DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, DIRECTOR

WATER-SUPPLY PAPER 352

SURFACE WATER SUPPLY OF THE UNITED STATES

1913

PART II. SOUTH ATLANTIC AND EASTERN GULF OF MEXICO BASINS

NATHAN C. GROVER, Chief Hydraulic Engineer

GUY C. STEVENS and WARREN E. HALL, District Engineers

WASHINGTON
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Water Resources Branch,
Geological Survey,
Box 3106, Capitol Station
Oklahoma City, Okla.

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ILLUSTRATIONS.

SURFACE WATER SUPPLY OF THE SOUTH ATLANTIC AND EASTERN GULF OF MEXICO BASINS, 1913.

AUTHORIZATION AND SCOPE OF WORK.

This volume is one of a series of 12 reports presenting results of measurements of flow made on streams in the United States during 1913.

Six of the reports for 1913 contain data for the year ending September 30, and the other six for the calendar year, as indicated in the table on page 6.

The data presented in these reports were collected by the United States Geological Survey under authority implied in the organic law (20 Stat. L., p. 394), which contains the following paragraph:

Provided, That this officer [the Director] shall have the direction of the geological survey and the classification of public lands and examination of the geological structure, mineral resources, and products of the national domain.

The work was begun in 1888 in connection with special studies of water supply for irrigation. Since the fiscal year ending June 30, 1895, successive sundry civil bills passed by Congress have carried the following item and appropriations:

For gaging the streams and determining the water supply of the United States, and for the investigation of underground currents and artesian wells, and for the preparation of reports upon the best methods of utilizing the water resources.

Annual appropriations for the fiscal years ending June 30, 1895–1914.

1895	$12,500
1896	20,000
1897 to 1900, inclusive	50,000
1901 to 1902, inclusive	100,000
1903 to 1906, inclusive	200,000
1907	150,000
1908 to 1910, inclusive	100,000
1911 to 1914, inclusive	150,000

In the execution of the work many private and State organizations have cooperated, either by furnishing data or by assisting financially in collecting the data. Acknowledgments for cooperation of the first kind are made in connection with the description of each station affected and of the second kind on page 15.

Measurements of stream flow have been made at about 3,000 points in the United States and also at many points in small areas in Seward Peninsula and the Yukon-Tanana region, and in the Hawaiian Islands. On July 1, 1913, 1,388 gaging stations were being maintained by the Survey and the cooperating organizations and during the year many miscellaneous discharge measurements were made at other points. In connection with this work data were also collected in regard to precipitation, evaporation, storage reservoirs, river profiles, and water power in many sections of the country and will be made available in the regular water-supply papers from time to time.

PUBLICATIONS.

A report for each year has been prepared embodying the stream-flow data collected during that year. An index to the reports containing stream-flow measurements prior to 1904 has been published as Water-Supply Paper 119. Circulars are also available giving complete lists of the gaging stations maintained by the Survey to date. and a list of the reports relating to the water supply of the country,

Prior to 1901 gage heights and discharge measurements were published in water-supply papers or bulletins and estimates of monthly discharge in annual reports; since 1901 both classes of data have been published in water-supply papers, and they are now being published in 12 parts, as shown in the following table:

Papers on surface water supply of the United States, 1913.

Part.	No.	Title.	Year used.
I	351	North Atlantic basins	Calendar year.
II	352	South Atlantic and eastern Gulf of Mexico basins	Do.
III	353	Ohio River basin	Year ending Sept. 30.
IV	354	St. Lawrence River basin	Calendar year.
V	355	Upper Mississippi River and Hudson Bay basins	Year ending Sept. 30.
VI	356	Missouri River basin	Calendar year.
VII	357	Lower Mississippi River basin	Do.
VIII	358	Western Gulf of Mexico basins	Year ending Sept. 30.
IX	359	Colorado River basin	Calendar year.
X	360	Great Basin	Year ending Sept. 30.
XI	361	Pacific basins in California	Do.
XII	362	North Pacific basins	Do.

A list of reports containing stream-flow data is presented in the following table:

Stream-flow data in reports of the United States Geological Survey.

[A=Annual Report; B=Bulletin; WS=Water-Supply Paper.]

Report.	Character of data.	Year.
10th A, pt. 2	Descriptive information only	
11th A, pt. 2	Monthly discharge and descriptive information	1884 to Sept., 1890.
12th A, pt. 2	.....do	1884 to June 30, 1891.
13th A, pt. 3	Mean discharge in second-feet	1884 to Dec. 31, 1892.
14th A, pt. 2	Monthly discharge (long-time records, 1871 to 1893)	1888 to Dec. 31, 1893.
B 131	Descriptions, measurements, gage heights, and ratings	1893 and 1894.
16th A, pt. 2	Descriptive information only	
B 140	Descriptions, measurements, gage heights, ratings, and monthly discharge (also many data covering earlier years).	1895.
WS 11	Gage heights (also gage heights for earlier years)	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years).	1895 and 1896.
WS 15	Descriptions, measurements, and gage heights, eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas.	1897.
WS 16	Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte, and western United States.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also some long-time records).	1897.
WS 27	Measurements, ratings, and gage heights, eastern United States, eastern Mississippi River, and Missouri River.	1898.
WS 28	Measurements, ratings, and gage heights, Arkansas River and western United States.	1898.
20th A, pt. 4	Monthly discharge (also for many earlier years)	1898.
WS 35 to 39	Descriptions, measurements, gage heights, and ratings	1899.
21st A, pt. 4	Monthly discharge	1899.
WS 47 to 52	Descriptions, measurements, gage heights, and ratings	1900.
22d A, pt. 4	Monthly discharge	1900.
WS 65, 66	Descriptions, measurements, gage heights, and ratings	1901.
WS 75	Monthly discharge	1901.
WS 82 to 85	Complete data	1902.
WS 97 to 100	.....do	1903.
WS 124 to 135	.....do	1904.
WS 165 to 178	.....do	1905.
WS 201 to 214	.....do	1906.
WS 241 to 252	.....do	1907–8.
WS 261 to 272	.....do	1909.
WS 281 to 292	.....do	1910.
WS 301 to 312	.....do	1911.
WS 321 to 332	.....do	1912.
WS 351 to 362[a]	.....do	1913.

[a] In preparation.

NOTE.—No data regarding stream flow are given in the 15th and 17th annual reports.

The table which follows gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1913. The data for any particular station will be found in the reports covering the years during which the station was maintained. For example, data for Machias River at Whitneyville, Me., 1903 to 1913, are published in Water-Supply Papers 97, 124, 165, 201, 241, 261, 281, 301, 321, and 351, which contain records for the New England streams from 1903 to 1913. Results of miscellaneous measurements are published by drainage basins.

Numbers of water-supply papers containing results of stream measurements, 1899–1913.

	1899 [a]	1900 [b]	1901	1902	1903	1904	1905	1906	1907–8	1909	1910	1911	1912	1913
North Atlantic	35	47, [c] 48	65, 75	82	97	[d] 124, [e] 125 [f] 126	[d] 165, [e] 166 [f] 167	[d] 201, [e] 202 [f] 203	241	261	281	301	321	351
South Atlantic and eastern Gulf of Mexico	[g] 35, 36	48	65, 75	[g] 82, 83	[g] 97, 98	[f] 126, 127	[f] 167, 168	[f] 203, 204	242	262	282	302	322	352
Ohio River basin	36	48, [h] 49	65, 75	83	98	128	169	205	243	263	283	303	323	353
St. Lawrence River and Great Lakes	36	49	65, 75	[i] 82, 83	97	129	170	206	244	264	284	304	324	354
Hudson Bay and Upper Mississippi River	36	49	[j] 65, 66, 75	[j] 83, 85	[j] 98, 99, [k] 100	[j] 128, 130	171	207	245	265	285	305	325	355
Missouri River	[l] 36, 37	49, [m] 50	66, 75	84	99	130, [n] 131	172	208	246	266	286	306	326	356
Lower Mississippi River	37	50	[j] 65, 66, 75	[j] 83, 84	[j] 98, 99	[j] 128, 131	[j] 169, 173	[j] 205, 209	247	267	287	307	327	357
Western Gulf of Mexico	37	50	66, 75	84	99	132	174	210	248	268	288	308	328	358
Colorado River	[o] 37, 38	50	66, 75	85	100	133	175, [p] 177	211	249	269	289	309	329	359
Great Basin	38, [q] 39	51	66, 75	85	100	133, [r] 134	176, [r] 177	212, [r] 213	250, [r] 251	270, [r] 271	290, [r] 291	310	330	360
California	38, [s] 39	51	66, 75	85	100	134	177	213	251	271	291	311	331	361
North Pacific	38	51	66, 75	85	100	135	[t] 177, 178	214	252	272	292	312	[u] 332	[u] 362

[a] Rating tables and index to Water-Supply Papers 35–39 contained in Water-Supply Paper 39.
[b] Rating tables and index to Water-Supply Papers 47–52 and data on precipitation, wells, and irrigation in California and Utah contained in Water-Supply Paper 52.
[c] Wissahickon and Schuylkill rivers to James River.
[d] New England rivers only.
[e] Hudson River to Delaware River, inclusive.
[f] Susquehanna River to Yadkin River, inclusive.
[g] James River only.
[h] Scioto River.
[i] Lake Ontario and tributaries to St. Lawrence River proper
[j] Tributaries of Mississippi from east.
[k] Hudson Bay only.
[l] Gallatin River.
[m] Loup and Platte rivers near Columbus, Nebr., and all tributaries below junction with Platte.
[n] Platte and Kansas rivers.
[o] Green and Gunnison rivers and Grand River above junction with Gunnison.
[p] Below junction with Gila.
[q] Mohave River only.
[r] Great Basin in California, excepting Truckee and Carson drainage basins.
[s] Kings and Kern rivers only.
[t] Rogue, Umpqua, and Siletz rivers only.
[u] In three parts: *A*, Pacific drainage in Washington and upper Columbia River basin; *B*, Snake River basin; *C*, Lower Columbia River and Rogue, Umpqua, and Siletz River basins.

Water-supply papers and other publications of the United States Geological Survey containing data in regard to the water resources of the United States may be obtained or consulted as indicated below.

1. Copies may be obtained free of charge by applying to the Director of the Geological Survey, Washington, D. C. The edition printed for free distribution is, however, small and is soon exhausted.

2. Copies may be purchased at nominal cost from the Superintendent of Documents, Government Printing Office, Washington, D. C., who will on application furnish lists giving prices.

3. Sets of the reports may be consulted in the libraries of the principal cities in the United States.

4. Complete sets are available for consultation in the local offices of the water-resources branch of the Geological Survey, as follows:

Albany, N. Y., Room 18, Federal Building.
Atlanta, Ga., Post Office Building.
Madison, Wis., Capitol Building.
St. Paul, Minn., Old Capitol Building.
Helena, Mont., Montana National Bank Building.
Denver, Colo., 302 Chamber of Commerce Building.
Phoenix, Ariz., Fleming Building.
Salt Lake City, Utah, Federal Building.
Boise, Idaho, 615 Idaho Building.
Tacoma, Wash., Federal Building.
Portland, Oreg., 416 Couch Building.
San Francisco, Cal., 505 Customhouse.
Los Angeles, Cal., Federal Building.
Honolulu, Hawaii, Kapiolani Building.

A list of the Geological Survey's publications will be sent on application to the Director of the United States Geological Survey, Washington, D. C.

DEFINITION OF TERMS.

The volume of water flowing in a stream—the "run-off" or "discharge"—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups: (1) Those which represent a rate of flow, as second-feet, gallons per minute, miner's inches, and discharge in second-feet per square mile; and (2) those which represent the actual quantity of water, as run-off in depth in inches, acre-feet, and millions of cubic-feet. The units used in this series of reports are second-foot, second-feet per square mile, run-off in inches, acre-foot, and millions of cubic-feet. They may be defined as follows:

"Second-foot" is an abbreviation for "cubic foot per second" and is a unit of rate of discharge of water flowing in a stream. A second foot is the rate of discharge of water flowing in a channel of rectangular cross-section, 1 foot wide and 1 foot deep, at an average velocity of 1 foot per second. It is generally used as a fundamental

unit from which others are computed by the use of the factors given in the tables of convenient equivalents (p. 11).

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

"Run-off, depth in inches," is the depth to which the drainage area would be covered if all the water flowing from it in a given period were conserved and uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth in inches.

An "acre-foot" is equivalent to 43,560 cubic feet, and is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation work.

"Millions of cubic-feet" is a unit used to express quantities of water stored in reservoirs and is most frequently used in studies of flood control.

The following terms used in these reports are not in very common use and may be defined as follows:

"Discharge relation" is an abbreviation for the term "relation of gage height to discharge."

"Control," "control section," and "point of control" are terms used to designate that section or sections of the stream below the gage which determines the discharge relation at the gage. It should be noted that the control section may not be the same at all stages.

The "point of zero flow" for a given gaging station is that point on the gage—the gage height—to which the surface of the river would fall if there were no flow.

CONVENIENT EQUIVALENTS.

The following is a list of convenient equivalents for use in hydraulic computations:

Table for converting discharge in second-feet per square mile into run-off in depth in inches over the area.

Discharge in second-feet per square mile.	Run-off in inches.				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	0.03719	1.041	1.079	1.116	1.153
2	.07438	2.083	2.157	2.231	2.306
3	.11157	3.124	3.236	3.347	3.459
4	.14876	4.165	4.314	4.463	4.612
5	.18595	5.207	5.393	5.578	5.764
6	.22314	6.248	6.471	6.694	6.917
7	.26033	7.289	7.550	7.810	8.070
8	.29752	8.331	8.628	8.926	9.223
9	.33471	9.372	9.707	10.041	10.376

NOTE.—For part of a month multiply the values for one day by the number of days.

Table for converting discharge in second-feet into run-off in acre-feet.

Discharge in second-feet.	Run-off in acre-feet.				
	1 day.	28 days.	29 days.	30 days.	31 days.
1.....	1.983	55.54	57.52	59.50	61.49
2.....	3.967	111.1	115.0	119.0	123.0
3.....	5.950	166.6	172.6	178.5	184.5
4.....	7.934	222.1	230.1	238.0	246.0
5.....	9.917	277.7	287.6	297.5	307.4
6.....	11.90	333.2	345.1	367.0	368.9
7.....	13.88	388.8	402.6	416.5	430.4
8.....	15.87	444.3	460.2	476.0	491.9
9.....	17.85	499.8	517.7	535.5	553.4

NOTE.—For part of a month multiply values for one day by the number of days.

1 second-foot equals 40 California miner's inches (law of Mar. 23, 1901).
1 second-foot equals 38.4 Colorado miner's inches.
1 second-foot equals 40 Arizona miner's inches.
1 second-foot equals 7.48 United States gallons per second; equals 448.8 gallons per minute; equals 646,317 gallons for one day.
1 second-foot for one year (365 days) covers 1 square mile 1.131 feet or 13.572 inches deep.
1 second-foot for one year (365 days) equals 31,536,000 cubic feet.
1 second-foot for one year (365 days) equals 724 acre-feet.
1 second-foot equals about 1 acre-inch per hour.
1 second-foot for one day equals 86,400 cubic feet.
1,000,000,000 (1 United States billion) cubic feet equals 11,570 second-feet for one day.
1,000,000,000 cubic feet equals 414 second-feet for one 28-day month.
1,000,000,000 cubic feet equals 399 second-feet for one 29-day month.
1,000,000,000 cubic feet equals 386 second-feet for one 30-day month.
1,000,000,000 cubic feet equals 373 second-feet for one 31-day month.
100 California miner's inches equals 18.7 United States gallons per second.
100 California miner's inches for one day equals 4.96 acre-feet.
100 Colorado miner's inches equals 2.60 second-feet.
100 Colorado miner's inches equals 19.5 United States gallons per second.
100 Colorado miner's inches for one day equals 5.17 acre-feet.
100 United States gallons per minute equals 0.223 second-foot.
100 United States gallons per minute for one day equals 0.442 acre-foot.
1,000,000 United States gallons per day equals 1.55 second-feet.
1,000,000 United States gallons equals 3.07 acre-feet.
1,000,000 cubic feet equals 22.95 acre-feet.
1 acre-foot equals 325,850 gallons.
1 inch deep on 1 square mile equals 2,323,200 cubic feet.
1 inch deep on 1 square mile equals 0.0737 second-foot per year.
1 foot equals 0.3048 meter.
1 mile equals 1.60935 kilometers.
1 mile equals 5,280 feet.
1 acre equals 0.4047 hectare.
1 acre equals 43,560 square feet.
1 acre equals 209 feet square, nearly.
1 square mile equals 2.59 square kilometers.
1 cubic foot equals 0.0283 cubic meter.
1 cubic foot of water weighs 62.5 pounds.
1 cubic meter per minute equals 0.5886 second-foot.

1 horsepower equals 550 foot-pounds per second.
1 horsepower equals 76.0 kilogram-meters per second.
1 horsepower equals 746 watts.
1 horsepower equals 1 second-foot falling 8.80 feet.
1¼ horsepower equals about 1 kilowatt.

To calculate water power quickly: $\frac{\text{Sec.-ft.} \times \text{fall in feet}}{11} = $ net horsepower on water wheel realizing 80 per cent of theoretical power.

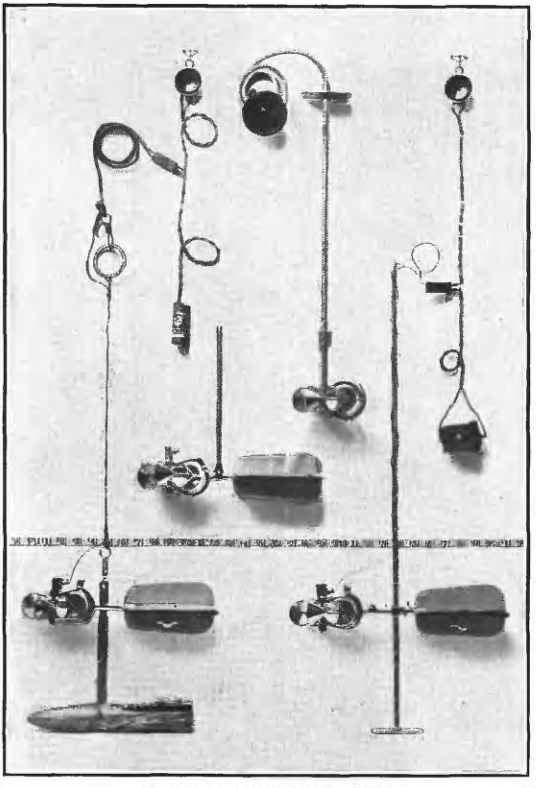
EXPLANATION OF DATA.

For each regular gaging station the following data (so far as available) are given: Description of the station, list of discharge measurements, table of daily gage height, table of daily discharge, table of monthly and yearly discharge and run-off. For stations at weirs or dams the gage-height table is usually omitted.

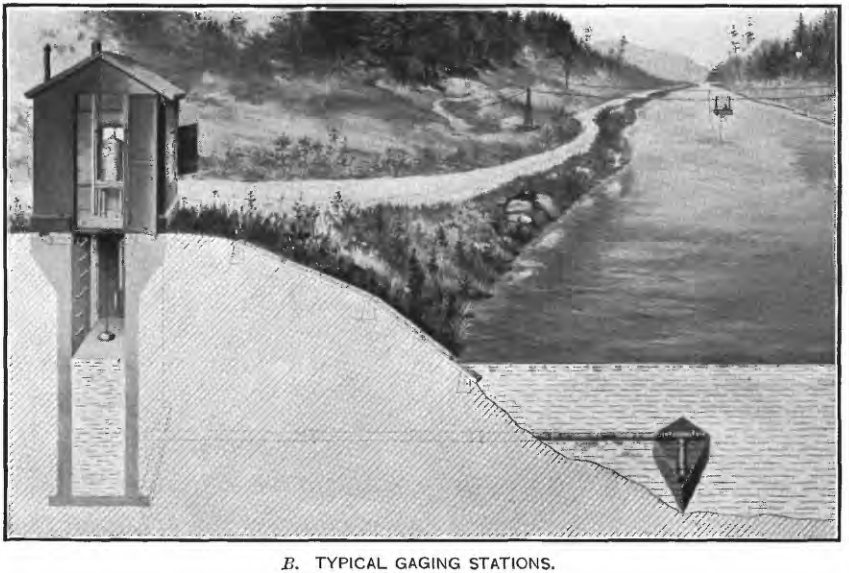
In addition to statements regarding the location and equipment of stations, the descriptions give information in regard to any condition which may affect the constancy of the relation of gage height to discharge (the discharge relation, p. 10), covering such points as ice, logging, shifting channels, and backwater; also information regarding diversions which decrease the total flow at the gage. Statements are also made regarding the accuracy of the data.

The table of daily gage height shows the daily fluctuations of the surface of the river as found from the mean of the gage readings taken each day, usually in the morning and in the evening, though at many stations only one reading is made each day. At a comparatively few stations automatic gages are used, some of which give a continuous record of river stage in the form of a hydrograph, and others a record printed at regular intervals from which the mean daily gage height can be computed. The gage height given in the table represents the elevation of the surface of the water above the zero of the gage. When the discharge relation is affected by ice or by backwater from obstructions, all gage heights are published as recorded, with suitable footnotes. The rating table is not applicable for such periods unless the proper corrections to the gage heights are known and applied. Attention is called to the fact that the zero of the gage is placed at an arbitrary datum and has no relation to zero flow or the bottom of the river. In general the zero is located somewhat below the lowest known flow, so that negative readings shall not occur.

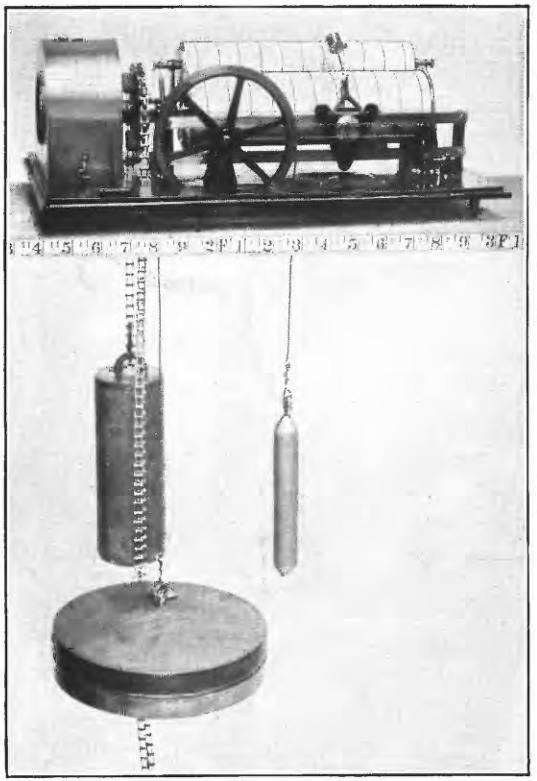
In the tables of daily gage height the use of zeros in the hundredths place indicates the limits of accuracy to which the gage was read and to which the mean daily gage height was computed. If a gage is read to tenths or half-tenths once a day or to tenths twice a day no zeros appear in the hundredths place for any stage. If the gage is read to half-tenths twice a day or to quarter-tenths or hundredths,



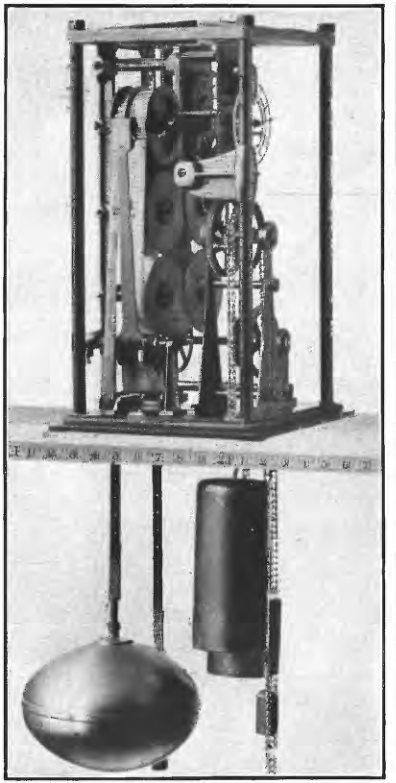
A. PRICE CURRENT METERS.



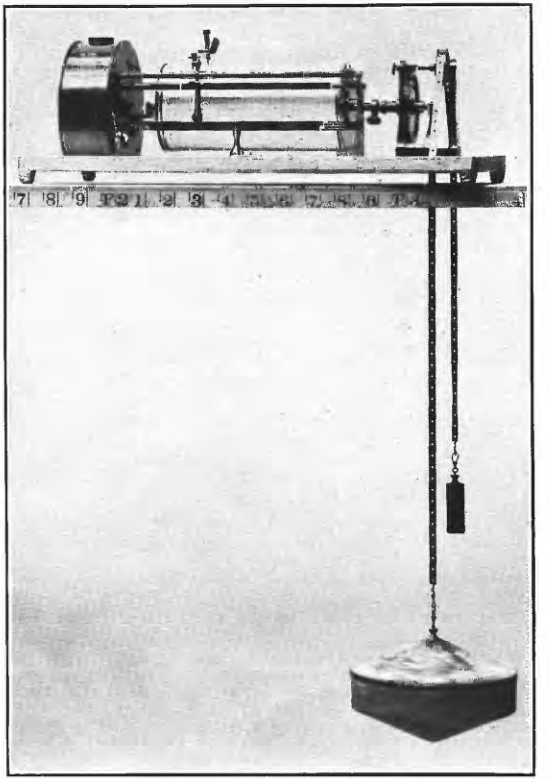
B. TYPICAL GAGING STATIONS.



A. STEVENS.



B. GURLEY.



C. FRIEZ.

AUTOMATIC GAGES.

regardless of the number of readings a day, the gage heights are published to hundredths, and zeros appear in the hundredths place, below a certain limiting stage. This limiting stage is so selected that the average error in the mean daily discharge, resulting from not using the mean daily gage height to hundredths above that stage, shall not be greater than 2 per cent. For automatic gages the allowable average error of the daily discharge has been taken as 1 per cent. The selection of the percentage is arbitrary, but it should be noted that the maximum error will in all cases be twice the average error. In like manner half-tenths are used from the hundredths limit to another higher limit, above which only tenths are used. It is the aim to have the gage height observations at each gaging station recorded to the degree of refinement required by the above method of use, but in practice it is found necessary, in order to avoid confusion in the gage observer's record, to have the observations for all stages recorded to the degree of refinement required for low stages, which usually necessitates readings to hundredths of a foot.

The discharge measurements and gage heights are the base data from which rating tables, daily discharge tables, and monthly discharge tables are computed. The base data for the tables presented in this report, unless otherwise stated in description of station, have been collected by the methods commonly used at current-meter gaging stations and described in standard textbooks.

The rating table gives, either directly or by interpolation, the discharge in second-feet corresponding to every stage of the river recorded during the period for which it is applicable. It is not published in this report but can be determined from the tables of daily gage height and daily discharge.

The table of daily discharge prepared from the rating table and gage-height table gives the discharge in second-feet corresponding to the mean of the gage readings observed each day.

In the table of monthly discharge the column headed "Maximum" gives the mean flow, as determined from the rating table, for the day when the mean gage height was highest. As the gage height is the mean for the day, it does not indicate correctly the stage when the water surface was at crest height, and the corresponding discharge was consequently larger than given in the maximum column. Likewise, in the column of "Minimum" the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow in cubic feet for each second during the month. On this the computations for the remaining columns, which are defined on pages 9 and 10, are based.

Plates I and II show typical gaging stations and current meters and gages used in the work.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS.

The accuracy of stream-flow data depends (1) on the permanence of channel and of the relation between discharge and stage and (2) on the accuracy of observation of stage, measurements of discharge, and interpretation of data.

In order to give engineers and others information regarding the probable accuracy of the computed results, footnotes are added to the daily discharge tables stating the probable accuracy of the rating curves used, and an accuracy column is inserted in the monthly discharge table. For the rating curves "well-defined" indicates, in general, that the rating is probably accurate within 5 per cent; "fairly well defined," within 10 per cent; "poorly defined" or "approximate," within 15 to 25 per cent. These notes are very general and are based on the plotting of the individual measurements with reference to the mean rating curve.

The accuracy column in the monthly discharge table does not apply to the maximum or minimum nor to any individual day, but to the monthly mean. It is based on the accuracy of the rating curve, the probable reliability of the observer, the number of gage readings per day, the range of the fluctuation in stage, and knowledge of local conditions. In this column A indicates that the mean monthly flow is probably accurate within 5 per cent; B, within 10 per cent; C, within 15 per cent; D, within 25 per cent. Special conditions are covered by footnotes.

Even though the monthly means for any station may represent with a high degree of accuracy, the quantity of water flowing past the gage, the figures showing discharge per square mile and depth of run-off in inches may be subject to gross errors which result from including in the measured drainage area large noncontributing districts or omitting estimates of water diverted for irrigation or other use. For this reason the computations of "second-feet per square mile" and "run-off, depth in inches" have not been made for stations draining areas having an annual rainfall of less than 20 inches, nor for those stations draining areas of over 20 inches of rainfall for which it is believed that the computations would be uncertain and misleading because of the presence of large noncontributing districts in the measured drainage area, of omitting estimates of water diverted for irrigation or other use, or of artificial control or unusual natural control of the flow of the river above the gaging station. All values of "second-feet per square mile" and "run-off, depth in inches" previously published by the Survey should be used with extreme caution, and such values in this report should be used with care because of possible inherent sources of error not known to the Survey.

In general the base data collected each year by the Survey engineers are published, not only to comply with the law but also to afford any engineer the means of analyzing in detail the results of the computations. The table of monthly discharge is so arranged as to give only a general idea of the flow at the station and should not be used for other than preliminary estimates. The tables of daily discharge allow more detailed studies of the variation in flow. It should be borne in mind that the observations in each succeeding year may be expected to throw new light on data already collected and published.

COOPERATION.

Special acknowledgments are due for financial assistance rendered by the following corporations and individuals: Alabama Geological Survey; Virginia Railway & Power Co.; Southern Aluminum Co.; Central Georgia Power Co.; Columbus Power Co.; North Carolina Electric & Power Co.; North Georgia Electric Co.; Northern Contracting Co.; Mr. P. F. Whittier; and Mr. B. H. Hardaway.

DIVISION OF WORK.

The field data in the James and Roanoke drainage basins were collected under the direction of G. C. Stevens. The field data for all drainage basins south of Roanoke River were collected under the direction of Warren E. Hall, assisted by B. M. Hall, jr. The ratings, special estimates, and studies of the completed data were made by Warren E. Hall and J. G. Mathers. The computations were made by J. G. Mathers, H. D. Padgett, M. I. Walters, J. H. Morgan, and W. A. Ellwood, and the data were prepared for publication by J. G. Mathers. The report was edited by Mrs. B. D. Wood.

GAGING STATION RECORDS.

JAMES RIVER BASIN.

JAMES RIVER AT BUCHANAN, VA.

Location.—At highway bridge near Chesapeake & Ohio Railway depot at Buchanan, Va.

Records available.—August 18, 1895, to December 31, 1913.

Drainage area.—2,060 square miles.

Gage.—Chain gage attached to the highway bridge; installed November 21, 1903, to replace original wire gage read from August 18, 1895, to that date. Datum of gage was lowered 2 feet April 3, 1897, to avoid negative readings; datum has since remained constant. A span of the bridge and the gage were destroyed by flood on the night of March 27, 1913. A temporary gage was used from April 22 to September 15, 1913, when a new chain gage was installed.

Channel and control.—Bed of river under bridge composed of rock overlain with a thick deposit of mud. A rock control several hundred feet below station.

Discharge measurements.—Made from downstream side of two-span highway bridge.

Winter flow.—Occasionally affected by ice for short periods.

Accuracy.—Rating curve well developed. Published data considered good.

Cooperation.—Since July 15, 1906, gage-height records have been furnished by the United States Weather Bureau.

Daily gage height, in feet, of James River, at Buchanan, Va., for 1913.

