California, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	468	301	325	455	481	1,758	796	209	108	145	167	430
2	356	291	327	477	491	1,774	733	191	116	142	170	420
3	359	287	331	506	475	1,772	665	188	132	142	173	410
4	712	282	343	499	456	1,759	607	194	147	148	172	405
5	753	276	374	486	495	1,629	548	195	190	147	184	405
6	570	268	392	497	633	1,476	500	189	259	155	181	410
7	486	259	357	495	620	1,481	479	179	257	164	177	423
8	425	255	369	497	563	1,568	485	169	241	165	174	415
9	390	250	359	493	580	1,563	487	178	221	157	174	415
10	359	262	358	455	668	1,483	492	172	213	153	176	412
11	339	267	357	418	1,060	1,379	458	159	188	153	172	409
12	325	259	377	399	974	1,346	425	161	175	151	169	397
13	308	262	405	415	913	1,304	408	158	175	152	170	382
14	301	257	432	442	897	1,267	394	149	171	156	165	371
15	296	266	484	410	858	1,188	395	141	171	158	168	375
16	298	265	482	407	865	1,081	374	130	166	156	191	365
17	293	261	476	397	1,004	1,010	350	123	157	161	228	357
18	284	260	456	395	1,231	948	315	117	156	160	325	353
19	280	292	460	404	1,391	999	293	117	152	154	352	382
20	289	308	463	428	1,514	1,137	283	120	146	153	310	376
21	311	299	442	504	1,558	1,252	274	120	139	151	499	358
22	324	307	419	567	1,560	1,283	269	120	139	160	1,005	346
23	324	308	421	564	1,675	1,210	274	122	142	165	994	350
24	312	296	453	560	1,683	1,123	283	114	144	171	698	330
25	310	291	418	552	1,485	1,073	251	111	140	175	639	316
26	307	298	427	537	1,539	983	230	109	141	173	578	327
27	307	305	455	511	1,726	931	225	111	153	176	572	344
28	297	313	479	478	1,852	936	217	108	156	175	553	341
29	283	.....	472	454	1,733	924	213	103	151	180	488	325
30	274	.....	438	465	1,716	865	220	106	147	175	454	307
31	290	.....	445	.....	1,736	.....	222	103	.....	170	.....	299
Mean	362	280	413	472	1,111	1,283	392	144	166	159	349	373

MOHAVE RIVER AT VICTORVILLE, CALIFORNIA.[1]

This station, established February 27, 1899, is at the wagon bridge at the gorge at Victorville known as The Narrows. It is described in Water-Supply Paper No. 39, page 408. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 473. During 1900 the following measurements of discharge were made under the direction of J. B. Lippincott:

Discharge measurements of Mohave River at Victorville, California.

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
1900.	*Feet.*	*Sec.-feet.*	1900.	*Feet.*	*Sec.-feet.*
April 14	0.90	32	June 3	0.90	23
April 28	.90	33	June 20	.85	27
May 11	.90	35	July 6	.85	31
May 23	.90	29	July 25	.85	28
May 29	.90	22			

[1] The name of this town has recently been changed from Victor to Victorville.

Daily gage height, in feet, of Mohave River at Victorville, California, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.00	1.10	1.10	1.00	0.90	0.90	0.80	0.85	0.85	0.85	0.90	0.90
2	1.00	1.10	1.10	1.00	.90	.90	.80	.85	.85	.85	.90	.90
3	1.00	1.10	1.20	1.00	.90	.90	.80	.85	.85	.85	.90	.90
4	1.00	1.10	1.20	1.00	.90	.90	.80	.85	.85	.85	.90	.90
5	1.00	1.10	1.20	1.00	.90	.90	.80	.85	.85	.85	.90	.90
6	1.00	1.10	1.20	.90	.90	.90	.80	.85	.85	.85	.90	.90
7	1.00	1.10	1.10	.90	.90	.90	.80	.85	.85	.85	.90	.90
8	1.00	1.10	1.10	.90	.90	.90	.80	.85	.85	.85	.90	.90
9	1.00	1.10	1.10	.90	.90	.90	.80	.85	.85	.90	.90	.90
10	1.00	1.00	1.10	.90	.90	.90	.80	.85	.85	.90	.90	.90
11	1.00	1.00	1.10	.90	.90	.90	.80	.85	.85	.90	.90	.90
12	1.00	1.00	1.10	.90	.90	.90	.80	.85	.85	.90	.90	.90
13	1.00	1.00	1.10	.90	.90	.90	.80	.85	.85	.90	.90	.90
14	1.00	1.00	1.10	.90	.90	.90	.80	.85	.85	.90	.90	.90
15	1.00	1.00	1.00	.90	.90	.90	.80	.85	.85	.90	.90	.90
16	1.00	1.00	1.00	.90	.90	.90	.80	.85	.85	.90	.90	.90
17	1.00	1.00	1.00	.90	.90	.90	.80	.85	.85	.90	.90	.90
18	1.00	1.00	1.00	.90	.90	.90	.80	.85	.85	.90	.90	.90
19	1.00	1.00	1.00	.90	.90	.85	.80	.85	.85	.90	.90	.90
20	1.00	1.00	1.00	.90	.90	.85	.80	.85	.85	.90	.90	.90
21	1.00	1.00	1.00	.90	.90	.85	.80	.85	.85	.90	3.00	.90
22	1.00	1.00	1.00	.90	.90	.80	.85	.85	.85	.90	.90	.90
23	1.00	1.00	1.10	.90	.90	.80	.85	.85	.85	.90	.90	.90
24	1.00	1.00	1.10	.90	.90	.80	.85	.85	.85	.90	.90	.90
25	1.00	1.00	1.10	.90	.90	.80	.85	.85	.85	.90	.90	.90
26	1.00	1.00	1.10	.90	.90	.80	.85	.85	.85	.90	.90	.90
27	1.00	1.00	1.10	.90	.90	.80	.85	.85	.85	.90	.90	.90
28	1.00	1.00	1.10	.90	.90	.80	.85	.85	.85	.90	.90	.90
29	1.00	------	1.10	.90	.90	.80	.85	.85	.85	.90	.90	.90
30	1.00	------	1.00	.90	.90	.80	.85	.85	.85	.90	.90	.90
31	1.00	------	1.00	------	.90	------	.85	.85	------	.90	------	.90

LOS ANGELES RIVER AT THE NARROWS, CALIFORNIA.

Los Angeles River heads immediately south of Santa Clara River, its various tributaries receiving their supply from the mountains surrounding the San Fernando Plains. It passes out of the lower end of the plain through a narrow valley known as The Narrows, at the lower end of which is the city of Los Angeles. The streams entering San Fernando Valley have brought down immense quantities of sand and gravel from the mountainous area, and thus have formed the San Fernando Plains. This coarse deposit acts as a natural regulator, absorbing the flood waters, which gradually appear lower down. The rainfall of southern California has been deficient for the last few years, but the discharge of Los Angeles River at The Narrows has been exceptionally constant, the decrease in 1900 being not more than 20 per cent of the average. On account of the numerous lawsuits which have arisen regarding water rights on this river, a thorough study of its discharge has been instituted by the city of Los Angeles, the work being under the direction of J. B. Lippincott, as consulting engineer for the city. The majority of the measurements have been made by C. A. Miller, although a number of them were made by F. H. Olmsted, city engineer. Several weirs have been placed in the river where the measurements are made. The points of measurements are as follows, in order downstream:

Weir A, at the intersection of Pacoima avenue with Los Angeles River, in the Lankershim Rancho subdivision.

Weir B, at the intersection of Vineland avenue with Los Angeles River.

Weir C, at the intersection of Fernando avenue with Los Angeles River.

Weir E, at the southwest corner of block 73, Providencia Rancho.

Weir G, at the intersection of the east line of block 71, Providencia Rancho, with Los Angeles River.

Weir L, 770 feet above weir H.

Weir H, approximately 300 feet east of the intersection of Buena Vista street with Los Angeles River.

Weir I, 2,543 feet below weir H.

Weir J, 600 feet east of the west line of block 69, Providencia Rancho.

Weir K, in block 79, Providencia Rancho, 300 feet west of center.

Measuring bridge P, near the southwest corner of block 81, Providencia Rancho, in the headworks site of the city of Los Angeles, commonly known as the Pomeroy & Hooker tract, where river turns to the east at angle of 90 degrees.

Measuring bridge Q, about 400 feet above the junction of the Verdugo Wash with Los Angeles River.

Measuring bridge No. 2, about 600 feet above the head of the power ditch of the Los Angeles City Water Company, in the so-called Crystal Springs tract.

Weir No. 7, 1 mile below the head, in the main supply ditch, sometimes called the Woolen Mill ditch, in the headworks site.

Measuring point No. 7B, at a 3-foot cement pipe in the same ditch, west of bridge No. 2 and at the Los Felix ranch house.

Weir No. 17, opposite bridge No. 2, on what is called the Glassell tributary.

(To get the total flow of river at bridge No. 2, there should be combined the flow at bridges No. 2, No. 17, and No. 7B. In case measurements were not taken on the main supply ditch at No. 7B, the measurement observed at weir No. 7, above No. 7B on the main supply ditch, was used, and the loss between No. 7 and No. 7B, 2.49 second-feet, was deducted. This is shown in detail in the table for bridge No. 2. For bridge Q a similar process is followed, omitting No. 17. For bridge P the observed flow at the bridge is combined with either the flow at No. 7 or at No. 7B.)

Weir No. 9, at the mouth of Tujunga Creek, near the western end of the headworks site, and near the intersection of Buena Vista street with Los Angeles River.

Weir No. 10, approximately 200 feet west of weir No. 9, at the outlet of a small cut which was run into the gravel bed for the development of water.

Weir M, block 67, Providencia Rancho, on a small stream entering the river in the headworks tract.

Discharge measurements of Los Angeles River at weir A.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.	*Sec.-feet.*	*Sec.-feet.*	1900.	*Sec.-feet.*	*Sec.-feet.*
August 14	0.565	0.612	May 17	0.461	0.461
August 19	.660		June 12	.461	.431
September 20	.500	.500	June 29	.402	
September 26	.500		August 1	.310	
October 24	.687	.687	August 8	.368	.370
November 24	.725	.723	August 15	.372	
November 28	.721		August 31	.430	
December 7	.678	.723	September 8	.378	
December 28	.768		September 11	.400	.368
			September 27	.328	
			November 10	.380	.380
Mean		.649	Mean		.402

Discharge measurements of Los Angeles River at weir B.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.	*Sec.-feet.*	*Sec.-feet.*	1900.	*Sec.-feet.*	*Sec.-feet.*
August 14	0.500	0.500	May 17	0.482	0.482
September 20	.500	.500	June 12	.430	.355
September 26	.500		June 29	.280	
October 24	.755	.755	July 27	.160	.160
November 24	.937	.939	August 1	.180	.198
November 28	.941		August 15	.197	
December 7	.864	.923	August 31	.219	
December 28	.982		September 8	.209	.203
			September 11	.223	
			September 27	.176	
			November 10	.260	.260
Mean		.723	Mean		.276

Discharge measurements of Los Angeles River at weir C.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.	*Sec.-feet.*	*Sec.-feet.*	1900.	*Sec.-feet.*	*Sec.-feet.*
August 14	2.88	2.88	May 17	2.98	2.98
August 28	2.88		June 12	2.91	2.91
September 20	2.69	2.48	July 27	2.45	2.45
September 26	2.26		August 1	2.50	2.50
October 9	2.88	2.93	August 8	2.48	
October 24	2.98		August 15	2.48	
November 24	3.45	3.43	August 31	2.55	
November 28	3.42		September 8	1.58	1.86
December 28	3.44	3.44	September 11	2.38	
			September 27	1.63	
			November 10	2.42	2.42
Mean		3.03	Mean		2.52

Discharge measurements of Los Angeles River at weir E.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.	*Sec.-feet.*	*Sec.-feet.*	1900.	*Sec.-feet.*	*Sec.-feet.*
August 14	5.55	5.55	May 15	5.45	5.45
August 28	5.55		June 12	5.18	4.99
September 20	5.35	5.30	June 29	4.81	
September 26	5.25		July 12	4.80	4.80
October 25	5.99	5.99	July 27	4.80	
November 17	6.53	6.38	August 1	4.53	4.63
November 28	6.24		August 15	4.47	
December 13	6.24	6.26	August 31	4.88	
December 21	6.24		September 8	4.49	4.48
December 26	6.30		September 11	4.65	
			September 27	4.30	
			November 10	4.67	4.67
Mean		5.89	Mean		4.84

Discharge measurements of Los Angeles River at weir G.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.	*Sec.-feet.*	*Sec.-feet.*	1900.	*Sec.-feet.*	*Sec.-feet.*
August 14	7.92	7.92	May 15	7.94	7.94
August 28	7.92		June 12	7.63	7.31
September 20	7.60	7.60	June 29	7.00	
September 26	7.60		July 27	6.45	6.45
October 9	7.66	8.13	August 1	6.45	6.70
October 25	8.60		August 15	6.80	
November 17	9.17	9.08	August 31	6.87	
November 28	8.99		September 8	6.72	6.80
December 13	8.90	8.90	September 11	7.00	
December 21	8.90		September 27	6.68	
December 26	8.92		November 13	6.99	6.99
Mean		8.33	Mean		7.03

Discharge measurements of Los Angeles River at weir L.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.	*Sec.-feet.*	*Sec.-feet.*	1900.	*Sec.-feet.*	*Sec.-feet.*
August 14	9.08	9.00	May 15	8.85	8.79
August 28	8.93		May 23	8.73	
September 20	8.59	8.74	June 12	8.62	8.46
September 26	8.89		June 29	8.30	
October 9	8.59		July 27	7.53	7.53
October 25	9.58	9.22	August 1	7.53	7.71
October 27	9.48		August 8	7.59	
November 17	10.15	10.04	August 15	7.69	
November 28	9.93		August 31	8.02	
December 13	10.02	10.11	September 8	7.82	7.92
December 21	10.02		September 11	8.20	
December 26	10.30		September 27	7.76	
			November 10	8.34	8.34
Mean		9.42	Mean		8.12

Discharge measurements of Los Angeles River at weir H.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.	*Sec.-feet.*	*Sec.-feet.*	1900.	*Sec.-feet.*	*Sec.-feet.*
August 14	11.88	12.04	May 15	11.42	11.31
August 28	12.19		May 23	11.21	
September 20	11.60	11.82	June 12	11.01	10.84
September 26	12.03		June 29	10.68	
October 9	11.60		July 27	9.96	9.96
October 25	12.66	12.31	August 1	9.96	10.20
October 27	12.66		August 8	10.16	
November 17	13.73	13.60	August 15	10.13	
November 28	13.47		August 31	10.57	
December 13	13.42	13.62	September 8	10.15	10.19
December 21	13.64		September 11	10.39	
December 26	13.80		September 27	10.03	
			November 10	10.54	10.54
Mean		12.68	Mean		10.51

Discharge measurements of Los Angeles River at weir I.

Date.	Discharge.	Average for month.	Date.	Discharge.	Average for month.
1899.	*Sec.-feet.*	*Sec.-feet.*	1900.	*Sec.-feet.*	*Sec.-feet.*
August 14	17.18	17.04	May 15	16.25	16.15
August 28	16.91		May 23	16.05	
September 20	17.15	17.23	June 12	15.66	15.57
September 26	17.32		June 29	15.49	
October 9	17.19	17.76	July 12	15.58	15.16
October 25	18.33		July 27	14.74	
November 17	19.04	18.88	August 1	14.37	14.70
November 28	18.72		August 8	14.94	
December 13	18.93	18.96	August 15	14.69	
December 26	18.99		August 31	14.80	
			September 8	14.54	14.53
			September 11	14.74	
			September 27	14.31	
			November 10	14.92	14.92
Mean		17.97	Mean		15.17

Discharge measurements of Los Angeles River at weir J.

Date.	Discharge at No. 7, or No. 7B+ 2.49.	Discharge over weir.	Total discharge for weir.	Average for month.
1899.	*Sec.-feet.*	*Sec.-feet.*	*Sec.-feet.*	*Sec.-feet.*
August 14	18.59	0.55	19.14	18.76
August 28	17.90	.49	18.39	
September 20	17.90	.49	18.39	18.58
September 26	18.28	.49	18.77	
October 9	18.08	.44	18.52	18.91
October 25	17.45	1.85	19.30	
November 17	18.02	2.91	20.93	20.71
November 28	13.78	6.71	20.49	
December 13	13.90	6.34	20.24	20.31
December 26	13.66	6.73	20.39	
Mean				19.45
1900.				
May 15	20.09	1.39	21.48	19.76
May 23	16.37	1.67	18.04	
June 12	19.81	.86	20.67	18.92
June 29	16.31	.86	17.17	
August 15	18.49	.41	18.90	19.31
August 31	19.25	.46	19.71	
September 8		.42		
September 11	19.81	.52	20.33	19.15
September 27	17.59	.39	17.98	
November 10	14.84	1.49	16.33	16.33
Mean				18.69

Note.—Total discharge of river at weir J equals discharge over weir + discharge at No. 7, or No. 7B + 2.49.

Discharge measurements of Los Angeles River at weir K.

Date.	Discharge at No. 7, or No. 7B+ 2.49.	Discharge over weir.	Total discharge for weir.	Average for month.
1899.	*Sec.-feet.*	*Sec.-feet.*	*Sec.-feet.*	*Sec.-feet.*
August 14	18.59	4.13	22.72	22.27
August 28	17.90	3.92	21.82	
September 20	17.90	3.91	21.81	22.03
September 26	18.28	3.98	22.26	
October 9	18.08	4.13	22.21	22.68
October 25	17.45	5.70	23.15	
November 17	18.02	6.97	24.99	24.73
November 28	13.78	10.69	24.47	
December 13	13.90	10.69	24.59	24.58
December 26	13.66	10.92	24.58	
Mean				23.26
1900.				
May 15	20.09	4.94	25.03	23.17
May 23	16.37	4.94	21.31	
July 2	16.32	2.93	19.25	19.25
August 1		2.55		
August 15	18.49	2.71	21.20	21.50
August 31	19.25	2.55	21.80	
September 8		2.81		
September 11	19.81	2.80	22.61	21.35
September 27	17.59	2.50	20.09	
November 10	14.84	4.12	18.96	18.96
Mean				20.85

Note.—Total discharge of river at weir K equals discharge over weir + discharge at No. 7, or No. 7B + 2.49.

Discharge measurements of Los Angeles River at bridge P.

Date.	Discharge at No. 7, or No. 7B.	Discharge at bridge.	Total discharge at bridge.	Average for month.
1899.	*Sec.-feet.*	*Sec.-feet.*	*Sec.-feet.*	*Sec.-feet.*
August 25	18.66	20.22	38.88	38.88
September 20	17.90	19.36	37.26	
September 27	18.66	21.08	39.74	38.50
October 10	18.08	19.81	37.89	
October 25	17.45	17.62	35.07	37.16
October 28	17.45	21.06	38.51	
November 17	18.02	25.73	43.75	
November 28	13.18	27.75	40.93	42.34
December 13	13.90	31.94	45.84	
December 26	13.66	27.67	41.33	43.58
Mean				40.09
1900.				
May 15	17.60	21.22	38.82	
May 23	13.88	20.28	34.16	36.49
June 12	17.32	18.59	35.91	35.91
July 2	13.83	19.51	33.34	
July 12	14.00	16.99	30.99	32.16
August 1	14.00	17.04	31.04	
August 8	14.00	18.71	32.71	
August 15	16.00	19.94	35.94	33.23
September 8		19.26		
September 11	17.32	19.67	36.99	
September 28	15.10	18.38	33.48	35.23
Mean				34.60

NOTE.—Total discharge of river at bridge P equals discharge at bridge + discharge at No. 7, or discharge at No. 7B.

Discharge measurements of Los Angeles River at bridge Q.

Date.	Discharge at No. 7–2.49, or 7B	Discharge at bridge.	Total discharge at bridge.	Average for month.
1899.	*Sec.-feet.*	*Sec.-feet.*	*Sec.-feet.*	*Sec.-feet.*
September 20	15.41	28.12	43.53	
September 27	16.17	27.99	44.16	43.84
October 10	15.59	27.77	43.36	
October 25	8.21	27.66	35.87	41.31
October 28	8.23	36.48	44.71	
November 17	9.36	39.71	49.07	
November 29	12.20	33.89	46.09	47.58
December 13	11.41	35.99	47.40	
December 26	11.17	31.86	43.03	45.21
Mean				44.49
1900.				
May 15	17.60	28.42	46.02	
May 23	13.88	27.97	41.85	43.93
June 12	17.32	27.64	44.96	44.96
July 2	13.83	26.20	40.03	
July 12	14.00	24.79	38.79	39.41
August 1	14.00	24.48	38.48	38.48
September 8		27.09		
September 11	17.32	26.22	43.54	
September 28	15.10	29.33	44.43	43.98
Mean				42.15

NOTE.—Total discharge of river at bridge Q equals discharge at Q + discharge at No. 7–2.49, or No. 7B.

Discharge measurements of Los Angeles River at bridge No. 2.

Date.	Discharge at No. 7–2.49, or No. 7B.	Discharge at No. 17.	Discharge at bridge.	Total discharge at bridge.	Average for month.
1899.	*Sec.-feet.*	*Sec.-feet.*	*Sec.-feet.*	*Sec.-feet.*	*Sec.-feet.*
August 19	15.59	0.06	41.29	56.94	57.79
August 25	16.17	.06	42.41	58.64	
September 20	15.41	.06	40.23	55.70	56.00
September 27	16.17	.06	40.07	56.30	
October 10	15.59	.05	39.35	54.99	
October 25	8.21	.05	48.88	57.14	55.61
October 28	8.23	.05	44.45	52.73	
October 31	8.78	.05	48.73	57.56	
November 17	9.36	.06	49.71	59.13	57.39
November 29	12.20	.06	43.40	55.66	
December 13	11.41	.07	46.69	58.17	58.15
December 26	11.17	.07	46.89	58.13	
Mean					56.99
1900.					
May 16	17.60	0.14	39.61	57.35	54.91
May 23	13.88	.14	38.46	52.48	
June 12	17.32	.14	39.23	56.69	56.69
July 2	13.83	.10	35.38	49.31	52.43
July 13	15.32	.14	40.10	55.56	
August 1	14.00	.10	34.62	48.72	
August 8	14.00	.10	34.77	48.87	51.12
August 15	16.00	.10	38.58	54.68	
August 31	16.76	.10	35.36	52.22	
September 8			34.27		
September 11	17.32	.20	35.56	53.08	51.27
September 28	15.10	.08	34.28	49.46	
November 10	14.84	.10	39.45	54.39	54.39
Mean					53.46

NOTE.—Total discharge of river at bridge No. 2 equals discharge at No. 2 + discharge at No. 7B, or No. 7 – 2.49.