[D. D. Booze, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.6	3.9	6.5	.....	3.7	5.1	3.0	3.0	2.7	2.2	2.9	3.2
2	4.8	3.9	5.7	.....	3.6	4.9	3.0	3.0	2.6	2.2	2.9	3.3
3	4.1	3.9	4.2	.....	3.5	4.7	3.0	3.0	2.5	2.2	2.9	4.7
4	4.2	4.2	3.9	.....	3.4	5.7	6.0	3.0	2.7	2.2	2.8	4.5
5	4.4	5.2	3.7	.....	3.3	4.9	4.6	3.0	2.6	2.2	2.8	4.3
6	4.1	4.8	3.5	.....	3.3	4.4	4.1	3.0	2.5	2.2	2.8	4.2
7	3.9	4.3	3.4	.....	3.2	4.2	3.8	3.0	2.5	2.2	2.7	4.2
8	5.5	3.9	3.3	.....	3.4	4.7	3.8	2.9	2.5	2.2	2.7	4.2
9	5.2	3.5	3.2	.....	3.6	4.5	3.8	2.9	2.4	2.2	5.2	4.1
10	4.9	3.5	3.1	.....	3.6	4.4	5.6	2.9	2.4	2.5	7.8	3.9
11	4.4	3.3	4.0	.....	3.4	4.2	4.6	2.9	2.4	2.8	4.8	3.7
12	4.1	3.3	4.8	.....	3.3	4.0	4.1	3.7	2.4	2.8	4.8	3.5
13	3.9	3.2	4.4	.....	3.2	3.7	3.7	3.8	2.4	2.8	4.7	3.4
14	3.7	3.0	9.1	.....	3.2	3.4	3.6	3.7	2.4	2.8	4.7	3.3
15	3.5	2.8	12.0	.....	3.2	3.2	3.5	3.6	2.4	2.7	4.6	3.2
16	3.4	2.8	10.5	.....	3.1	3.1	3.4	3.5	2.1	2.6	4.7	3.2
17	3.3	2.8	7.6	.....	3.4	3.0	3.4	3.5	2.1	2.6	5.7	3.1
18	3.3	2.8	6.5	.....	3.5	3.0	3.3	3.5	2.1	2.6	5.6	3.1
19	3.2	2.7	5.6	.....	3.5	3.0	3.3	3.4	2.1	2.6	5.0	3.0
20	3.1	2.7	4.8	.....	3.5	3.0	3.3	3.4	2.1	2.9	4.5	3.0
21	3.0	2.7	4.5	.....	3.5	3.0	3.6	3.4	2.9	3.4	4.1	3.0
22	2.9	2.7	4.3	4.6	3.7	3.0	3.5	3.3	2.7	3.9	3.8	2.9
23	2.9	2.6	4.1	4.4	4.2	3.2	3.4	3.3	2.7	3.7	3.6	2.9
24	2.9	2.6	3.9	4.2	8.0	3.0	3.3	3.2	2.6	3.5	3.4	3.0
25	2.9	2.6	3.8	4.1	7.2	3.0	3.3	3.2	2.5	3.8	3.3	3.2
26	2.8	2.7	3.8	4.0	5.7	3.2	3.2	3.1	2.4	5.3	3.2	3.7
27	2.8	3.3	11.3	3.9	5.1	3.5	3.1	3.1	2.4	4.5	3.2	6.3
28	5.5	7.0	.....	3.9	7.7	3.8	3.0	3.0	2.3	4.1	3.2	5.2
29	5.0	.....	.....	3.9	7.2	3.2	3.0	3.0	2.3	3.7	3.2	4.9
30	4.5	.....	.....	3.8	6.1	3.0	3.0	2.9	2.3	3.4	3.2	4.6
31	4.1	.....	.....	.....	5.5	.....	3.0	2.9	.....	3.1	.....	4.4

NOTE.—Span of bridge and gage destroyed by flood on night of March 27. Crest of flood determined by levels on October 2, 1914, to have been 31.0 feet. New gage installed on April 22.

Daily discharge, in second-feet, of James River, at Buchanan, Va., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	6,480	2,820	8,760	.....	2,460	5,330	1,400	1,400	1,040	515	1,280	1,670
2	4,660	2,820	6,720	.....	2,290	4,880	1,400	1,400	930	515	1,280	1,820
3	3,210	2,820	3,410	.....	2,120	4,450	1,400	1,400	820	515	1,280	4,450
4	3,410	3,410	2,820	.....	1,960	6,720	7,460	1,400	1,040	515	1,160	4,020
5	3,820	5,560	2,460	.....	1,820	4,880	4,240	1,400	930	515	1,160	3,610
6	3,210	4,660	2,120	.....	1,820	3,820	3,210	1,400	820	515	1,160	3,410
7	2,820	3,610	1,960	.....	1,670	3,410	2,640	1,400	820	515	1,040	3,410
8	6,250	2,820	1,820	.....	1,930	4,450	2,640	1,280	820	515	1,040	3,410
9	5,560	2,120	1,670	.....	2,290	4,020	2,640	1,280	715	515	5,560	3,210
10	4,880	2,120	1,530	.....	2,290	3,820	6,480	1,280	715	820	12,500	2,820
11	3,820	1,820	3,020	.....	1,960	3,410	4,240	1,280	715	1,160	4,660	2,460
12	3,210	1,820	4,660	.....	1,820	3,020	3,210	2,460	715	1,160	4,660	2,120
13	2,820	1,670	3,820	.....	1,670	2,460	2,460	2,640	715	1,160	4,450	1,960
14	2,460	1,400	16,800	.....	1,670	1,960	2,290	2,460	715	1,160	4,450	1,820
15	2,120	1,160	28,800	.....	1,670	1,670	2,120	2,290	715	1,040	4,240	1,670
16	1,960	1,160	22,300	.....	1,530	1,530	1,960	2,120	430	930	4,450	1,670
17	1,820	1,160	11,900	.....	1,960	1,400	1,960	2,120	430	930	6,720	1,530
18	1,820	1,160	8,760	.....	2,120	1,400	1,820	2,120	430	930	6,480	1,530
19	1,670	1,040	6,480	.....	2,120	1,400	1,820	1,960	430	930	5,100	1,400
20	1,530	1,040	4,660	.....	2,120	1,400	1,820	1,960	430	1,280	4,020	1,400
21	1,400	1,040	4,020	.....	2,120	1,400	2,290	1,960	1,280	1,960	3,210	1,400
22	1,280	1,040	3,610	4,240	2,460	1,400	2,120	1,820	1,040	2,820	2,640	1,280
23	1,280	930	3,210	3,820	3,410	1,670	1,960	1,820	1,040	2,460	2,290	1,280
24	1,280	930	2,820	3,410	13,100	1,400	1,820	1,670	930	2,120	1,960	1,400
25	1,280	930	2,640	3,210	10,700	1,400	1,820	1,670	820	2,640	1,820	1,670
26	1,160	1,040	2,640	3,020	6,720	1,670	1,670	1,530	715	5,780	1,670	2,460
27	1,160	1,820	.....	2,820	5,330	2,120	1,530	1,530	715	4,020	1,670	8,230
28	6,250	10,100	.....	2,820	12,200	2,640	1,400	1,400	610	3,210	1,670	5,560
29	5,100	.....	.....	2,820	10,700	1,670	1,400	1,400	610	2,460	1,670	4,880
30	4,020	.....	.....	2,640	7,720	1,400	1,400	1,280	610	1,960	1,670	4,240
31	3,210	.....	.....	.....	6,250	.....	1,400	1,280	.....	1,530	.....	3,820

NOTE.—Discharge completed from a rating curve fairly well defined below 20,000 second-feet.

Monthly discharge of James River at Buchanan, Va., for 1913.

[Drainage area, 2,060 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	6,480	1,160	3,060	1.49	1.72	B.
February	10,100	930	2,290	1.11	1,16	B.
March 1–23	.....	1,530	6,280	3.05	2.95	B.
April 22–30	.....	2,640	3,200	1.55	.52	B.
May	13,100	1,530	3,870	1.88	2.17	B.
June	6,720	1,400	2,740	1.33	1.48	B.
July	7,460	1,400	2,450	1.19	1.37	B.
August	2,640	1,280	1,690	.820	.94	B.
September	1,280	430	758	.368	.41	B.
October	5,780	515	1,520	.738	.85	B.
November	12,500	1,040	3,230	1.57	1.75	B.
December	8,230	1,280	2,760	1.34	1.54	B.

JAMES RIVER AT HOLCOMB ROCK, VA.

Location.—At works of the Virginia Electrolytic Co., at Holcomb Rock, Va.
Records available.—Gage heights January 1, 1900, to December 31, 1913.
Drainage area.—Not measured.
Gage.—A copper float inclosed in a stilling box, with a vertical rod extending up through power-house floor.
Discharge measurements.—None made at this station.
Cooperation.—Gage heights furnished by the Virginia Electrolytic Co.

Daily gage height, in feet, of James River at Holcomb Rock, Va., for 1913.

[R. D. Damson, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.95	2.9	3.5	3.55	1.4	3.0	1.15	0.95	0.5	−0.15	0.7	1.2
2	3.8	2.8	2.45	3.15	1.15	2.6	1.1	1.5	.1	.1	.6	2.25
3	3.45	3.0	2.05	2.6	1.05	2.45	1.1	1.2	.15	− .25	.6	3.1
4	3.7	3.1	1.6	2.25	1.3	2.4	4.9	1.2	.25	.0	.35	2.45
5	3.8	4.4	1.35	2.2	1.25	2.4	2.25	1.0	.2	.2	.35	2.0
6	3.2	3.8	1.25	1.95	1.3	2.05	1.7	1.05	.15	− .2	.35	1.45
7	2.8	3.35	1.15	1.75	1.25	1.85	1.5	1.25	− .25	.05	.25	1.5
8	3.6	2.85	.9	1.55	1.35	2.25	1.25	1.25	.05	− .35	.3	1.65
9	4.3	2.4	.65	1.5	1.4	2.15	1.1	1.2	− .05	− .4	5.7	1.85
10	4.05	2.45	.85	1.3	1.4	1.9	1.0	.6	− .3	.25	8.05	1.7
11	3.4	2.35	1.2	1.35	1.1	1.55	1.5	.9	− .2	.35	4.3	1.5
12	2.85	.95	2.35	5.85	1.2	1.5	2.1	1.4	− .1	.4	3.0	1.35
13	2.75	.9	2.05	8.2	1.2	1.4	1.3	1.65	− .2	.6	2.3	1.25
14	2.5	.8	9.45	8.9	1.2	1.4	1.1	2.15	− .5	.6	2.05	1.05
15	2.5	.65	12.3	8.55	1.2	1.2	1.1	1.45	− .35	.4	2.65	1.05
16	2.5	.5	11.4	9.3	1.2	1.2	.85	1.3	− .35	.45	2.65	1.0
17	2.25	.7	7.35	6.9	1.3	1.15	.35	1.0	− .1	.15	3.2	.9
18	2.1	.6	4.9	4.95	1.2	1.2	.65	1.05	− .1	.15	3.35	.9
19	2.0	.6	3.55	3.9	1.2	1.05	.95	.9	.0	.1	2.7	.85
20	2.05	.5	2.95	3.25	1.2	1.2	1.9	1.25	− .3	.8	2.25	.8
21	2.0	.6	2.5	2.75	1.2	1.55	1.85	1.3	.75	1.1	1.85	.45
22	1.85	.6	2.15	2.35	1.6	.85	1.2	1.1	.6	1.55	1.5	.7
23	1.8	.35	1.85	2.2	4.8	1.35	1.25	1.0	.45	1.35	1.25	.6
24	1.75	.65	1.6	2.1	9.3	1.2	1.25	.8	.45	1.15	1.25	.75
25	1.8	.55	1.4	1.8	6.7	1.2	1.05	1.0	.25	1.95	1.0	.8
26	1.7	.55	1.65	1.7	4.35	1.1	1.3	1.0	.2	2.65	1.0	3.35
27	2.15	.75	7.75	1.7	.....	1.65	.65	.95	.1	2.35	.95	4.9
28	3.9	3.05	25.8	1.65	6.1	1.4	1.15	.8	.1	1.85	.9	3.35
29	4.4	.....	8.05	1.6	6.45	1.3	1.1	.8	− .05	1.45	.85	2.65
30	3.55	.....	5.7	1.55	4.45	1.2	1.05	.65	− .15	1.25	.9	2.15
31	3.05	.....	4.2	.....	3.45	.....	.9	.55	.....	.9	.....	1.85

JAMES RIVER AT CARTERSVILLE, VA.

Location.—At highway bridge crossing James River between Pemberton and Cartersville, about 50 miles above Richmond.
Records available.—January 1, 1899, to December 31, 1913.
Drainage area.—6,230 square miles.
Gage.—Standard chain gage attached to the highway bridge July 24, 1903, to replace wire gage which had been used from January 1, 1899, to that date.
Channel.—Left bank overflows for several hundred feet at a stage of about 20 feet; right bank does not overflow.
Discharge measurements.—Made from downstream side of six-span highway bridge.
Winter flow.—Occasionally affected by ice for short periods during severe winters.
Accuracy.—Rating curve well developed for ordinary stages. Above the overflow point the discharge is uncertain. No measurement made in 1913, but one made in 1914 indicated that the discharge relation has remained constant.

Daily gage height, in feet, of James River at Cartersville, Va., for 1913.

[B. W. Palmore, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.7	4.1	4.4	8.1	3.2	12.2	2.7	1.6	1.2	1.3	2.6	2.3
2	7.2	3.8	4.8	6.1	2.9	6.0	2.4	1.45	1.1	1.7	2.5	2.7
3	5.6	3.4	4.6	5.2	2.8	5.1	2.3	1.5	1.1	1.25	2.1	3.5
4	5.3	3.9	4.1	4.7	2.7	5.6	2.2	2.0	1.4	1.15	2.0	3.9
5	4.9	3.8	3.4	4.2	2.6	5.2	3.4	1.8	1.3	1.1	1.9	4.3
6	4.8	3.2	3.1	4.0	2.5	5.1	4.4	1.6	1.25	1.05	1.8	3.9
7	4.3	3.1	2.9	3.7	2.4	4.4	3.4	2.1	1.15	1.05	1.7	3.7
8	3.7	3.0	2.7	3.5	2.4	7.4	2.4	1.3	1.1	1.0	1.7	3.2
9	3.5	3.0	2.6	3.2	2.4	4.8	2.2	1.25	1.0	1.15	3.0	3.1
10	4.8	2.9	2.4	3.1	2.3	4.1	2.0	1.6	.88	1.3	13.5	3.1
11	4.5	3.9	3.1	2.9	2.3	3.4	3.5	2.3	.95	2.0	10.2	3.0
12	4.1	2.8	3.6	5 3	2.2	3.2	2.1	2.2	.91	1.7	7.2	2.9
13	3.7	2.6	4.8	18.0	2.1	3.0	2.3	1.5	.90	1.5	6.3	2.8
14	3.5	2.4	12.5	16.0	2.1	2.8	2.8	2.7	.92	1.6	4.2	2.7
15	3.0	2.3	19.7	13.6	2.0	2.7	2.2	2.8	.94	1.6	3.8	2.5
16	2.9	2.2	18.9	13.0	2.0	2.5	2.2	2.7	.88	1.55	3.2	2.4
17	2.7	2.1	14.4	12.4	2.2	2.2	2.0	2.2	.78	1.4	5.1	2.4
18	2.7	1.9	10.1	9.7	2.6	2.0	1.8	1.9	.92	1.35	5.2	2.3
19	2.6	1.9	7.8	8.2	2.5	1.9	1.9	1.8	1.0	1.3	5.0	2.2
20	2.4	2.0	6.5	7.3	2.1	1.9	1.8	5.1	1.05	1.7	4.6	2.1
21	2.3	2.0	5.8	6.2	2.1	1.8	.....	3.3	1.1	2.5	4.0	2.0
22	2.2	2.0	5.5	5.3	2.2	1.8	.....	3.0	3.1	2.4	3.9	2.0
23	2.2	1.9	5.1	4.9	2.9	2.4	.....	2.3	3.0	2.3	3.7	2.0
24	2.2	1.9	4.3	4.4	16.3	4.0	2.3	2.5	2.5	2.9	3.0	2.9
25	2.4	1.8	4.0	4.1	15.8	4.3	2.3	3.1	1.7	5.2	2.8	3.3
26	2.3	1.9	3.8	3.9	12.0	4.0	1.9	2.0	1.6	5.8	2.5	6.1
27	2.4	2.0	4.0	3.7	9.8	3.2	1.8	1.9	1.4	4.9	2.4	6.0
28	4.8	2.9	10.9	3.6	10.2	3.1	1.5	1.8	1.25	4.8	2.4	5.9
29	4.9	.....	21.6	3.4	8.5	4.1	1.4	1.6	1.15	4.6	2.5	5.5
30	5.6	.....	13.0	3.3	8.8	3.8	1.6	1.4	1.1	3.6	2.4	4.6
31	4.7	.....	9.1	.....	11.0	.....	1.3	1.3	.....	2.9	.....	4.1

Daily discharge, in second-feet, of James River at Cartersville, Va., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	12,200	8,060	8,780	19,300	5,970	33,700	4,880	2,640	1,910	2,090	4,670	4.040
2	16,500	7,340	9,780	13,300	5,310	13,000	4,250	2,360	1,740	2,830	4,460	4,880
3	11,900	6,420	9,280	10,800	5,090	10,600	4,040	2,450	1,740	2,000	3,630	6,650
4	11,100	7,580	8,060	9,530	4,880	11,900	3,830	3,430	2,270	1,820	3,430	7,580
5	10,000	7,340	6,420	8,300	4,670	10,800	6,420	3,030	2,090	1,740	3,230	8,540
6	9,780	5,970	5,750	7,820	4,460	10,600	8,780	2.640	2,000	1,660	3,030	7,580
7	8,540	5,750	5,310	7,110	4,250	8,780	6,420	3,630	1,820	1,660	2,830	7,110
8	7,110	5,530	4,880	6,650	4,250	17,100	4,250	2,090	1,740	1,570	2,830	5,970
9	6,650	5,530	4,670	5,970	4,250	9,780	3,830	2,000	1,570	1,820	5,530	5,750
10	9,780	5,310	4,250	5,750	4,040	8,060	3,430	2,640	1,380	2,090	38,600	5,750
11	9,030	7,580	5,750	5,310	4,040	6,420	6,650	4,040	1,490	3,430	26,400	5,530
12	8,060	5,090	6,880	11,100	3,830	5,970	3,630	3,830	1,430	2,830	16,500	5,310
13	7,110	4,670	9,780	57,200	3,630	5,530	4,040	2,450	1,410	2,450	13,800	5,090
14	6,650	4,250	34,800	48,600	3,630	5,090	5,090	4,880	1,440	2,640	8,300	4,880
15	5,530	4,040	64,900	39,000	3,430	4,880	3,830	5,090	1,470	2,640	7,340	4,460
16	5,310	3,830	61,200	36,700	3,430	4,460	3,830	4,880	1,380	2,540	5,970	4,250
17	4,880	3,630	42,100	34,400	3,830	3,830	3,430	3,830	1,220	2,270	10,600	4,250
18	4,880	3,230	26,100	24,700	4,670	3,430	3,030	3,230	1,440	2,180	10,800	4,040
19	4,670	3,230	18,300	19,600	4,460	3,230	3,230	3,030	1,570	2,090	10,300	3,830
20	4,250	3,430	14,400	16,800	3,630	3,230	3,030	10,600	1,660	2,830	9,280	3,630
21	4,040	3,430	12,400	13,500	3,630	3,030	3,280	6,190	1,740	4,460	7,820	3,430
22	3,830	3,430	11,600	11,100	3,830	3,030	3,530	5,530	5,750	4,250	7,580	3,430
23	3,830	3,230	10,600	10,000	5,310	4,250	3,780	4,040	5,530	4,040	7,110	3,430
24	3,830	3,230	8,540	8,780	49,800	7,820	4,040	4,460	4,460	5,310	5,530	5,310
25	4,250	3,030	7,820	8,060	47,800	8,540	4,040	5,750	2,830	10,800	5,090	6,190
26	4,040	3,230	7,340	7,580	32,900	7,820	3,230	3,430	2,640	12,400	4,460	13,300
27	4,250	3,430	7,820	7,110	25,000	5,970	3,030	3,230	2,270	10,000	4,250	13,000
28	9,780	5,310	28,900	6,880	26,400	5,750	2,450	3,030	2,000	9,780	4,250	12,700
29	10,000	.....	74,600	6,420	20,600	8,060	2,270	2,640	1,820	9,280	4,460	11,600
30	11,900	.....	36,700	6,190	21,600	7,340	2,640	2,270	1,740	9,280	4,250	9,280
31	9,530	.....	22,600	.....	29,300	.....	2,090	2,090	.....	5,310	.....	8,060

NOTE.—Daily discharge determined from a rating curve well defined below 10,000 second-feet and fairly well defined between 10,000 and 40,000 second-feet. Discharge interpolated July 21–23.

Monthly discharge of James River at Cartersville, Va., for 1913.

[Drainage area, 6,230 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	16,500	3,830	7,520	1.21	1.40	A.
February	8,060	3,030	4,860	.780	.81	A.
March	74,600	4,250	18,700	3.00	3.46	B.
April	57,200	5,310	15,800	2.54	2.83	B.
May	49,800	3,430	11,400	1.83	2.11	B.
June	33,700	3,030	8,070	1.30	1.45	A.
July	8,780	2,090	4,010	.644	.74	A.
August	10,600	2,000	3,720	.597	.69	A.
September	5,750	1,220	2,120	.340	.38	A.
October	12,400	1,570	4,200	.674	.78	A.
November	38,600	2,830	8,210	1.32	1.47	A.
December	13,300	3,430	6,410	1.03	1.19	A.
The year	74,600	1,220	7,930	1.27	17.31	

ROANOKE RIVER BASIN.

ROANOKE RIVER AT ROANOKE, VA.

Location.—At Walnut Street highway bridge at Roanoke, Va.

Records available.—July 10, 1896, to July 14, 1906; May 7, 1908, to December 31, 1913.

Drainage area.—388 square miles.

Gage.—Standard chain gage was attached to Walnut Street Bridge November 28, 1903, to replace wire gage that had been read from July 10, 1896, to that date.

Channel and control.—Nearly straight, 160 feet wide between bridge abutments; broken by one pier. The bed of the stream is composed of coarse gravel and small bowlders. Both banks may overflow at extreme flood stages. Control is loose bowlders and shifts slightly.

Discharge measurements.—Made from downstream side of two-span highway bridge.

Winter flow.—Occasionally affected by ice for short periods.

Accuracy.—Owing to varying conditions of flow frequent measurements are required at low stages to adequately define the discharge curve from year to year. No measurements were made in 1913, but measurements in 1914 indicate that the discharge relation has remained constant.

Cooperation.—Gage-height records furnished through the courtesy of the Roanoke Railway & Electric Co., J. W. Hancock, general manager.

Daily gage height, in feet, of Roanoke River at Roanoke, Va., for 1913.

[C. C. Hogshead and W. J. Lambert, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.5	1.4	2.1	1.8	1.1	1.6	1.2	0.8	0.7	0.7	0.9	1.0
2	1.4	1.4	1.9	1.7	1.0	1.5	1.1	.75	.65	.7	.9	2.0
3	1.4	1.4	1.7	1.6	1.0	1.4	1.9	.75	.65	.7	.9	1.7
4	1.4	1.4	1.5	1.5	1.0	1.4	2.8	.7	.7	.7	.85	1.5
5	1.5	1.4	1.4	1.5	1.0	1.3	2.5	.7	1.1	.7	.8	1.4
6	1.4	1.3	1.3	1.4	1.0	1.3	1.8	.7	.9	.65	.8	1.3
7	1.3	1.2	1.2	1.3	1.0	1.2	1.5	.75	.7	.7	.8	1.3
8	1.2	1.1	1.2	1.3	1.0	1.6	1.3	.75	.6	.65	.8	1.4
9	1.1	1.1	1.2	1.3	1.0	1.5	1.2	.75	.7	.8	3.0	1.3
10	1.1	1.1	1.2	1.3	1.0	1.3	1.1	1.9	.....	1.2	2.3	1.2
11	1.1	1.1	1.4	1.3	.9	1.2	1.2	1.7	.....	1.2	1.8	1.2
12	1.0	1.1	1.3	1.6	.9	1.3	1.5	.9	.....	1.1	1.5	1.1
13	1.2	1.0	1.3	2.6	.9	1.3	1.2	.9	.....	1.1	1.5	1.1
14	1.1	1.0	7.7	2.1	.9	1.2	1.1	1.0	.....	.9	1.3	1.0
15	1.0	1.0	4.0	1.9	.9	1.1	1.0	.9	.....	.9	1.3	1.0
16	1.0	1.0	3.4	1.9	1.0	1.1	1.0	.9	.....	.8	1.2	1.0
17	1.0	1.0	2.4	1.8	1.2	1.0	1.0	.7	.....	.8	1.2	1.0
18	1.0	.9	2.2	1.7	1.2	1.0	.9	.7	.....	.8	1.2	1.0
19	1.0	.9	1.9	1.6	1.0	1.0	.9	1.1	.....	.85	1.2	1.0
20	.9	.9	1.8	1.6	.9	1.0	.9	1.2	.....	1.3	1.1	.9
21	.9	1.0	1.7	1.5	1.0	.9	.9	1.1	.....	1.7	1.1	.9
22	.9	1.0	1.6	1.4	1.1	1.0	.8	1.0	.....	1.4	1.1	.9
23	.9	1.0	1.5	1.3	3.9	1.7	.8	.9	.....	1.2	1.0	.9
24	.9	1.0	1.5	1.3	5.7	2.2	.8	.9	.9	1.2	1.0	1.0
25	.9	1.0	1.4	1.3	3.0	1.3	.75	.8	.9	1.4	1.0	1.0
26	.9	.9	1.4	1.2	2.4	1.2	.9	.7	.8	1.3	.9	2.3
27	1.0	1.6	3.4	1.2	2.0	1.6	.75	.7	.8	1.2	.9	1.8
28	2.5	2.9	3.5	1.2	2.8	1.4	.75	.7	.8	1.1	.9	1.7
29	1.9	.....	2.4	1.2	2.2	1.8	1.1	.7	.7	1.1	.9	1.4
30	1.6	.....	2.1	1.1	2.0	1.5	.9	.7	.7	1.0	.9	1.4
31	1.5	.....	2.0	.....	1.8	.....	.8	.7	.....	.9	.....	1.3

Daily discharge, in second-feet, of Roanoke River at Roanoke, Va., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	375	326	770	550	206	430	242	115	89	89	143	173
2	326	326	620	490	173	375	206	102	77	89	143	690
3	326	326	490	430	173	326	620	102	77	89	143	490
4	326	326	375	375	173	326	1,440	89	89	89	129	375
5	375	326	326	375	173	282	1,130	89	206	89	115	326
6	326	282	282	326	173	282	550	89	143	77	115	282
7	282	242	242	282	173	242	375	102	89	89	115	282
8	242	206	242	282	173	430	282	102	65	77	115	326
9	206	206	242	282	173	375	242	102	89	115	1,660	282
10	206	206	242	282	173	282	206	620	65	242	940	242
11	206	206	326	282	143	242	242	490	55	242	550	242
12	173	206	282	430	143	282	375	143	50	206	375	206
13	242	173	282	1,230	143	282	242	143	50	206	375	206
14	206	173	7,900	770	143	242	206	173	50	143	282	173
15	173	173	2,900	620	143	206	173	143	65	143	282	173
16	173	173	2,140	620	173	206	173	143	65	115	242	173
17	173	173	1,030	550	242	173	173	89	50	115	242	173
18	173	143	850	490	242	173	143	89	55	115	242	173
19	173	143	620	430	173	173	143	206	90	129	242	173
20	143	143	550	430	143	173	143	242	140	282	206	143
21	143	173	490	375	173	143	143	206	200	490	206	143
22	143	173	430	326	206	173	115	173	300	326	206	143
23	143	173	375	282	2,780	490	115	143	200	242	173	143
24	143	173	375	282	5,200	850	115	143	143	242	173	173
25	143	173	326	282	1,660	282	102	115	143	326	173	173
26	143	143	326	242	1,030	242	143	89	115	282	143	940
27	173	430	2,140	242	690	430	102	89	115	242	143	550
28	1,130	1,540	2,260	242	1,440	326	102	89	115	206	143	490
29	620	.....	1,030	242	850	550	206	89	89	206	143	326
30	430	.....	770	206	690	375	143	89	89	173	143	326
31	375	.....	690	.....	550	.....	115	89	.....	143	.....	282

NOTE.—Daily discharge determined from a rating curve well defined below 2,000 second-feet. Discharge Sept. 10–23, estimated from comparison of hydrographs of stations in James and Roanoke basins.

Monthly discharge of Roanoke River at Roanoke, Va., for 1913.

[Drainage area, 388 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	1,130	143	271	0.698	0.80	A.
February	1,540	143	266	.686	.71	A.
March	7,900	242	965	2.49	2.87	B.
April	1,230	206	408	1.05	1.17	A.
May	5,200	143	604	1.56	1.80	B.
June	850	143	312	.804	.90	A.
July	1,440	102	281	.724	.83	A.
August	620	89	151	.389	.45	A.
September	*a* 300	*a* 50	106	.273	.30	D.
October	490	77	181	.466	.54	A.
November	1,660	115	277	.714	.80	A.
December	940	143	290	.747	.86	A.
The year	7,900	*a* 50	344	.887	12.03	

a Estimated.

ROANOKE RIVER AT OLD GASTON, N. C.

Location.—At bridge of Roanoke Railway Co., at Old Gaston, N. C., 1¼ miles north of Thelma, N. C., about three-fourths of a mile below mouth of Indian Creek and 2½ miles above mouth of Deep Creek.

Records available.—December 7, 1911, to December 31, 1913.

Drainage area.—8,350 square miles.

Gage.—Standard chain gage attached to outside of guard timber on downstream side of second span from right end of deck-plate girder railroad bridge of Roanoke Railway Co.

Channel and control.—Channel fairly permanent; point of control, about 1 mile below gage, is of rock and probably permanent.

Discharge measurements.—Made from downstream side of bridge to which gage is attached. Measuring section broken by 11 bridge piers.

Floods.—Flood of 1877 highest known in this locality. No definite marks preserved at Old Gaston, but from authentic information regarding the crest height as observed in 1877 the approximate height has been determined as about 19 feet, referred to present gage datum. The corresponding discharge is about 275,000 second-feet.

Winter flow.—Ice sometimes forms to considerable thickness at this station.

Regulation.—Persons engaged in the operation of power plants at Roanoke Rapids and Weldon have observed on Tuesday or Wednesday during periods of low water a trough probably due to the weekly shutdown of large power plants farther upstream.

Accuracy.—The gage being situated about 1 mile from the lower end of a pool approximately 3 miles long, the station is not very sensitive. The left bank overflows in extreme floods; but a fair determination can be made of the overflow discharge around the bridge.

Daily gage height, in feet, of Roanoke River at Old Gaston, N. C., for 1913.