Average discharge of Los Angeles River at weir No. 9.

Month.	1899.	1900.	Month.	1899.	1900.
	Sec.-feet.	*Sec.-feet.*		*Sec.-feet.*	*Sec.-feet.*
January	1.17	0.52	July	0.55	0.15
February	1.00	.49	August	.48	.18
March	1.16	.39	September	.44	.20
April	1.10	.38	October	.64	
May	.71	.30	November	.56	
June	.69	.24	December	.52	

Average discharge of developed water at weir No. 10.

Month.	1899.	1900.	Month.	1899.	1900.
	Sec.-feet.	*Sec.-feet.*		*Sec.-feet.*	*Sec.-feet.*
January		0.89	July	0.79	0.74
February		.81	August	.79	.73
March	0.96	.86	September	.83	.70
April	.93	.79	October	.86	
May	.90	.82	November	.94	
June	.86	.79	December	.91	

Average discharge of small tributary of Los Angeles River at weir M.

Month.	Discharge.	Month.	Discharge.
1899.	*Sec.-feet.*	1899.	*Sec.-feet.*
January	0.29	July	Dry.
February	.20	August	Do.
March	.20	September	Do.
April	.14	October	Do.
May	.07	November	Do.
June	.06	December	Do.

Average discharge of cut of West Los Angeles Water Company in San Fernando Valley, from gravel beds of Los Angeles River.

Month.	1899.	1900.	Month.	1899.	1900.
	Sec.-feet.	*Sec.-feet.*		*Sec.-feet.*	*Sec.-feet.*
May	----	5.79	September	6.02	----
June	----	5.85	October	5.94	----
July	----	5.75	November	6.07	----
August	6.01	5.87	December	6.08	----

Average discharge of Los Angeles River.

Measuring point.	Intervening distance along river.	Average discharge, August to December, inclusive, 1899.	Rate of growth per 100 feet, 1899.	Average discharge, May to November, inclusive, 1900.	Rate of growth per 100 feet, 1900.
	Feet.	*Sec.-feet.*		*Sec.-feet.*	
Weir A		0.649		0.402	
	10,280		0.001		0.001
Weir B		.723		.276	
	3,486		.066		.064
Weir C		3.03		2.52	
	7,069		.039		.033
Weir E		5.89		4.84	
	4,585		.053		.048
Weir G		8.33		7.03	
	1,041		.105		.105
Weir L		9.42		8.12	
	770		.424		.310
Weir H		12.68		10.51	
	2,543		.210		.183
Weir I		17.97		15.17	
	3,926		.038		.089
Weir J		19.45		18.69	
	3,600		.100		.060
Weir K		23.06		20.85	
	6,345		.268		.217
Bridge P		40.09		34.60	
	4,629		.095		.163
Bridge Q		44.49		42.15	
	6,756		.185		.167
Bridge No. 2		56.99		53.46	

ARROYO SECO, CALIFORNIA.

This stream is a tributary of Los Angeles River, which it joins at the city of Los Angeles. The station is described in Water-Supply Paper No. 39, page 410. During 1900 the following measurements were made at the cable station at the Terminal quarries by E. P. Dewey and W. B. Clapp:

Discharge measurements of Arroyo Seco near Pasadena, California.

Date.	Discharge.	Date.	Discharge.
1900.	*Sec.-feet.*	1900.	*Sec.-feet.*
January 3	20.3	November 21	144.0
January 4	4.3	November 22	*a* 580.0
March 5	7.2	Do	85.1
March 6	1.2	November 23	31.0
May 5	42.4	November 24	11.5
May 6	10.5	November 26	8.7
May 7	5.4	December 1	4.3
May 14	2.2	December 6	1.4
November 20	.2		

a Estimated.

SAN GABRIEL RIVER ABOVE AZUSA, CALIFORNIA.

This station is described in Water-Supply Paper No. 39, page 410. All of the surplus waters of the river are now used for irrigation purposes on the plain in the vicinity of Azusa, and it is only an occasional flood that passes the gaging station. Previous to 1899 it was difficult to compute the discharge of the river, owing to the location of the station and the many diversions above the mouth of the canal. In 1898, however, the San Gabriel Electric Company completed its canal system, and measurements are now obtained with greater ease and accuracy, as the conduits of the company divert the entire normal flow.

The season of 1899 and 1900 was notable in southern California for the deficient rainfall, and during the latter year only one flood discharge passed the gaging station. On November 21, 1900, a heavy rainfall prevailed in southern California, and during the night of that day the river reached 7.2 feet on the gage. The maximum discharge of this flood was computed by taking the cross section and fall of the stream and applying the Kutter formula, the coefficient of roughness (n) being obtained by comparison with a few current-meter velocity measurements. The calculated discharge was 5,168 second-feet.

The following tables are condensed from data presented in the United States Land Office suit between the San Gabriel Power Company, applicants, and irrigators in the vicinity of Azusa, Duarte, and Covina, contestants. The tables give the results of daily gagings over the weirs on various branches of San Gabriel River, as recorded by the San Gabriel Power Company. The lengths of the several weirs are as follows:

West branch of North Fork, 18-inch weir.
North branch of North Fork, 36-inch weir.
West fork of river above North Fork, 36-inch weir.
Coldwater Creek, 2½ miles from mouth, 18-inch weir.
San Gabriel River, 100 yards above Fish Fork, 36-inch weir.
Fish Fork 100 yards above mouth, 30-inch weir.
Iron Fork 100 yards above mouth, 36-inch weir.

Estimated daily discharge, in second-feet, over weir on the west branch of North Fork of San Gabriel River, California, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1	.....	0.23	0.19	0.20	18	0.27	0.23	0.25	.....
2	0.28	.23	.19	.12	19	.31	.23	.15	.....
3	.27	.23	.17	.18	20	.39	.22	.12	.....
4	.27	.26	.22	.18	21	.39	.22	.15	.....
5	.26	.17	.12	.23	22	.24	.22	.12	.....
6	.28	.23	.12	.23	23	.26	.22	.15	.....
7	.24	.23	.22	.19	24	.26	.22	.22	.....
8	.23	.22	.18	.19	25	.28	.22	.27	.....
9	.25	.12	.20	.19	26	.37	.23	.26	.....
10	.23	.12	.22	.19	27	.37	.18	.26	.....
11	.25	.19	.22	.19	28	.26	.18	.22	.....
12	.25	.19	.22	.19	29	.23	.25	.20	.....
13	.22	.19	.22	.22	30	.23	.20	.17	.....
14	.27	.19	.18	.....	31	.23	.....	.....	.....
15	.27	.15	.18	.....					
16	.31	.26	.12	.....	Mean	.28	.21	.19	.19
17	.31	.23	.12	.....					

Estimated daily discharge, in second-feet, over weir on the north branch of North Fork of San Gabriel River, California, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1	.....	0.89	0.62	0.65	18	0.97	0.65	0.59	.....
2	0.92	.89	.62	.72	19	.97	.62	.59	.....
3	.92	.89	.62	.68	20	.97	.60	.59	.....
4	.92	.95	.62	.68	21	.97	.60	.53	.....
5	.89	.95	.60	.68	22	.96	.....	.53	.....
6	.89	.74	.65	.68	23	1.07	.55	.53	.....
7	.89	.74	.61	.56	24	.95	.52	.81	.....
8	.82	.74	.61	.56	25	.95	.52	.68	.....
9	.80	.77	.83	.56	26	.96	.56	.65	.....
10	.70	.77	.61	.57	27	.68	.57	.65	.....
11	.81	.74	.61	.59	28	.68	.57	.68	.....
12	.83	.74	.63	.59	29	.89	.57	.68	.....
13	.86	.77	.61	.59	30	.86	.74	.68	.....
14	.95	.68	.63	.....	31	.68	.....	.....	.....
15	.97	.74	.63	.....					
16	.97	.62	.59	.....	Mean	.89	.70	.63	.62
17	.97	.65	.59	.....					

Estimated daily discharge, in second-feet, over weir on West Fork of San Gabriel River, California, above North Fork, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1	0.55	0.05	0.12	0.16	18	0.16	0.12	.11	.....
2	.62	.02	.12	.16	19	.12	.10	.12	.....
3	.68	.....	.12	.16	20	.12	.12	.12	.....
4	.62	.....	.12	.16	21	.07	.12	.16	.....
5	.53	.....	.08	.15	22	.12	.10	.16	.....
6	.55	.....	.11	.20	23	.....	.07	.....	.....
7	.55	.....	.16	.20	24	.....	.08	.....	.....
8	.55	.....	.12	.16	25	.08	.08	.12	.....
9	.44	.....	.12	.16	26	.....	.....	.20	.....
10	.34	.....	.16	.13	27	.....	.08	.16	.....
11	.29	.....	.16	.20	28	.05	.08	.16	.....
12	.26	.08	.12	.20	29	.08	.10	.13	.....
13	.24	.07	.12	.20	30	.05	.12	.14	.....
14	.20	.08	.16	.....	31	.05	.10	.....	.....
15	.13	.08	.16	.....					
16	.12	.12	.16	.....	Mean	.29	.09	.14	.17
17	.16	.10	.16	.....					

Estimated daily discharge, in second-feet, over weir on Coldwater Creek, California, 2½ miles from mouth, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1	.....	0.43	0.52	.....	18	.....	0.47	.....	.....
2	.....	.....	.58	0.60	19	.....	.52	.....	.....
3	.....	.49	.62	.62	20	.....	.55	.....	.....
4	.....	.46	.57	.61	21	.....	.56	.....	.....
5	.....	.54	.55	.63	22	.....	.51	.....	.....
6	.....	.53	.56	.61	23	.....	.49	.....	.....
7	.....	.50	.51	.58	24	.....	.45	.....	.....
8	.....	.50	.51	.58	25	.....	.44	.....	.....
9	.....	.53	.56	.58	26	.....	.45	.....	.....
10	.....	.56	.50	.55	27	0.37	.42	.....	.....
11	.....	.53	.55	.60	28	.49	.42	.....	.....
12	.....	.51	.52	.60	29	.50	.41	.....	.....
13	.....	.46	.....	.64	30	.47	.40	.....	.....
14	.....	.47	.....	.....	31	.46	.56	.....	.....
15	.....	.45	.....	.....					
16	.....	.45	.....	.....	Mean	.46	.48	.55	.60
17	.....	.47	.....	.....					