[R. A. Howell, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.4	3.6	4.4	5.2	2.35	3.4	3.7	1.55	2.6	1.45	2.15	1.95
2	2.5	3.2	5.5	4.5	2.15	3.0	3.4	1.45	2.9	1.65	1.95	2.25
3	3.0	3.0	4.2	3.8	2.15	2.9	3.5	1.7	3.3	1.5	1.85	4.2
4	2.8	2.6	3.4	3.4	2.1	2.9	2.15	3.2	3.9	1.55	1.85	5.6
5	2.9	3.0	3.2	3.0	2.05	2.8	2.3	3.8	6.5	1.45	1.9	4.2
6	2.8	2.8	2.8	2.8	2.6	2.4	5.1	3.4	6.4	1.35	1.8	3.4
7	2.8	2.8	2.5	2.6	2.1	2.3	4.1	2.6	4.3	1.25	1.7	3.0
8	2.8	2.6	2.45	2.25	1.9	2.45	3.0	1.9	3.4	1.15	1.75	2.9
9	2.5	2.3	2.3	2.6	1.95	3.6	2.5	1.7	2.4	1.5	2.6	2.7
10	2.3	2.25	2.2	2.25	2.1	3.6	2.0	1.85	2.05	1.8	6.7	3.0
11	2.25	2.1	2.1	2.25	2.0	3.0	1.9	2.05	1.75	2.05	8.9	2.4
12	2.15	2.3	2.8	2.2	1.95	2.35	1.8	1.95	1.85	3.3	6.9	2.6
13	2.05	2.15	2.8	3.3	1.9	2.8	3.2	3.2	1.55	2.9	4.1	1.95
14	1.9	2.3	3.0	8.3	2.0	3.2	2.6	3.2	1.55	2.05	3.5	2.3
15	2.2	2.1	9.4	9.1	1.9	2.8	2.2	2.6	1.6	2.5	3.0	2.2
16	2.05	2.1	11.0	5.6	1.85	2.6	2.25	2.05	1.4	2.0	2.8	2.0
17	1.95	2.05	13.0	4.4	1.95	2.1	1.85	2.05	1.3	1.75	2.6	1.95
18	1.95	1.95	12.7	4.2	1.9	2.25	1.8	2.2	1.55	1.7	2.6	2.1
19	1.9	2.0	5.7	3.8	2.5	2.0	1.8	1.85	1.45	1.8	3.0	1.95
20	2.0	1.95	4.3	3.4	2.8	1.95	1.8	1.5	1.55	1.6	2.8	2.05
21	1.95	1.9	3.9	3.2	2.8	1.95	1.8	1.7	2.3	1.7	2.6	1.95
22	2.05	2.0	3.7	2.8	2.05	1.9	2.8	1.65	2.05	4.8	2.35	1.9
23	2.05	2.05	3.6	3.0	2.15	2.2	2.25	1.95	2.4	3.6	2.25	1.9
24	2.05	2.05	3.4	2.8	4.4	3.4	1.9	2.2	3.6	3.4	2.15	2.05
25	2.8	2.0	3.2	2.6	6.8	4.2	1.65	1.95	2.8	3.4	2.0	3.0
26	3.7	2.15	3.0	2.6	8.7	3.1	1.6	1.95	2.2	5.6	1.95	4.3
27	3.5	2.1	3.1	2.4	7.8	3.3	1.65	1.6	1.8	5.3	1.75	4.9
28	5.1	2.35	3.4	2.4	4.2	3.4	1.6	1.85	1.75	4.8	2.0	5.0
29	6.0	.....	4.2	2.4	5.0	3.7	1.5	1.65	1.8	3.2	1.95	4.0
30	5.9	.....	4.8	2.6	5.8	3.5	1.5	1.7	1.6	2.7	1.95	3.4
31	4.4	.....	3.8	.....	4.2	.....	1.55	2.15	.....	2.45	.....	3.3

Daily discharge, in second-feet, of Roanoke River at Old Gaston, N. C., for 1911–1913.

Day.	Dec.	Day.	Dec.	Day.	Dec.
1911.		1911.		1911.	
1	.....	11	3,090	21	9,500
2	.....	12	3,090	22	15,300
3	.....	13	2,460	23	15,300
4	.....	14	3,410	24	32,400
5	.....	15	5,500	25	37,800
6	.....	16	4,430	26	25,900
7	3,740	17	15,300	27	23,600
8	3,410	18	27,400	28	17,900
9	3,090	19	20,600	29	14,200
10	2,770	20	11,900	30	11,400
				31	9,500

Daily discharge, in second-feet, of Roanoke River at Old Gaston, N. C., for 1911–1913—Con.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1912.												
1	9,060	20,600	22,100	63,700	12,200	5,320	10,700	2,620	1,880	3,580	2,770	2,930
2	11,400	14,200	13,600	22,100	11,200	5,680	10,700	3,410	1,500	3,580	2,460	2,930
3	10,900	9,000	10,700	16,900	9,280	5,320	16,200	2,160	1,250	2,930	2,770	2,930
4	9,960	9,000	9,500	16,200	8,000	5,680	10,700	2,160	1,250	2,930	2,620	2,620
5	9,500	5,500	8,420	13,900	7,010	4,600	8,210	2,020	790	2,620	2,460	3,250
6	8,630	5,500	9,060	11,400	6,620	4,780	4,960	3,410	1,880	2,620	2,160	3,350
7	7,010	5,500	8,840	9,960	5,870	4,960	6,430	2,020	1,880	2,460	2,620	4,430
8	5,500	4,430	11,900	10,200	9,280	4,960	7,400	2,620	2,020	3,090	3,580	4,780
9	5,140	4,430	21,400	10,200	14,400	7,400	5,680	2,930	1,500	1,880	36,000	4,600
10	4,780	5,140	22,800	9,730	12,500	6,620	5,870	2,310	1,500	2,160	23,600	3,910
11	4,780	5,500	20,600	9,500	8,420	4,260	3,910	2,310	2,160	1,500	10,700	4,780
12	4,780	5,140	15,600	8,840	11,200	4,960	4,600	2,310	2,160	2,310	6,620	5,140
13	4,600	3,740	19,200	8,420	29,000	5,500	6,240	2,020	1,750	2,310	6,240	3,250
14	4,400	4,780	31,500	8,210	60,800	3,910	5,500	1,880	1,500	2,020	4,260	3,250
15	4,200	3,740	34,200	8,420	78,000	4,080	3,910	2,310	1,370	2,620	3,740	3,090
16	4,100	6,620	106,000	7,010	35,100	8,210	3,740	2,310	1,370	2,160	3,580	3,090
17	4,000	9,960	127,000	8,210	35,100	4,960	4,600	2,160	2,620	2,930	3,740	2,930
18	4,400	9,500	210,000	8,210	40,600	4,960	3,410	2,020	1,880	3,090	3,580	2,620
19	4,780	13,000	137,000	10,200	26,600	6,060	3,410	1,880	2,160	3,090	3,250	3,250
20	4,780	17,200	22,100	9,960	15,300	6,430	3,580	1,750	3,250	2,620	3,250	3,090
21	13,000	14,700	14,400	8,840	11,700	6,620	4,600	1,620	6,430	2,770	3,090	3,090
22	9,960	15,300	11,900	8,000	10,200	5,500	5,140	2,020	4,430	2,770	3,090	3,090
23	8,630	32,400	10,900	10,200	9,280	4,430	3,910	2,310	3,090	2,020	3,090	3,250
24	7,800	36,000	11,700	15,000	8,630	7,010	3,580	2,020	3,410	2,930	2,930	3,250
25	7,010	17,900	25,900	13,300	8,000	5,500	3,910	1,880	20,600	2,770	2,770	3,250
26	6,620	17,900	45,400	9,960	7,400	7,600	3,250	1,750	27,400	2,620	2,930	4,080
27	6,240	30,700	49,300	8,210	7,200	6,820	3,410	1,500	13,300	2,770	2,310	3,910
28	6,240	45,400	25,100	7,400	6,060	4,960	2,930	1,250	8,210	2,620	2,930	4,080
29	6,620	50,300	17,500	7,800	7,010	15,000	2,930	1,500	6,620	3,090	2,770	4,960
30	8,630	.....	45,400	8,000	5,870	11,200	3,250	2,020	4,600	1,620	2,770	4,430
31	21,400	.....	58,600	.....	5,500	.....	2,020	3,580	.....	2,310	.....	3,740
1913.												
1	5,140	9,960	14,200	19,200	4,960	9,060	10,400	2,310	5,870	2,020	4,260	3,580
2	5,500	8,210	21,400	14,700	4,260	7,400	9,060	2,020	7,010	2,620	3,580	4,600
3	7,400	7,400	13,000	10,900	4,260	7,010	9,500	2,770	8,630	2,160	3,250	13,000
4	6,620	5,870	9,060	9,060	4,080	7,010	4,260	8,210	11,400	2,310	3,250	22,100
5	7,010	7,400	8,210	7,400	3,910	6,620	4,780	10,900	29,000	2,020	3,410	13,000
6	6,620	6,620	6,620	6,620	5,870	5,140	18,500	9,060	28,200	1,750	3,090	9,060
7	6,620	6,620	5,500	5,870	4,080	4,780	12,500	5,870	13,600	1,500	2,770	7,400
8	6,620	5,870	5,320	4,600	3,410	5,320	7,400	3,410	9,060	1,250	2,930	7,010
9	5,500	4,780	4,780	5,870	3,580	9,960	5,500	2,770	5,140	2,160	5,870	6,240
10	4,780	4,600	4,430	4,600	4,080	9,960	3,740	3,250	3,910	3,090	30,700	7,400
11	4,600	4,080	4,080	4,600	3,740	7,400	3,410	3,910	2,930	3,910	51,300	5,140
12	4,260	4,780	6,620	4,430	3,580	4,960	3,090	3,580	3,250	8,630	32,400	5,870
13	3,910	4,260	6,620	8,630	3,410	6,620	8,210	8,210	2,310	7,010	12,500	3,580
14	3,410	4,780	7,400	45,400	3,740	8,210	5,870	8,210	2,310	3,910	9,500	4,780
15	4,430	4,080	56,400	53,300	3,410	6,620	4,430	5,870	2,460	5,500	7,400	4,430
16	3,910	4,080	77,100	22,100	3,250	5,870	4,600	3,910	1,880	3,740	6,620	3,740
17	3,580	3,910	117,000	14,200	3,580	4,080	3,250	3,910	1,620	2,930	5,870	3,580
18	3,580	3,580	110,000	13,000	3,410	4,600	3,090	4,430	2,310	2,770	5,870	4,080
19	3,410	3,740	22,800	10,900	5,500	3,740	3,090	3,250	2,020	3,090	7,400	3,580
20	3,740	3,580	13,600	9,060	6,620	3,580	3,090	2,160	2,310	2,460	6,620	3,910
21	3,580	3,410	11,400	8,210	6,620	3,580	3,090	2,770	4,780	2,770	5,870	3,580
22	3,910	3,740	10,400	6,620	3,910	3,410	6,620	2,620	3,910	16,600	4,960	3,410
23	3,910	3,910	9,960	7,400	4,260	4,430	4,600	3,580	5,140	9,960	4,600	3,410
24	3,910	3,910	9,060	6,620	14,200	9,060	3,410	4,430	9,960	9,060	4,260	3,910
25	6,620	3,740	8,210	5,870	31,500	13,000	2,620	3,580	6,620	9,060	3,740	7,400
26	10,400	4,260	7,400	5,870	49,300	7,800	2,460	3,580	4,430	22,100	3,580	13,600
27	9,500	4,080	7,800	5,140	40,600	8,630	2,620	2,460	3,090	19,900	2,930	17,200
28	18,500	4,960	9,060	5,140	13,000	9,060	2,460	3,250	2,930	16,600	3,740	17,900
29	25,100	.....	13,000	5,140	17,900	10,400	2,160	2,620	3,090	8,210	3,580	11,900
30	24,300	.....	16,600	5,870	23,600	9,500	2,160	2,770	2,460	6,240	3,580	9,060
31	14,200	.....	10,900	.....	13,000	.....	2,310	4,260	.....	5,320	.....	8,630

NOTE.—Daily discharge determined from a rating curve well defined below 33,300 second-feet and fairly well defined up to 181,000 second-feet. Above 194,000 second-feet the rating curve is assumed a tangent. Discharge Jan. 13–18, 1912, estimated because of ice. A measurement made in 1914 at a lower stage than any previous measurements, indicated that the curve used for discharges below 25,000 second-feet was not correct. Discharges for 1911–12 have therefore been recomputed and supersede those previously published.

Monthly discharge of Roanoke River at Old Gaston, N. C., for 1911–1913.

[Drainage area, 8,350 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1911.						
December 7–31	37,800	2,460	12,900	1.54	1.43	A.
1912.						
January	21,400	4,000	7,380	.884	1.02	B.
February	50,300	3,740	14,600	1.75	1.89	A.
March	210,000	8,420	38,000	4.55	5.25	A.
April	68,700	7,010	12,400	1.49	1.66	A.
May	78,000	5,500	16,900	2.02	2.33	A.
June	15,000	3,910	6,110	.732	.82	A.
July	16,200	2,020	5,440	.651	.75	A.
August	3,580	1,250	2,200	.263	.30	A.
September	27,400	790	4,460	.534	.60	A.
October	3,580	1,500	2,610	.313	.36	A.
November	36,000	2,160	5,290	.634	.71	A.
December	5,140	2,620	3,590	.430	.50	A.
The year	210,000	790	9,920	1.19	16.19	
1913.						
January	25,100	3,410	7,240	.867	1.00	A.
February	9,960	3,410	5,010	.600	.62	A.
March	117,000	4,080	20,300	2.43	2.80	A.
April	53,300	4,430	11,200	1.34	1.50	A.
May	49,300	3,250	9,700	1.16	1.34	A.
June	13,000	3,410	6,890	.825	.92	A.
July	18,500	2,160	5,230	.626	.72	A.
August	10,900	2,020	4,320	.517	.60	A.
September	29,000	1,620	6,390	.765	.85	A.
October	22,100	1,250	6,150	.737	.85	A.
November	51,300	2,770	8,310	.995	1.11	A.
December	22,100	3,410	7,620	.913	1.05	A.
The year	117,000	1,250	8,220	.984	13.36	

NOTE.—Discharge for 1911–12 supersedes that previously published.

PEEDEE RIVER BASIN.

YADKIN RIVER AT DONNAHA, N. C.

Location.—At toll bridge in Donnaha on road between Donnaha and East Bend, N. C., about a quarter of a mile west of Donnaha railway station, and about 6 miles downstream from mouth of Ararat River, which enters on left side of river. Station about 60 miles upstream from gaging station at Salisbury, N. C.

Records available.—April 11 to December 31, 1913.

Drainage area.—1,600 square miles.

Gage.—Vertical gage in four sections, on left bank 150 feet downstream from left end of toll bridge.

Channel and control.—Channel, sand and bed rock, probably permanent. Current slightly obstructed by two old steel trusses lying about 150 and 400 feet, respectively, below bridge; obstructions probably permanent. Control, a rock ledge extending across river and forming a shoal about 450 feet below gage.

Discharge measurements.—Made from 3-span toll bridge with two piers in stream and two on banks; bridge has steel trestle approaches at both ends. Flood water confined under bridge except during extreme floods above about 28 feet.

Winter flow.—No ice of any importance forms at this station.

Regulation.—None except for a few small milldams on tributaries.

Accuracy.—Rating curve depends largely on three discharge measurements made early in 1914, and is moderately good between gage heights 5 and 7 feet.

Discharge measurements of Yadkin River at Donnaha, N. C., in 1913.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Sept. 15	Warren E. Hall	5.15	1,240
16	....do	5.24	1,360
Nov. 29	....do	5.23	1,400

Daily gage height, in feet, of Yadkin River at Donnaha, N. C., for 1913.

[J. F. Goolsby, observer.]

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	5.9	6.0	6.0	6.0	5.6	5.2	5.4	7.6
2	.....	5.9	5.8	5.6	6.4	5.6	5.2	5.4	8.6
3	.....	5.9	5.8	5.4	6.0	5.8	5.1	5.4	6.8
4	.....	5.9	6.8	6.8	5.8	7.8	5.1	5.4	6.3
5	.....	5.8	6.4	6.2	5.6	7.4	5.1	5.4	5.8
6	.....	5.8	6.2	5.8	5.6	7.8	5.0	5.4	5.9
7	.....	5.8	6.7	5.6	5.7	7.6	5.0	5.4	5.6
8	.....	5.8	6.7	5.6	5.6	7.4	5.0	5.6	5.5
9	.....	6.2	6.8	5.4	5.4	6.9	5.0	7.8	5.4
10	.....	6.0	6.6	5.4	6.6	6.2	5.2	6.4	5.4
11	6.2	6.0	6.6	5.4	5.9	5.8	5.2	6.0	5.4
12	11.8	6.0	6.4	5.4	5.8	5.7	5.6	5.6	5.4
13	9.5	5.9	6.2	5.4	5.6	5.4	5.8	5.5	5.4
14	8.1	5.8	6.1	5.3	5.5	5.1	5.4	5.4	5.3
15	7.3	5.8	6.0	5.3	5.5	5.0	5.2	5.4	5.4
16	7.1	5.8	5.8	5.3	5.4	5.1	5.2	5.4	5.4
17	6.8	5.9	5.6	5.3	5.4	5.3	5.2	5.3	5.4
18	6.8	6.3	5.6	5.3	5.4	5.3	5.2	5.3	5.3
19	6.4	6.4	5.4	6.1	5.4	5.2	6.0	5.3	5.4
20	6.4	6.2	5.4	5.8	5.3	5.2	11.0	5.2	5.6
21	6.2	6.1	5.3	5.6	5.3	5.4	6.8	5.2	5.6
22	6.1	6.6	5.3	5.5	5.4	7.4	5.9	5.2	5.6
23	6.1	9.5	5.3	5.4	5.4	5.6	5.8	5.2	5.5
24	6.1	14.5	5.3	5.4	10.8	5.4	5.8	5.2	5.4
25	6.1	12.8	6.5	5.4	10.0	5.4	6.8	5.2	5.5
26	6.0	11.4	7.1	5.9	9.6	5.3	5.8	5.2	6.5
27	6.0	8.0	7.8	5.7	8.0	5.3	5.6	5.2	6.3
28	6.0	7.1	6.6	5.6	8.0	5.3	5.5	5.2	5.9
29	6.0	6.9	5.9	5.5	7.3	5.3	5.5	5.2	5.6
30	5.9	6.5	5.5	5.5	6.1	5.3	5.5	5.2	5.6
31	.....	6.2	.....	6.1	5.7	.....	5.4	.....	6.5

Daily discharge, in second-feet, of Yadkin River at Donnaha, N. C., for 1913.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	2,320	2,470	2,470	2,470	1,880	1,320	1,600	4,960
2	.....	2,320	2,170	1,880	3,070	1,880	1,320	1,600	6,610
3	.....	2,320	2,170	1,600	2,470	2,170	1,180	1,600	3,680
4	.....	2,320	3,680	3,680	2,170	5,290	1,180	1,600	2,920
5	.....	2,170	3,070	2,770	1,880	4,640	1,180	1,600	2,170
6	.....	2,170	2,770	2,170	1,880	5,290	1,050	1,600	2,320
7	.....	2,170	3,530	1,880	2,020	4,960	1,050	1,600	1,880
8	.....	2,170	3,530	1,880	1,880	4,640	1,050	1,880	1,740
9	.....	2,770	3,680	1,600	1,600	3,840	1,050	5,290	1,600
10	.....	2,470	3,370	1,600	3,370	2,770	1,320	3,070	1,600
11	2,770	2,470	3,370	1,600	2,320	2,170	1,320	2,470	1,600
12	12,000	2,470	3,070	1,600	2,170	2,030	1,880	1,880	1,600
13	8,140	2,320	2,770	1,600	1,880	1,600	2,170	1,740	1,600
14	5,770	2,170	2,620	1,460	1,740	1,180	1,600	1,600	1,460
15	4,480	2,170	2,470	1,460	1,740	1,050	1,320	1,600	1,600
16	4,160	2,170	2,170	1,460	1,600	1,180	1,320	1,600	1,600
17	3,680	2,320	1,880	1,460	1,600	1,460	1,320	1,460	1,600
18	3,680	2,920	1,880	1,460	1,600	1,460	1,320	1,460	1,460
19	3,070	3,070	1,600	2,620	1,600	1,320	2,470	1,460	1,600
20	3,070	2,770	1,600	2,170	1,460	1,320	10,700	1,320	1,880
21	2,770	2,620	1,460	1,880	1,460	1,600	3,680	1,320	1,880
22	2,620	3,370	1,460	1,740	1,600	4,640	2,320	1,320	1,880
23	2,620	8,140	1,460	1,600	1,600	1,880	2,170	1,320	1,740
24	2,620	16,600	1,460	1,600	10,400	1,600	2,170	1,320	1,600
25	2,620	13,800	3,220	1,600	8,990	1,600	3,680	1,320	1,740
26	2,470	11,400	4,160	2,320	8,310	1,460	2,170	1,320	3,220
27	2,470	5,610	5,290	2,030	5,610	1,460	1,880	1,320	2,920
28	2,470	4,160	3,370	1,880	5,610	1,460	1,740	1,320	2,320
29	2,470	3,840	2,320	1,740	4,480	1,460	1,740	1,320	1,880
30	2,320	3,220	1,740	1,740	2,620	1,460	1,740	1,320	1,880
31	.....	2,770	.....	2,620	2,030	.....	1,600	.....	3,220

NOTE.—Daily discharge determined from a rating curve well defined between 1,000 and 4,000 second-feet; below 1,000 second-feet the curve is based on a fairly accurate determination of the point of zero flow; above 5,000 second-feet it is approximate.

Monthly discharge of Yadkin River near Donnaha, N. C., for 1913.

[Drainage area, 1,600 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
April 11–30	12,000	2,320	3,810	2.38	1.77	B.
May	16,600	2,170	3,990	2.49	2.87	B.
June	5,290	1,460	2,660	1.66	1.85	A.
July	3,680	1,460	1,910	1.19	1.37	A.
August	10,400	1,460	3,010	1.88	2.17	A.
September	5,290	1,050	2,360	1.48	1.65	A.
October	10,700	1,050	2,000	1.25	1.44	A.
November	5,290	1,320	1,710	1.07	1.19	A.
December	6,610	1,460	2,250	1.41	1.63	A.

YADKIN RIVER NEAR SALISBURY, N. C.

Location.—At highway bridge known as the Piedmont Toll Bridge, 1,000 feet above Southern Railway bridge, 6 miles east of Salisbury, and about 5 miles below mouth of South Yadkin River.

Records available—September 24, 1895, to December 31, 1909; September 1, 1911, to December 31, 1913.

Drainage area.—3,400 square miles.

Gage.—Standard chain gage attached to highway bridge. From the date of establishment to May 31, 1899, the gage was at the Southern Railway bridge, and from the latter date it was at the highway bridge until moved back to the railroad bridge early in the year 1903, where it remained until the end of the year 1905. Since January 1, 1906, the gage has been at the highway bridge on the same datum as originally established there in 1899. The last gage at the railroad bridge read the same as the gage at the highway bridge at gage height 3.2 feet, but was not the same for higher and lower stages. Datum of the original gage at the railroad bridge somewhat uncertain.

Channel and control.—Channel wide and rather rough; control, a rock ledge about 500 feet below bridge, extending entirely across river.

Discharge measurements.—Made from highway bridge. During the time that the gage was at the railroad bridge most of the measurements were made from that bridge.

Winter flow.—Ice has little if any effect at this station.

Regulation.—Flow during low stages may be slightly affected by developed powers on the river and tributaries above station.

Accuracy.—Owing to the fact that station has an excellent natural control the rating curve for low and medium stages is good.

The following discharge measurement was made by Warren E. Hall:
February 21: Gage height, 2.71 feet; discharge, 3,550 second-feet.

Daily gage height, in feet, of Yadkin River near Salisbury, N. C., for 1913.

[J. T. Yarbrough, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.6	3.0	4.8	3.8	2.7	2.8	2.2	2.4	3.0	2.4	2.4	2.85
2	2.4	2.9	3.6	3.3	2.6	2.75	2.2	2.7	2.4	2.25	2.3	6.5
3	2.4	2.8	3.1	3.0	2.5	2.65	2.15	4.0	2.25	2.2	2.4	5.4
4	2.6	2.8	2.85	3.0	2.55	2.8	3.4	4.1	4.7	2.0	2.2	3.6
5	2.7	2.8	2.6	2.9	2.45	2.9	3.6	2.8	5.4	2.1	2.3	3.0
6	2.5	2.7	2.65	2.8	2.5	2.7	2.6	2.55	4.1	2.05	2.2	2.7
7	2.4	2.6	2.55	2.7	2.5	2.6	2.4	2.65	3.2	2.1	2.3	2.8
8	2.35	2.5	2.5	2.7	2.5	2.9	2.3	2.5	2.6	2.0	2.2	3.0
9	2.4	2.5	2.4	2.75	2.6	2.95	2.0	2.1	3.0	2.1	5.0	2.85
10	2.4	2.5	2.75	2.8	2.6	2.7	2.1	4.0	2.85	2.2	5.1	2.55
11	2.2	2.4	3.3	2.9	2.7	2.7	2.1	4.0	2.45	2.3	3.8	2.6
12	2.3	2.7	3.2	5.1	2.55	2.6	2.1	2.8	2.2	2.2	2.85	2.4
13	2.4	2.7	2.85	7.4	2.45	2.7	2.3	2.8	2.15	2.6	2.65	2.5
14	2.4	2.5	5.9	5.4	2.45	2.75	2.3	2.85	2.05	2.2	2.5	2.4
15	2.3	2.4	13.1	4.2	2.3	2.35	2.2	2.65	2.2	2.1	2.5	2.5
16	2.25	2.4	15.4	4.0	2.4	2.4	2.1	2.5	2.0	2.0	2.4	2.35
17	2.25	2.4	10.3	3.7	2.45	2.35	2.1	2.35	2.25	2.1	2.5	2.4
18	2.2	2.35	4.8	3.4	2.65	2.4	2.1	2.2	2.3	1.95	2.4	2.3
19	2.2	2.35	3.9	3.2	2.9	2.3	1.9	2.0	2.5	2.15	2.45	2.4
20	2.35	2.3	3.7	3.1	3.0	2.2	2.4	3.0	2.35	5.0	2.3	2.2
21	2.3	2.7	3.9	3.0	2.8	2.3	3.3	4.5	2.65	5.0	2.4	2.4
22	2.35	2.7	4.0	2.9	3.4	2.35	2.4	4.0	4.9	3.2	2.2	2.3
23	2.4	2.7	3.6	2.9	3.0	2.5	2.0	2.65	3.8	2.7	2.35	2.8
24	2.9	2.6	3.2	2.8	7.8	2.85	2.1	4.3	2.8	2.5	2.3	2.65
25	3.9	2.5	3.0	2.7	6.5	2.85	2.2	3.9	2.6	4.8	2.25	2.85
26	3.6	2.4	3.2	2.9	4.0	3.3	2.05	2.4	2.3	4.3	2.2	3.7
27	4.1	2.6	3.8	2.65	3.4	2.85	2.2	2.2	2.4	3.3	2.3	4.0
28	7.1	5.0	6.2	2.85	6.0	2.55	2.15	2.4	2.2	2.8	2.2	3.2
29	5.5	.....	4.7	2.75	5.0	2.5	2.1	2.2	2.3	2.7	2.25	2.9
30	3.9	.....	4.4	2.7	3.5	2.4	2.8	4.5	2.3	2.6	2.2	3.2
31	3.2	.....	4.2	.....	3.0	.....	2.6	4.6	.....	2.5	.....	3.2

Daily discharge, in second-feet, of Yadkin River near Salisbury, N. C., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,210	4,400	11,300	7,210	3,500	3,790	2,170	2,660	4,400	2,660	2,660	3,940
2	2,660	4,090	6,460	5,390	3,210	3,640	2,170	3,500	2,660	2,290	2,410	19,200
3	2,660	3,790	4,720	4,400	2,930	3,360	2,000	7,980	2,290	2,170	2,660	13,900
4	3,210	3,790	3,940	4,400	3,070	3,790	5,740	8,370	10,800	1,730	2,170	6,460
5	3,500	3,790	3,210	4,090	2,800	4,090	6,460	3,790	13,900	1,940	2,410	4,400
6	2,930	3,500	3,360	3,790	2,930	3,500	3,210	3,070	8,370	1,840	2,170	3,500
7	2,660	3,210	3,070	3,500	2,930	3,210	2,660	3,360	5,050	1,940	2,410	3,790
8	2,540	2,930	2,930	3,500	2,930	4,090	2,410	2,930	3,210	1,730	2,170	4,400
9	2,660	2,930	2,660	3,640	3,210	4,240	1,730	1,940	4,400	1,940	12,200	3,940
10	2,660	2,930	3,640	3,790	3,210	3,500	1,940	7,980	3,940	2,170	12,600	3,070
11	2,170	2,660	5,390	4,090	3,500	3,500	1,940	7,980	2,800	2,410	7,210	3,210
12	2,410	3,500	5,050	12,600	3,070	3,210	1,940	3,790	2,170	2,170	3,940	2,660
13	2,660	3,500	3,940	23,800	2,800	3,500	2,410	3,790	2,060	3,210	3,360	2,930
14	2,660	2,930	16,300	13,900	2,800	3,640	2,410	3,940	1,840	2,170	2,930	2,660
15	2,410	2,660	60,700	8,770	2,410	2,540	2,170	3,360	2,170	1,940	2,930	2,930
16	2,290	2,660	77,200	7,980	2,660	2,660	1,940	2,930	1,730	1,730	2,660	2,540
17	2,290	2,660	41,300	6,830	2,800	2,540	1,940	2,540	2,290	1,940	2,930	2,660
18	2,170	2,540	11,300	5,740	3,360	2,660	1,940	2,170	2,410	1,630	2,660	2,410
19	2,170	2,540	7,590	5,050	4,090	2,410	1,530	1,730	2,930	2,060	2,800	2,660
20	2,540	2,410	6,830	4,720	4,400	2,170	2,660	4,400	2,540	12,200	2,410	2,170
21	2,410	3,500	7,590	4,400	3,790	2,410	5,390	9,990	3,360	12,200	2,630	2,660
22	2,540	3,500	7,980	4,090	5,740	2,540	2,660	7,980	11,700	5,050	2,170	2,410
23	2,660	3,500	6,460	4,090	4,400	2,930	1,730	3,360	7,210	3,500	2,540	3,790
24	4,090	3,210	5,050	3,790	25,900	3,940	1,940	9,170	3,790	2,930	2,410	3,360
25	7,590	2,930	4,400	3,500	19,200	3,940	2,170	7,590	3,210	11,300	2,290	3,940
26	6,460	2,660	5,050	4,090	7,980	5,390	1,840	2,660	2,410	9,170	2,170	3,500
27	8,370	3,210	7,210	3,360	5,740	3,940	2,170	2,170	2,660	5,390	2,410	7,980
28	22,200	12,200	17,700	3,940	16,800	3,070	2,060	2,660	2,170	3,790	2,170	5,050
29	14,400	.....	10,800	3,640	12,200	2,930	2,170	2,170	2,410	3,500	2,290	4,090
30	7,590	.....	9,580	3,500	6,100	2,660	3,790	9,990	2,410	3,210	2,170	5,050
31	5,050	.....	8,770	.....	4,400	.....	3,210	10,400	.....	2,930	.....	5,050

NOTE.—Daily discharge determined from a rating curve fairly well defined below 22,000 second-feet.

Monthly discharge of Yadkin River near Salisbury, N. C., for 1913.

[Drainage area, 3,400 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	22,200	2,170	4,380	1.29	1.49	B.
February	12,200	2,410	3,500	1.03	1.07	A.
March	77,200	2,660	12,000	3.53	4.07	B.
April	23,800	3,500	5,850	1.72	1.92	B.
May	25,900	2,410	5,640	1.66	1.91	B.
June	5,390	2,170	3,330	.979	1.09	A.
July	6,460	1,530	2,600	.765	.88	A.
August	10,400	1,730	4,850	1.43	1.65	B.
September	13,900	1,730	4,110	1.21	1.35	A.
October	12,200	1,630	3,700	1.09	1.26	A.
November	12,600	2,170	3,360	.988	1.10	A.
December	19,200	2,170	4,530	1.33	1.53	B.
The year	77,200	1,530	4,840	1.42	19.32	

SAVANNAH RIVER BASIN.

TALLULAH RIVER AT MATHIS, GA.

Location.—About a quarter of a mile southeast of Mathis station on the Tallulah Falls Railway; about 900 feet below mouth of Tiger Creek, about 1 mile below the Mathis storage dam of the Georgia Railway & Power Co., now under construction, and about 5 miles upstream from Tallulah Falls, Ga., where a station was formerly located.

Records available.—October 31, 1912, to December 31, 1913.

Drainage area.—186 square miles.