Estimated daily discharge, in second-feet, over weir on San Gabriel River, California, 100 yards above Fish Fork, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1	2.24			1.67	18	2.00	1.68	1.72	
2	2.48			1.67	19	1.97	1.68	1.72	
3	2.48	1.72		1.71	20	1.97	1.64	1.68	
4	2.42	1.80		1.84	21	2.00	1.68	1.59	
5	2.33	1.80		1.84	22	2.00	1.68	1.63	
6	2.27	1.80		1.80	23	2.00	1.68	1.79	
7	2.06	1.80		1.72	24	1.97	1.68	1.89	
8	2.12	1.80		1.67	25	2.18	1.76	1.84	
9	2.09	1.80	1.84	1.71	26	2.00	1.68	1.84	
10	2.15	1.80	1.80	1.71	27	2.00	1.60	1.67	
11	2.09	1.80	1.72	1.75	28	1.95	1.60	1.63	
12	2.15	1.97	1.76	1.76	29	1.77	1.68	1.67	
13	2.15	1.92	1.72	1.89	30	1.77	1.68	1.79	
14	2.03	1.85	1.76		31		1.97		
15	2.03	1.80	1.76						
16	2.12	1.68	1.80		Mean	2.09	1.75	1.74	1.75
17	2.00	1.76	1.71						

Estimated daily discharge, in second-feet, over weir on Fish Fork of San Gabriel River, California, 100 yards from mouth, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1	1.42			0.95	18	1.00	0.84	0.89	
2	1.66			.90	19	1.00	.84	.86	
3	1.68	0.99		.95	20	1.00	.95	.84	
4	1.66	.96		.96	21	1.12	.89	.84	
5	1.28	1.02		.93	22	1.12	.90	.80	
6	1.25	1.06		.93	23	1.13	.90	.98	
7	1.16	1.06		.93	24	1.06	.90	1.02	
8	1.18	.92		.93	25	1.02	.92	1.01	
9	1.08	.95	1.52	.90	26	.90	.92	.98	
10	.98	1.02	.92	.89	27	.90	.92	.78	
11	.96	.99	.96	.95	28	.90	.92	.80	
12	.98	1.11	1.13	.95	29	.87	.99	.81	
13	.98	1.11	1.10	1.01	30	.87	.95	.84	
14	1.04	1.02	.99		31		1.08		
15	1.02	.99	1.08						
16	1.25	.90	.94		Mean	1.11	.96	.96	.94
17	.93	.90	.93						

Estimated daily discharge, in second-feet, over weir on Iron Fork of San Gabriel River, California, 100 yards from mouth, for 1900.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1	1.97			1.05	18	1.37	1.09	1.09	
2	1.97	0.87		1.08	19	1.37	1.09	1.09	
3	2.03	1.05		1.05	20	1.42	1.16	1.05	
4	2.09	1.09		1.12	21	1.31	1.12	.91	
5	1.89	1.16		1.20	22	1.34	1.12	.87	
6	1.91	1.16		1.12	23	1.37	1.02	1.12	
7	1.83	.62		1.09	24	1.24	1.02	1.27	
8	1.66	1.16		1.16	25	1.29	.95	1.20	
9	1.55	1.12	1.09	1.12	26	1.24	.95	1.20	
10	1.58	1.16	1.12	1.09	27	1.26	.95	1.05	
11	1.50	1.24	1.12	1.20	28	1.21	1.02	1.01	
12	1.39	1.06	1.09	1.20	29	1.09	1.09	1.01	
13	1.42	1.09	1.09	1.23	30	1.14	1.09	1.16	
14	1.42	1.20	1.12	1.31	31	1.24	1.12		
15	1.44	1.24	1.16						
16	1.42	1.12	1.09		Mean	1.50	1.07	1.09	1.14
17	1.42	1.12	1.16						

Estimated daily discharge, in second-feet, of San Gabriel canals, California, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	a22.0	a22.8	17.0	15.5	17.0	21.0	9.9	3.5	4.5	3.7	5.3	52.6
2	a22.0	a22.7	17.0	16.0	17.0	21.5	10.1	3.5	4.7	4.2	5.5	49.6
3	40.0	a22.6	a17.5	17.0	16.2	19.4	9.6	3.5	5.2	4.7	5.5	48.7
4	50.0	22.5	a27.5	16.0	25.0	a18.5	8.4	3.5	5.0	4.8	5.5	46.2
5	a50.0	23.0	a30.0	16.0	a48.0	18.0	8.9	4.4	4.6	4.9	5.6	44 3
6	a40.0	a22.5	a24.5	15.5	54.0	17.5	7.8	4.6	4.3	4.9	5.8	42.9
7	40.0	a22.2	≥3.0	20.0	a54.0	a17.5	7.4	4.4	4.1	4.5	5.8	43.5
8	a38.0	21.8	a22.0	17.6	a49.0	a17.5	7.6	4.3	4.0	4.3	5.8	42.3
9	a34.0	21.5	21.0	16.3	a43.0	.....	7.2	4.5	4.2	4.0	5.8	35.6
10	a31.0	20.8	20.0	16.1	a43.0	17.1	6.6	4.7	4.3	4.0	5.9	35.6
11	32.0	20.6	20.0	15.0	a56.0	17.5	6.2	4.0	4.5	4.4	5.5	34.5
12	a31.0	20.5	19.5	a14.6	56.0	17.1	5.6	4.6	4.5	4.7	5.7	31.4
13	a30.0	20.4	19.3	a15.0	52.0	18.1	5.1	4.3	4.6	5.6	5.7	33.6
14	30.0	20.4	20.0	a15.0	47.0	17.5	5.1	4.5	4.8	6.4	5.9	32.9
15	a29.2	20.3	18.0	a14.6	41.6	16.0	7.2	4.1	4.5	5.8	6.2	32.3
16	a28.5	20.3	18.0	a13.5	40.3	15.4	5.9	3.9	4.1	5.3	7.1	32.4
17	a28.0	19.5	18.0	a13.5	39.0	14.3	5.6	3.7	3.7	5.2	13.4	.....
18	27.5	19.0	17.6	a13.0	a38.5	13.7	5.3	4.3	3.5	5.5	15.6	.....
19	a27.0	19.0	18.4	a13.0	a36.5	12.3	5.3	4.6	3.3	5.6	13.2	.....
20	a26.5	19.0	18.2	a14.0	a31.0	11.5	5.9	4.5	3.4	6.0	16.7	.....
21	26.0	18.7	18.1	a26.0	a30.5	11.7	5.4	4.0	3.3	5.7	b31.8	.....
22	a25.4	18.7	18.0	a22.0	a29.0	10.9	5.4	3.6	3.1	5.5	.....	.....
23	a24.8	17.5	25.0	a19.0	a30.5	10.1	4.8	3.6	3.8	5.5	.....	.....
24	a24.2	18.0	23.0	18.5	a29.5	11.0	4.6	3.6	5.2	5.8	.....	.....
25	24.5	18.0	20.0	18.5	a27.0	10.8	4.3	3.6	5.7	5.8	.....	.....
26	a24.4	18.0	20.0	19.7	a24.0	10.1	4.3	3.6	5.2	5.8	.....	.....
27	a24.3	18.0	19.5	21.0	a23.5	9.6	4.6	3.7	4.7	5.3	.....	.....
28	24.2	17.5	17.5	21.5	a22.5	9.6	4.2	3.6	4.3	5.8	45.2	.....
29	a23.8	.....	17.0	20.6	a22.0	9.1	4.9	3.5	4.2	6.2	48.0	.....
30	23.4	.....	15.5	18.5	a21.0	8.3	4.5	3.9	3.9	5.7	54.8	.....
31	23.0	.....	15.5	.....	a19.5	.....	4.1	4.3	.....	5.7	.....	.....

a Estimated. *b* Power conduit washed out soon after noon.

San Gabriel River at Azusa was dry throughout the year 1900—the canals diverting the entire flow—except on the dates given in the following table, and excepting also November 21 to December 31, inclusive, for which period the record is not obtainable:

Discharge of San Gabriel River at Azusa, California, 1900.

	Second-feet.
January 3	49
January 4	19
May 5	38
May 6	26
May 11	9

SANTA ANA RIVER BELOW WARMSPRINGS, CALIFORNIA.

The original station was established in June, 1896, three-fourths of a mile below the headworks of the Santa Ana canal and opposite the warm springs in the canyon. A change of location of the gage was necessitated, owing to a spillway in the canal, through which a certain amount of water from the Santa Ana flume was turned into the river below the old gage, and on November 9, 1898, a new rod was located 800 feet below the mouth of Warmsprings Canyon and 100 feet above the ford on the canyon road. The station is described in Water-Supply Paper No. 39, page 418. Results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 484.

During 1900 the following measurements of discharge were made under the direction of J. B. Lippincott:

April 14: Gage height, 2.20 feet; discharge, 23 second-feet.
May 5: Gage height, 4.35 feet; discharge, 244 second-feet.
July 13: Gage height, 2.35 feet; discharge, 22 second-feet.
November 20: Gage height, 3.30 feet; discharge, 102 second-feet.

Daily gage height, in feet, of Santa Ana River below Warmsprings, California, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.30	2.20	2.23	2.20	2.64	2.33	2.26	1.85	1.85	1.95	2.00	2.50
2	2.30	2.23	2.23	2.23	2.56	2.35	2.33	1.85	1.85	1.95	2.00	2.50
3	2.36	2.23	2.23	2.33	2.50	2.30	2.33	1.85	1.90	1.95	2.00	2.45
4	2.58	2.33	2.26	2.33	2.45	2.30	2.30	1.85	1.90	1.95	2.00	2.45
5	2.53	2.26	2.40	2.33	4.40	2.33	2.30	1.85	1.85	2.00	2.00	2.45
6	2.45	2.26	2.33	2.30	*a*4.24	2.30	2.35	1.85	1.85	1.95	2.00	2.45
7	2.30	2.26	2.33	2.23	*a*4.20	2.26	2.26	1.85	1.85	1.95	2.00	2.45
8	2.26	2.30	2.33	2.20	*a*3.55	2.30	2.23	1.85	1.85	1.90	2.00	2.45
9	2.23	2.23	2.30	2.30	*a*2.90	2.26	2.20	1.85	1.85	1.90	2.00	2.45
10	2.30	2.26	2.26	2.30	2.69	2.23	2.20	1.85	1.85	1.90	2.00	2.45
11	2.30	2.26	2.26	2.26	2.55	2.23	2.23	1.85	1.85	1.90	2.00	2.45
12	2.30	2.23	2.23	2.30	*a*3.10	2.20	2.26	1.85	1.85	1.95	2.00	2.45
13	2.33	2.26	2.26	2.23	*a*2.76	2.20	2.23	1.85	1.85	2.00	2.00	2.45
14	2.38	2.23	2.26	2.30	2.60	2.26	2.30	1.85	1.85	2.06	2.00	2.45
15	2.35	2.23	2.33	2.26	2.66	2.23	2.30	1.85	1.85	2.03	2.03	2.45
16	2.23	2.20	2.26	2.23	2.65	2.20	2.23	1.80	1.85	1.95	2.03	2.45
17	2.33	2.23	2.26	2.20	2.65	2.20	2.33	1.85	1.85	1.95	2.16	2.40
18	2.23	2.23	2.23	2.16	2.60	2.20	2.33	1.85	1.85	1.95	*a*2.50	2.40
19	2.30	2.30	2.23	2.16	2.56	2.16	2.26	1.85	1.85	2.03	*a*2.90	2.40
20	2.35	2.30	2.20	2.16	2.56	2.16	2.23	1.90	1.85	1.95	3.30	2.40
21	2.30	2.23	2.26	2.50	2.58	2.23	2.03	1.90	1.85	2.00	*a*7.70	2.40
22	2.33	2.26	2.26	2.52	2.50	2.26	1.95	1.80	1.85	2.00	*a*5.10	2.35
23	2.26	2.26	2.43	2.45	2.47	2.26	2.00	1.80	1.85	2.00	4.00	2.35
24	2.26	2.26	2.37	2.40	2.40	2.30	2.00	1.80	1.90	2.00	3.75	2.35
25	2.23	2.23	2.30	2.30	2.37	2.30	1.95	1.80	2.06	2.00	3.40	2.35
26	2.20	2.23	2.30	2.40	2.35	2.30	1.90	1.80	2.00	2.00	3.20	2.35
27	2.16	2.23	2.26	2.47	2.23	2.30	1.90	1.80	1.95	2.00	3.00	2.35
28	2.20	2.23	2.23	2.50	2.20	2.26	1.95	1.75	1.90	2.00	2.90	2.35
29	2.16	------	2.26	2.69	2.20	2.26	1.90	1.75	1.90	2.00	2.80	2.35
30	2.20	------	2.23	2.69	2.23	2.20	1.90	1.80	1.90	2.00	2.75	2.35
31	2.20	------	2.26	------	2.20	------	1.85	1.90	------	2.00	------	2.35

a Estimated.