Gage.—Step gage, composed of eight vertical sections on left bank in a line normal to stream, installed March 27, 1913, about 400 feet below site of original gage but at same datum. Original gage had been moved 20 feet upstream February 1, 1913, on account of construction work on bridge cribs, but was washed out during flood of March 16, 1913.

Channel and control.—Channel fairly permanent, though owing to construction of bridge crib above, silt tends to collect around the gage. Bottom of sand, gravel, and bowlders. Control, bowlder and gravel bar about 150 feet below gage; practically permanent.

Discharge measurements.—Usually made from a rough railroad trestle just above gage. Section is very rough and current irregular. One measurement was made by using a swinging bridge above mouth of Tiger Creek and adding measurement made of Tiger Creek, at a foot log half a mile above gage.

Floods.—March 27, 1913; crest of flood 9.5 feet.

Winter flow.—Little affected by ice.

Regulation.—Small diurnal fluctuation caused by operation of small mills on Tiger Creek. When Mathis storage dam, 1 mile above on Tallulah River, is completed, the gage heights will be affected greatly.

Accuracy.—Backwater from construction bridge cribs directly over original gage invalidates records from February 1 to March 15, 1913; readings reliable after March 27. Gage readings prior to February 1, 1913, probably valueless, as no rating curve had been made before that time.

Cooperation.—Gage-height record furnished by Northern Contracting Co., builders of the Mathis Dam.

Discharge measurements of Tallulah River at Mathis, Ga., in 1913.

[Warren E. Hall, hydrographer.]

Date.	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Mar. 27[a]	7.76	7,050	Sept. 5	1.48	394
27[a]	7.33	6,560	5	2.08	632
27[a]	5.65	3,550	6	1.51	386
May 9	1.85	575			

[a] Measured by floats; coefficient used, 0.90.

Daily gage height, in feet, of Tallulah River at Mathis, Ga., for 1913.

[Miles Phillips, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.95	2.25	3.4	2.95	1.9	1.7	1.45	1.2	1.0	1.1	1.0	1.65
2	1.9	2.2	3.2	2.8	1.9	1.65	1.45	1.3	1.0	1.0	1.0	1.5
3	1.95	2.65	3.1	2.75	1.9	1.6	1.3	1.2	.8	.8	1.0	1.15
4	1.9	2.65	3.0	2.7	1.9	1.7	1.35	1.3	.7	.7	1.0	1.2
5	1.9	2.45	2.95	2.6	1.9	1.7	1.4	1.2	1.2	.7	.95	1.15
6	1.85	2.3	2.9	2.55	1.9	2.3	1.55	1.1	1.6	.7	1.1	1.1
7	1.9	2.3	2.85	2.5	1.9	2.4	1.25	1.15	1.2	.7	1.1	2.0
8	2.1	2.3	2.9	2.55	1.9	2.65	1.1	1.45	1.1	.75	1.1	1.45
9	2.05	2.3	2.9	2.75	1.9	2.6	1.5	1.5	1.0	.8	1.1	1.25
10	1.9	2.35	3.7	2.65	1.9	2.25	1.2	1.4	.9	.8	1.1	1.2
11	1.95	2.8	3.6	2.9	1.85	1.5	1.2	1.4	.85	.8	1.1	1.2
12	2.3	3.3	3.3	2.65	1.85	1.8	1.7	1.3	.75	.8	.9	1.2
13	2.25	3.0	3.4	2.8	1.85	1.7	1.45	1.3	.8	.8	.9	1.1
14	2.05	2.85	6.3	2.55	1.8	1.65	1.3	1.25	.9	.8	.9	1.1
15	2.05	2.85	5.8	2.5	1.8	1.6	1.25	1.2	1.05	.8	.9	1.1
16	2.05	2.75	.....	2.5	1.8	1.6	1.2	1.2	1.2	.8	.9	1.1
17	2.1	2.7	.....	2.45	2.0	1.5	1.1	1.2	1.2	.8	.9	1.0
18	2.15	2.6	.....	2.45	1.8	1.5	1.1	1.2	1.1	.8	.9	.95
19	2.0	2.6	.....	2.3	2.0	1.75	1.1	1.0	1.0	.85	.9	1.1
20	1.95	3.3	.....	2.3	1.8	1.3	1.1	1.1	1.15	1.35	.85	1.0
21	2.05	3.2	.....	2.3	1.7	1.55	1.25	1.25	1.5	2.0	.8	.9
22	2.0	3.0	.....	2.2	1.7	1.5	2.4	1.0	1.1	.9	.8	.9
23	2.0	2.85	.....	2.2	4.4	1.5	1.2	1.55	1.1	.9	.8	1.4
24	2.55	2.75	.....	2.15	3.1	1.45	1.2	1.0	1.0	2.0	.8	1.2
25	2.45	2.8	.....	2.1	2.25	1.4	1.8	1.05	1.0	1.35	.8	2.35
26	2.25	2.75	.....	2.1	2.05	1.4	1.55	1.0	.95	1.2	.8	1.85
27	3.4	5.4	6.9	2.1	2.0	1.4	2.85	1.05	.8	1.15	.8	1.5
28	2.85	4.8	3.9	2.1	1.45	1.4	1.45	1.0	.75	1.3	.8	1.35
29	2.55	.....	3.4	2.1	1.8	1.4	1.35	1.1	1.15	1.1	.8	1.7
30	2.4	.....	3.4	2.1	1.75	1.55	1.2	1.2	1.7	1.1	1.1	1.85
31	2.35	.....	3.2	.....	1.7	.....	1.2	1.25	.....	1.1	.....	1.7

NOTE.—Gage destroyed by flood Mar. 14 and replaced Mar. 27.

Daily discharge, in second-feet, of Tallulah River at Mathis, Ga., for 1913.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1,150	570	476	369	270	200	234	200	454
2	.....	1,050	570	454	369	308	200	200	200	390
3	.....	1,020	570	432	308	270	138	138	200	252
4	.....	990	570	476	328	308	110	110	200	270
5	.....	936	570	476	348	270	270	110	184	252
6	.....	908	570	772	411	234	432	110	234	234
7	.....	880	570	826	289	252	270	110	234	620
8	.....	908	570	965	234	369	234	124	234	369
9	.....	1,020	570	936	390	390	200	138	234	289
10	.....	965	570	746	270	348	168	138	234	270
11	.....	1,120	546	390	270	348	153	138	234	270
12	.....	965	546	522	476	308	124	138	168	270
13	.....	1,050	546	476	369	308	138	138	168	234
14	.....	908	522	454	308	289	168	138	168	234
15	.....	880	522	432	289	270	217	138	168	234
16	.....	880	522	432	270	270	270	138	168	234
17	.....	853	620	390	234	270	270	138	168	200
18	.....	853	522	390	234	270	234	138	168	184
19	.....	772	620	499	234	200	200	153	168	234
20	.....	772	522	308	234	234	252	328	153	200
21	.....	772	476	411	289	289	390	620	138	168
22	.....	720	476	390	826	200	234	168	138	168
23	.....	720	2,210	390	270	411	234	168	138	348
24	.....	695	1,250	369	270	200	200	620	138	270
25	.....	670	746	348	522	217	200	328	138	799
26	.....	670	645	348	411	200	184	270	138	546
27	5,600	670	620	348	1,080	217	138	252	138	398
28	1,810	670	369	348	369	200	124	308	138	320
29	1,450	670	522	348	328	234	252	234	138	476
30	1,450	670	499	411	270	270	476	234	234	546
31	1,310	.....	476	.....	270	289	.....	234	.....	476

NOTE.—Daily discharge determined from a fairly well defined rating curve.

Monthly discharge of Tallulah River at Mathis, Ga., for 1913.

[Drainage area, 186 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
April	1,150	670	860	4.62	5.16	B.
May	2,210	369	628	3.38	3.90	A.
June	965	308	485	2.61	2.91	A.
July	1,080	234	359	1.93	2.23	A.
August	411	200	275	1.48	1.71	A.
September	476	110	223	1.20	1.34	B.
October	620	110	208	1.12	1.29	B.
November	234	138	179	.962	1.07	B.
December	799	168	329	1.77	2.04	A.

BROAD RIVER (OF GEORGIA) NEAR CARLTON, GA.

Location.—At the Seaboard Air Line Railway bridge 3 miles east of Carlton, Ga., and 2 miles above the mouth of South Fork.

Records available.—May 27, 1897, to December 31, 1913.

Drainage area.—762 square miles.

Gage.—Standard chain gage attached to railroad bridge.

Channel and control.—The bed of the stream is sand and gravel and may be slightly changeable. Left bank overflows for about 400 feet at gage height 16 feet.

Discharge measurements.—Made from upstream side of deck railroad bridge.

Regulation.—Flow affected little or not at all by artificial control.

Cooperation.—Gage-height record furnished by United States Weather Bureau.

No discharge measurements have been made at this station since 1910; conditions that may have affected the rating curve are not known, and estimates for 1913 are withheld.

Daily gage height, in feet, of Broad River (of Georgia) near Carlton, Ga., for 1913.

[M. C. Power, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.6	2.7	6.4	2.8	2.1	.....	.....	3.8	2.9	4.6	2.3	3.0
2	2.2	2.7	4.4	2.4	1.9	.....	.....	3.6	2.6	3.5	2.4	3.5
3	2.4	2.4	3.5	2.6	1.8	.....	.....	3.0	2.7	2.8	2.2	2.9
4	2.7	5.6	3.0	2.3	2.2	.....	.....	2.8	3.1	2.45	2.0	2.5
5	2.3	4.4	2.5	2.1	2.0	.....	.....	2.5	3.5	2.25	2.3	2.5
6	2.0	3.3	2.2	2.8	1.9	.....	.....	5.7	3.9	2.45	2.2	2.1
7	2.2	2.7	2.4	2.5	2.1	.....	.....	4.0	4.0	2.1	2.5	2.9
8	2.4	2.2	2.2	2.7	1.9	.....	.....	3.8	3.7	2.3	2.3	2.8
9	2.1	2.5	2.5	2.2	2.2	.....	.....	2.9	2.35	2.5	2.6	2.7
10	2.3	2.2	2.9	2.5	2.0	.....	.....	3.1	2.15	2.8	2.2	2.6
11	2.2	2.4	5.0	2.8	2.3	.....	2.45	3.5	2.45	2.6	2.4	2.5
12	2.2	5.7	4.5	4.9	2.1	.....	2.8	2.7	2.3	2.3	2.3	2.8
13	2.0	4.6	5.6	4.1	1.9	.....	2.9	3.5	2.05	2.1	2.2	2.9
14	2.4	3.4	8.3	3.7	2.2	.....	3.2	2.9	2.5	2.4	2.5	2.7
15	2.2	2.3	19.1	4.2	2.0	.....	2.7	3.1	2.8	2.2	2.3	2.8
16	2.1	2.6	14.4	3.4	1.8	.....	2.45	2.7	3.2	2.5	2.6	2.8
17	2.3	2.2	6.9	2.9	2.2	.....	2.15	2.2	3.6	2.8	2.4	2.7
18	2.5	2.4	5.3	2.6	2.2	.....	2.35	2.8	4.0	2.6	2.2	2.7
19	2.4	2.6	4.2	2.2	2.5	.....	2.15	2.8	3.6	2.7	2.5	2.7
20	2.2	3.4	3.1	2.3	2.8	.....	2.25	2.6	2.9	4.3	2.4	2.7
21	2.5	3.8	3.6	2.1	2.4	.....	2.6	2.2	3.0	3.8	2.3	2.7
22	2.3	4.3	4.7	2.4	2.1	.....	3.1	2.7	2.8	3.3	2.2	2.7
23	2.1	3.3	4.1	2.2	2.9	.....	4.3	3.0	2.5	3.0	2.6	2.7
24	3.7	2.4	3.5	2.0	3.4	.....	3.9	3.5	2.9	4.1	2.4	3.1
25	4.7	2.2	2.8	1.8	3.1	.....	2.6	2.5	2.6	5.5	2.3	3.7
26	3.9	2.5	3.1	2.0	2.7	.....	3.5	2.25	2.25	4.3	2.1	4.4
27	5.5	2.8	3.9	2.2	2.4	.....	4.6	3.0	3.0	3.3	2.4	4.1
28	7.9	3.5	3.4	2.4	2.2	.....	3.9	2.8	2.35	3.8	2.6	3.4
29	7.0	.....	2.7	2.2	.....	.....	2.7	2.5	2.2	3.3	2.4	3.2
30	5.2	.....	2.9	2.0	.....	.....	3.8	2.35	4.5	3.0	2.7	9.3
31	3.2	.....	2.5	.....	.....	.....	4.3	4.0	.....	2.7	.....	6.7

ALTAMAHA RIVER BASIN.

OCMULGEE RIVER NEAR JACKSON, GA.

Location.—At Pittmans Ferry, 8 miles southeast of Jackson, Ga., half a mile above mouth of Yellow Water Creek, and a short distance below Heards Creek; 1½ miles below dam and power plant of the Central Georgia Power Co.

Records available.—May 18, 1906, to December 31, 1913.

Drainage area.—1,400 square miles.

Gage.—Automatic gage installed near the ferry landing on right bank by Central Georgia Power Co. The gage used previous to 1913 was a vertical staff in three sections on the right bank of river, upstream side of ferry landing. Both gages read the same and the staff gage is read twice a day as a check on the automatic gage.

Channel and control.—Bottom sandy; shifts considerably but the shifting has little if any effect on the rating curve, as the control is a rocky ledge about 400 feet below the gage.

Discharge measurements.—Made at ferry, either from the ferry boat or a small boat held in place by the ferry cable.

Regulation.—Flow at low stages since 1911 greatly affected by operation of plant of Central Georgia Power Co.

Accuracy.—Station fairly well rated; possible errors due to effect of power regulation eliminated by means of automatic gage record.

Cooperation.—Gage heights furnished by Central Georgia Power Co.

The following discharge measurement was made by Warren E. Hall:

June 5: Gage height, 5.09 feet; discharge, 1,980 second-feet.

Daily gage height, in feet, of Ocmulgee River near Jackson, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.0	5.6	6.2	5.7	4.9	4.36	4.75	4.8	4.27	4.49	4.55	4.5
2	5.0	5.35	5.9	5.45	4.75	4.65	4.9	4.6	4.95	4.65	4.40	4.6
3	5.0	5.6	5.8	5.25	4.6	4.65	4.9	4.55	4.95	4.65	4.55	4.6
4	4.75	5.6	5.4	5.25	4.47	4.9	4.75	5.0	4.6	4.6	4.33	4.55
5	4.55	5.8	5.3	5.2	4.7	4.95	4.7	4.7	4.6	4.41	4.27	4.6
6	4.85	5.7	5.2	5.15	4.65	5.05	4.5	4.7	4.55	4.7	4.28	4.40
7	4.85	5.4	5.1	5.25	4.65	5.05	4.8	4.6	4.37	4.7	4.30	4.32
8	4.85	5.2	4.9	5.2	4.6	5.4	4.8	4.75	4.55	4.7	4.29	4.48
9	4.8	4.9	4.7	5.1	4.6	5.8	4.9	4.7	4.55	4.7	4.19	4.7
10	4.7	5.2	5.1	4.9	4.5	5.5	4.85	4.65	4.55	4.65	4.41	4.7
11	4.6	5.1	5.4	5.15	4.27	5.25	4.75	4.8	4.65	4.6	4.33	4.7
12	4.4	5.2	5.6	5.6	4.55	5.15	4.7	5.15	4.6	4.24	4.33	4.8
13	4.85	5.35	6.6	5.3	4.55	5.0	4.45	5.1	4.55	4.65	4.35	4.40
14	4.9	5.3	9.2	5.4	4.65	4.9	4.65	4.85	4.45	4.55	4.33	4.35
15	4.75	5.1	18.4	5.2	4.6	4.65	4.8	4.9	4.65	4.33	4.36	4.7
16	4.75	4.85	17.9	5.1	4.55	4.95	4.75	4.7	4.65	4.32	4.33	4.8
17	4.6	5.2	12.6	4.8	4.5	4.95	4.8	4.15	4.7	4.28	4.45	4.75
18	4.55	5.0	8.5	4.8	4.5	4.95	4.7	4.6	4.7	4.27	4.36	4.9
19	4.37	5.0	6.9	4.7	4.9	4.85	4.75	4.8	4.9	4.03	4.21	4.85
20	4.75	5.0	6.3	4.6	4.85	4.9	4.7	4.40	4.65	4.32	4.25	4.6
21	4.7	5.1	6.6	4.75	4.85	4.8	4.9	4.6	4.49	4.37	4.27	4.5
22	4.6	5.2	7.1	4.7	4.8	4.48	4.7	4.8	5.05	4.34	4.18	4.55
23	4.6	5.1	6.6	4.65	4.7	4.75	4.47	4.65	4.6	4.40	3.96	4.35
24	4.8	5.3	6.1	4.65	4.85	4.85	4.47	3.95	4.7	4.36	4.25	4.18
25	5.35	5.2	5.8	4.85	4.9	4.75	4.49	4.75	4.7	4.29	4.27	4.00
26	5.55	5.1	5.6	4.8	5.0	4.9	4.28	4.6	4.7	4.27	4.28	4.15
27	6.3	5.2	6.2	4.65	4.95	4.9	4.10	4.6	4.65	4.17	4.19	4.22
28	7.4	5.8	6.8	4.85	4.85	4.9	4.33	4.7	4.6	4.55	4.21	4.25
29	7.4	.....	6.4	4.9	4.75	4.65	4.9	4.6	4.8	4.6	4.06	4.8
30	6.6	.....	4.9	4.85	4.75	4.75	4.95	4.48	4.7	4.6	3.91	4.8
31	5.9	.....	4.8	.....	4.7	.....	4.8	3.95	.....	4.55	.....	4.8

NOTE.—Automatic gage out of order; staff gage read Jan. 1–5, Aug. 1–31, Sept. 22, and Dec. 1–31. Individual readings during these periods may be somewhat in error because of regulation of flow by operation of the power plant.

Daily discharge, in second-feet, of Ocmulgee River near Jackson, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,820	3,050	4,280	3,260	1,620	742	1,330	1,420	638	912	1,000	925
2	1,820	2,540	3,660	2,740	1,330	1,160	1,620	1,080	1,720	1,160	790	1,080
3	1,820	3,050	3,460	2,330	1,080	1,160	1,620	1,000	1,720	1,160	1,000	1,080
4	1,330	3,050	2,640	2,330	884	1,620	1,330	1,820	1,080	1,080	706	1,000
5	1,000	3,460	2,440	2,230	1,240	1,720	1,240	1,240	1,080	804	638	1,080
6	1,520	3,260	2,230	2,130	1,160	1,920	925	1,240	1,000	1,240	649	790
7	1,520	2,640	2,020	2,330	1,160	1,920	1,420	1,080	754	1,240	670	694
8	1,520	2,230	1,620	2,230	1,080	2,640	1,420	1,330	1,000	1,240	660	898
9	1,420	1,620	1,240	2,020	1,080	3,460	1,620	1,240	1,000	1,240	556	1,240
10	1,240	2,230	2,020	1,620	925	2,840	1,520	1,160	1,000	1,160	804	1,240
11	1,080	2,020	2,640	2,130	638	2,330	1,330	1,420	1,160	1,080	706	1,240
12	790	2,230	3,050	3,050	1,000	2,130	1,240	2,130	1,080	607	706	1,420
13	1,520	2,540	5,100	2,440	1,000	1,820	858	2,020	1,000	1,160	730	790
14	1,620	2,440	10,400	2,640	1,160	1,620	1,160	1,520	858	1,000	706	730
15	1,330	2,020	21,200	2,230	1,080	1,160	1,420	1,620	1,160	706	742	1,240
16	1,330	1,520	21,100	2,020	1,000	1,720	1,330	1,240	1,160	694	706	1,420
17	1,080	2,230	17,400	1,420	925	1,720	1,420	518	1,240	649	858	1,330
18	1,000	1,820	9,000	1,420	925	1,720	1,240	1,080	1,240	638	742	1,620
19	754	1,820	5,720	1,240	1,620	1,520	1,330	1,420	1,620	414	576	1,520
20	1,330	1,820	4,480	1,080	1,520	1,620	1,240	790	1,160	694	618	1,080
21	1,240	2,020	5,100	1,330	1,520	1,420	1,620	1,080	912	754	638	925
22	1,080	2,230	6,120	1,240	1,420	898	1,240	1,420	1,920	718	546	1,000
23	1,080	2,020	5,100	1,160	1,240	1,330	884	1,160	1,080	790	362	730
24	1,420	2,440	4,080	1,160	1,520	1,520	884	355	1,240	742	618	546
25	2,540	2,230	3,460	1,520	1,620	1,330	912	1,330	1,240	660	638	390
26	2,950	2,020	3,050	1,420	1,820	1,620	649	1,080	1,240	638	649	518
27	4,480	2,230	4,280	1,160	1,720	1,620	470	1,080	1,160	536	556	586
28	6,740	3,460	5,510	1,520	1,520	1,620	706	1,240	1,080	1,000	576	618
29	6,740	.....	4,690	1,620	1,330	1,160	1,620	1,080	1,420	1,080	438	1,420
30	5,100	.....	1,620	1,520	1,330	1,330	1,720	898	1,240	1,080	327	1,420
31	3,660	.....	1,420	.....	1,240	.....	1,400	355	.....	1,000	.....	1,420

NOTE.—Daily discharge determined from a rating curve fairly well defined below 10,000 second-feet. During the periods Jan. 1–5, Aug. 1–31, Sept. 22, and Dec. 1–31, when staff gage was used, discharges for individual days may be somewhat in error because of regulation of flow by operation of power plant.

Monthly discharge of Ocmulgee River near Jackson, Ga., for 1913.

[Drainage area, 1,400 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	6,740	754	2,060	1.47	1.69	B.
February	3,460	1,520	2,370	1.69	1.76	B.
March	21,200	1,240	5,490	3.92	4.52	C.
April	3,260	1,080	1,880	1.34	1.50	B.
May	1,820	638	1,250	.893	1.03	B.
June	3,460	742	1,680	1.20	1.34	B.
July	1,720	470	1,250	.893	1.03	B.
August	2,130	355	1,210	.864	1.00	B.
September	1,920	638	1,170	.836	.93	B.
October	1,240	414	899	.642	.74	C.
November	1,000	327	664	.474	.53	C.
December	1,620	390	1,030	.736	.85	B.
The year	21,200	327	1,750	1.25	16.92	

OCMULGEE RIVER AT MACON, GA.

Location.—At the Fifth Street Bridge in the city of Macon, near the Southern Railway passenger station and about 500 feet above the Central of Georgia Railway bridge.

Records available.—October 18, 1895, to December 31, 1913.

Drainage area.—2,420 square miles.

Gage.—The United States Weather Bureau gage originally used at this station is a heavy timber bolted to a pier of the Central of Georgia Railway bridge. A standard chain gage was installed October 9, 1905, on the downstream steel handrail of highway bridge, about 500 feet upstream from old gage. These gages have been referred to the same datum and have given practically the same readings. Since August 1, 1912, the discharge relation has been considerably changed owing to the construction of a dock about 800 feet below the gage.

Channel and control.—Both banks are high and neither is subject to overflow; bed soft and shifting.

Discharge measurements.—Made from the downstream side of the highway bridge to which the gage is attached.

Regulation.—Flow, especially at low stages, is likely to be considerably affected by the operations of the power dam near Jackson, Ga.

Accuracy.—As the station is situated below the fall line, rapidly rising or falling stages are likely to be attended by variations in surface slope, causing greater or less discharge than for the normal rating curve. The possible error in mean gage heights due to artificial control may cause the estimates for individual days to be considerably in error, especially at low stages. Dredging and construction work below the station has so changed the discharge relation that no estimates can be made for 1913.

Cooperation.—Since June 1, 1899, all gage heights have been furnished by the United States Weather Bureau.

The following discharge measurement was made by B. M. Hall, jr.:

April 3: Gage height, 7.34 feet; discharge 3,200 second-feet.

Daily gage height, in feet, of Ocmulgee River at Macon, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.0	8.7	15.8	9.3	5.0	4.0	3.7	4.0	1.4	3.4	2.2	0.2
2	4.5	7.4	14.7	8.5	5.5	2.8	3.9	6.8	1.7	2.3	2.0	.3
3	4.7	4.8	10.3	7.8	5.0	4.4	4.4	4.2	2.0	2.9	1.0	1.4
4	4.4	12.9	9.1	7.3	4.4	4.3	4.2	8.7	2.2	2.9	2.0	.1
5	3.8	10.8	7.2	7.1	3.9	4.7	4.5	4.9	5.2	2.4	1.1	1.2
6	2.9	9.2	6.4	6.6	4.8	5.4	4.8	3.8	6.6	1.3	.9	1.3
7	4.4	7.6	5.8	6.2	4.8	5.2	2.9	3.1	3.9	2.5	.9	1.1
8	4.2	6.6	5.1	6.7	4.8	6.1	4.1	3.8	2.0	3.0	.7	2.5
9	4.0	5.5	4.6	6.6	4.7	10.6	3.7	3.8	2.9	2.9	1.7	1.1
10	4.1	4.0	3.7	6.2	4.5	8.5	3.9	3.9	3.0	2.8	.8	.8
11	3.7	5.4	5.4	6.2	4.2	6.5	4.9	4.3	3.0	2.9	1.4	1.8
12	3.5	5.9	6.4	13.2	3.3	6.0	4.3	4.0	3.0	2.4	1.4	2.1
13	2.7	5.9	11.9	9.6	4.5	5.3	4.4	3.8	2.9	1.3	1.3	1.7
14	4.4	6.2	14.3	7.5	4.2	4.8	2.9	4.0	2.4	1.9	1.4	1.8
15	4.3	5.6	19.8	7.3	4.6	4.1	3.8	3.7	1.8	1.6	1.3	1.3
16	4.0	4.9	23.5	6.8	4.5	3.0	3.8	4.0	3.0	1.2	1.1	1.7
17	4.0	3.8	21.7	6.4	4.4	4.7	3.4	3.6	3.1	1.3	.8	1.8
18	3.9	5.2	17.6	6.2	4.0	4.2	3.3	2.7	3.0	.9	2.0	1.8
19	3.3	4.8	13.0	6.4	3.6	4.3	3.3	2.9	4.8	1.0	1.0	2.2
20	2.3	5.2	11.6	5.6	5.0	4.3	3.5	3.0	10.5	1.6	.5	2.0
21	3.8	5.2	10.4	5.1	5.0	4.3	2.6	2.9	5.1	2.3	.5	1.6
22	3.6	5.9	14.9	5.8	5.0	3.9	5.5	3.0	3.6	1.3	.7	1.0
23	3.5	6.2	12.9	5.5	4.7	2.4	8.3	3.0	4.3	.9	.4	1.6
24	3.6	5.0	11.1	5.4	4.8	4.5	9.9	2.5	3.0	2.3	.3	1.1
25	11.8	6.0	10.0	5.0	4.4	4.1	4.9	1.8	3.0	2.7	−.1	.9
26	8.7	5.2	9.2	5.3	4.2	4.0	5.0	2.3	3.1	1.2	.5	1.2
27	7.8	4.9	10.9	4.9	4.8	4.2	5.1	2.8	3.0	.8	.8	.9
28	11.8	9.9	12.2	4.2	4.5	4.8	3.4	2.9	2.6	2.3	.4	.8
29	13.2	.....	11.7	5.3	4.6	3.9	7.1	4.0	1.8	1.7	.8	.6
30	13.0	.....	10.4	5.2	4.0	2.7	6.0	2.5	3.8	1.9	.6	5.6
31	10.5	.....	9.9	.....	4.2	.....	4.8	2.0	.....	2.2	.....	4.1

OCONEE RIVER NEAR GREENSBORO, GA.

Location.—At the highway bridge 5 miles west of Greensboro on the road to Madison, Ga., about 4 miles above the mouth of Apalachee River and 1½ miles below Town Creek.

Records available.—July 25, 1903, to December 31, 1913.

Drainage area.—1,100 square miles.

Gage.—Standard chain gage attached to the bridge.

Channel and control.—Bed composed chiefly of sand; slightly shifting.

Discharge measurements.—Made from the downstream side of the bridge.

Regulation.—Flow affected by operation of power plants above station.

Accuracy.—No discharge measurements made in 1913, but one made in 1914 indicated that there had been no change in discharge relation. Estimates of daily discharge, especially at low stages, may be somewhat in error for individual days because of fluctuations due to operation of power plants.

Daily gage height, in feet, of Oconee River near Greensboro, Ga., for 1913.

[W. E. Strickland, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.6	5.2	11.1	5.4	3.3	3.6	2.5	3.4	1.6	5.5	2.4	3.4
2	3.5	4.0	12.4	4.9	3.2	3.4	2.6	3.2	1.6	4.8	2.2	3.4
3	3.1	3.3	9.0	4.8	3.1	5.8	2.4	3.8	1.8	4.0	2.2	2.8
4	2.8	3.5	6.6	4.6	3.1	3.9	2.0	4.0	2.7	3.2	2.1	2.6
5	3.2	4.6	5.5	4.6	3.0	3.5	3.1	2.6	2.3	2.4	1.8	2.5
6	3.2	5.4	5.3	4.4	3.1	4.0	4.2	2.2	3.6	2.2	1.8	2.6
7	2.9	4.8	4.2	4.3	3.2	4.1	2.6	2.6	3.3	2.0	1.8	2.4
8	2.7	4.1	4.2	4.0	3.2	5.0	2.0	6.2	2.6	2.0	2.3	1.9
9	2.6	3.8	4.0	4.0	3.1	9.2	2.1	5.4	1.9	2.0	2.8	2.0
10	3.1	3.6	4.3	3.8	3.2	10.3	1.6	2.7	1.8	2.1	2.6	2.4
11	3.1	3.7	5.2	7.4	3.2	5.8	1.6	3.8	1.6	1.8	2.4	2.4
12	2.9	4.0	8.8	12.2	2.9	4.2	1.8	2.4	3.0	1.8	2.2	2.4
13	2.8	3.8	10.9	9.6	2.4	3.2	2.6	2.4	1.4	1.8	2.0	2.6
14	2.6	3.8	13.8	7.2	2.2	2.6	3.0	2.7	1.3	1.8	1.7	2.8
15	2.6	4.2	18.4	6.4	2.1	2.5	2.6	2.5	1.4	1.8	1.6	2.6
16	2.8	4.0	24.2	5.4	2.2	2.2	2.3	2.7	1.4	1.7	1.7	2.5
17	2.8	3.8	19.2	4.4	2.8	2.1	1.8	2.4	1.6	1.6	1.8	2.5
18	3.0	3.8	15.6	4.2	3.2	2.2	1.6	1.9	3.6	1.9	1.8	2.5
19	2.8	4.4	11.6	4.1	3.8	3.0	2.6	1.8	7.6	2.2	2.0	2.4
20	2.8	4.4	9.0	4.0	4.2	2.6	3.0	1.6	5.8	3.7	2.0	2.2
21	2.6	8.3	9.3	3.8	3.6	2.3	3.6	1.6	4.6	4.6	2.2	2.6
22	2.6	7.9	10.0	3.6	3.2	2.4	4.0	1.6	3.6	3.4	2.1	2.4
23	2.8	7.4	8.2	3.5	3.7	2.4	4.2	1.8	3.2	3.4	1.9	3.0
24	6.5	6.4	5.7	3.4	3.8	3.0	2.6	4.2	2.6	4.6	1.8	3.2
25	13.2	5.4	5.0	3.4	4.0	2.3	2.9	4.9	2.2	5.8	2.0	3.3
26	.7.8	4.8	4.6	3.4	3.8	2.2	3.8	3.0	1.8	4.6	2.1	3.8
27	8.1	5.0	10.2	3.6	3.1	2.4	5.4	2.2	1.8	3.2	1.8	3.6
28	12.6	5.1	8.3	3.6	2.8	2.4	4.6	2.0	1.9	2.8	1.6	3.6
29	16.0	.....	8.8	3.4	2.6	2.4	3.6	1.8	2.2	2.7	1.8	5.6
30	14.2	.....	11.5	3.3	2.4	2.6	3.6	1.8	5.8	2.6	2.0	11.2
31	9.2	.....	7.4	.....	2.4	.....	3.8	1.8	.....	2.4	.....	11.6

Daily discharge, in second-feet, of Oconee River near Greensboro, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,160	1,900	5,480	2,000	1,040	1,160	755	1,080	479	2,050	720	1,080
2	1,120	1,330	6,530	1,750	1,000	1,080	790	1,000	479	1,700	650	1,080
3	965	1,040	4,090	1,700	965	2,200	720	1,240	534	1,330	650	860
4	860	1,120	2,630	1,600	965	1,280	590	1,330	825	1,000	620	790
5	1,000	1,600	2,050	1,600	930	1,120	965	790	685	720	534	755
6	1,000	2,000	1,950	1,510	965	1,330	1,420	650	1,160	650	534	790
7	895	1,700	1,420	1,460	1,000	1,380	790	790	1,040	590	534	720
8	825	1,380	1,420	1,330	1,000	1,800	590	2,410	790	590	685	562
9	790	1,240	1,330	1,330	965	4,220	620	2,000	562	590	860	590
10	965	1,160	1,460	1,240	1,000	4,940	479	825	534	620	790	720
11	965	1,200	1,900	3,100	1,000	2,200	479	1,240	479	534	720	720
12	895	1,330	3,960	6,350	895	1,420	534	720	930	534	650	720
13	860	1,240	5,340	4,480	720	1,000	790	720	426	534	590	790
14	790	1,240	7,920	2,980	650	790	930	825	400	534	506	860
15	790	1,420	14,000	2,520	620	755	790	755	426	534	479	790
16	860	1,330	22,600	2,000	650	650	685	825	426	506	506	755
17	860	1,240	15,200	1,510	860	620	534	720	479	479	534	755
18	930	1,240	10,100	1,420	1,000	650	479	562	1,160	562	534	755
19	860	1,510	5,860	1,380	1,240	930	790	534	3,220	650	590	720
20	860	1,510	4,090	1,330	1,420	790	930	479	2,200	1,200	590	650
21	790	3,640	4,280	1,240	1,160	685	1,160	479	1,600	1,600	650	790
22	790	3,400	4,740	1,160	1,000	720	1,330	479	1,160	1,080	620	720
23	860	3,100	3,580	1,120	1,200	720	1,420	534	1,000	1,080	562	930
24	2,580	2,520	2,150	1,080	1,240	930	790	1,420	790	1,600	534	1,000
25	7,300	2,000	1,800	1,080	1,330	685	895	1,750	650	2,200	590	1,040
26	3,340	1,700	1,600	1,080	1,240	650	1,240	930	534	1,600	620	1,240
27	3,520	1,800	4,870	1,160	965	720	2,000	650	534	1,000	534	1,160
28	6,720	1,850	3,640	1,160	860	720	1,600	590	562	860	479	1,160
29	10,600	.....	3,960	1,080	790	720	1,160	534	650	825	534	2,100
30	8,370	.....	5,780	1,040	720	790	1,160	534	2,200	790	590	5,560
31	4,220	.....	3,100	.....	720	.....	1,240	534	.....	720	.....	5,860

NOTE.—Daily discharge determined from a rating curve fairly well defined below 6,000 second-feet. Above 7,000 second-feet the curve is approximate.