MILL CREEK IN CANYON, CALIFORNIA.

This station is described in Water-Supply Paper No. 39, page 421. The Crafton Water Company diverts all of the water of the creek at the mouth of the canyon. The water passes over a weir, and the volume, therefore, is determined with considerable accuracy. The following tables, furnished by the Crafton Water Company, give the daily discharge of the creek entering the canal, as well as the amount of water which that company develops by pumping. The results of measurements for 1899 will be found in the Twenty-first Annual Report, Part IV, page 485.

Estimated daily discharge, in second-feet, of Mill Creek at Crafton headworks, California, for 1900.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	9.8	10.2	9.8	9.0	13.0	8.2	5.5	4.9	5.1	4.9	5.1
2	10.0	10.6	9.8	9.1	13.0	8.2	5.5	4.9	5.5	5.1	5.1
3	.....	10.0	9.8	10.0	12.1	7.6	5.6	5.1	5.5	5.1	5.1
4	.....	10.2	11.9	9.8	12.1	7.8	5.6	5.7	5.7	5.3	5.1
5	.....	10.6	10.2	9.2	.....	8.0	6.3	5.7	5.5	4.9	5.1
6	.....	10.6	10.2	9.3	.....	8.0	6.3	5.5	5.5	5.1	5.1
7	.....	10.6	10.2	9.8	15.5	8.0	5.1	5.5	5.0	5.1	5.1
8	.....	10.2	10.2	9.8	14.6	8.0	4.3	5.5	5.0	4.1	5.1
9	.....	10.6	10.2	9.7	16.4	8.0	4.3	5.1	5.0	3.8	5.1
10	.....	10.2	9.8	8.9	17.0	8.0	4.5	5.1	5.5	3.9	5.1
11	.....	10.2	9.8	8.9	.....	8.0	4.5	5.4	5.5	4.9	5.1
12	.....	10.2	9.6	9.3	.....	8.0	5.5	5.5	5.5	4.9	5.1
13	.....	10.0	9.6	9.3	.....	8.2	5.5	5.5	5.5	5.6	5.1
14	.....	10.0	9.8	8.9	.....	8.0	5.5	5.5	5.5	5.8	5.1
15	.....	10.0	9.8	8.9	.....	8.0	5.5	5.5	4.5	5.8	5.1
16	.....	10.0	9.8	9.8	12.0	8.2	4.5	5.5	4.5	5.4	8.5
17	.....	10.0	9.8	8.9	12.0	7.2	3.8	5.5	4.3	5.2	7.5
18	9.8	10.0	9.8	8.9	12.0	4.8	3.3	5.5	5.1	5.0	.....
19	10.0	10.2	9.8	8.9	13.0	6.8	4.4	5.5	4.5	5.0	.....
20	10.0	10.2	9.8	8.9	12.0	7.6	4.0	5.5	4.1	5.0	.....
21	10.6	10.2	10.2	10.2	12.0	7.6	5.4	5.5	5.1	4.1	.....
22	10.4	10.2	10.2	13.3	10.1	6.5	5.4	5.5	5.1	4.6	.....
23	10.6	10.2	13.2	10.8	12.0	6.5	4.8	4.9	4.9	5.2	.....
24	10.6	10.2	10.6	10.8	10.1	.....	5.0	5.5	5.3	5.2	.....
25	10.6	10.2	9.8	10.2	10.1	.....	5.0	4.9	5.3	5.2	.....
26	10.4	10.2	10.2	10.2	9.9	.....	5.0	4.9	5.3	5.2	.....
27	10.4	9.8	10.2	10.2	9.9	.....	5.0	4.3	4.9	5.2	.....
28	10.4	9.8	11.6	10.8	8.4	5.4	5.0	4.3	4.9	5.2	.....
29	10.4	.....	10.2	13.0	8.6	5.4	5.0	4.3	4.9	5.2	.....
30	10.6	.....	9.8	13.0	8.6	5.3	4.7	5.1	4.9	5.3	.....
31	10.2	.....	9.8	.....	8.2	.....	4.7	5.1	.....	5.1	.....
Mean	10.3	10.2	10.2	9.9	11.8	7.3	5.0	5.2	5.1	5.0	5.4

NOTE.—No record from November 18 to December 31.

Estimated daily discharge, in second-feet, of water pumped from Mill Creek at Crafton headworks, California, for 1900.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	.....	1.7	2.0	2.2	3.5	2.9	2.9	2.9	2.9
2	.....	1.7	2.0	2.2	3.5	2.9	2.9	2.9	2.9
3	.....	1.7	2.0	2.2	3.5	2.9	2.9	2.9	2.9
4	.....	1.7	2.0	2.2	3.5	2.9	2.9	2.9	2.9
5	.....	1.7	.....	2.2	3.5	2.9	2.9	2.9	2.9
6	.....	1.7	.....	2.2	3.5	2.9	2.9	2.9	2.9
7	.....	1.7	.....	2.2	3.5	2.9	2.9	2.9	2.9
8	.....	1.7	.....	2.2	3.5	2.9	2.9	2.9	2.9
9	.....	1.7	.....	2.2	3.5	2.9	2.9	2.9	2.9
10	.....	1.7	.....	2.2	3.3	2.9	2.9	2.8	2.9
11	.....	1.7	2.2	2.2	3.3	2.9	2.9	2.8	2.9
12	.....	1.7	.....	2.2	3.5	2.9	2.9	2.8	2.9
13	.....	1.7	.....	2.2	3.5	2.9	2.9	2.8	2.9
14	.....	1.7	.....	2.2	3.5	2.9	2.9	2.8	2.9
15	.....	1.7	.....	2.2	3.5	2.9	2.9	2.8	2.9
16	.....	1.7	2.2	2.2	3.3	2.9	2.9	2.8	2.9
17	.....	1.7	2.2	2.2	3.2	2.9	2.9	2.8	2.9
18	.....	1.7	2.2	2.2	3.2	2.9	2.9	2.8	.....
19	.....	1.7	2.2	2.2	3.2	2.9	2.9	2.8	.....
20	.....	1.7	.....	2.2	3.2	2.9	2.9	2.8	.....
21	.....	1.7	2.2	3.7	3.2	2.9	2.9	2.8	.....
22	.....	1.7	2.2	3.7	3.2	2.9	2.9	2.8	.....
23	.....	1.7	2.2	3.7	3.2	2.9	2.9	2.8	.....
24	.....	1.7	2.2	3.7	3.2	2.9	2.9	2.8	.....
25	.....	1.7	2.2	3.7	3.2	2.9	2.9	2.8	.....
26	.....	1.7	2.2	3.7	3.2	2.9	2.9	2.8	.....
27	.....	.....	2.2	3.7	3.2	2.9	2.9	2.8	.....
28	1.0	.....	2.2	3.7	3.2	2.9	2.2	2.8	.....
29	1.5	.....	2.2	3.7	3.2	2.9	2.9	2.8	.....
30	1.7	.....	2.2	3.7	3.3	2.9	2.9	2.9	.....
31	1.7	.....	2.2	.....	3.3	2.9	.....	2.9	.....
Mean	1.5	1.7	2.2	2.7	3.3	2.9	2.9	2.8	2.9

NOTE.—No record from November 17 to December 31.

CHINO CREEK AT RINCON, CALIFORNIA.

There is no gaging rod at this place, owing to the shifting nature of the stream bed. The results of discharge measurements made during 1899 will be found in Water-Supply Paper No. 39, page 427. During 1900 the following measurements of discharge were made under the direction of J. B. Lippincott:

Discharge measurements of Chino Creek near Rincon, California.

Date.	Discharge.	Date.	Discharge.
1900.	*Sec.-feet.*	1900.	*Sec.-feet.*
January 18	24.1	August 15	1.1
January 29	27.0	September 3	*a* 0.0
February 21	13.4	October 5	5.0
April 17	8.8	October 16	.4
June 24	4.0	November 5	14.4
July 7	2.1	December 4	17.1
July 28	2.2	December 31	16.6

a All water pumped out.

SANTA ANA RIVER AT RINCON, CALIFORNIA.

This station is described in Water-Supply Paper No. 39, page 427. During 1900 the following measurements of discharge were made at the wagon bridge at Rincon, above the mouth of Chino Creek, under the direction of J. B. Lippincott:

Discharge measurements of Santa Ana River at Rincon, California.

Date.	Discharge.	Date.	Discharge.
1900.	*Sec.-feet.*	1900.	*Sec.-feet.*
January 18	224	August 15	87
January 29	184	September 3	88
February 21	162	September 22	88
April 16	*a* 91	October 5	*c* 64
April 17	102	Do	74
June 24	69	October 16	122
July 7	85	October 25	*b* 71
July 27	*b* 38	November 5	117
July 28	*c* 45	December 4	338
Do	61	December 31	210

a One mile below Rincon bridge.
b At Riverside Narrows, 12 miles above Rincon.
c At Auburndale bridge.

Discharge measurements of canals diverting water from Santa Ana River near Rincon, California.

Date.	Canal.	Locality.	Discharge.
1900.			*Sec.-feet.*
July 28	Newberry	Auburndale bridge	5.5
Do	Ditch south of Newberry	do	2.3
Do	Gilliland	do	1.4
August 15	Santa Ana	First road crossing	25.7
Do	Yorba	Opposite first road crossing	14.0
Do	Anaheim	do	18.4
September 3	Santa Ana	First road crossing	39.0
Do	Yorba	Opposite first road crossing	21.5
Do	Anaheim	do	18.2
September 22	Santa Ana	First road crossing	44.7
Do	Yorba	Opposite first road crossing	17.3
Do	Anaheim	do	16.7
October 5	Townsend or Newberry	Auburndale bridge	5.8
Do	Fuller	1 mile north of Auburndale bridge	6.5
October 16	Santa Ana	First road crossing	58.0
Do	Yorba	Opposite first road crossing	21.1
Do	Anaheim	do	30.0
November 5	Santa Ana	First road crossing	71.1
Do	Yorba	Opposite first road crossing	16.1
Do	Anaheim	do	29.0

SAN LUIS REY RIVER, CALIFORNIA.

The water of this river is diverted, upon its appearance from the canyon, by the flume of the Escondido Irrigation District, and is conducted to a reservoir from whence its waters are distributed for irrigation purposes. Table of the daily discharge of the river for 1899 will be found in Water-Supply Paper No. 39, page 429; that for 1900 was not available at time of publication. Measurements are made over a weir at the headworks of the canal of the Escondido Irrigation District, from whom the figures are obtained.

SWEETWATER RIVER AT SWEETWATER DAM, CALIFORNIA.

Owing to the severe drought of the last few years, the water supply of the streams of southern California, particularly of Sweetwater River, has been abnormally low. During the season 1899–1900 there was no discharge into Sweetwater reservoir from the drainage area of 186 square miles. The estimated discharge for the three preceding seasons, also table of the evaporation at Sweetwater dam, will be found in Water-Supply Paper No. 39, page 430.

MISCELLANEOUS DISCHARGE MEASUREMENTS IN CALIFORNIA.