Monthly discharge of Oconee River near Greensboro, Ga., for 1913.

[Drainage area, 1,100 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	10,600	790	2,170	1.97	2.27	B.
February	3,640	1,040	1,700	1.55	1.61	A.
March	22,600	1,330	5,120	4.65	5.36	C.
April	6,350	1,040	1,790	1.63	1.82	A.
May	1,420	620	971	.883	1.02	A.
June	4,940	620	1,260	1.15	1.28	A.
July	2,000	479	924	.840	.97	A.
August	2,410	479	901	.819	.94	A.
September	3,220	400	897	.815	.91	A.
October	2,200	479	944	.858	.99	A.
November	860	479	600	.545	.61	A.
December	5,860	562	1,190	1.08	1.24	A.
The year	22,600	400	1,540	1.40	19.02	

OCONEE RIVER AT FRALEYS FERRY, NEAR MILLEDGEVILLE, GA.

Location.—At Fraleys Ferry, 6 miles above Milledgeville, Ga., and about 4 miles below mouth of Little River.

Records available.—May 23, 1906, to December 31, 1908; October 6, 1909, to December 31, 1913.

Drainage area.—2,840 square miles.

Gage.—A combination sloping and vertical rod gage in four sections. Section 0 to 8 feet is the old sloping gage bolted to solid rock on left bank above Fraley's Ferry. On November 13–14, 1913, vertical sections were added up to 20 feet.

Channel and control.—Sandy and shifting at measuring section; rock control below.

Discharge measurements.—Made from ferryboat.

Point of zero flow.—Top of natural control is approximately 3 feet above zero of gage. The point of zero flow is therefore at about gage height 3 feet.

Regulation.—None below vicinity of Athens, Ga., where storage may cause low daily discharge at this station at times.

Accuracy.—Records excellent, except for high discharges, which can not be measured.

The following discharge measurement was made by Warren E. Hall and B. M. Hall, jr.

November 14: Gage height, 5.39 feet; discharge, 1,370 second-feet.

Daily gage height, in feet, of Oconee River at Fraleys Ferry, near Milledgeville, Ga., for 1913.

[H. A. Taylor, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.4	7.1	11.2	7.5	6.1	6.0	5.8	6.2	5.2	7.9	5.6	5.4
2	6.4	7.1	13.6	7.2	6.0	6.1	5.9	6.5	5.15	7.5	5.4	5.8
3	6.2	7.8	11.1	7.0	6.0	6.6	5.8	6.4	5.1	6.6	5.45	5.9
4	6.2	8.7	8.0	6.8	6.0	6.7	5.7	7.2	5.0	5.8	5.5	5.8
5	6.2	8.2	7.8	6.8	6.0	6.5	6.3	7.0	5.1	5.5	5.6	5.6
6	6.1	7.9	7.4	6.7	5.9	6.6	6.6	5.6	6.4	5.4	5.6	5.45
7	6.1	7.5	7.0	6.6	5.9	6.8	5.9	5.45	6.8	5.35	5.4	5.5
8	6.1	7.0	6.8	6.5	5.9	7.4	5.4	5.3	6.1	5.25	5.5	6.0
9	6.0	6.5	6.7	6.5	5.9	8.4	5.2	6.8	5.6	5.3	6.3	6.1
10	6.0	6.4	6.8	6.5	5.8	9.2	5.3	5.9	5.4	5.2	5.4	5.8
11	6.0	6.4	7.3	7.2	5.8	8.3	5.7	6.8	5.15	5.15	5.6	5.6
12	6.0	7.2	7.8	12.6	5.8	7.4	5.7	7.0	5.05	5.1	5.45	5.5
13	6.0	7.9	12.0	12.6	5.8	6.7	5.8	6.0	5.0	5.45	5.4	5.4
14	6.1	7.8	14.6	8.0	5.8	6.2	6.0	6.0	4.95	5.25	5.4	5.4
15	6.1	7.2	16.Q	7.8	5.8	6.0	6.0	6.6	4.85	5.1	5.3	5.5
16	6.0	6.8	20.0	7.5	5.8	5.9	5.8	6.2	4.95	5.05	5.35	5.5
17	5.9	6.6	24.6	7.1	5.8	5.8	5.45	5.7	5.1	5.05	5.4	5.5
18	5.9	6.4	19.0	6.8	6.3	5.7	5.3	5.35	5.45	5.05	5.5	5.5
19	5.9	6.4	14.0	6.6	6.6	5.7	5.15	5.25	8.3	5.1	5.4	5.45
20	5.9	6.6	8.8	6.5	6.8	6.0	5.1	5.15	8.8	6.2	5.4	5.45
21	5.9	7.6	9.2	6.4	6.4	5.9	5.9	5.1	6.8	6.8	5.4	5.5
22	5.8	7.9	9.0	6.4	6.2	5.7	6.4	5.1	6.8	6.2	5.4	5.4
23	5.8	7.6	8.8	6.3	6.0	5.6	6.3	5.1	6.3	5.7	5.35	5.5
24	6.2	6.3	8.3	6.3	6.2	5.6	6.7	5.7	5.8	7.0	5.4	5.7
25	10 8	6.4	7.6	6.3	6.2	5.5	5.8	6.8	5.6	8.5	5.45	6.0
26	9.6	6.6	7.4	6.3	6.2	5.6	6.4	6.2	5.4	7.0	5.45	7.0
27	8.4	6.7	8.6	6.3	6.1	5.5	6.9	5.7	5.4	6.2	5.3	6.5
28	9.6	8.9	9.0	6.3	6.0	5.45	7.1	5.7	5.3	5.8	5.4	6.2
29	9.6	.....	9.0	6.3	5.8	5.4	7.2	5.1	5.2	5.7	5.4	6.2
30	9.6	.....	8.7	6.2	5.8	5.4	5.7	5.1	6.4	5.7	5.4	8.7
31	8.5	.....	8.0	.....	5.9	.....	5.8	5.1	.....	5.6	.....	8.8

Daily discharge, in second-feet, of Oconee River at Fraleys Ferry, near Milledgeville, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,760	3,950	12,500	4,690	2,300	2,150	1,870	2,450	1,170	5,450	1,610	1,380
2	2,760	3,950	18,900	4,130	2,150	2,300	2,010	2,920	1,120	4,690	1,380	1,870
3	2,450	5,260	12,300	3,770	2,150	3,080	1,870	2,760	1,080	3,080	1,440	2,010
4	2,450	7,050	5,650	3,420	2,150	3,250	1,740	4,130	990	1,870	1,490	1,870
5	2,450	6,050	5,260	3,420	2,150	2,920	2,600	3,770	1,080	1,490	1,610	1,610
6	2,300	5,450	4,500	3,250	2,010	3,080	3,080	1,610	2,760	1,380	1,610	1,440
7	2,300	4,690	3,770	3,080	2,010	3,420	2,010	1,440	3,420	1,320	1,380	1,490
8	2,300	3,770	3,420	2,920	2,010	4,500	1,380	1,270	2,300	1,220	1,490	2,150
9	2,150	2,920	3,250	2,920	2,010	6,450	1,170	3,420	1,610	1,270	2,600	2,300
10	2,150	2,760	3,420	2,920	1,870	8,070	1,270	2,010	1,380	1,170	1,380	1,870
11	2,150	2,760	4,310	4,130	1,870	6,250	1,740	3,420	1,120	1,120	1,610	1,610
12	2,150	4,130	5,260	16,100	1,870	4,500	1,740	3,770	1,040	1,080	1,440	1,490
13	2,150	5,450	14,500	16,100	1,870	3,250	1,870	2,150	990	1,440	1,380	1,380
14	2,300	5,260	21,700	5,650	1,870	2,450	2,150	2,150	950	1,220	1,380	1,380
15	2,300	4,130	25,600	5,260	1,870	2,150	2,150	3,080	870	1,080	1,270	1,490
16	2,150	3,420	36,800	4,690	1,870	2,010	1,870	2,450	950	1,040	1,320	1,490
17	2,010	3,080	49,700	3,950	1,870	1,870	1,440	1,740	1,080	1,040	1,380	1,490
18	2,010	2,760	34,000	3,420	2,600	1,740	1,270	1,320	1,440	1,040	1,490	1,490
19	2,010	2,760	20,000	3,080	3,080	1,740	1,120	1,220	6,250	1,080	1,380	1,440
20	2,010	3,080	7,250	2,920	3,420	2,150	1,080	1,120	7,250	2,450	1,380	1,440
21	2,010	4,880	8,070	2,760	2,760	2,010	2,010	1,080	3,420	3,420	1,380	1,490
22	1,870	5,450	7,650	2,760	2,450	1,740	2,760	1,080	3,420	2,450	1,380	1,380
23	1,870	4,880	7,250	2,600	2,150	1,610	2,600	1,080	2,600	1,740	1,320	1,490
24	2,450	2,600	6,250	2,600	2,450	1,610	3,250	1,740	1,870	3,770	1,380	1,740
25	11,600	2,760	4,880	2,600	2,450	1,490	1,870	3,420	1,610	6,650	1,440	2,150
26	8,910	3,080	4,500	2,600	2,450	1,610	2,760	2,450	1,380	3,770	1,440	3,770
27	6,450	3,250	6,850	2,600	2,300	1,490	3,590	1,740	1,380	2,450	1,270	2,920
28	8,910	7,450	7,650	2,600	2,150	1,440	3,950	1,740	1,270	1,870	1,380	2,450
29	8,910	.....	7,650	2,600	1,870	1,380	4,130	1,080	1,170	1,740	1,380	2,450
30	8,910	.....	7,050	2,450	1,870	1,380	1,740	1,080	2,760	1,740	1,380	7,050
31	6,650	.....	5,650	.....	2,010	.....	1,870	1.080	.....	1,610	.....	7,250

NOTE.—Daily discharge determined from a rating curve fairly well defined below 6,000 second-feet. Above 7,000 second-feet the curve is approximate.

Monthly discharge of Oconee River at Fraleys Ferry, near Milledgeville, Ga., for 1913.

[Drainage area, 2,840 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	11,600	1,870	3,670	1.29	1.49	B.
February	7,450	2,600	4,180	1.47	1.53	A.
March	49,700	3,250	11,800	4.15	4.78	C.
April	16,100	2,450	4,200	1.48	1.65	B.
May	3,420	1,870	2,190	.771	.89	A.
June	8,070	1,380	2,770	.975	1.09	A.
July	4,130	1,080	2,130	.750	.86	A.
August	4,130	1,080	2,120	.746	.86	A.
September	7,250	870	1,990	.701	.78	A.
October	6,650	1,040	2,150	.757	.87	A.
November	2,600	1,270	1,460	.514	.57	A.
December	7,250	1,380	2,160	.761	.88	A.
The year	49,700	870	3,400	1.20	16.25	

OCONEE RIVER AT DUBLIN, GA.

Location.—At the Wrightville & Tennille Railroad bridge at Dublin, Ga.

Records available.—February 11, 1898, to December 31, 1913; fragmentary records prior to 1898.

Drainage area.—4,180 square miles.

Gage.—Vertical timber attached to downstream side of central or turnspan-pier of railroad bridge; also a short sloping section bolted to rock just above the bridge on the right bank.

Channel and control.—Rocky and nearly permanent at wagon bridge, shifting in bottom of channel below bridge. At a stage of about 20 feet the left bank overflows for 1,100 feet through an iron frame trestle approach to the bridge. This ground is thickly covered with brushy growth, which probably retards the flow of water over the overflow section. The right bank does not overflow.

Discharge measurements.—Made from downstream side of wagon bridge, 500 feet above railroad bridge.

Regulation.—The only power plant of consequence is near Athens, Ga., and is so far above the station that its operation probably does not greatly affect the flow at Dublin.

Accuracy.—Lack of data covering changes in channel makes results at this station uncertain. A good degree of accuracy may be obtained by making frequent discharge measurements.

Cooperation.—Gage-height records since 1898 furnished by United States Weather Bureau.

Estimates of discharge for 1913 withheld.

Daily gage height, in feet, of Oconee River at Dublin, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.2	10.8	6.9	11.9	2.8	0.8	0.3	4.1	−0.2	1.8	0.8	6.1
2	4.7	10.7	9.2	11.7	2.7	1.0	.3	3.1	− .1	2.8	.7	6.8
3	4.3	10.8	12.2	10.5	2.6	1.4	.7	3.9	− .3	5.4	.6	5.8
4	4.2	8.9	17.6	8.2	2.1	2.1	.4	3.7	− .5	4.1	.4	4.8
5	4.2	7.4	19.5	6.5	1.9	3.2	.4	4.9	− .5	1.9	.1	6.1
6	4.3	7.9	17.5	4.9	1.9	3.3	1.1	5.5	− .3	1.2	.0	7.8
7	4.0	9.2	15.2	4.9	1.8	3.0	2.2	3.8	.0	.1	− .1	6.9
8	5.3	9.5	12.0	5.0	1.7	2.9	2.8	2.9	2.2	.1	− .2	4.8
9	2.9	8.0	9.9	4.7	1.6	5.0	1.5	.9	2.5	.0	.0	3.7
10	2.8	5.5	5.8	4.4	1.6	5.8	.4	.7	1.1	− .1	1.7	2.5
11	2.8	3.4	4.9	4.2	2.3	6.9	.1	3.2	.4	− .2	2.7	2.6
12	2.8	3.9	4.8	4.0	2.7	7.9	.8	2.8	.1	− .3	3.0	1.9
13	2.9	5.9	6.2	7.2	2.6	8.5	.5	5.1	− .5	− .4	1.7	1.9
14	2.8	6.1	9.0	8.6	1.7	8.1	.4	3.7	− .4	− .6	.8	1.7
15	2.8	7.1	10.9	8.9	1.5	6.2	.8	1.7	− .5	− .5	.7	1.3
16	2.8	7.3	14.2	12.5	1.3	3.2	1.2	2.5	− .6	− .6	.4	1.3
17	2.7	5.5	21.3	12.2	1.3	2.4	.9	3.1	− .6	− .7	.1	1.1
18	2.7	5.0	26.5	9.2	1.2	2.7	.4	1.7	− .1	− .7	− .1	.9
19	2.5	4.0	26.5	5.9	1.2	1.9	.1	.5	− .2	− .6	− .3	.8
20	2.3	3.7	24.0	3.8	2.1	1.1	.0	.1	2.1	− .4	− .3	.8
21	2.2	3.3	23.0	3.8	2.5	1.0	− .1	− .2	5.8	.0	− .3	.8
22	2.1	4.2	20.2	3.7	2.7	1.4	− .2	− .4	6.2	2.1	− .3	1.0
23	2.0	6.0	18.0	3.6	2.5	1.4	.8	− .5	3.9	2.5	− .1	1.2
24	2.0	6.7	14.0	3.3	1.9	.8	2.2	− .5	2.4	1.4	.1	1.8
25	2.0	7.2	14.1	3.2	1.9	.7	3.0	− .3	2.1	2.1	.1	2.1
26	3.5	5.8	14.5	2.9	2.5	.9	3.8	1.0	1.3	5.0	.1	2.4
27	7.2	4.5	13.4	3.0	2.1	.9	4.2	2.5	.3	5.8	.1	2.7
28	8.2	4.8	12.2	3.0	1.5	.4	3.2	1.7	− .1	3.8	.0	2.7
29	9.1	.....	10.5	2.9	1.2	.3	4.1	2.0	− .2	1.7	.0	2.2
30	10.2	.....	10.2	2.9	1.0	.4	6.2	1.1	.1	1.8	− .1	1.8
31	10.6	.....	11.4	.....	.8	.....	6.0	.2	.....	1.1	.....	1.7

FLORIDA EVERGLADES DRAINAGE CANALS.

During the summer of 1913 investigations of flow in the drainage canals of the Florida Everglades were made by the Florida Everglades Engineering Commission. In the course of the investigation engineers of the Commission made frequent measurements of Hillsboro canal, North New River canal, South New River canal, Miami canal, and Threemile canal, at points shown on the map (Pl. III). The results of these measurements as furnished by the Commission are as follows:

Discharge measurements of Hillsboro canal at inlet, near Ritta, Fla., in 1913.

Date.	Discharge.	Date.	Discharge.	Date.	Discharge.
	Sec.-ft.		*Sec.-ft.*		*Sec.-ft.*
May 30	435	Aug. 12	393	Sept. 4	417
June 22	393	20	366	9	413
July 9	432	26	385	10	418
21	438	28	398	18	374
Aug. 1	437	30	419	19	351
4	371	Sept. 3	326	23	404
7	355				

Discharge measurements of North New River canal at inlet, near Ritta, Fla., in 1913.

Date.	Discharge.	Date.	Discharge.	Date.	Discharge.
	Sec.-ft.		*Sec.-ft.*		*Sec.-ft.*
May 29	534	July 31	480	Aug. 26	516
June 10	494	Aug. 4	406	Sept. 1	444
20	478	9	498	4	469
July 8	501	20	545	13	613
11	526	20	416	19	510
21	498	20	425		

Discharge measurements of North New River canal at dredge boat Everglades, Fla., in 1913.

Date.	Discharge.	Date.	Discharge.	Date.	Discharge.
	Sec.-ft.		*Sec.-ft.*		*Sec.-ft.*
July 30	553	Aug. 16	512	Sept. 1	544
31	532	21	561	7	553
Aug. 4	511	22	553	13	571
8	535	22	565	20	549
13	529	Sept. 1	530	22	555

Discharge measurements of North New River canal at lock, near Fort Lauderdale, Fla., in 1913.

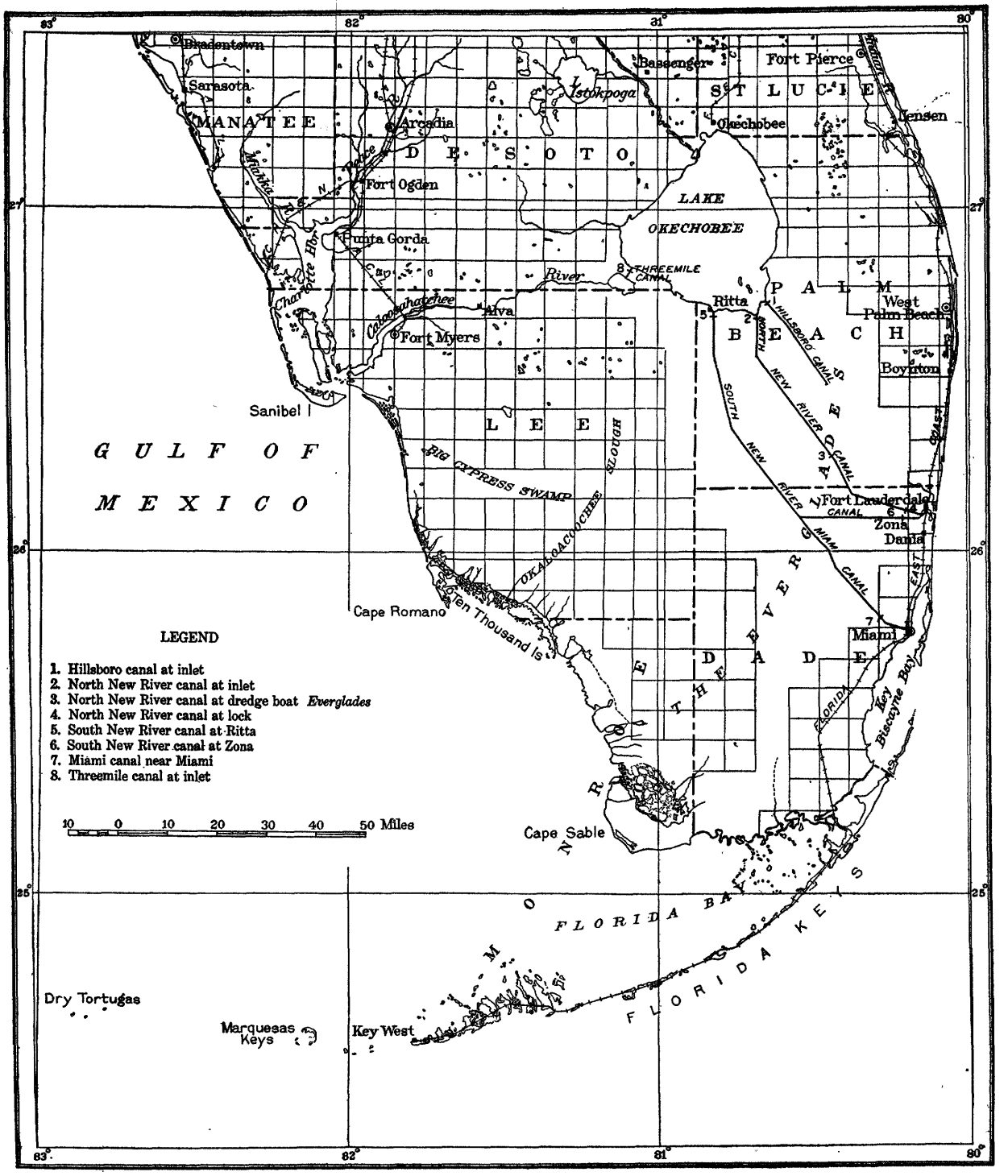
Date.	Discharge.	Date.	Discharge.	Date.	Discharge.
	Sec.-ft.		*Sec.-ft.*		*Sec.-ft.*
May 28	1,100	July 17	864	Aug. 28	941
June 9	1,140	29	765	Sept. 10	879
19	2,000	Aug. 2	805	15	968
July 6	1,060	7	1,060	18	1,010
7	1,050	13	830	20	974
12	983	21	946	26	1,000
12	985	22	937		
16	909	22	1,010		

Discharge measurements of South New River canal at Ritta, Fla., in 1913.

Date.	Discharge.	Date.	Discharge.	Date.	Discharge.
	Sec.-ft.		*Sec.-ft.*		*Sec.-ft.*
June 1	390	Aug. 12	298	Aug. 28	339
20	336	18	369	30	343
July 19	354	18	296	Sept. 2	294
Aug. 1	297	23	239	15	342
6	316	23	314	27	271
6	285	26	438	29	271
11	335	26	310		

Discharge measurements of South New River canal at Zona, Fla., in 1913.

Date.	Discharge.	Date.	Discharge.	Date.	Discharge.
	Sec.-ft.		*Sec.-ft.*		*Sec.-ft.*
May 27	459	July 16	490	Aug. 29	449
June 8	378	29	358	Sept. 3	376
18	668	Aug. 2	400	9	421
23	659	8	490	10	444
July 5	571	21	403	20	478
12	475	21	371		



MAP OF CANALS IN FLORIDA EVERGLADES, SHOWING LOCATION OF MEASURING POINTS.

Discharge measurements of Miami canal near Miami, Fla., in 1913.

Date.	Discharge.	Date.	Discharge.	Date.	Discharge.
	Sec.-ft.		*Sec.-ft.*		*Sec.-ft.*
May 22	327	July 14	443	Sept. 8	382
25	409	24	380	12	398
June 4	414	31	381	17	428
5	439	Aug. 6	353	22	415
27	478	12	360	29	402
28	426	19	444		
July 1	416	27	409		

Discharge measurements of Threemile canal at inlet, near Ritta, Fla., in 1913.

Date.	Discharge.	Date.	Discharge.	Date.	Discharge.
	Sec.-ft.		*Sec.-ft.*		*Sec.-ft.*
May 30	645	Aug. 18	639	Sept. 3	415
June 20	662	19	525	8	473
July 10	612	23	397	9	462
19	536	25	448	15	495
20	587	29	401	16	468
Aug. 2	558	Sept. 2	507		
11	633	2	475		

APALACHICOLA RIVER BASIN.

CHATTAHOOCHEE RIVER NEAR NORCROSS, GA.

Location.—At Medlock's bridge, 4½ miles north of Norcross, Ga., 1½ miles above the mouth of John Creek, and about 5 miles above Suwanee Creek.

Records available.—January 9, 1903, to December 31, 1913.

Drainage area.—1,170 square miles.

Gage.—Standard chain gage on the toll bridge read twice daily. Original gage was a vertical staff attached to oak tree on right bank about 100 feet above bridge. A chain gage, established March 14, 1903, was read in connection with the vertical gage until June 28, 1905, when present gage was installed.

Channel and control.—Bed of stream sandy and changeable; right bank is high and overflows only slightly; the left bank will overflow for about 800 feet at a gage height of 16 to 18 feet.

Discharge measurements.—Made from downstream side of bridge.

Regulation.—Dams near Gainesville, Ga., and on Chestatee River interfere with the natural flow. It is thought that the two readings a day give a good daily mean gage height.

Accuracy.—Except for possible error in mean gage heights due to artificial control, the results at this station are excellent.

Cooperation.—Since September 1, 1912, morning gage heights have been furnished by United States Weather Bureau.

Discharge measurements of Chattahoochee River near Norcross, Ga., in 1913.

[Warren E. Hall, hydrographer.]

Date	Gage height.	Discharge.	Date.	Gage height.	Discharge.
	Feet.	*Sec.-ft.*		*Feet.*	*Sec.-ft.*
Mar. 13	7.61	7,190	Mar. 14	11.54	13,200
13	7.80	7,710	15	12.79	14,300
14	11.19	12,900			

Daily gage height, in feet, of Chattahoochee River near Norcross, Ga., for 1913.

[W. O. Medlock, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.0	3.9	6.3	4.9	3.2	2.9	2.7	2.6	2.0	3.6	2.0	1.9
2	2.8	3.6	4.7	4.6	3.2	3.0	2.5	3.5	1.8	2.4	1.75	2.7
3	2.8	4.1	4.2	4.4	3.1	3.2	1.9	2.8	1.9	2.0	1.7	2.7
4	2.7	5.8	3.9	4.4	3.1	3.0	2.2	2.3	1.7	2.1	1.9	2.4
5	2.5	4.6	3.8	4.1	2.9	2.9	2.4	2.4	1.9	1.9	1.8	2.0
6	2.6	3.8	3.5	4.1	3.0	2.9	2.6	3.9	2.1	1.7	1.8	2.0
7	2.6	3.6	3.6	4.0	3.0	3.0	2.2	2.8	2.5	2.1	1.85	2.4
8	2.6	3.4	3.3	4.0	3.1	3.9	2.4	2.3	1.9	1.7	1.7	2.7
9	2.8	3.2	3.4	3.8	3.0	4.6	1.9	2.7	2.0	1.8	2.0	2.7
10	2.6	3.2	6.0	3.8	3.0	3.3	1.95	3.0	1.8	1.85	2.1	1.9
11	2.7	4.2	6.7	4.2	3.1	3.2	2.2	2.7	1.8	1.9	2.2	2.2
12	3.0	7.4	5.4	4.5	2.9	3.0	2.4	2.9	1.75	1.6	1.7	2.0
13	3.3	4.9	7.1	4.5	3.0	2.8	2.9	2.7	1.7	1.4	1.9	1.9
14	3.1	4.0	11.2	4.0	3.0	2.8	2.3	2.7	1.65	1.7	1.8	2.0
15	2.8	3.7	12.9	4.1	2.8	2.6	2.3	2.8	1.55	1.6	1.9	1.9
16	2.8	3.4	12.3	4.0	3.0	2.3	2.1	2.7	1.9	2.0	1.7	1.9
17	2.7	3.4	7.4	3.8	3.1	2.4	2.2	2.4	2.2	1.75	1.9	2.0
18	2.7	3.2	6.0	3.7	3.1	2.6	2.1	2.0	2.0	1.75	1.8	1.9
19	2.9	3.1	5.4	3.6	3.0	2.9	1.9	2.1	2.2	1.9	2.0	1.85
20	2.7	3.4	5.1	3.6	2.9	2.3	1.9	1.9	1.9	2.4	1.7	1.8
21	2.8	4.8	5.6	3.6	3.0	2.5	2.2	1.95	2.2	2.8	1.8	1.9
22	2.8	4.2	6.3	3.5	2.9	2.7	2.6	1.9	1.9	2.0	1.65	1.8
23	2.8	3.7	5.0	3.4	3.7	2.4	2.3	2.2	2.0	1.75	1.7	1.85
24	3.6	3.6	4.7	3.4	5.8	2.6	2.0	2.9	1.9	2.2	1.7	2.1
25	5.7	3.4	4.6	3.3	4.0	2.5	2.4	2.1	1.85	2.3	1.75	2.3
26	4.5	3.2	4.6	3.4	3.3	2.4	4.3	1.9	1.7	2.3	1.8	2.5
27	10.7	3.9	9.5	3.4	3.1	2.4	3.4	1.85	1.8	2.1	1.8	3.2
28	9.8	9.8	9.8	3.4	3.0	2.6	3.3	1.8	1.6	2.0	1.5	2.5
29	5.4	.....	6.2	3.4	3.0	2.4	3.0	1.8	1.5	2.0	1.65	2.9
30	4.1	.....	5.4	3.3	2.8	2.5	2.8	2.7	5.5	2.0	1.9	3.9
31	3.9	.....	5.4	.....	2.8	.....	3.2	2.9	.....	2.1	.....	3.6

Daily discharge, in second-feet, of Chattahoochee River near Norcross, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,800	2,610	5,340	3,640	1,980	1,720	1,560	1,480	1,000	2,340	1,000	925
2	1,640	2,340	3,420	3,310	1,980	1,800	1,400	2,250	850	1,320	812	1,560
3	1,640	2,800	2,900	3,100	1,890	1,980	925	1,640	925	1,000	775	1,560
4	1,560	4,710	2,610	3,100	1,890	1,800	1,160	1,240	775	1,080	925	1,320
5	1,400	3,310	2,520	2,800	1,720	1,720	1,320	1,320	925	925	850	1,000
6	1,480	2,520	2,250	2,800	1,800	1,720	1,480	2,610	1,080	775	850	1,000
7	1,480	2,340	2,340	2,700	1,800	1,800	1,160	1,640	1,400	1,080	888	1,320
8	1,480	2,160	2,070	2,700	1,890	2,610	1,320	1,240	925	775	775	1,560
9	1,640	1,980	2,160	2,520	1,800	3,310	925	1,560	1,000	850	1,000	1,560
10	1,480	1,980	4,950	2,520	1,800	2,070	962	1,800	850	888	1,080	925
11	1,560	2,900	5,860	2,900	1,890	1,980	1,160	1,560	850	925	1,160	1,160
12	1,800	6,810	4,230	3,200	1,720	1,800	1,320	1,720	812	700	775	1,000
13	2,070	3,640	6,390	3,200	1,800	1,640	1,720	1,560	775	560	925	925
14	1,890	2,700	12,400	2,700	1,800	1,640	1,240	1,560	738	775	850	1,000
15	1,640	2,430	15,100	2,800	1,640	1,480	1,240	1,640	665	630	925	925
16	1,640	2,160	14,200	2,700	1,800	1,240	1,080	1,560	925	1,000	775	925
17	1,560	2,160	6,810	2,520	1,890	1,320	1,160	1,320	1,160	812	925	1,000
18	1,560	1,980	4,950	2,430	1,890	1,480	1,080	1,000	1,000	812	850	925
19	1,720	1,890	4,230	2,340	1,800	1,720	925	1,080	1,160	925	1,000	888
20	1,560	2,160	3,870	2,340	1,720	1,240	925	925	925	1,320	775	850
21	1,640	3,530	4,470	2,340	1,800	1,400	1,160	962	1,160	1,640	850	925
22	1,640	2,900	5,340	2,250	1,720	1,560	1,480	925	925	1,000	738	850
23	1,640	2,430	3,750	2,160	2,430	1,320	1,240	1,160	1,000	812	775	888
24	2,340	2,340	3,420	2,160	4,710	1,480	1,000	1,720	925	1,160	775	1,080
25	4,590	2,160	3,310	2,070	2,700	1,400	1,320	1,080	888	1,240	812	1,240
26	3,200	1,980	3,310	2,160	2,070	1,320	3,000	925	775	1,240	850	1,400
27	11,600	2,610	9,850	2,160	1,890	1,320	2,160	888	850	1,080	850	1,980
28	10,300	10,300	10,300	2,160	1,800	1,480	2,070	850	700	1,000	630	1,400
29	4,230	.....	5,210	2,160	1,800	1,320	1,800	850	630	1,000	738	1,720
30	2,800	.....	4,230	2,070	1,640	1,400	1,640	1,560	4,350	1,000	925	2,610
31	2,610	.....	4,230	.....	1,640	.....	1,980	1,720	.....	1,080	.....	2,340

NOTE.—Daily discharge determined from a well-defined rating curve. Discharge for individual days may be somewhat in error because of fluctuations due to operation of power plants.

Monthly discharge of Chattahoochee River near Norcross, Ga., for 1913.

[Drainage area, 1,170 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	11,600	1,400	2,550	2.18	2.51	B.
February	10,300	1,890	2,990	2.56	2.67	B.
March	15,100	2,070	5,360	4.58	5.28	B.
April	3,640	2,070	2,600	2.22	2.48	B.
May	4,710	1,640	1,960	1.68	1.94	B.
June	3,310	1,240	1,670	1.43	1.60	B.
July	3,000	925	1,380	1.18	1.36	B.
August	2,610	850	1,400	1.20	1.38	B.
September	4,350	630	1,030	.880	.98	B.
October	2,340	560	1,020	.872	1.01	B.
November	1,160	630	862	.737	.82	B.
December	2,610	850	1,250	1.07	1.23	B.
The year	15,100	560	2,000	1.71	23.26	

CHATTAHOOCHEE RIVER AT WEST POINT, GA.

Location.—At Montgomery Street Bridge, West Point, Ga., until October 20, 1912; after that date at a point about a mile upstream, just below the mouth of Oseligee Creek, about 300 feet east of the West Point waterworks pumping plant, and about 4 miles above Long Cane Creek.

Records available.—July 30, 1896, to December 31, 1913.

Drainage area.—3,300 square miles.

Gage.—Staff gage in two sections; the lower section, reading from 0 to 6 feet, is near the right bank; the upper section, reading from 6 to 25 feet, is fastened to a tree on the left bank; datum of staff gage different from that of chain gage formerly used.

Channel and control.—Bottom rough, rocky, and fairly permanent; banks are overflowed at high stages; control, a rock ledge extending entirely across river just below gage.

Discharge measurements.—Made from a boat at a section near staff gage, or from highway bridge to which chain gage was attached; no tributaries enter between the two sections.

Regulation.—The operation of power plants at points above causes some diurnal fluctuation. The Langdale Dam, 5 miles below the station, forms a pond reaching back as far as West Point. This affected the gage heights at the highway bridge. The new gage established in October, 1912, is not affected by backwater.

Accuracy.—Rating curve well developed from low to medium flood stages. No records of discharge at extreme floods have yet been obtained. Diurnal fluctuation caused by hydroelectric plants above will cause some error in individual days, during low water.

Cooperation.—Gage heights after October 20, 1912, have been furnished by the Columbus Power Co., of Columbus, Ga. The hydraulic engineer for that company has also assisted in making discharge measurements.

Discharge measurements of Chattahoochee River at West Point, Ga., in 1913.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec. ft.*			*Feet.*	*Sec. ft.*
Feb. 12	Hall and King	4.29	5,470	Feb. 12	Warren E. Hall	4.37	5,890
12	do	4.38	5,390	13	Hall and King	6.73	11,400
12	do	4.34	5,500	13	Warren E. Hall	6.61	11,100

Daily gage-height, in feet, of Chattahoochee River at West Point, Ga., for 1913.

[J. H. Miller, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.8	6.1	7.6	6.1	3.8	3.3	4.2	3.6	2.6	3.9	2.6	2.6
2	3.8	5.4	8.4	5.7	3.8	3.6	3.6	5.4	2.5	4.5	2.6	3.2
3	3.7	6.8	5.9	5.3	3.7	4.7	3.2	4.9	3.1	3.6	2.7	3.4
4	3.9	9.2	5.1	5.1	3.6	4.0	3.0	3.8	2.4	2.9	2.4	3.2
5	3.6	7.9	4.7	5.0	3.7	3.8	3.2	3.4	2.3	2.7	2.4	3.3
6	3.7	6.2	4.5	4.8	3.6	4.2	2.9	2.8	2.2	2.4	2.4	3.8
7	3.4	5.2	4.3	4.6	3.6	4.8	2.7	2.8	2.2	2.4	2.4	3.2
8	3.5	4.7	4.1	4.6	3.7	5.0	3.0	4.4	2.2	2.4	2.5	3.5
9	3.6	4.3	4.0	4.5	3.6	5.0	2.7	3.8	2.2	2.2	2.5	3.0
10	3.6	4.1	5.7	4.4	3.7	4.5	2.7	3.4	2.6	2.4	2.4	2.9
11	3.5	4.1	8.2	5.2	3.7	4.3	2.9	3.2	2.3	2.2	2.4	3.0
12	3.9	4.3	7.4	4.9	3.6	3.8	3.3	3.1	2.8	2.1	2.6	2.8
13	4.4	6.7	11.4	4.8	3.4	3.6	3.9	3.1	2.3	2.0	2.5	2.8
14	4.1	6.2	.....	4.7	3.5	3.4	4.6	3.2	2.2	2.0	2.5	2.7
15	3.8	5.0	.....	4.6	3.6	3.3	4.2	3.3	2.1	2.1	2.4	2.6
16	3.7	4.4	.....	4.4	3.4	3.2	3.4	3.4	2.4	2.1	2.5	2.9
17	3.7	4.1	.....	4.4	3.7	3.0	3.4	3.2	2.3	1.95	2.4	2.6
18	3.6	4.1	11.4	4.3	4.0	3.0	3.1	3.2	2.2	2.1	2.5	2.6
19	3.7	3.9	7.2	4.2	3.8	3.0	2.8	3.9	2.5	2.9	2.4	2.6
20	3.6	5.2	6.4	4.2	3.7	3.0	3.6	2.5	2.6	3.8	2.4	2.6
21	3.6	5.3	7.4	4.1	3.8	3.2	3.8	2.4	3.2	3.6	2.4	2.6
22	3.7	5.7	10.2	4.0	3.6	3.2	3.4	2.3	3.0	3.0	2.6	2.6
23	3.6	5.6	7.8	4.0	3.9	3.2	3.7	2.3	2.8	3.1	2.4	2.7
24	3.9	4.8	6.5	3.9	5.2	3.5	4.0	3.0	2.2	3.8	2.5	2.7
25	6.8	4.4	5.8	3.9	4.7	3.1	3.5	3.2	2.6	3.9	2.3	3.0
26	6.3	4.1	5.4	3.9	5.1	3.0	3.7	3.0	2.2	3.2	2.4	3.1
27	.....	5.3	9.4	4.0	4.0	3.0	4.4	2.5	2.3	2.8	2.4	3.4
28	.....	7.1	10.1	3.8	3.7	2.9	4.8	2.3	2.2	3.2	2.4	3.3
29	.....	.....	9.7	3.9	3.6	2.9	4.4	2.4	2.2	2.7	2.4	3.8
30	10.8	.....	8.4	3.8	3.4	4.2	4.8	3.2	4.0	2.6	2.5	5.0
31	6.1	.....	6.9	.....	3.4	.....	4.0	2.6	.....	2.7	.....	5.0

NOTE.—Water over top of gage Jan. 27–29 and Mar. 14–17.

Daily discharge, in second-feet, of Chattahoochee River at West Point, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4,150	9,750	13,500	9,760	4,150	3,100	5,080	3,730	2,130	4,370	2,130	2,130
2	4,150	8,000	15,500	8,750	4,150	3,730	3,730	8,000	2,000	5,800	2,130	2,990
3	3,940	11,500	9,250	7,750	3,940	6,280	2,990	6,760	2,830	3,730	2,260	3,340
4	4,370	17,500	7,250	7,250	3,730	4,600	2,680	4,150	1,880	2,540	1,880	2,990
5	3,730	14,200	6,280	7,000	3,940	4,150	2,990	3,340	1,770	2,260	1,880	3,160
6	3,940	10,000	5,800	6,520	3,730	5,080	2,540	2,400	1,660	1,880	1,880	4,150
7	3,340	7,500	5,320	6,040	3,730	6,520	2,260	2,400	1,660	1,880	1,880	2,990
8	3,530	6,280	4,840	6,040	3,940	7,000	2,680	5,560	1,660	1,880	2,000	3,530
9	3,730	5,320	4,600	5,800	3,730	7,000	2,260	4,150	1,660	1,660	2,000	2,680
10	3,730	4,840	8,750	5,560	3,940	5,800	2,260	3,340	2,130	1,880	1,880	2,540
11	3,530	4,840	15,000	7,500	3,940	5,320	2,540	2,990	1,770	1,660	1,880	2,680
12	4,370	5,320	13,000	6,760	3,730	4,150	3,160	2,830	2,400	1,560	2,130	2,400
13	5,560	11,200	23,000	6,520	3,340	3,730	4,370	2,830	1,770	1,460	2,000	2,400
14	4,840	10,000	35,000	6,280	3,530	3,340	6,040	2,990	1,660	1,460	2,000	2,260
15	4,150	7,000	45,000	6,040	3,730	3,160	5,080	3,160	1,560	1,560	1,880	2,130
16	3,940	5,560	40,000	5,560	3,340	2,990	3,340	3,340	1,880	1,560	2,000	2,540
17	3,940	4,840	33,000	5,560	3,940	2,680	3,340	2,990	1,770	1,420	1,880	2,130
18	3,730	4,840	23,000	5,320	4,600	2,680	2,830	2,990	1,660	1,560	2,000	2,130
19	3,940	4,370	12,500	5,080	4,150	2,680	2,400	4,370	2,000	2,540	1,880	2,130
20	3,730	7,500	10,500	5,080	3,940	2,680	3,730	2,000	2,130	4,150	1,880	2,130
21	3,730	7,750	13,000	4,840	4,150	2,990	4,150	1,880	2,990	3,730	1,880	2,130
22	3,940	8,750	20,000	4,600	3,730	2,990	3,340	1,770	2,680	2,680	2,130	2,130
23	3,730	8,500	14,000	4,600	4,370	2,990	3,940	1,770	2,400	2,830	1,880	2,260
24	4,370	6,520	10,800	4,370	7,500	3,530	4,600	2,680	1,660	4,150	2,000	2,260
25	11,500	5,560	9,000	4,370	6,280	2,830	3,530	2,990	2,130	4,370	1,770	2,680
26	10,200	4,840	8,000	4,370	7,250	2,680	3,940	2,680	1,660	2,990	1,880	2,830
27	26,000	7,750	18,200	4,600	4,600	2,680	5,560	2,000	1,770	2,400	1,880	3,340
28	35,000	12,200	19,800	4,150	3,940	2,540	6,520	1,770	1,660	2,990	1,880	3,160
29	32,000	.....	18,800	4,370	3,730	2,540	5,560	1,880	1,660	2,260	1,880	4,150
30	21,500	.....	15,500	4,150	3,340	5,080	6,520	2,990	4,600	2,130	2,000	7,000
31	9,750	.....	11,800	.....	3,340	.....	4,600	2,130	.....	2,260	.....	7,000

NOTE.—Daily discharge determined from a rating curve well defined between 2,500 and 15,000 second-feet. Daily discharge Jan. 27–29 and Mar. 14–17 estimated from a hydrograph comparison with stations in the Chattahoochee River basin.

Monthly discharge of Chattahoochee River at West Point, Ga., for 1913.

[Drainage area, 3,300 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	a 35,000	3,340	7,810	2.37	2.73	B.
February	17,500	4,370	7,940	2.41	2.51	A.
March	a 45,000	4,600	15,800	4.79	5.52	B.
April	9,760	4,150	5,820	1.76	1.96	A.
May	7,500	3,340	4,180	1.27	1.46	A.
June	7,000	2,540	3,920	1.19	1.33	A.
July	6,520	2,260	3,820	1.16	1.34	A.
August	8,000	1,770	3,190	.967	1.11	A.
September	4,600	1,560	2,040	.618	.69	B.
October	5,800	1,420	2,570	.779	.90	B.
November	2,260	1,770	1,950	.591	.66	B.
December	7,000	2,130	2,980	.903	1.04	A.
The year	a 45,000	1,420	5,160	1.56	21.25	

a Estimated.

SWEETWATER CREEK NEAR AUSTELL, GA.

Location.—About 1¼ miles from Austell, Ga.; a quarter of a mile south of Lithia Springs Park; about 1½ miles downstream from Southern Railway bridge; 2 miles below Noses Creek; 1½ miles above Stricklands bridge, and 6 miles above junction of Sweetwater Creek with Chattahoochee River.

Records available.—May 6, 1904, to December 31, 1905, and November 3 to December 27, 1913.

Drainage area.—245 square miles.

Gage.—Staff gage in two sections; lower section, inclined, reading to 8 feet, is fastened to solid rock on right bank; upper section, reading 8 to 16 feet, fastened vertically to a tree on right bank about 100 feet upstream. Gage read twice daily.

Channel and control.—A rocky shoal more than a mile below the gage is the apparent control. The bottom between the gage and control is composed of silt which shifts and probably changes the discharge relation.

Discharge measurements.—Made at Southern Railway bridge, Stricklands bridge, or by boat or wading near gage.

Regulation.—Small water-power plants above cause considerable diurnal fluctuation during low stages.

Accuracy.—Mean gage height for individual days, particularly during low-water periods, may be considerably in error owing to diurnal fluctuation.

Cooperation.—Station reestablished in the fall of 1913 by P. H. Whittier and F. K. McCullough, students in the Georgia School of Technology. Survey instruments were used and the work was directed by the district engineer.

Discharge measurements of Sweetwater Creek near Austell, Ga., in 1913.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Oct. 28	Whittier and McCullough	1.95	122
Nov. 4	do	1.58	80
11	do	1.65	89

Daily gage height, in feet, of Sweetwater Creek near Austell, Ga., for 1904, 1905, and 1913.

[J. L. Causey, observer.]

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1904.								
1	.....	3.4	1.9	1.5	1.9	0.9	0.9	1.65
2	.....	2.5	1.45	1.6	1.7	.65	1.05	1.6
3	.....	1.9	1.3	4.4	1.6	1.05	.95	1.8
4	.....	1.6	1.25	2.9	3.0	.7	1.6	1.85
5	.....	1.5	1.2	3.9	2.65	1.05	1.8	2.5
6	.....	1.5	1.1	3.85	2.05	.75	1.7	3.65
7	.....	1.95	1.05	2.3	1.7	.95	1.4	2.6
8	.....	1.7	1.35	11.9	1.65	.9	1.35	2.25
9	.....	1.45	1.35	16.3	1.6	.65	1.25	2.05
10	.....	1.3	1.15	11.4	1.45	.9	1.25	2.05
11	.....	1.2	1.1	4.95	1.4	.9	1.25	2.2
12	.....	1.2	1.05	6.3	1.3	.85	1.3	2.0
13	.....	1.1	1.15	4.3	1.25	.9	1.65	1.85
14	.....	1.0	.9	3.45	1.25	.95	2.1	1.75
15	.....	1.0	1.0	3.25	1.35	.85	1.75	1.75
16	.....	1.15	1.05	4.55	1.1	.55	1.45	1.8
17	.....	1.0	.55	3.2	.9	1.0	1.4	1.85
18	1.5	1.0	1.0	3.45	1.2	.7	1.35	1.75
19	1.5	1.0	.75	2.4	1.2	.7	1.45	1.8
20	1.45	1.9	.75	1.95	1.05	.85	1.4	1.65
21	1.45	2.8	.75	2.15	1.1	.7	1.45	1.65
22	1.35	3.5	.9	2.0	1.1	.75	1.8	1.6
23	1.3	2.15	1.15	1.95	1.0	.6	2.4	1.7
24	1.3	1.7	.7	2.65	1.15	1.0	2.0	1.65
25	1.25	1.3	1.05	4.05	1.0	.9	1.75	1.65
26	1.15	1.15	1.0	5.5	1.05	.9	1.6	1.65
27	1.2	1.2	.9	7.15	.85	.85	1.45	1.75
28	1.2	2.4	1.25	6.0	1.1	.85	1.6	3.45
29	1.15	5.6	2.5	3.1	1.05	.9	1.5	3.25
30	1.3	2.85	2.2	2.35	.95	.5	1.5	3.2
31	2.55	.....	1.65	2.1	.....	.95	.....	2.5

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1905.												
1	2.1	3.0	3.1	2.35	2.75	1.75	4.0	1.8	1.85	7.2	1.85	2.05
2	2.05	2.6	3.0	2.35	2.35	1.7	3.6	1.65	1.95	5.4	1.7	2.45
3	2.1	2.45	3.0	2.35	2.45	1.6	2.55	1.65	2.1	2.8	1.55	9.6
4	2.05	2.55	2.8	2.3	2.55	1.6	2.2	1.65	3.3	2.45	1.75	12.9
5	2.0	2.45	2.8	2.55	2.35	1.65	5.6	1.5	2.7	2.35	1.75	6.7
6	3.3	2.5	2.8	2.9	2.45	1.55	4.6	1.4	2.55	2.05	1.75	4.0
7	2.8	2.55	2.8	2.8	2.1	1.35	7.0	1.7	1.65	1.85	1.75	3.6
8	2.75	4.4	2.8	2.75	2.15	1.45	11.6	1.45	1.55	1.7	1.8	5.8
9	2.55	7.2	2.85	2.8	2.4	1.25	8.6	1.8	1.55	1.6	1.8	10.2
10	2.3	10.2	3.4	2.65	2.1	1.25	8.8	3.1	1.6	1.65	2.6	11.6
11	2.8	8.6	4.0	2.6	1.95	1.05	9.2	3.4	1.1	2.4	3.4	10.4
12	11.2	6.0	4.1	2.6	1.75	1.0	16.7	4.7	1.65	2.35	3.0	6.4
13	14.4	6.5	3.6	2.5	1.65	1.15	10.7	8.2	1.65	2.2	2.5	4.0
14	11.4	6.8	3.2	2.4	1.65	1.45	5.1	4.4	1.7	2.0	2.2	3.4
15	4.7	6.4	3.0	2.55	1.7	1.55	3.4	3.9	1.35	1.95	2.1	3.5
16	3.4	6.0	2.9	2.8	2.85	1.55	2.9	4.4	1.35	2.0	2.0	3.5
17	3.5	5.6	2.8	2.55	4.0	1.45	2.65	3.9	1.45	2.1	1.95	3.6
18	3.0	5.3	2.75	2.5	2.7	1.35	2.3	3.8	1.6	1.4	1.95	3.5
19	3.0	5.2	2.7	2.4	2.05	1.5	2.25	3.6	1.5	1.8	1.95	3.6
20	3.2	6.6	2.85	2.4	1.9	1.95	2.3	2.8	1.4	1.7	2.0	5.2
21	3.0	7.1	3.7	2.3	1.85	1.4	2.1	2.65	1.35	1.75	1.95	6.4
22	2.8	6.9	3.7	2.2	2.45	1.7	2.1	2.85	1.25	1.65	2.05	6.1
23	2.45	5.5	3.1	2.2	2.9	2.3	1.85	3.9	1.25	1.65	1.9	5.7
24	2.4	4.4	2.85	2.2	5.1	2.7	1.75	5.8	1.4	1.65	1.95	5.2
25	2.2	3.7	2.55	2.15	4.5	2.5	2.35	6.5	1.4	1.85	2.1	4.9
26	2.1	3.4	2.5	2.2	3.3	2.1	2.4	4.1	1.35	2.4	2.5	4.4
27	2.25	3.2	2.5	2.2	2.7	2.85	1.9	2.8	1.3	2.4	2.65	4.0
28	2.2	3.2	2.45	2.1	2.4	3.0	1.75	2.05	1.15	2.2	2.6	3.6
29	2.25	.....	2.4	2.5	2.3	3.6	1.9	1.9	1.15	2.0	2.25	3.6
30	2.4	.....	2.5	2.6	2.3	2.7	2.15	1.7	1.65	1.8	2.05	3.4
31	3.2	.....	2.4	.....	2.0	.....	1.8	1.7	.....	1.75	.....	3.4

Daily gage height, in feet, of Sweetwater Creek near Austell, Ga., for 1904, 1905, and 1913—Continued.

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1913.								
1		2.7	11	1.75	1.8	21	1.55	1.7
2		3.7	12	1.7	1.8	22	1.6	1.8
3	1.8	2.0	13	1.7	1.7	23	1.6	1.8
4	1.75	2.2	14	1.7	1.7	24	1.65	1.9
5	1.7		15	1.7	1.8	25	1.55	1.9
6	1.7		16	1.6	1.8	26	1.55	3.0
7	1.7	1.9	17	1.6	1.8	27	1.55	2.8
8	1.7	1.9	18	1.7	1.8	28	1.65	
9	1.8	1.9	19	1.55	1.8	29	1.75	
10	1.9	1.9	20	1.55	1.7	30	1.8	

Daily discharge, in second-feet, of Sweetwater Creek near Austell, Ga., for 1904, 1905, and 1913.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1904.								
1		270	110	80	110	45	45	90
2		167	76	87	94	35	52	87
3		110	67	440	87	52	48	102
4		87	64	210	222	37	87	106
5		80	61	344	182	52	102	167
6		80	55	336	124	39	94	305
7		114	52	147	94	48	73	177
8		94	70	3,560	90	45	70	142
9		76	70	5,760	87	35	64	124
10		67	58	3,310	76	45	64	124
11		61	55	568	73	45	64	137
12		61	52	985	67	43	67	119
13		55	58	420	64	45	90	106
14		50	45	277	64	48	128	98
15		50	50	252	70	43	98	98
16		58	52	470	55	32	76	102
17		50	32	246	45	50	73	106
18	80	50	50	277	61	37	70	98
19	80	50	39	157	61	37	76	102
20	76	110	39	114	52	43	73	90
21	76	199	39	132	55	37	76	90
22	70	284	45	119	55	39	102	87
23	67	132	58	114	50	33	157	94
24	67	94	37	182	58	50	119	90
25	64	67	52	371	50	45	98	90
26	58	58	50	720	52	45	87	90
27	61	61	45	1,320	43	43	76	98
28	61	157	64	880	55	43	87	277
29	58	750	167	234	52	45	80	252
30	67	204	137	152	48	30	80	246
31	172		90	128		48		167

Daily discharge, in second-feet, of Sweetwater Creek near Austell, Ga., for 1904, 1905, and 1913—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1905.												
1	128	222	234	152	194	98	362	102	106	1,340	106	124
2	124	177	222	152	152	94	298	90	114	690	94	162
3	128	162	222	152	162	87	172	90	128	199	84	2,410
4	124	172	199	147	172	87	137	90	258	162	98	4,060
5	119	162	199	172	152	90	750	80	188	152	98	1,140
6	258	167	199	210	162	84	480	73	172	124	98	362
7	199	172	199	199	128	70	1,260	94	90	106	98	298
8	194	440	199	194	132	76	3,410	76	84	94	102	810
9	172	1,340	204	199	157	64	1,910	102	84	87	102	2,710
10	147	2,710	270	182	128	64	2,010	234	87	90	177	3,410
11	199	1,910	362	177	114	52	2,210	270	55	157	270	2,810
12	3,210	880	380	177	98	50	5,960	505	90	152	222	1,020
13	4,810	1,060	208	167	90	58	2,960	1,740	90	137	167	362
14	3,310	1,180	246	157	90	76	605	440	94	119	137	270
15	505	1,020	222	172	94	84	270	344	70	114	128	284
16	270	880	210	199	204	84	210	440	70	119	119	284
17	284	750	199	172	362	76	182	344	76	128	114	298
18	222	660	194	167	188	70	147	328	87	73	114	284
19	222	630	188	157	124	80	142	298	80	102	114	298
20	246	1,100	204	157	110	114	147	199	73	94	119	630
21	222	1,300	312	147	106	73	128	182	70	98	114	1,020
22	199	1,220	312	137	162	94	128	204	64	90	124	915
23	162	720	234	137	210	147	106	344	64	90	110	780
24	157	440	204	137	605	188	98	810	73	90	114	630
25	137	312	172	132	460	167	152	1,060	73	106	128	555
26	128	270	167	137	258	128	157	380	70	157	167	440
27	142	246	167	137	188	204	110	199	67	157	182	362
28	137	246	162	128	157	222	98	124	58	137	177	298
29	142	.....	157	167	147	298	110	110	58	119	142	298
30	157	.....	167	177	147	188	132	94	90	102	124	270
31	246	.....	157	.....	119	.....	102	94	.....	98	.....	270

Day.	Nov.	Dec.	Day.	Nov.	Dec.	Day.	Nov.	Dec.
1913.			1913.			1913.		
1	.....	188	11	98	102	21	84	94
2	.....	312	12	94	102	22	87	102
3	102	119	13	94	94	23	87	102
4	98	137	14	94	94	24	90	110
5	94	128	15	94	102	25	84	110
6	94	119	16	87	102	26	84	222
7	94	110	17	87	102	27	84	199
8	94	110	18	94	102	28	90	.....
9	102	110	19	84	102	29	98	.....
10	110	110	20	84	94	30	102	.....
						31	.....	.....

NOTE.—Daily discharge determined from a rating curve fairly well defined between 50 and 2,000 second-feet; discharge Dec. 5 and 6, 1913, interpolated. Determinations for individual days subject to error, owing to regulation of the stream by the operation of power plants, and should be used with caution.

Monthly discharge of Sweetwater Creek near Austell, Ga., for 1904–5.

[Drainage area, 245 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1904.						
May 18-31	172	58	75.5	0.308	0.16	C.
June	750	50	125	.510	.57	B.
July	167	32	62.5	.255	.29	C.
August	5,760	80	722	2.95	3.40	B.
September	222	43	76.5	.312	.35	C.
October	52	30	42.4	.173	.20	C.
November	157	45	82.5	.337	.38	B.
December	305	87	131	.535	.62	B.
1905.						
January	4,810	119	539	2.20	2.54	B.
February	2,710	162	734	3.00	3.12	B.
March	380	157	221	.902	1.04	B.
April	210	128	163	.665	.74	B.
May	605	90	180	.735	.85	B.
June	298	50	109	.445	.50	B.
July	5,960	98	805	3.29	3.79	B.
August	1,740	73	308	1.26	1.45	B.
September	258	55	92.8	.379	.42	B.
October	1,340	73	177	.722	.83	B.
November	270	84	131	.535	.60	B.
December	4,060	124	899	3.67	4.23	B.
The year	5,960	50	363	1.48	20.11	
1913.						
November 3-30	110	84	92.4	.377	.39	B.
December 1-27	312	94	125	.510	.51	B.

FLINT RIVER NEAR WOODBURY, GA.

Location.—At the Macon & Birmingham Railroad bridge, 3 miles east of Woodbury, Ga., about a third of a mile above the mouth of Cane Creek and a quarter of a mile below Elkins Creek.

Records available.—March 29, 1900, to December 31, 1913.

Drainage area.—1,090 square miles.

Gage.—Vertical staff, in four sections, on the left bank about 300 feet above the railroad bridge. Datum of gage 660 feet above sea level.

Channel—Bottom is rough, consisting chiefly of rock, and currents are irregular. Above gage height 10 feet the banks are subject to overflow for a width of about 350 feet, but all water passes beneath the bridge and its approaches.

Discharge measurements.—Made from downstream side of railroad bridge, which does not make a right angle with the current.

Regulation.—The operation of power plants on tributary streams above the station affects the daily flow at low stages.

Accuracy.—Since October 1, 1912, the records are based on two gage-height readings a day, and as the operation of the power plants above causes some diurnal fluctuation the estimates of daily discharge may be considerably in error for individual days, especially at low stages. The discharge rating curve was fairly constant for a number of years, but changed considerably in 1909 and 1910, probably owing to conditions at the shoals half a mile below. The highway bridge built a short distance below the gage in September, 1911, materially affected the conditions of flow and necessitated the use of a new rating curve.

Cooperation.—Since July 1, 1910, morning readings have been furnished by United States Weather Bureau. Afternoon readings since October 1, 1912, have been furnished by Central Georgia Power Co.

Discharge measurements of Flint River near Woodbury, Ga., in 1913.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Mar. 17.	Warren E. Hall	11.62	22,100
18.	do	8.84	14,100
18,	do	8.08	13,000

Daily gage height, in feet, of Flint River near Woodbury, Ga., for 1913.