During the severe drought of 1898 measurements were instituted to ascertain the low-water flow of the important irrigation streams of California, the results of measurements made during that season being printed in Water-Supply Paper No. 28, page 193. These low-water measurements were continued in 1899 and 1900, the results for the former year being printed in Water-Supply Paper No. 39, page 432; those for the latter year, which were made under the direction of J. B. Lippincott, resident hydrographer, are published herein. The meas-

urements made in Sacramento and San Joaquin valleys during the three seasons mentioned have been assembled in the following table:

Miscellaneous discharge measurements in Sacramento and San Joaquin valleys, California.

Date.	Stream.	Locality.	Discharge.		
			1898.	1899.	1900.
			Sec.-feet.	*Sec.-feet.*	*Sec.-feet.*
September 13	Sacramento River	Jellys Ferry	4,152.00	4,087.00	.....
September 20	do	do	.....	.....	4,105.00
September 22	Stoney Creek	300 feet below Bridgeport bridge (1 mile below Elk Creek).	.....	.....	7.70
September 18	Feather River	One-half mile above Oroville bridge.	.....	.....	1,123.00
October 7	Yuba River	Dry except for water from reservoir.	0.00	.....	.....
August 28	do	Parks Bar Bridge, 1 mile below Smartville.	.....	.....	*a* 474.00
August 29	North Fork of Yuba River.	Above Yuba Power Company's dam.	.....	.....	*a* 282.00
September 18	Middle Fork of Yuba River.	Freeman's bridge	.....	.....	*a* 64.00
September 17	Bear River	1 mile south of Wheatland	.....	.....	12.00
October 7	American River	North and Middle forks at head of North Fork ditch.	16.00	.....	.....
September —	do	Folsom	34.50	.....	.....
September 16	do	Main stream 1 mile above mouth of South Fork.	.....	86.10	.....
Do	do	North Fork ditch at road crossing 2½ miles above Folsom.	.....	19.64	.....
September 14	do	Main stream 1 mile above mouth of South Fork.	.....	.....	235.00
Do	do	North Fork ditch at road crossing 2½ miles above Folsom.	.....	.....	11.80
September 16	South Fork of American River.	.....	.....	*b* 20.00	.....
Do	do	Natoma ditch	.....	*b* 20.00	.....
September 14	do	At iron road bridge near mouth.	.....	.....	80.50
Do	do	Natoma ditch, S.P.R.R. crossing 3 miles above Folsom.	.....	.....	35.00
September 23	Cache Creek	At Rumsey road bridge	.....	.....	3.80
September 24	do	Road bridge crossing near lower lake.	.....	.....	4.70
September 23	Puta Creek	6 miles above Winter's, at Devils Gate.	.....	.....	4.40
September 15	Consumne River	At bridge Jackson-Latrobe road crossing.	.....	2.00	.....
Do	do	Michigan Bar ditch, Jackson-Latrobe road crossing.	.....	2.60	.....
September 12	do	At bridge Jackson-Latrobe road crossing.	.....	.....	1.70
Do	do	Michigan Bar ditch, Jackson-Latrobe road crossing.	.....	.....	3.70
September 14	Mokelumne River	100 feet below bridge Mock Hill–Jackson road.	.....	33.10	.....
September 12	do	do	.....	.....	15.00
Do	do	Amador ditch, below Butte ditch.	.....	.....	37.00
Do	do	Butte ditch	.....	.....	4.80
September 14	Calaveras Creek	Bridge San Andres–Jackson road.	.....	0.00	.....
September 11	do	do	.....	.....	0.00
October 6	Stanislaus River	Oakdale	49.60	.....	.....
Do	do	Stanislaus and San Joaquin canal.	32.70	.....	.....
September 9	do	Oakdale	.....	88.40	.....
August 11	do	do	.....	.....	66.00
September 6	do	do	.....	.....	35.30
September 7	do	Stanislaus Water Company's canal 100 feet below head gate, 6 miles above Knights Ferry.	.....	.....	84.70

a Measurement by H. D. H. Connick.
b Estimated by Mr. Knight, superintendent of Folsom Power Company.

Miscellaneous discharge measurements in Sacramento and San Joaquin valleys, California—Continued.

Date.	Stream.	Locality.	Discharge.		
			1898.	1899.	1900.
			Sec.-feet.	*Sec.-feet.*	*Sec.-feet.*
September 7	Stanislaus River	Below Stanislaus Water Company's intake.			28.00
		Total flow 6 miles above Knights Ferry.			112.70
October 7	Tuolumne River	Lagrange	82.70		
Do	do	Mining ditch	24.00		
Do	do	Turlock canal	30.00		
		Total flow at Lagrange	136.70		
September 11	do	1,000 feet below Geological Survey gaging station.		12.10	
Do	do	Mining ditch		24.00	
Do	do	Turlock canal flume No. 3		28.90	
		Total flow at Lagrange		65.00	
August 11	do	Lagrange			17.00
Do	do	Mining ditch			12.00
Do	do	Turlock canal			117.00
		Total flow at Lagrange			146.00
September 8	do	1,000 feet below Geological Survey gaging station.			10.90
Do	do	Mining ditch			9.00
Do	do	Turlock canal			35.00
		Total flow at Lagrange			*a* 54.90
September 11	Merced River	One mile above head gate of Crocker-Hoffman canal.		35.50	
Do	do	Valley Mills ditch		4.95	
		Total flow above Crocker-Hoffman dam.		40.45	
September 10	do	One-half mile above bridge at Merced Falls (total).			63.00
September 11	do	Snelling ditch (estimated)		0.50	
September 10	do	do			2.10
September 11	do	Crocker-Hoffman canal 300 feet below head gate.		16.50	
September 10	do	Crocker-Hoffman canal at head gate.			6.50
Do	do	Merced River Mill ditch at mill.			27.10
July 28	San Joaquin River	Herndon	611.00		
September 2	do	do	328.00		
September 8	do	Pollasky, 500 feet above bridge		269.30	
Do	do	Herndon		195.60	
August 9	do	do			466.00
September 1	do	do			246.00
September 28	do	do			197.00
Do	do	Pollasky, 500 feet above bridge			187.60
September 26	Salinas River	Gaging station near Salinas			1.70
July 27	King River	Red Mountain	503.00		
August 31	do	do	243.80		
September 4	do	do		206.00	
August 10	do	do			427.00
September 4	do	do			405.00
September 27	do	do			220.00
August 31	do	Church canal check near Trimmer Springs road.	164.30		
September 4	do	do		151.10	229.20
August 31	do	Seventy-six canal at mouth of canyon.	0.00		
September 4	do	do		0.00	0.00
August 31	do	Kingsburg canal at mouth of canyon.	0.00		
September 4	do	do		0.25	0.00
Do	do	Gould canal at mouth of canyon.		2.00	84.00

a It is said that at the time of this measurement a portion of the flow of Tuolumne River was being diverted for hydraulic mining in the gravel range 45 miles above Lagrange, and that after being used the water reached Merced River.

Miscellaneous discharge measurements in Sacramento and San Joaquin valleys, California—Continued.

Date.	Stream.	Locality.	Discharge.		
			1898.	1899.	1900.
			Sec.-feet.	*Sec.-feet.*	*Sec.-feet.*
August 31	King River	Fowler Switch canal at mouth of canyon.	0.00		
September 4	do	do		0.00	0.00
September 1	Kaweah River	One-half mile above Kaweah Irrigation and Power Company's headworks.	35.30		
September 6	do	do		40.90	
September 3	do	do			100.00
September 1	do	At iron bridge above Watumna canal headworks.	17.90		
September 6	do	do		33.30	
September 3	do	do			86.60
September 1	do	Kaweah Irrigation and Power Company's ditch.	*8.50		
September 6	do	do		1.49	
September 3	do	do			8.10
September 1	do	Pogues ditch	4.50		
September 6	do	do		4.87	
September 3	do	do			6.67
Do	do	Myers ditch			1.00
Do	do	Watumna ditch at headworks			15.00
September 1	do	North Fork at mouth	0.30		
September 6	do	do		1.12	
September 1	do	South Fork at mouth	0.00		
September 6	do	do		1.18	
September 1	Tule River	Headworks of Pioneer ditch (estimated).	6.00	13.12	
Do	do	Pioneer canal 1 mile below head gate.		8.43	
September 2	do	Headworks of Pioneer ditch			9.05
August 29	Kern River	First Point of Measurement	115.62		
September 2	do	do		99.22	
August 30	do	do			103.16

Miscellaneous discharge measurements in southern California.

Date.	Stream.	Locality.	Discharge.
1900.			*Sec.-feet.*
October 8	Santa Clara River	Piru Creek, Piru Land and Water Company's upper ditch.	0.80
Do	do	Piru Land and Fruit Company's lower ditch	1.26
Do	do	Piru Creek opposite lower ditch	.22
Do	do	Camulos, at head of wooden flume	10.60
Do	do	Seepage at head of wooden flume, Camulos	.78
Do	do	Road crossing below San Francisquito Creek	3.25
Do	do	East Channel	3.64
Do	do	Newhall ditch	3.35
		Total	10.24
October 9	Los Angeles River	Pacoima submerged dam	.09
Do	do	Tujunga River near headworks of Monte Vista ditch.	.19
September 17	do	Arroyo Seco, Pasadena Lake, Vineyard, Land and Water Company's pump at dry tunnel (pump runs about 4 hours per day).	.55
Do	do	Arroyo Seco, main tunnel at Devils Gate (including water from a pump on surface above head of tunnel)—	
		No. 1	2.37
		No. 2	.09
		No. 3	.52
Do	do	Richardson tunnel weir, 2,300 feet below Devils Gate weir.	.385
Do	do	Arroyo Seco, Wilson's tunnel weir, 3,000 feet below Devils Gate weir.	.187
Do	do	Sheep Corral Springs, Arroyo Seco—	
		To South Pasadena	.70
		To Pasadena (pump exhausts the supply in 12 hours).	1.24
		Total	1.94

Miscellaneous discharge measurements in southern California—Continued.