[E. T. Riggins, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.45	2.6	3.8	2.5	0.9	0.6	0.4	1.25	0.5	0.8	0.5	0.75
2	1.4	2.0	3.6	2.1	.9	.5	.5	1.15	.45	.75	.5	1.1
3	1.4	2.5	2.8	1.9	.9	.9	.65	1.85	.4	.65	.5	1.2
4	1.35	4.3	2.4	1.8	.8	1.65	.9	1.8	.4	.5	.5	1.05
5	1.3	4.0	1.9	1.75	.7	1.35	.75	1.25	1.2	.35	.4	.9
6	1.25	2.8	1.75	1.65	.7	1.55	.95	.9	1.45	.25	.4	.8
7	1.2	2.2	1.6	1.55	.7	1.85	.8	.7	1.05	.2	.4	.9
8	1.2	1.9	1.6	1.45	.7	3.0	.55	1.35	.95	.2	.45	.95
9	1.15	1.6	1.55	1.4	.7	3.2	.4	1.15	.95	.2	.45	.9
10	1.1	1.45	1.6	1.3	.7	2.7	.45	.75	.75	.2	.4	.85
11	1.1	1.35	1.95	1.4	.7	2.7	2.8	.6	.5	.2	.4	.75
12	1.2	1.75	2.2	1.5	.7	1.75	1.85	1.15	.4	.2	.4	.7
13	1.3	1.7	5.4	1.4	.7	1.2	1.45	.85	.3	.2	.4	.7
14	1.3	1.6	7.5	1.35	.7	.95	1.75	.65	.3	.1	.4	.7
15	1.25	1.5	14.8	1.3	.7	.85	1.65	.6	.3	.1	.5	.7
16	1.2	1.4	13.6	1.3	.65	.75	1.6	.9	.4	.2	.5	.7
17	1.1	1.3	11.8	1.25	.6	.65	1.1	.7	.4	.2	.5	.7
18	1.1	1.2	8.6	1.2	.9	.6	.95	.45	.6	.15	.5	.65
19	1.1	1.2	5.0	1.2	.9	.6	.8	.4	1.65	.75	.5	.6
20	1.1	1.65	3.5	1.15	.9	.55	.75	.35	1.9	.85	.5	.6
21	1.1	3.8	4.1	1.0	1.0	.5	1.25	.25	1.25	.7	.5	.6
22	1.1	3.6	5.6	.95	.9	.5	1.95	.2	1.1	.7	.5	.6
23	1.15	3.2	4.6	.9	1.4	.5	3.0	.15	1.0	.75	.5	.6
24	1.4	2.4	3.6	.9	1.65	.5	3.8	.45	.9	1.15	.5	.6
25	1.85	1.9	2.8	.9	1.5	.45	3.2	.45	.8	1.3	.5	.8
26	2.0	1.6	2.4	.9	1.35	.4	3.8	.4	.6	1.2	.5	.9
27	2.8	2.3	2.8	.9	1.15	.35	1.8	.25	.35	.95	.5	1.0
28	3.2	4.0	3.6	.9	.9	.3	1.6	.1	.4	.8	.5	.9
29	3.7	.....	3.5	.9	.75	.3	2.1	.15	.3	.7	.5	1.3
30	4.0	.....	3.1	.9	.7	.3	2.4	.3	.45	.6	.5	1.8
31	2.8	.....	3.2	.....	.6	.....	2.0	.35	.....	.55	.....	1.75

Daily discharge, in second-feet, of Flint River near Woodbury, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,180	2,440	4,200	2,310	700	483	371	998	424	620	424	584
2	1,130	1,700	3,900	1,810	700	424	424	912	398	584	424	870
3	1,130	2,310	2,720	1,590	700	700	516	1,540	371	516	424	955
4	1,080	4,980	2,180	1,490	620	1,360	700	1,490	371	424	424	828
5	1,040	4,500	1,590	1,440	548	1,080	584	998	955	347	371	700
6	998	2,720	1,440	1,360	548	1,260	742	700	1,180	301	371	620
7	955	1,930	1,310	1,260	548	1,540	620	548	828	279	371	700
8	955	1,590	1,310	1,180	548	3,000	454	1,080	742	279	398	742
9	912	1,310	1,260	1,130	548	3,300	371	912	742	279	398	700
10	870	1,180	1,310	1,040	548	2,580	398	584	584	279	371	660
11	870	1,080	1,640	1,130	548	2,580	2,720	483	424	279	371	584
12	955	1,440	1,930	1,220	548	1,440	1,540	912	371	279	371	548
13	1,040	1,400	6,960	1,130	548	955	1,180	660	323	279	371	548
14	1,040	1,310	11,400	1,080	548	742	1,440	516	323	239	371	548
15	998	1,220	31,300	1,040	548	660	1,360	483	323	239	424	548
16	955	1,130	27,700	1,040	516	584	1,310	700	371	279	424	548
17	870	1,040	22,600	998	483	516	870	548	371	279	424	548
18	870	955	14,100	955	700	483	742	398	483	259	424	516
19	870	955	6,200	955	700	483	620	371	1,360	584	424	483
20	870	1,360	3,750	912	700	454	584	347	1,590	660	424	483
21	870	4,200	4,660	785	785	424	998	301	998	548	424	483
22	870	3,900	7,350	742	700	424	1,640	279	870	548	424	483
23	912	3,300	5,490	700	1,130	424	3,000	259	785	584	424	483
24	1,130	2,180	3,900	700	1,360	424	4,200	398	700	912	424	483
25	1,540	1,590	2,720	700	1,220	398	3,300	398	620	1,040	424	620
26	1,700	1,310	2,180	700	1,080	371	4,200	371	483	955	424	700
27	2,720	2,050	2,720	700	912	347	1,490	301	347	742	424	785
28	3,300	4,500	3,900	700	700	323	1,310	239	371	620	424	700
29	4,050	.....	3,750	700	584	323	1,810	259	323	548	424	1,040
30	4,500	.....	3,150	700	548	323	2,180	323	398	483	424	1,490
31	2,720	.....	3,300	.....	483	.....	1,700	347	.....	454	.....	1,440

NOTE.—Daily discharge determined from a rating curve fairly well defined below 24,000 second-feet. Because of uncertainties due to power regulation and lack of measurements between discharges of 2,000 and 12,000 second-feet, discharges for individual days should be used with caution.

Monthly discharge of Flint River near Woodbury, Ga., for 1913.

[Drainage area, 1,090 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	4,500	870	1,420	1.30	1.50	B.
February	4,980	955	2,130	1.95	2.03	B.
March	31,300	1,260	6,190	5.68	6.55	B.
April	2,310	700	1,070	.982	1.10	C.
May	1,360	483	689	.632	.73	C.
June	3,300	323	947	.869	.97	C.
July	4,200	371	1,400	1.28	1.48	C.
August	1,540	239	602	.552	.64	C.
September	1,590	323	614	.563	.63	C.
October	1,040	239	475	.436	.50	C.
November	424	371	408	.374	.42.	C.
December	1,490	483	691	.634	.73	C.
The year	31,300	239	1,390	1.28	17.28	

FLINT RIVER NEAR CULLODEN, GA.

Location.—At Grays Ferry, 14 miles southwest of Culloden, Ga., 1½ miles above the mouth of Auchumpkee Creek, and about 3 miles above old gage near Musella, Ga., which was read for a short time in 1907.

Records available.—July 1, 1911, to December 31, 1913.

Drainage area.—2,000 square miles.

Gage.—Staff in four sections: Section reading 0.0 to 10.0 feet is a vertical timber well braced to a willow stump on left bank just below ferry landing; section reading 10.0 to 12.0 feet is a vertical timber fastened to a sycamore tree on bank, 5 feet to left of lower section; section reading 12.0 to 20.0 feet is on a vertical timber attached to a large water oak about 50 feet to left of ferry landing; section reading 20.0 to 21.0 feet is fastened directly to a large water oak 75 feet to left of ferry landing.

Channel and control.—Bed sandy and likely to shift at station; control, rock ledge half a mile below; probably permanent.

Discharge measurements.—Made from the ferryboat.

Accuracy.—Rating curve defined by measurements for stages below 3.5 feet only; above that point it was extended by use of area and velocity curves; accuracy of estimates depends on permanence of discharge relation.

No discharge measurements were made in 1913.

Daily gage height, in feet, of Flint River near Culloden, Ga., for 1913.

[F. A. Adams, observer.]

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	5.0	2.7	2.2	1.9	3.0	1.9	2.25	2.2	2.1
2	.....	7.1	4.4	2.65	2.15	1.95	2.8	1.95	2.35	2.1	2.4
3	4.0	5.7	4.2	2.6	2.3	2.0	3.2	2.0	2.4	2.05	2.9
4	7.0	4.7	4.0	2.55	3.8	2.25	3.6	2.45	2.2	2.1	2.85
5	6.0	4.2	3.9	2.5	3.7	3.1	3.2	4.0	2.05	2.05	2.65
6	5.1	3.8	3.8	2.45	3.8	2.85	2.65	4.9	1.9	2.0	2.45
7	5.0	3.6	3.6	2.4	4.2	2.7	2.4	3.6	1.9	2.0	2.7
8	4.1	3.5	3.4	2.4	4.7	2.25	4.2	3.1	1.8	2.1	2.8
9	4.1	3.1	3.4	2.4	5.4	2.0	3.2	2.7	1.8	2.2	2.7
10	4.4	3.3	3.4	2.45	4.8	1.9	2.9	2.5	1.8	2.1	2.55
11	3.1	3.9	3.8	2.4	4.5	3.2	2.6	2.15	1.8	2.1	2.4
12	4.1	4.0	4.4	2.4	4.0	4.3	3.0	2.05	1.75	2.0	2.3
13	3.9	.....	3.8	2.4	3.2	3.1	2.85	1.95	1.65	2.0	2.3
14	3.5	.....	3.6	2.4	2.85	3.3	2.6	1.9	1.65	2.0	2.2
15	3.2	.....	3.4	2.35	2.6	3.4	2.4	1.9	1.65	2.0	2.25
16	3.1	30.5	3.3	2.3	2.5	3.2	2.25	2.0	1.65	2.1	2.3
17	3.1	.....	3.2	2.3	2.35	2.8	2.55	2.15	1.6	2.1	2.3
18	3.0	.....	3.2	2.6	2.3	2.6	2.25	2.1	1.65	2.1	2.3
19	3.0	.....	3.1	2.65	2.25	2.35	2.05	3.0	1.7	2.1	2.3
20	3.1	7.2	3.0	2.85	2.2	2.05	1.9	4.2	2.65	2.1	2.3
21	4.1	6.3	2.95	2.7	2.2	2.5	1.85	4.0	2.55	2.1	2.2
22	5.6	.....	2.9	2.7	2.25	3.8	1.85	3.2	2.4	2.1	2.2
23	5.3	8.1	2.8	2.6	2.1	4.2	1.8	2.9	2.3	2.1	2.3
24	4.3	7.2	2.8	3.4	2.1	5.6	2.4	2.6	3.1	2.1	2.3
25	3.9	5.6	2.8	3.4	2.1	5.2	2.2	2.35	3.4	2.1	2.6
26	3.2	5.6	2.8	3.4	2.0	4.8	1.9	2.15	3.0	2.1	2.8
27	3.3	7.0	2.8	2.9	2.0	3.8	2.0	2.05	2.85	2.1	2.8
28	6.0	6.9	2.8	2.6	2.0	3.6	1.85	2.0	2.55	2.1	2.8
29	.....	6.0	2.75	2.45	2.0	4.6	1.8	1.95	2.45	2.1	2.85
30	.....	5.4	2.7	2.3	1.95	4.0	1.85	2.1	2.35	2.1	4.0
31	.....	5.2	.....	2.2	.....	3.6	1.9	.....	2.25	.....	3.8

NOTE.—Water over top of gage Mar. 1, 13-19, and 22. Until Apr. 1 the gage read only to 10 feet. On that date it was extended to read to 21 feet. Gage height of 30.5 feet given for Mar. 16 is the peak flood height determined with a level from flood marks.

Daily discharge, in second-feet, of Flint River near Culloden, Ga., for 1913.

Day.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	.....	4,050	1,310	890	665	1,590	665	930	890	810
2	.....	7,720	3,220	1,260	850	700	1,400	700	1,010	810	1,050
3	2,700	5,170	2,960	1,220	970	735	1,790	735	1,050	772	1,490
4	7,520	3,630	2,700	1,180	2,460	930	2,230	1,090	890	810	1,440
5	5,680	2,960	2,580	1,130	2,340	1,690	1,790	2,700	772	772	1,260
6	4,200	2,460	2,460	1,090	2,460	1,440	1,260	3,910	665	735	1,090
7	4,050	2,230	2,230	1,050	2,960	1,310	1,050	2,230	665	735	1,310
8	2,830	2,120	2,010	1,050	3,630	930	2,960	1,600	598	810	1,400
9	2,830	1,690	2,010	1,050	4,670	735	1,790	1,310	598	890	1,310
10	3,220	1,900	2,010	1,090	3,770	665	1,490	1,130	598	810	1,180
11	1,690	2,580	2,460	1,050	3,350	1,790	1,220	850	598	810	1,050
12	2,830	2,700	3,220	1,050	2,700	3,090	1,590	772	566	735	970
13	2,580	.....	2,460	1,050	1,790	1,690	1,440	700	504	735	970
14	2,120	.....	2,230	1,050	1,440	1,600	1,220	665	504	735	890
15	1,790	.....	2,010	1,010	1,220	2,010	1,050	665	504	735	930
16	1,690	.....	1,900	970	1,130	1,790	930	735	504	810	970
17	1,690	.....	1,790	970	1,010	1,400	1,180	850	473	810	970
18	1,590	.....	1,790	1,220	970	1,220	930	810	504	810	970
19	1,590	.....	1,690	1,260	930	1,010	772	1,590	534	810	970
20	1,690	7,920	1,590	1,440	890	772	665	2,960	1,260	810	970
21	2,830	6,220	1,540	1,310	890	1,130	632	2,700	1,180	810	890
22	5,000	.....	1,490	1,310	930	2,460	632	1,790	1,050	810	890
23	4,510	9,840	1,400	1,220	810	2,960	598	1,490	970	810	970
24	3,090	7,920	1,400	2,010	810	5,000	1,050	1,220	1,690	810	970
25	2,580	5,000	1,400	2,010	810	4,350	890	1,010	2,010	810	1,220
26	1,790	5,000	1,400	2,010	735	3,770	665	850	1,590	810	1,400
27	1,900	7,520	1,400	1,490	735	2,460	735	772	1,440	810	1,400
28	5,680	7,330	1,400	1,220	735	2,230	632	735	1,180	810	1,400
29	.....	5,680	1,360	1,090	735	3,490	598	700	1,090	810	1,440
30	.....	4,670	1,310	970	700	2,700	632	810	1,010	810	2,700
31	.....	4,350	.....	890	.....	2,230	665	.....	930	.....	2,460

NOTE.—Daily discharge determined from a rating curve fairly well defined below 3,000 second-feet; discharge above 6,000 second-feet only approximate.

Monthly discharge of Flint River near Culloden, Ga., for 1913.

[Drainage area, 2,000 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
February 3-28	7,520	1,590	3,060	1.53	1.48	C.
April	4,050	1,310	2,050	1.02	1.14	B.
May	2,010	890	1,230	.615	.71	B.
June	4,670	700	1,610	.805	.90	B.
July	5,000	665	1,910	.955	1.10	B.
August	2,960	598	1,160	.580	.67	B.
September	3,910	665	1,290	.645	.72	B.
October	2,010	473	899	.450	.52	B.
November	890	735	798	.399	.45	B.
December	2,700	810	1,220	.610	.70	B.

FLINT RIVER AT ALBANY, GA.

Location.—At the Dougherty County highway bridge in the city of Albany, 700 feet below the Atlantic Coast Line Railroad bridge.

Records available.—April 10, 1893, to December 31, 1913 (United States Weather Bureau gage heights). Discharge measurements were begun by the Geological Survey in 1901, and estimates of daily discharge have been made from January 1, 1902, to December 31, 1913.

Drainage area.—5,000 square miles.

Gage.—Standard chain gage, installed at the bridge by the United States Geological Survey April 20, 1904. The original staff gage was washed out in 1898. It was again injured in 1902, and on June 18, 1902, a new gage was installed by the United States Weather Bureau at a datum 0.75 foot lower than that of the former gage. The 1902 gage heights, as published by the United States Weather Bureau and the United States Geological Survey, all refer to the new gage datum. The present standard chain gage has the same datum and reads in conformity with the United States Weather Bureau gage.

Channel and control.—Channel at and below gage may shift slightly, but the control is such that conditions of flow are practically permanent. The river overflows both banks, but only under the approaches to the bridge.

Discharge measurements.—Fairly accurate measurements can be made at the section at the Atlantic Coast Line bridge, although it is very rough, and train switching in the railroad yard interferes with the work. The section at the Georgia Northern Railway bridge, 1 mile above, at which measurements are sometimes made, is considered better, especially for medium and low stages.

Regulation.—Power developments on Muckalee Creek, which joins Flint River about 2 miles above the station, cause considerable diurnal fluctuation, especially at low stages. It is probable that the flow is also affected by other power plants farther up the river.

Accuracy.—As the records are based on one gage reading a day, made at 7 a. m., it is probable that the estimates of daily discharge are somewhat in error, especially at low stages. The actual daily discharge is probably greater than that indicated by the 7 a. m. reading; accuracy of rating curve depends on permanence of discharge relation.

Cooperation.—Gage heights are furnished by the United States Weather Bureau.

No discharge measurements were made during 1913.

Daily gage height, in feet, of Flint River at Albany, Ga., for 1913.

[D. W. Brosnan, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.7	7.2	8.6	14.3	3.8	1.8	1.4	6.4	2.5	1.0	1.6	0.9
2	7.2	7.6	10.4	14.3	3.6	1.6	1.4	6.6	1.7	1.2	1.4	.8
3	7.7	8.0	13.8	14.2	3.6	2.1	1.3	6.0	1.4	1.5	1.2	1.0
4	7.7	8.6	17.5	13.7	3.5	2.4	1.0	4.8	1.2	1.5	1.3	1.0
5	7.5	9.4	18.2	11.9	3.4	2.8	1.0	4.6	1.1	1.3	1.3	1.1
6	7.2	9.6	17.5	10.3	3.0	3.0	.9	5.2	.9	1.2	1.1	1.5
7	6.4	9.8	16.8	8.9	2.9	3.5	1.4	4.9	1.5	1.0	.9	1.9
8	5.8	10.1	15.5	8.1	2.9	3.8	1.9	5.2	2.5	.9	.8	1.7
9	5.5	10.3	12.8	7.6	2.8	4.1	1.7	4.1	4.0	.7	.8	2.0
10	5.2	10.3	9.4	7.1	2.7	4.4	1.7	4.4	3.8	.5	.8	2.2
11	5.1	9.3	7.6	6.5	2.7	4.6	1.4	5.1	3.1	.4	.9	2.2
12	4.9	7.3	6.5	7.0	2.7	6.1	1.0	4.9	2.6	.3	1.8	2.2
13	4.7	6.4	6.5	9.5	2.7	6.4	1.2	3.6	2.3	.3	1.7	2.0
14	4.7	6.6	8.0	11.1	2.6	6.2	1.8	3.1	1.7	.5	1.4	2.0
15	4.6	7.2	13.0	12.4	2.6	5.2	2.8	2.8	1.4	.5	1.4	2.2
16	4.6	7.2	21.1	11.8	2.5	4.0	2.4	2.5	1.6	.8	1.4	1.8
17	4.4	7.0	25.2	10.5	2.5	3.6	2.2	2.8	2.4	.3	1.4	1.7
18	4.2	6.2	26.3	8.1	2.5	2.8	2.1	3.0	3.0	.3	1.2	1.8
19	4.1	5.5	28.1	7.1	2.5	2.4	2.0	3.1	2.5	.2	1.2	1.5
20	4.0	5.3	30.0	6.5	2.4	1.8	1.6	3.0	3.1	.1	1.0	1.6
21	4.0	5.2	30.3	6.0	2.4	1.5	1.4	2.4	3.8	.5	.9	1.8
22	4.0	5.5	29.4	5.6	2.5	1.3	1.2	1.8	4.5	.8	.8	1.8
23	4.0	6.2	27.9	5.2	2.9	1.3	1.2	1.6	4.8	1.8	.9	1.5
24	3.9	7.1	25.5	5.0	3.0	1.3	2.5	1.0	5.0	2.0	.9	1.4
25	3.9	7.6	23.5	4.6	3.0	1.2	4.7	1.5	4.6	2.3	1.1	1.4
26	4.0	8.1	20.4	4.3	3.0	1.1	5.3	1.2	3.4	2.9	1.1	1.8
27	4.0	8.1	19.0	4.3	3.0	1.1	5.9	1.6	2.5	3.3	1.0	2.1
28	5.0	8.6	18.0	4.3	2.7	1.0	6.3	1.6	1.9	3.2	.9	2.4
29	6.4	.....	17.0	4.3	2.7	.9	6.6	1.3	1.5	2.9	.9	2.4
30	6.6	.....	16.0	4.1	2.5	.9	6.3	1.3	1.5	2.4	.9	2.4
31	6.9	.....	15.3	.....	2.2	.....	5.9	2.5	.....	2.4	.....	2.5

Daily discharge, in second-feet, of Flint River at Albany, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	10,300	9,670	11,400	19,100	5,560	3,380	3,020	8,670	4,080	2,670	3,200	2,580
2	9,670	10,200	13,700	19,100	5,320	3,200	3,020	8,920	3,290	2,840	3,020	2,500
3	10,300	10,700	18,300	18,900	5,320	3,670	2,930	8,170	3,020	3,110	2,840	2,670
4	10,300	11,400	24,400	18,200	5,210	3,980	2,670	6,700	2,840	3,110	2,930	2,670
5	10,000	12,400	25,600	15,600	5,100	4,410	2,670	6,480	2,760	2,930	2,930	2,760
6	9,670	12,700	24,400	13,500	4,640	4,640	2,580	7,180	2,580	2,840	2,760	3,110
7	8,670	12,900	23,200	11,800	4,520	5,210	3,020	6,820	3,110	2,670	2,580	3,480
8	7,920	13,300	21,000	10,800	4,520	5,560	3,480	7,180	4,080	2,580	2,500	3,270
9	7,540	13,500	16,900	10,200	4,410	5,900	3,290	5,900	5,780	2,420	2,500	3,570
10	7,180	13,500	12,400	9,540	4,300	6,240	3,290	6,240	5,560	2,250	2,500	3,770
11	7,060	12,300	10,200	8,800	4,300	6,480	3,020	7,060	4,750	2,170	2,580	3,770
12	6,820	9,800	8,800	9,420	4,300	8,300	2,670	6,820	4,190	2,090	3,380	3,770
13	6,590	8,670	8,800	12,500	4,300	8,670	2,840	5,320	3,870	2,090	3,290	3,570
14	6,590	8,920	10,700	14,600	4,190	8,420	3,380	4,750	3,290	2,250	3,020	3,570
15	6,480	9,670	17,200	16,300	4,190	7,180	4,410	4,410	3,020	2,250	3,020	3,770
16	6,480	9,670	31,400	15,500	4,080	5,780	3,980	4,080	3,200	2,500	3,020	3,380
17	6,240	9,420	40,900	13,800	4,080	5,320	3,770	4,410	3,980	2,090	3,020	3,290
18	6,020	8,420	43,500	10,800	4,080	4,410	3,670	4,640	4,640	2,090	2,840	3,380
19	5,900	7,540	48,000	9,540	4,080	3,980	3,570	4,750	4,080	2,010	2,840	3,110
20	5,780	7,300	52,900	8,800	3,980	3,380	3,200	4,640	4,750	1,930	2,670	3,200
21	5,780	7,180	53,700	8,170	3,980	3,110	3,020	3,980	5,560	2,250	2,580	3,380
22	5,780	7,540	51,300	7,670	4,080	2,930	2,840	3,380	6,360	2,500	2,500	3,380
23	5,780	8,420	47,400	7,180	4,520	2,930	2,840	3,200	6,700	3,380	2,580	3,110
24	5,670	9,540	41,600	6,940	4,640	2,930	4,080	2,670	6,940	3,570	2,580	3,020
25	5,670	10,200	36,800	6,480	4,640	2,840	6,590	3,110	6,480	3,870	2,760	3,020
26	5,780	10,800	29,900	6,130	4,640	2,760	7,300	2,840	5,100	4,520	2,760	3,380
27	5,780	10,800	27,000	6,130	4,640	2,760	8,040	3,200	4,080	4,980	2,670	3,670
28	6,940	11,400	25,200	6,130	4,300	2,670	8,540	3,200	3,480	4,860	2,580	3,980
29	8,670	.....	23,500	6,130	4,300	2,580	8,920	2,930	3,110	4,520	2,580	3,980
30	8,920	.....	21,800	5,900	4,080	2,580	8,540	2,930	3,110	3,980	2,580	3,980
31	9,300	.....	20,600	.....	3,770	.....	8,040	4,080	.....	3,980	.....	4,080

NOTE.—Daily discharge determined from a rating curve well defined between 2,500 and 48,000 second-feet.

Monthly discharge of Flint River at Albany, Ga., for 1913.

[Drainage area, 5,000 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area.)	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	10,300	5,670	7,410	1.48	1.71	A.
February	13,500	7,180	10,300	2.06	2.14	A.
March	53,700	8,800	27,200	5.44	6.27	B.
April	19,100	5,900	11,100	2.22	2.48	A.
May	5,560	3,770	4,450	.890	1.03	A.
June	8,670	2,580	4,540	.908	1.01	A.
July	8,920	2,580	4,300	.860	.99	A.
August	8,920	2,670	5,120	1.02	1.18	A.
September	6,940	2,580	4,260	.852	.95	A.
October	4,980	1,930	2,950	.590	.68	A.
November	3,380	2,500	2,790	.558	.62	A.
December	4,080	2,500	3,360	.672	.77	A.
The year	53,700	1,930	7,310	1.46	19.83	

FLINT RIVER AT BAINBRIDGE, GA.

Location.—At county wagon bridge half a mile from Bainbridge and about 25 miles above confluence of Flint and Chattahoochee rivers.

Records available.—January 1, 1908, to December 31, 1913.

Drainage area.—7,410 square miles (United States Weather Bureau).

Gage.—Standard chain gage attached to highway bridge.

Channel and control.—Bed soft and likely to shift, but appears to have remained fairly permanent, as indicated by constancy of discharge relation.

Accuracy.—It is possible that daily discharge as determined by one gage-height reading a day may be somewhat in error for individual days; otherwise the accuracy is good for low and medium stages; accuracy of rating curve depends on permanence of discharge relation.

Cooperation.—Gage heights are furnished by the United States Weather Bureau.

No discharge measurements were made during 1913.

Daily gage height, in feet, of Flint River at Bainbridge, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	11.9	10.4	13.6	21.0	9.7	7.2	5.6	9.7	6.1	5.7	5.9	4.6
2	11.5	10.6	15.1	20.2	9.4	6.8	6.0	9.9	6.5	5.4	5.6	4.6
3	11.3	10.7	16.3	19.9	9.2	6.6	5.9	10.0	6.4	5.3	5.3	4.6
4	11.6	11.2	17.4	19.9	9.2	6.8	5.9	9.1	6.0	5.6	5.1	4.6
5	11.5	12.1	18.6	19.3	9.0	7.0	5.7	8.9	5.8	5.6	5.1	4.7
6	11.3	13.0	19.8	18.0	8.8	7.2	5.7	8.7	5.7	5.5	5.0	4.8
7	11.2	13.3	20.2	16.8	8.6	7.7	5.6	8.9	5.6	5.3	4.8	5.2
8	11.1	13.5	19.7	15.5	8.5	8.0	6.0	8.8	5.7	5.2	4.9	5.3
9	11.0	13.5	19.0	14.8	8.3	8.1	6.3	8.6	6.5	5.0	4.7	5.3
10	10.8	13.4	17.9	14.1	8.2	8.7	6.1	8.2	7.2	4.9	4.7	5.2
11	10.6	13.5	15.8	13.8	8.3	9.2	6.0	8.2	7.4	4.8	4.7	5.2
12	10.5	13.3	14.2	13.4	8.1	9.8	5.8	8.7	7.0	4.8	5.2	5.4
13	10.2	12.2	13.2	13.8	8.1	10.2	5.7	8.4	6.5	4.7	5.3	5.3
14	9.0	11.8	13.3	14.8	7.9	10.5	5.6	7.9	6.2	4.5	5.2	5.2
15	9.0	11.4	14.2	15.8	7.9	10.4	5.7	7.5	5.8	4.4	5.1	5.1
16	8.9	11.6	17.2	16.5	7.8	9.9	6.4	7.0	5.5	4.3	5.1	5.0
17	8.8	11.7	21.2	16.6	7.8	9.0	6.4	6.7	5.7	4.4	4.9	5.1
18	8.6	11.4	24.2	15.9	7.7	8.2	6.3	6.8	5.8	4.2	4.7	5.0
19	8.5	11.0	26.8	14.6	7.6	7.8	6.3	6.9	6.1	4.4	4.8	5.0
20	8.4	10.4	28.2	13.5	7.6	7.4	6.2	6.5	6.2	4.4	4.7	5.0
21	8.3	10.0	29.4	12.7	7.5	6.9	6.0	6.3	6.8	4.2	4.7	5.0
22	8.3	10.0	30.7	12.1	7.4	6.6	6.0	6.0	7.3	4.3	4.9	4.9
23	8.2	10.0	31.4	11.7	7.6	6.5	6.2	5.8	7.8	4.4	4.8	4.9
24	8.3	10.8	31.2	11.3	8.0	6.3	7.0	5.6	8.0	5.1	4.8	5.0
25	8.3	11.6	30.3	11.0	7.9	6.2	7.9	5.4	8.2	5.4	4.7	5.1
26	8.5	11.9	28.7	10.6	7.7	6.2	8.7	5.3	7.6	5.7	4.7	4.8
27	8.7	12.0	27.0	10.3	7.8	6.0	9.0	5.3	6.9	5.8	4.8	5.1
28	9.0	12.1	25.3	10.1	7.8	5.9	9.2	5.6	6.5	6.4	4.7	5.3
29	9.8	.....	23.5	10.0	7.8	5.9	9.7	5.7	5.9	6.6	4.7	5.5
30	10.6	.....	22.4	9.9	7.6	5.7	9.9	5.6	5.7	6.4	4.6	5.6
31	10.2	.....	21.7	.....	7.3	.....	9.9	5.6	.....	6.1	.....	5.6

Daily discharge, in second-feet, of Flint River at Bainbridge, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	14,500	11,500	.....	.....	10,300	6,960	5,530	10,300	5,960	5,610	5,780	4,730
2	13,700	11,900	.....	.....	9,780	6,590	5,870	10,600	6,320	5,370	5,530	4,730
3	13,300	12,100	.....	.....	9,460	6,410	5,780	10,800	6,230	5,290	5,290	4,730
4	13,900	13,100	.....	.....	9,460	6,590	5,780	9,310	5,870	5,530	5,130	4,730
5	13,700	15,000	.....	.....	9,160	6,770	5,610	9,020	5,690	5,530	5,130	4,810
6	13,300	.....	.....	.....	8,880	6,960	5,610	8,740	5,610	5,450	5,050	4,890
7	13,100	.....	.....	.....	8,600	7,480	5,530	9,020	5,530	5,290	4,890	5,210
8	12,900	.....	.....	.....	8,460	7,830	5,870	8,880	5,610	5,210	4,970	5,290
9	12,700	.....	.....	.....	8,200	7,950	6,140	8,600	6,320	5,050	4,810	5,290
10	12,300	.....	.....	.....	8,070	8,740	5,960	8,070	6,960	4,970	4,810	5,210
11	11,900	.....	.....	.....	8,200	9,460	5,870	8,070	7,160	4,890	4,810	5,210
12	11,700	.....	.....	.....	7,950	10,400	5,690	8,740	6,770	4,890	5,210	5,370
13	11,200	15,200	.....	.....	7,950	11,200	5,610	8,330	6,320	4,810	5,290	5,290
14	9,160	14,300	.....	.....	7,710	11,700	5,530	7,710	6,050	4,660	5,210	5,210
15	9,160	13,500	.....	.....	7,710	11,500	5,610	7,260	5,690	4,590	5,130	5,130
16	9,020	13,900	.....	.....	7,590	10,600	6,230	6,770	5,450	4,520	5,130	5,050
17	8,880	14,100	.....	.....	7,590	9,160	6,230	6,500	5,610	4,590	4,970	5,130
18	8,600	13,500	.....	.....	7,480	8,070	6,140	6,590	5,690	4,450	4,810	5,050
19	8,460	12,700	.....	.....	7,370	7,590	6,140	6,680	5,960	4,590	4,890	5,050
20	8,330	11,500	.....	.....	7,370	7,160	6,050	6,320	6,050	4,590	4,810	5,050
21	8,200	10,800	.....	.....	7,260	6,680	5,870	6,140	6,590	4,450	4,810	5,050
22	8,200	10,800	.....	15,000	7,160	6,410	5,870	5,870	7,060	4,520	4,970	4,970
23	8,070	10,800	.....	14,100	7,370	6,320	6,050	5,690	7,590	4,590	4,890	4,970
24	8,200	12,300	.....	13,300	7,830	6,140	6,770	5,530	7,830	5,130	4,890	5,050
25	8,200	13,900	.....	12,700	7,710	6,050	7,710	5,370	8,070	5,370	4,810	5,130
26	8,460	14,500	.....	11,900	7,480	6,050	8,740	5,290	7,370	5,610	4,810	4,890
27	8,740	14,700	.....	11,300	7,590	5,870	9,160	5,290	6,680	5,690	4,890	5,130
28	9,160	15,000	.....	11,000	7,590	5,780	9,460	5,530	6,320	6,230	4,810	5,290
29	10,400	.....	.....	10,800	7,590	5,780	10,300	5,610	5,780	6,410	4,810	5,450
30	11,900	.....	.....	10,600	7,370	5,610	10,600	5,530	5,610	6,230	4,730	5,530
31	11,200	.....	.....	.....	7,060	.....	10,600	5,530	.....	5,960	.....	5,530

NOTE.—Daily discharge determined from a rating curve well defined below 15,000 second-feet. On days for which no discharge is given it was greater than 16,000 second-feet.