Date.	Stream.	Locality.	Discharge.
1900.			*Sec.-feet.*
September 18	Los Angeles River	Arroyo Seco, Painters Well steam plant	0.38
		Second plant	.44
		Total	.82
September 13	San Gabriel River	Morengo Water Company, Southern Pacific Company's Garfield station.	*a* 1.82
Do	do	Morengo Water Company's weir in Morengo Canyon.	*a*.46
Do	do	Los Robles Water Company's reservoir	*a*.31
Do	do	Reservoir at junction of Glenarm and Los Robles avenues, Pasadena.	*a* 0.068
Do	do	Graves & Bean tunnel	1.10
September 14	do	Brick kiln between Molino and Hope streets, Pasadena.	.02
Do	do	Oak Knoll Park, Pasadena	.34
Do	do	Patton tunnel, near Kewen Lake	.18
Do	do	Patton's east canyon	1.48
September 17	do	Patton's east canyon (natural flow, pump not running).	.37
Do	do	Mission ditch, Patton ranch	.20
September 14	do	Winston ranch	.56
Do	do	Shorb's ranch	*a*.18
September 15	do	Yoakham's ranch	*a*.12
Do	do	Robert Liddel's, San Pasqual and Shorb streets	*a*.10
Do	do	R. W. Scoville's	*a*.07
Do	do	Mrs. Black, San Pasqual and Craig streets	*a*.07
Do	do	Morningside ranch, J. P. Butler's	*a*.04
September 17	do	Bradbury ranch, Santa Anita and Rose avenues	*a* 1.44
Do	do	San Gabriel Sanitarium tunnel	*a*.04
September 18	do	W. A. Highland's, Rose avenue, Lamanda Park	*a*.10
September 19	do	Chapman ranch (2 wells, 1 artesian, pumped)	1.01
Do	do	Chapman ranch (4 wells pumped)	1.90
September 20	do	Chapman ranch (natural flow of cienaga)	.07
Do	do	Chapman ranch dairy	.72
		Total	3.70
September 20	do	Alhambra Water Co	*b* 2.58
Do	do	do	*c*.34
		Total	2.92
September 24	do	Santa Anita Canyon (natural flow)	.22
Do	do	Sierra Madre Water Co	*a*.145
Do	do	Remamettes, east of Sierra Madre	.09
September 18	do	Monrovia Water Co. (3 wells pumped)	3.24
September 24	do	Monrovia Canyon to Monrovia Water Co.	*a*.428
		To Bradbury	*a*.116
		Total	.544
September 21	do	Duarte Mutual Improvement and Canal Co	.78
Do	do	Beardsley Water Co	.44
August 7	do	East Whittier ditch at El Monte road crossing	5.71
Do	do	Killion's pumping plant, 4 wells near El Monte	10.22
Do	do	Cameron or Sheep Creek ditch	2.46
Do	do	Rincon ditch	2.47
Do	do	Old Temple ditch	1.20
Do	do	Cate ditch near head	8.71
Do	do	Standifer ditch	14.56
Do	do	Banta ditch	15.44
		Total San Gabriel River at intake of Standifer and Banta ditches.	30.00
August 8	do	Rodriguez ditch near Old Mission	2.00
Do	do	Rio Honda or old San Gabriel under Mission bridge.	23.28
Do	do	Arroyo ditch	21.08
Do	do	Little Lake	.22

a Measurement over weir. *b* Weir No. 1. *c* Weir No. 2.

Miscellaneous discharge measurements in southern California—Continued.

Date.	Stream.	Locality.	Discharge.
1900.			*Sec.-feet.*
August 8	San Gabriel River	Agricultural ditch	Dry.
Do	do	Below Agricultural ditch	Dry.
August 27	do	Glendora, Azusa Irrigation Co., Massey well	1.50
Do	do	Glendora, Azusa Irrigation Co., Paine well	.90
September 27	do	Daty & Sons	1.80
Do	do	San Diemas Irrigation Co., F. D. Smith well	1.20
Do	do	Thacker well	.80
Do	do	Smith well (private)	.30
Do	do	Chapman well	.70
Do	do	Ruddock well	.50
Do	do	Artesian Belt Co., 2 wells	1.60
Do	do	Azusa city well	.20
Do	do	Walker's well	.90
Do	do	Citizens Water Co., Covina	.10
Do	do	Covina plant, Deacon well	.44
Do	do	San Diemas Canyon (natural flow)	.01
Do	do	Sparks's well	.40
		Total of San Diemas wash wells *a*	11.38
Do	do	Richards, 4 wells	1.52
Do	do	Sumner	.48
Do	do	Sheldon Bros	.30
Do	do	La Verne Land and Water Co	.70
Do	do	Rodgers	.10
Do	do	True (5 days in 30)	.16
Do	do	Rodney Soper's	.24
Do	do	Hayes and Stratton	.20
Do	do	Wallace	.16
Do	do	Mullard	.30
Do	do	Douglas and McQuilly	.76
Do	do	Norris	.30
Do	do	Williams Bros	.80
Do	do	Kulp (intermittent), south of Mesa avenue	.20
Do	do	D. Fulton	.50
Do	do	Steves	.20
Do	do	Daniels and Overholtzer	1.34
Do	do	Massey, 2 wells	.54
Do	do	Hauser Bros	.76
Do	do	Moorwaw & Son	.50
Do	do	Sleider	.88
Do	do	Rutherford & Co	.40
Do	do	New Deal Water Co	.40
Do	do	Kiser	.90
		Total of wells on Lordsburg Mesa	12.64
September 25	Santa Ana River	Frey's ranch near Spadra	1.85
Do	do	Phillips's ranch near Spadra	*b*.74
September 27	do	C. L. Lancaster, Mesa avenue, Lordsburg	*b*.559
September 26	do	Covina Irrigation Co.'s compressor pumping plant, south of Lordsburg.	3.58
September 24	do	Neuruff place, corner of Holt and San Antonio avenues, Pomona.	*b*.33
September 25	do	Pomona Land and Water Co., Garey avenue	*b*1.28
Do	do	Consolidated Water Co., Pomona, air compressor plant.	*b*3.34
September 24	do	Consolidated Water Co., north of Pomona College.	*b*.82
September 25	do	James Warden's place	*b*.25
September 24	do	Brundege place, San Antonio avenue, Pomona	*b*.26
September 25	do	Del Monte Water Co	*b*.96
Do	do	San Antonio Water Co.'s wells in Claremont (water goes to Ontario).	*b*.40
Do	do	San Antonio Water Co.'s wells at Indian Hill, ½ mile north of Pomona College.	*b*.99
Do	do	San Antonio Canyon	*b c*3.72
July 11	do	Cucamonga Land and Water Co., Cucamonga Creek, 30-inch pipe line. *a*	*c*1.15
Do	do	Cucamonga Land and Water Co., Lone Star Spring pumping plant. *a*	*c*1.20

a Statement by Irwin F. Daniels.
b Measurement over weir.
c From records of Pomona Land and Water Company. The discharge from San Antonio Canyon was 7.53 second-feet on September 2, 1895, and 9.02 second-feet on September 6, 1897. July 11, 1900, measurement was made of water in San Antonio Canyon by S. G. Bennett, and a discharge of 4.07 second-feet was found.

Miscellaneous discharge measurements in southern California—Continued.

Date.	Stream.	Locality.	Discharge.
1900.			*Sec.-feet.*
July 11	Santa Ana River	Cucamonga Land and Water Co., Y tunnel *a*	*b* 1.68
Do	do	Stowell water from 90-acre tract, west side part to Ontario. *a*	*b* 2.97
Do	do	San Antonio Water Co., Haskell well	*b* 2.13
Do	do	San Antonio Water Co., Sixteenth street pumping plant.	*b* 1.72
		Total Red Hill development, Cucamonga	10.85
Do	do	Natural surface flow of Cucamonga Creek in canyon (Iomosa Water Co.).	.90
		Developed by bed-rock tunnel	.18
		Total	1.08
August 4	do	Cucamonga Land and Water Co., Lone Star Spring pumping plant.	*b* 1.02
March 16	do	Lytle Creek, head of McIntyre ditch	*b*.14
March 19	do	Lytle Creek, head of Whiting's ditch	*b* 1.12
March 17	do	Lytle Creek near head of Ranchero ditch	*b*.24
June 8	do	Lytle Creek at intake of Rialto canal	*b* 6.19
September 29	do	do	*b* 4.62
June 8	do	Cajon Creek Canyon in flume opposite Keenbrook station.	1.37
July 12	do	West Twin Creek in flume	.22
October 1	do	do	.16
July 12	do	East Twin Creek, Del Rosa cement canal	.62
October 1	do	do	.36
July 12	do	East Twin Creek, Kansas City Syndicate development.	.15
October 1	do	do	.17
March 15	do	City Creek, Whitlock ditch, flume across McKenzie.	.23
Do	do	City Creek, Logsdon and Farrel ditch at head	1.26
Do	do	City Creek, Daley ditch at head	.72
July 12	do	City Creek, measurement in cement canal	.16
October 1	do	City Creek at head of pipe line	.21
July 12	do	Plunge Creek at intake of ditch	*a*.34
July 13	do	Below wasteway of Santa Ana canal	22.34
Do	do	South Fork or Redlands canal, water not going over weir into North Fork or Highlands canal on account of repairs.	*a* 10.65
Do	do	Redlands tunnel	*a*.84
Do	do	Morton Canyon	*a*.09
October 2	do	South Fork or Redlands canal	*a* 6.25
Do	do	North Fork or Highlands canal	*a* 5.61
Do	do	Green Spot pipe line	*a*.12
Do	do	Redlands tunnel	*a*.85
Do	do	Morton Canyon	*a*.20
April 14	do	Mill Creek, Crafton reservoir	10.77
May 6	do	Mill Creek, road crossing Santa Ana Canyon	38.76
Do	do	Mill Creek zanja	8.49
July 13	do	Mill Creek zanja	*a* 5.35
Do	do	Mill Creek, water being pumped by Crafton Water Co. and others in Mill Creek Canyon and Yucaipe Valley.	*a* 3.44
		Total	8.79
October 2	do	Crafton Water Co's pumping plant, Mill Creek Canyon.	*a* 1.35
Do	do	At mouth of Mill Creek Canyon	*a* 7.21
		Total	8.56
July 14	do	San Timeteo Canyon ditch at Bicknell Station	1.50
March 15	do	Return water, Haws & Talmage ditch at head gate.	.00
Do	do	Return water, Rabel ditch at intake	*a* .54
Do	do	Return water, Shay or Stout ditch at head	.50
March 16	do	Return water, McKenzie ditch 250 feet below intake.	2.30
Do	do	Return water, Meeks & Daley ditch, submerged weir at intake.	*a* 13.94

a Measurement by E. T. Wright. *b* Over weir.

Miscellaneous discharge measurements in southern California—Continued.

Date.	Stream.	Locality.	Discharge.
1900.			*Sec.-feet.*
March 21	Santa Ana River	Return water, upper canal of Riverside Water Co. at intake.	*a* 61.94
March 15	do	Return water, Beam ditch, flume 300 feet below intake.	.68
March 21	do	Return water, Swamp ditch at first turn-out	*a* .70
June	do	Return water, Haws & Talmage ditch	.00
Do	do	Return water, Rabel ditch	.35
Do	do	Return water, Shay ditch	.40
Do	do	Return water, McKenzie ditch	1.57
Do	do	Return water, Meeks & Daley ditch	13.78
Do	do	Return water, Beam ditch	.50
Do	do	Return water, Riverside Water Co.'s upper canal.	52.94
Do	do	Return water, Riverside Water Co.'s lower canal.	7.16
March 9	do	Timber ditch at intake	.00
June	do	Timber ditch	.00
March 21	do	Gage canal at head	*a* .40
Do	do	Gage canal at Palm avenue	*a* 22.58
June	do	Gage canal at head	.29
Do	do	Gage canal at Palm avenue	22.52
Do	do	Logsdon & Farrel ditch	.49
Do	do	Whitlock ditch	.00
Do	do	Daley ditch	1.12
Do	do	McIntyre ditch	.01
Do	do	Whiting ditch	.13
Do	do	Swamp ditch	.89
Do	do	Ranchero ditch	.55
March 9	do	Ward & Warren ditch at head	2.55
June	do	Ward & Warren ditch	1.70
March 9	do	Mill flume of Riverside Water Co	2.67
June	do	do	2.17
Do	do	Mill pump of Riverside Water Co	1.88
March 9	do	Camp Carlton ditch at head	*a* 2.55
June	do	Camp Carlton ditch	2.60
Do	do	East Riverside ditch	5.38
Do	do	Colton Terrace Water Co	1.54
Do	do	City of Colton	3.21
Do	do	Bloomington flume	3.68
July 26	do	Riverside Water Co.'s upper canal in flume 150 feet above tunnel of Riverside Mesa.	43.30
July 27	do	North Riverside and Jurupa canal in flume near Beckstead's house.	14.42
Do	do	Riverside Water Co.'s lower canal	7.13
Do	do	Rubidoux ditch	8.18
Do	do	Trujillo ditch	.46
Do	do	75 feet below intake of Trujillo ditch	.44
Do	do	Evans's upper ditch	1.04
		Total flow from Santa Ana at Rubidoux ditch intake.	10.12
Do	do	Alsetrez ditch from Spring Brook, 100 feet below West Riverside bridge.	2.77
Do	do	200 feet below West Riverside bridge	1.16
Do	do	West Riverside bridge, Rubidoux Mountain	5.27
Do	do	At Riverside Narrows	38.41
September 13	do	Riverside Water Co.'s lower canal	6.69
October 19	do	North Riverside and Jurupa canal	14.05
October 25	do	Rubidoux ditch	7.80
Do	do	Trujillo ditch	.53
Do	do	20 feet below intake of Trujillo ditch	.56
Do	do	Evans's upper ditch	3.32
		Total flow from Santa Ana at Rubidoux ditch intake.	12.21
Do	do	Alsetrez ditch from Spring Brook, West Riverside bridge.	1.53
Do	do	West Riverside bridge	8.45
Do	do	Evans's ditch, West Riverside bridge	4.36
Do	do	Riverside Narrows	70.64

a Measurement over weir.

Miscellaneous discharge measurements in southern California—Continued.

Date.	Stream.	Locality.	Discharge.
1900.			*Sec.-feet.*
July 28	Santa Ana River	300 feet above Auburndale bridge	45.16
Do	do	Newberry ditch, Auburndale bridge	5.47
Do	do	Ditch south of Newberry ditch, Auburndale bridge.	2.32
Do	do	Gilliland ditch, Auburndale bridge	1.40
		Total	54.35
October 5	do	Auburndale bridge	63.90
Do	do	Townsend ditch, Auburndale bridge	5.84
Do	do	Fuller's ditch near schoolhouse	6.50
July 28	do	Rincon bridge	60.76
Do	do	Chino Creek under bridge on Chino-Corona road	2.20
October 5	do	Rincon bridge	74.20
Do	do	Chino Creek	5.00
July 28	do	Durkee ditch near ranch house	1.80
Do	do	Anaheim and Santa Ana division box	48.60
October 5	do	do	75.10
March 17	Pumping plants	East Riverside Irrigation District	6.59
Do	do	Colton Terrace Water Co	1.69
Do	do	City of Colton, upper pumps	2.57
Do	do	City of Colton, lower pumps (estimated)	2.37
Do	do	Bloomington, flume at lower end	3.80
March 21	do	Mill pump of Riverside Water Company, not running.	.00
Do	do	Pomroy & Marble, not running	.00
March 16	do	Johnson & Hubbard, two flumes	1.26
Do	do	Base line and Waterman avenue, not running	.00

Discharge measurements in tunnels near Devils Gate, Arroyo Seco, Los Angeles River, California.

Date.	Tunnel.	Discharge.
1897.		*Sec.-feet.*
June 14	Northwest tunnel	3.72
July 12	do	3.72
August 9	do	3.42
October 11	do	2.93
November 8	do	2.93
June 14	Northeast tunnel	.34
July 12	do	.296
August 9	do	.276
September 13	do	.238
October 11	do	.218
November 8	do	.256
June 14	Richardson tunnel	.726
July 12	do	.726
August 9	do	.612
September 13	do	.618
October 11	do	.618
November 8	do	.618
June 14	Wilson's tunnel	.380
July 12	do	.380
August 9	do	.318
September 13	do	.380
October 11	do	.360
November 8	do	.360

[Concluded in Water-Supply Paper No. 52.]

1895.

Sixteenth Annual Report of the United States Geological Survey, 1894–95, Part II, Papers of an economic character, 1895; octavo, 598 pp.

Contains a paper on the public lands and their water supply, by F. H. Newell, illustrated by a large map showing the relative extent and location of the vacant public lands; also a report on the water resources of a portion of the Great Plains, by Robert Hay.

A geological reconnoissance of northwestern Wyoming, by George H. Eldridge, 1894; octavo, 72 pp. Bulletin No. 119 of the United States Geological Survey; price, 10 cents.

Contains a description of the geologic structure of portions of the Bighorn Range and Bighorn Basin, especially with reference to the coal fields, and remarks upon the water supply and agricultural possibilities.

Report of progress of the division of hydrography for the calendar years 1893 and 1894, by F. H. Newell, 1895; octavo, 176 pp. Bulletin No. 131 of the United States Geological Survey; price, 15 cents.

Contains results of stream measurements at various points, mainly within the arid region, and records of wells in western Nebraska, western Kansas, and eastern Colorado.

1896.

Seventeenth Annual Report of the United States Geological Survey, 1895–96, Part II, Economic geology and hydrography, 1896; octavo, 864 pp.

Contains papers on "The underground water of the Arkansas Valley in eastern Colorado," by G. K. Gilbert; "The water resources of Illinois," by Frank Leverett; and "Preliminary report on the artesian waters of a portion of the Dakotas," by N. H. Darton.

Artesian-well prospects in the Atlantic Coastal Plain region, by N. H. Darton, 1896; octavo, 230 pp., 19 plates. Bulletin No. 138 of the United States Geological Survey; price, 20 cents.

Gives a description of the geologic conditions of the coastal region from Long Island, N. Y., to Georgia, and contains data relating to many of the deep wells.

Report of progress of the division of hydrography for the calendar year 1895, by F. H. Newell, hydrographer in charge, 1896; octavo, 356 pp. Bulletin No. 140 of the United States Geological Survey; price, 25 cents.

Contains a description of the instruments and methods employed in measuring streams and the results of hydrographic investigations in various parts of the United States.

1897.

Eighteenth Annual Report of the United States Geological Survey, 1896–97, Part IV, Hydrography, 1897; octavo, 756 pp.

Contains a "Report of progress of stream measurements for the calendar year 1896," by Arthur P. Davis; "The water resources of Indiana and Ohio," by Frank Leverett; "New developments in well boring and irrigation in South Dakota," by N. H. Darton; and "Reservoirs for irrigation," by J. D. Schuyler.

1899.

Nineteenth Annual Report of the United States Geological Survey, 1897–98, Part IV, Hydrography, 1899; octavo, 814 pp.

Contains a "Report of progress of stream measurements for the calendar year 1898," by F. H. Newell and others; "The rock waters of Ohio," by Edward Orton; and "A preliminary report on the geology and water resources of Nebraska west of the one hundred and third meridian," by N. H. Darton.

Part II of the Nineteenth Annual contains a paper on "Principles and conditions of the movements of ground water," by F. H. King, and one on "Theoretical investigation of the motion of ground waters," by C. S. Slichter.

1900.

Twentieth Annual Report of the United States Geological Survey, 1898–99, Part IV, Hydrography, 1900; octavo, 660 pp.

Contains a "Report of progress of stream measurements for the calendar year 1898," by F. H. Newell, and "Hydrography of Nicaragua," by A. P. Davis.

1901.

Twenty-first Annual Report of the United States Geological Survey, 1899–1900, Part IV, Hydrography, 1901; octavo, 768 pp.

Contains a "Report of progress of stream measurements for the calendar year 1899," by F. H. Newell; "Preliminary description of the geology and water resources of the southern half of the Black Hills and adjoining regions in South Dakota and Wyoming," by N. H. Darton; and "The High Plains and their utilization," by W. D. Johnson.

Bulletins can be obtained only by prepayment of cost, as noted above. Money should be transmitted by postal money order or express order, payable to the Director of the United States Geological Survey. Postage stamps, checks, and drafts can not be accepted. Correspondence should be addressed to

The Director, United States Geological Survey, Washington, D. C.

WATER-SUPPLY AND IRRIGATION PAPERS.

1. Pumping water for irrigation, by Herbert M. Wilson, 1896.
2. Irrigation near Phœnix, Arizona, by Arthur P. Davis, 1897.
3. Sewage irrigation, by George W. Rafter, 1897.
4. A reconnoissance in southeastern Washington, by Israel C. Russell, 1897.
5. Irrigation practice on the Great Plains, by E. B. Cowgill, 1897.
6. Underground waters of southwestern Kansas, by Erasmus Haworth, 1897.
7. Seepage waters of northern Utah, by Samuel Fortier, 1897.
8. Windmills for irrigation, by E. C. Murphy, 1897.
9. Irrigation near Greeley, Colorado, by David Boyd, 1897.
10. Irrigation in Mesilla Valley, New Mexico, by F. C. Barker, 1898.
11. River heights for 1896, by Arthur P. Davis, 1897.
12. Underground waters of southeastern Nebraska, by N. H. Darton, 1898.
13. Irrigation systems in Texas, by W. F. Hutson, 1898.
14. New tests of pumps and water lifts used in irrigation, by O. P. Hood, 1898.
15, 16. Operations at river stations, 1897, Parts I, II, 1898.
17. Irrigation near Bakersfield, California, by C. E. Grunsky, 1898.
18. Irrigation near Fresno, California, by C. E. Grunsky, 1898.
19. Irrigation near Merced, California, by C. E. Grunsky, 1899.
20. Experiments with windmills, by Thomas O. Perry, 1899.
21. Wells of northern Indiana, by Frank Leverett, 1899.
22. Sewage irrigation, Part II, by George W. Rafter, 1899.
23. Water-right problems of Bighorn Mountains, by Elwood Mead, 1899.
24, 25. Water resources of the State of New York, Parts I, II, by G. W. Rafter, 1899.
26. Wells of southern Indiana (continuation of No. 21), by Frank Leverett, 1899.
27, 28. Operations at river stations, 1898, Parts I, II, 1899.
29. Wells and windmills in Nebraska, by Erwin Hinckley Barbour, 1899.
30. Water resources of the lower peninsula of Michigan, by Alfred C. Lane, 1899.
31. Lower Michigan mineral waters, by Alfred C. Lane, 1899.
32. Water resources of Porto Rico, by H. M. Wilson, 1900.
33. Storage of Water on Gila River, Arizona, by J. B. Lippincott, 1900.
34. Geology and water resources of southeastern S. Dak., by J. E. Todd, 1900.
35–39. Operations at river stations, 1899, Parts I–V, 1900.
40. The Austin dam, by Thomas U. Taylor, 1900.
41, 42. The windmill: its efficiency and use, Parts I, II, by E. C. Murphy, 1901.
43. Conveyance of water in irrigation canals, etc., by Samuel Fortier, 1901.
44. Profiles of rivers, by Henry Gannett, 1901.
45. Water storage on Cache Creek, California, by Albert E. Chandler, 1901.
46. Reconn. of Kern and Yuba rivers, Cal., by F. H. Olmsted and M. Manson, 1901.
47–52. Operations at river stations, 1900, Parts I–VI, 1901.

Other papers are in various stages of preparation. Provision has been made for printing these by the following clause in the sundry civil act making appropriations for the year 1896–97:

Provided, That hereafter the reports of the Geological Survey in relation to the gaging of streams and to the methods of utilizing the water resources may be printed in octavo form, not to exceed 100 pages in length and 5,000 copies in number; 1,000 copies of which shall be for the official use of the Geological Survey, 1,500 copies shall be delivered to the Senate, and 2,500 copies shall be delivered to the House of Representatives, for distribution. [Stat. L., vol. 29, p. 453.]

The endeavor is made to send these pamphlets to persons who have rendered assistance in their preparation through replies to schedules or who have furnished data. Requests made for a certain paper and stating a reason for asking for it are granted whenever practicable, but it is impossible to comply with general demands, such as to have all of the series sent.

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