Monthly discharge of Flint River at Bainbridge, Ga., for 1913.

[Drainage area, 7,410 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	14,500	8,070	10,700	1.44	1.66	A.
May	10,300	7,060	8,040	1.09	1.26	A.
June	11,700	5,610	7,660	1.03	1.15	A.
July	10,600	5,530	6,710	.906	1.04	A.
August	10,800	5,290	7,340	.991	1.14	A.
September	8,070	5,450	6,320	.853	.95	A.
October	6,410	4,450	5,160	.696	.80	A.
November	5,780	4,730	5,000	.675	.75	A.
December	5,530	4,730	5,100	.688	.79	A.

CHIPOLA RIVER NEAR ALTHA, FLA.

Location.—At Willis Bridge, 3½ miles west of Altha, Fla., about 3 miles upstream from mouth of Tenmile Creek and about 1 mile upstream from Luck and Tremble Shoals at head of navigation.

Records available.—November 21, 1912, to December 31, 1913.

Drainage area.—740 square miles.

Gage.—On November 21, 1912, a vertical staff gage was placed on left bank of river about 75 feet upstream from bridge. On April 22, 1913, a chain gage was established on the upstream handrail of wagon bridge. Since April 22 the chain gage has been used.

Channel and control.—Rough, rocky bottom; no piers or obstructions in water. Current fairly swift and regular; bottom is composed mostly of soft limestone rock. During low and medium stages the rock shoal about 1 mile below forms an excellent control. At high stages this control is submerged and the discharge relation will probably be determined by the flat slope of river below the shoal. Both banks are steep and rocky and rarely overflow.

Discharge measurements.—Made from downstream side of single span steel highway bridge. Both piers are out of water on steep banks. Measurements below a gage height of about 12.0 feet can be made from the bridge. Extreme floods can not be measured from the bridge.

Floods.—Spring flood of 1912 reached gage height of about 30 feet (estimated).

Winter flow.—Not affected by ice.

Regulation.—None.

Point of zero flow.—Not yet determined.

Accuracy.—Data insufficient for construction of rating curve.

Cooperation.—Gage heights furnished by Mr. B. H. Hardaway.

Discharge measurements of Chipola River near Altha, Fla., in 1913.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
Apr. 23	Warren E. Hall and B. M. Hall, jr	10.74	1,540
23	....do	10.69	1,530

Daily gage height, in feet, of Chipola River near Altha, Fla., for 1913.

[W. S. Newsom, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	11.9	10.0	13.4	15.2	10.0	.....	9.7	9.6	9.3	9.0	9.1	8.7
2	11.9	10.0	13.4	15.0	10.0	9.5	9.6	9.7	9.3	9.0	.....	8.7
3	11.9	10.9	13.5	14.4	10.0	9.5	9.6	.....	9.2	9.0	9.0	8.7
4	11.8	14.0	14.0	14.0	10.0	9.5	9.6	9.5	9.2	8.9	9.0	8.7
5	11.8	14.0	14.6	13.8	9.9	9.4	10.0	9.5	9.1	.....	9.0	8.7
6	11.9	14.2	16.4	13.4	9.9	9.5	.....	9.5	9.1	8.9	9.0	8.7
7	11.0	14.6	16.4	12.9	9.9	9.6	10.0	9.5	.....	8.9	9.0	.....
8	11.0	14.8	15.6	12.6	9.8	.....	9.9	9.4	9.3	8.9	9.0	8.9
9	10.8	14.8	15.5	12.1	9.8	9.6	9.9	9.4	9.2	8.9	.....	8.8
10	10.8	14.4	14.1	12.0	9.7	14.0	9.9	.....	9.2	8.9	9.0	8.8
11	10.6	14.2	16.1	12.0	9.7	13.4	9.9	9.4	9.1	8.9	9.0	8.8
12	10.6	14.0	16.1	12.9	9.7	12.6	9.9	9.4	9.1	.....	9.0	8.8
13	10.5	13.8	16.4	13.0	9.7	11.5	.....	9.4	9.1	8.9	9.0	8.8
14	10.4	13.1	17.1	12.9	9.7	10.6	9.9	9.3	.....	8.9	9.0	.....
15	10.4	13.0	18.4	12.8	9.8	.....	9.9	9.3	9.1	9.2	9.0	9.2
16	10.3	13.0	20.0	12.8	9.8	10.2	9.8	9.5	9.3	8.9	.....	9.2
17	10.1	13.0	20.0	12.7	10.1	9.9	9.8	.....	9.3	8.8	8.9	9.1
18	10.1	13.0	20.0	12.1	.....	9.8	9.8	9.4	9.4	8.8	8.9	9.0
19	10.0	12.9	20.1	11.9	9.8	9.7	9.8	9.4	9.3	.....	8.9	9.0
20	10.0	12.7	20.5	11.4	9.8	9.7	.....	9.4	9.2	9.1	8.9	9.1
21	10.0	12.6	20.1	11.1	9.7	9.6	10.0	9.3	.....	8.8	8.9	.....
22	9.9	12.2	21.1	10.9	9.8	.....	10.0	9.3	9.2	8.9	8.9	9.0
23	9.9	12.1	20.6	10.8	9.6	9.4	9.9	9.2	9.2	9.0	.....	9.0
24	10.0	12.1	20.0	10.6	10.2	9.4	9.9	.....	9.2	10.1	8.9	9.0
25	10.0	12.4	19.4	10.4	10.1	9.4	9.8	9.3	9.1	9.2	8.9	9.2
26	10.0	12.6	19.4	10.5	10.1	9.4	9.8	9.3	9.1	.....	8.9	9.2
27	10.0	12.9	19.4	10.5	10.0	9.4	.....	9.3	9.1	9.2	8.9	9.1
28	10.0	13.0	18.2	10.4	9.9	9.6	9.7	9.5	9.1	9.2	8.9	.....
29	10.0	.....	17.0	10.2	9.9	.....	9.7	9.5	9.1	9.2	8.9	9.0
30	10.0	.....	16.2	10.1	9.8	9.7	9.6	9.4	9.1	9.2	.....	9.0
31	10.0	.....	15.2	.....	9.7	.....	9.6	.....	.....	9.2	.....	9.1

CHOCTAWHATCHEE RIVER BASIN.

PEA RIVER AT PERA, ALA.

Location.—At the Elton wagon bridge, half a mile west of Pera, Ala. It is about 10 miles above the mouth of Flat Creek, and no tributary streams except very small ones come in nearer the station.

Records available.—August 27, 1904, to August 31, 1913.

Drainage area.—1,180 square miles.

Gage.—Standard chain gage attached to the bridge; datum unchanged.

Channel and control.—In soft rock, nearly permanent.

Discharge measurements.—Made from the downstream side of the wagon bridge to which the gage is attached.

Regulation.—Power plants on Whitewater Creek, a tributary stream above the station, cause diurnal fluctuations in the low-water flow. The gage is read twice a day to lessen the effect of such fluctuations.

Accuracy.—The estimates of daily discharge may be considerably in error for individual days owing to the operation of the power plants above the station.

No discharge measurements made during 1913.

Daily gage height, in feet, of Pea River at Pera, Ala., for 1913.

[W. G. Early, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1	11.2	11.7	18.1	12.6	5.8	3.7	3.9	9.0
2	10.8	11.2	18.4	11.8	5.7	3.7	4.8	7.5
3	10.4	12.0	17.7	11.2	5.6	3.4	5.2	6.4
4	10.2	12.8	15.5	10.3	5.4	4.4	4.4	5.6
5	9.6	11.4	14.0	10.7	5.2	4.4	6.4	5.0
6	9.2	11.4	12.2	10.3	5.0	5.0	5.4	4.4
7	9.0	12.1	10.7	9.8	4.9	7.1	5.4	4.1
8	8.8	13.3	9.9	9.1	4.8	8.2	4.6	3.9
9	8.7	11.3	9.2	8.8	4.8	8.6	3.8	4.0
10	8.3	9.6	11.6	8.6	4.7	10.3	5.0	4.0
11	8.0	9.0	15.0	11.7	4.8	9.8	4.4	4.6
12	9.0	9.1	13.2	13.6	4.9	7.8	3.9	4.8
13	9.7	9.2	15.2	12.4	4.6	7.3	3.6	4.6
14	8.6	9.2	25.7	11.5	5.6	6.9	3.4	4.4
15	8.0	9.2	31.8	10.8	5.4	6.2	4.0	4.6
16	7.8	8.5	38.0	9.2	5.0	5.2	3.8	5.0
17	7.9	8.2	37.9	9.1	5.6	4.6	3.6	4.2
18	8.0	7.8	35.2	8.8	7.0	4.2	3.4	3.7
19	8.1	7.6	32.6	8.6	5.5	4.0	3.3	3.3
20	8.2	7.6	28.2	7.6	5.1	4.2	4.2	2.4
21	8.1	7.5	23.1	7.1	4.6	4.2	8.8	2.0
22	7.7	12.8	27.0	6.8	4.6	4.0	13.8	1.6
23	7.4	15.5	26.0	6.6	4.9	3.9	14.8	2.3
24	7.5	12.6	22.4	6.4	7.8	3.8	12.8	2.6
25	8.2	10.8	18.5	6.2	7.3	3.6	13.8	2.8
26	8.4	9.7	15.6	6.4	6.3	3.5	13.6	2.9
27	9.7	10.0	15.0	6.6	5.4	3.5	14.2	3.0
28	11.2	15.2	16.2	6.4	5.0	3.6	11.2	3.6
29	9.8	.....	15.2	6.2	4.8	3.7	9.0	3.2
30	9.3	.....	14.1	6.2	3.4	4.0	9.7	2.7
31	9.4	.....	13.1	.....	3.6	.....	10.0	2.9

Daily discharge, in second-feet, of Pea River at Pera, Ala., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1	3,300	3,530	6,480	3,950	1,090	535	578	2,310
2	3,120	3,300	6,610	3,580	1,060	535	794	1,700
3	2,930	3,670	6,290	3,300	1,030	476	906	1,290
4	2,840	4,040	5,280	2,890	965	691	691	1,030
5	2,570	3,390	4,590	3,070	906	691	1,290	850
6	2,400	3,390	3,760	2,890	850	850	965	691
7	2,310	3,720	3,070	2,660	822	1,550	965	622
8	2,230	4,270	2,710	2,350	794	1,980	741	578
9	2,180	3,350	2,400	2,230	794	2,140	556	600
10	2,020	2,570	3,490	2,140	767	2,890	850	600
11	1,900	2,310	5,050	3,530	794	2,660	691	741
12	2,310	2,350	4,220	4,410	822	1,820	578	794
13	2,620	2,400	5,140	3,850	741	1,620	515	741
14	2,140	2,400	9,970	3,440	1,030	1,470	476	691
15	1,900	2,400	12,800	3,120	965	1,220	600	741
16	1,820	2,100	15,600	2,400	850	906	556	850
17	1,860	1,980	15,600	2,350	1,030	741	515	644
18	1,900	1,820	14,300	2,230	1,510	644	476	535
19	1,940	1,740	13,100	2,140	995	600	457	457
20	1,980	1,740	11,100	1,740	878	644	644	295
21	1,940	1,700	8,780	1,550	741	644	2,230	238
22	1,780	4,040	10,600	1,430	741	600	4,500	184
23	1,660	5,280	10,100	1,360	822	578	4,960	280
24	1,700	3,950	8,450	1,290	1,820	556	4,040	326
25	1,980	3,120	6,660	1,220	1,620	515	4,500	362
26	2,060	2,620	5,330	1,290	1,260	495	4,410	381
27	2,620	2,750	5,050	1,360	965	495	4,680	400
28	3,300	5,140	5,600	1,290	850	515	3,300	515
29	2,660	.....	5,140	1,220	794	535	2,310	438
30	2,440	.....	4,640	1,220	476	600	2,620	344
31	2,490	.....	4,180	.....	515	.....	2,750	381

NOTE.—Daily discharge determined from a rating curve well defined below 7,000 second-feet. Because of uncertainties due to power regulation and lack of measurements since 1911, daily discharge should be used with caution.

Monthly discharge of Pea River at Pera, Ala., for 1913.

[Drainage area, 1,180 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	3,300	1,660	2,290	1.94	2.24	B.
February	5,280	1,700	3,040	2.58	2.69	B.
March	15,600	2,400	7,290	6.18	7.12	B.
April	4,410	1,220	2,380	2.02	2.25	B.
May	1,820	476	945	.801	.92	C.
June	2,890	476	1,010	.856	.96	C.
July	4,960	457	1,750	1.48	1.71	B.
August	2,310	184	665	.564	.65	C.

ESCAMBIA RIVER BASIN.

CONECUH RIVER AT BECK, ALA.

Location.—At Simmons Bridge, at Beck, about 12 miles below the mouth of Patsaliga Creek, 8 miles west of Andalusia, Ala., a station on the Central of Georgia and Louisville & Nashville railroads.

Records available.—August 24, 1904, to December 31, 1913.

Drainage area.—1,290 square miles.

Gage.—Standard chain gage attached to the upstream side of the wagon bridge; datum unchanged.

Channel and control.—In soft bedrock and practically permanent. Both banks are subject to overflow at high stages.

Discharge measurements.—Made from the wagon bridge.

Regulation.—The flow at times may be affected by logging operations.

Accuracy.—Conditions of flow at this station are practically permanent and a good rating curve has been developed.

No discharge measurements were made in 1913.

Daily gage height, in feet, of Conecuh River at Beck, Ala., for 1913.

[S. T. Dillard, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	13.2	13.5	11.2	4.4	.....	2.6	7.2	.....	4.5	3.4	2.8
2	10.7	.....	.....	10.4	4.3	2.5	2.5	7.0	2.0	4.3	.....	2.9
3	9.6	13.3	14.0	9.8	4.1	2.4	2.9	.....	2.2	4.0	2.9	3.3
4	8.9	13.2	12.8	9.4	.....	2.5	.....	4.0	2.1	3.9	2.8	3.3
5	.....	12.7	12.1	9.4	3.9	2.5	2.7	3.6	2.1	.....	2.6	3.4
6	7.9	12.2	12.2	.....	3.8	2.7	.....	3.0	2.2	3.8	2.5	3.4
7	7.5	12.0	11.8	8.3	3.7	3.0	3.2	3.0	.....	3.6	2.7	.....
8	7.1	12.9	10.2	7.9	3.6	.....	3.1	3.0	2.0	3.4	2.7	3.4
9	6.7	.....	.....	7.1	3.8	4.2	3.2	2.8	1.9	2.9	.....	3.5
10	6.4	13.6	10.8	7.0	3.5	4.8	3.0	.....	1.9	2.7	2.8	3.4
11	6.2	11.4	11.7	12.3	.....	4.2	2.8	2.9	1.8	2.6	2.6	3.8
12	.....	9.7	12.8	11.4	4.1	4.0	2.6	2.6	1.8	.....	2.5	3.9
13	6.6	9.0	18.9	.....	3.9	4.1	.....	2.7	1.7	2.5	2.4	4.0
14	6.5	8.3	25.2	9.2	3.7	4.0	2.9	2.8	.....	2.4	2.4	.....
15	6.3	8.1	30.1	8.4	3.5	.....	2.8	2.7	5.4	2.3	2.4	3.2
16	6.2	.....	.....	8.0	3.7	3.4	2.7	2.6	9.2	2.2	.....	3.2
17	6.1	7.4	.....	7.7	4.9	3.0	2.6	.....	8.4	2.0	2.3	3.3
18	6.0	7.3	.....	7.2	.....	2.8	2.6	2.4	8.0	2.1	2.3	3.4
19	.....	7.0	39.2	6.6	3.7	2.6	2.5	2.3	7.6	.....	2.4	3.4
20	6.0	6.7	35.3	.....	3.8	2.5	.....	2.2	5.0	3.4	2.5	3.4
21	5.9	6.4	32.4	5.8	3.6	2.5	2.6	2.0	.....	3.2	2.5	.....
22	5.7	.....	26.5	5.3	3.3	.....	7.6	1.9	4.8	3.6	2.6	3.3
23	5.6	.....	.....	5.2	3.9	2.4	6.5	1.8	3.7	3.8	.....	3.4
24	5.7	9.6	23.0	5.0	3.9	2.5	6.6	.....	3.4	4.1	2.6	3.4
25	6.2	7.8	19.2	4.8	.....	2.4	8.9	1.8	3.2	4.0	2.5	.....
26	.....	7.2	15.8	5.1	3.5	2.3	8.1	1.8	3.0	.....	2.4	3.6
27	9.6	7.0	15.4	.....	3.3	2.1	.....	1.7	2.7	3.9	.....	3.6
28	11.0	11.6	14.3	4.9	3.0	2.2	7.5	1.9	.....	3.8	2.4	.....
29	11.1	.....	13.7	4.8	2.9	.....	7.7	1.9	2.4	3.6	2.3	3.6
30	10.6	.....	.....	4.6	.....	2.8	7.6	1.8	2.4	3.5	.....	3.6
31	11.3	.....	11.8	.....	2.7	.....	7.4	.....	.....	3.4	.....	3.6

Daily discharge, in second-feet, of Conecuh River at Beck, Ala., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5,810	6,060	6,240	4,920	1,260	554	554	2,700	380	1,300	834	617
2	4,640	6,200	7,000	4,470	1,210	524	524	2,590	395	1,210	742	650
3	4,030	6,120	6,520	4,140	1,120	496	650	1,840	443	1,080	650	795
4	3,630	6,060	5,840	3,910	1,080	524	618	1,080	418	1,040	617	795
5	3,360	5,880	5,440	3,910	1,040	524	585	914	418	1,020	554	834
6	3,080	5,490	5,490	3,600	996	585	671	684	443	996	524	834
7	2,860	5,380	5,270	3,300	955	684	757	684	419	914	585	834
8	2,640	5 890	4,360	3,080	914	927	720	684	395	834	585	834
9	2,430	6,500	4,530	2,640	996	1,170	757	617	373	650	601	874
10	2,270	6,290	4,700	2,590	874	1,440	684	634	373	585	617	834
11	2,160	5,040	5,210	5,550	997	1,170	617	650	352	554	554	996
12	2,260	4,080	5,840	5,040	1,120	1,080	554	554	352	539	524	1,040
13	2,370	3,690	9,310	4,420	1,040	1,120	602	585	332	524	496	1,080
14	2,320	3,300	12,900	3,800	955	1,080	650	617	1,030	496	496	918
15	2,210	3,190	15,700	3,350	874	957	617	585	1,730	469	496	757
16	2,160	3,000	18,500	3,130	755	834	585	554	3,800	443	482	757
17	2,100	2,810	21,000	2,970	1,490	684	554	525	3,350	395	469	795
18	2,050	2,750	26,000	2,700	1,220	617	554	496	3,130	418	469	834
19	2,050	2,590	20,900	2,370	955	554	524	469	2,910	626	496	834
20	2,050	2,430	18,700	2,160	996	524	539	443	1,540	834	524	834
21	2,000	2,270	17,000	1,940	914	524	554	395	1,490	757	524	814
22	1,890	4,000	13,600	1,680	795	510	2,910	373	1,440	914	554	795
23	1,830	6,000	12,600	1,640	1,040	496	2,320	352	955	996	554	834
24	1,890	4,030	11,600	1,540	1,040	524	2,370	352	834	1,120	554	834
25	2,160	3,020	9,480	1,440	957	496	3,630	352	757	1,080	524	874
26	3,100	2,700	7,550	1,590	874	469	3,190	352	684	1,060	496	914
27	4,030	2,590	7,320	1,540	795	418	3,020	332	585	1,040	496	914
28	4,810	5,150	6,690	1,490	684	443	2,860	373	540	996	496	914
29	4,870	.....	6,350	1,440	650	530	2,970	373	496	914	469	914
30	4,590	.....	5,810	1,350	618	617	2,910	352	496	874	543	914
31	4,980	.....	5,270	.....	585	.....	2,810	366	.....	834	.....	914

NOTE.—Daily discharge determined from a rating curve well defined below 7,000 second-feet. For days when the gage was not read discharge was estimated from a hydrograph comparison with the flow of Pea River at Pera, Ala., or interpolated. As no measurements have been made since 1911, estimates of daily discharge should be used with caution.

Monthly discharge of Conecuh River at Beck, Ala., for 1913.

[Drainage area, 1,290 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	5,810	1,830	2,990	2.32	2.68	B.
February	a 6,500	2,270	4,380	3.40	3.54	C.
March	a 26,000	4,360	10,100	7.83	9.03	C.
April	5,550	1,350	2,920	2.26	2.52	B.
May	1,490	585	968	.750	.86	B.
June	1,440	418	702	.544	.61	B.
July	3,630	524	1,350	1.05	1.21	B.
August	2,700	332	706	.547	.63	B.
September	3,800	332	1,030	.798	.89	B.
October	1,300	395	823	.638	.74	B.
November	834	469	551	.427	.48	B.
December	1,080	617	851	.660	.76	B.
The year	a 26,000	332	2,270	1.76	23.95	

a Estimated.

MOBILE RIVER BASIN.

OOSTANAULA RIVER AT RESACA, GA.

Location.—At the Western & Atlantic Railroad bridge in Resaca, Ga., 3 miles below the junction of Conasauga and Coosawattee rivers and 1 mile above the mouth of Camp Creek.

Records available.—1891 to 1898 (gage heights by the United States Weather Bureau and discharge measurements and gage heights by the United States Geological Survey); 1899 to 1904 partial records of gage heights; continuous records January 1, 1905, to December 31, 1913.

Drainage area.—1,610 square miles.

Gage.—Heavy vertical timber attached to the downstream side of the bridge pier in the middle of the river.

Channel and control.—Slightly shifting at and below the station. The left bank is low and overflows during high water for 480 feet.

Discharge measurements.—Usually made from the downstream side of the railroad bridge but at times are made from a boat at the ferry, about 200 feet above, where the section is somewhat better.

Regulation.—Except on the smaller tributaries there are very few milldams, and these have little or no effect on the flow at the station. The channel is sometimes obstructed by logs under the left span of the bridge.

Accuracy.—A good rating curve has been developed for low and medium stages.

Cooperation.—Gage heights are furnished by the United States Weather Bureau.

The following discharge measurement was made by Warren E. Hall and B. M. Hall, jr.:

October 22: Gage height, 2.25 feet; discharge, 702 second-feet.

Daily gage height, in feet, of Oostanaula River at Resaca, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.0	9.0	21.4	8.6	4.5	4.0	3.6	2.8	2.0	6.0	1.8	2.8
2	6.0	8.8	20.8	7.2	4.5	5.0	3.4	3.8	2.0	2.2	1.8	4.0
3	5.5	8.0	18.0	7.0	4.5	5.8	3.4	3.6	1.9	2.0	1.8	3.6
4	7.0	10.0	9.0	6.4	4.4	6.6	3.4	3.0	1.9	1.8	1.8	2.8
5	6.5	9.0	8.0	6.2	4.4	5.8	4.2	2.7	1.9	1.6	1.8	2.6
6	5.5	7.7	6.5	6.2	4.4	5.0	3.6	2.5	1.8	1.6	1.8	2.6
7	5.0	6.0	6.0	6.0	4.3	5.0	3.4	2.3	1.8	1.5	1.8	2.7
8	5.2	5.8	5.6	5.8	5.0	5.4	3.0	2.2	1.8	1.5	1.8	3.4
9	6.0	5.5	5.4	5.3	5.5	10.0	3.0	2.2	1.8	1.5	1.8	3.0
10	5.8	5.0	7.0	5.3	4.8	8.0	2.8	2.0	1.8	1.5	1.8	2.8
11	5.6	5.6	11.0	5.8	4.3	7.0	2.8	2.0	1.8	1.5	1.5	2.6
12	7.2	15.0	10.0	5.6	4.2	5.2	3.8	1.8	1.7	1.4	1.8	2.4
13	10.5	12.3	8.0	5.5	4.1	4.8	5.0	1.8	1.7	1.4	1.8	2.3
14	8.2	10.5	17.4	5.5	4.1	4.6	4.2	1.8	1.6	1.4	1.8	2.3
15	6.0	6.8	22.2	5.4	3.8	4.6	3.6	4.2	1.6	1.4	1.8	2.3
16	5.0	6.4	25.6	5.4	3.7	4.4	3.2	3.8	1.6	1.4	1.8	2.2
17	5.0	6.0	25.0	5.3	3.7	4.4	3.0	2.8	1.6	1.4	1.8	2.2
18	5.8	5.8	20.7	5.2	4.0	4.4	2.8	2.6	1.6	1.4	1.8	2.1
19	7.7	5.5	11.0	5.2	4.0	4.4	2.6	2.4	1.6	2.0	1.8	2.1
20	6.7	5.6	8.0	5.0	4.0	4.3	2.4	2.2	1.8	1.6	1.8	2.0
21	5.4	11.2	8.5	5.0	4.0	4.3	2.3	2.0	1.8	1.6	1.8	2.0
22	5.8	10.0	12.6	5.0	4.0	4.8	2.4	2.0	3.3	1.6	1.8	2.0
23	5.8	8.0	11.4	4.8	4.4	4.6	2.4	2.0	3.0	1.8	1.8	2.2
24	6.4	7.2	9.0	4.8	12.0	4.4	2.4	2.0	2.4	1.6	1.8	2.5
25	11.2	6.0	7.1	4.8	11.0	4.0	2.4	1.9	2.0	1.5	1.8	2.8
26	11.2	5.5	7.5	4.8	9.2	3.8	3.7	1.7	1.8	1.5	1.8	3.0
27	12.4	10.6	16.2	4.7	7.4	3.6	7.0	1.7	1.6	1.5	1.7	3.2
28	14.5	20.4	19.0	4.7	6.0	3.6	5.0	1.7	1.5	3.0	1.7	3.2
29	12.3	.....	19.5	4.6	4.5	3.6	3.5	1.7	1.6	2.6	1.7	3.8
30	11.5	.....	17.4	4.6	4.0	3.6	3.0	3.2	7.0	2.0	1.7	4.2
31	10.7	.....	11.6	.....	4.0	.....	3.0	2.0	.....	1.8	.....	5.0

Daily discharge, in second-feet, of Oostanaula River at Resaca, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4,110	5,870	18,000	5,510	2,120	1,760	1,500	1,030	640	3,270	560	1,030
2	3,270	5,690	17,400	4,280	2,120	2,500	1,380	1,630	640	726	560	1,760
3	2,880	4,980	14,600	4,110	2,120	3,110	1,380	1,500	600	640	560	1,500
4	4,110	6,780	5,870	3,600	2,040	3,770	1,380	1,140	600	560	560	1,030
5	3,680	5,870	4,980	3,430	2,040	3,110	1,900	972	600	486	560	920
6	2,880	4,720	3,680	3,430	2,040	2,500	1,500	870	560	486	560	920
7	2,500	3,270	3,270	3,270	1,970	2,500	1,380	772	560	452	560	972
8	2,650	3,110	2,960	3,110	2,500	2,800	1,140	726	560	452	560	1,380
9	3,270	2,880	2,800	2,730	2,880	6,780	1,140	726	560	452	560	1,140
10	3,110	2,500	4,110	2,730	2,350	4,980	1,030	640	560	452	560	1,030
11	2,960	2,960	7,730	3,110	1,970	4,110	1,030	640	560	452	560	920
12	4,280	11,600	6,780	2,960	1,900	2,650	1,630	560	522	420	560	820
13	7,250	8,980	4,980	2,880	1,830	2,350	2,500	560	522	420	560	772
14	5,160	7,250	14,000	2,880	1,830	2,200	1,900	560	486	420	560	772
15	3,270	3,940	18,800	2,800	1,630	2,200	1,500	1,900	486	420	560	772
16	2,500	3,600	22,200	2,800	1,570	2,040	1,260	1,630	486	420	560	726
17	2,500	3,270	21,600	2,730	1,570	2,040	1,140	1,030	486	420	560	726
18	3,110	3,110	17,300	2,650	1,760	2,040	1,030	920	486	420	560	682
19	4,720	2,880	7,730	2,650	1,760	2,040	920	820	486	640	560	682
20	3,850	2,960	4,980	2,500	1,760	1,970	820	726	560	486	560	640
21	2,800	7,920	5,420	2,500	1,760	1,970	770	640	560	486	560	640
22	3,110	6,780	9,270	2,500	1,760	2,350	820	640	1,320	486	560	640
23	3,110	4,980	8,110	2,350	2,040	2,200	820	640	1,140	560	560	726
24	3,600	4,280	5,870	2,350	8,690	2,040	820	640	820	486	560	870
25	7,920	3,270	4,200	2,350	7,730	1,760	820	600	640	452	560	1,030
26	7,920	2,880	4,540	2,350	6,050	1,630	1,570	522	560	452	560	1,140
27	9,070	7,350	12,800	2,270	4,450	1,500	4,110	522	486	452	522	1,260
28	11,100	17,000	15,600	2,270	3,270	1,500	2,500	522	452	1,140	522	1,260
29	8,980	.....	16,100	2,200	2,120	1,500	1,440	522	486	920	522	1,630
30	8,210	.....	14,000	2,200	1,760	1,500	1,140	1,260	4,110	640	522	1,900
31	7,440	.....	8,310	.....	1,760	.....	1,140	640	.....	560	.....	2,500

NOTE.—Daily discharge determined from a rating curve well defined below 7,000 second-feet.

Monthly discharge of Oostanaula River at Resaca, Ga., for 1913.

[Drainage area, 1,610 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	11,100	2,500	4,690	2.91	3.36	A.
February	17,000	2,500	5,380	3.34	3.48	A.
March	22,200	2,800	9,940	6.17	7.11	B.
April	5,510	2,200	2,920	1.81	2.02	A.
May	8,690	1,570	2,620	1.63	1.88	A.
June	6,780	1,500	2,510	1.56	1.74	A.
July	4,110	770	1,400	.870	1.00	A.
August	1,900	522	855	.531	.61	A.
September	4,110	452	718	.446	.50	A.
October	3,270	420	617	.383	.44	A.
November	560	522	555	.345	.39	A.
December	2,500	640	1,060	.658	.76	A.
The year	22,200	420	2,760	1.71	23.29	

COOSA RIVER AT RIVERSIDE, ALA.

Location.—At the Southern Railway bridge at Riverside, Ala., 1 mile above mouth of Blue Eye Creek and about 7 miles above Choccolocco Creek.

Records available.—September 25, 1896, to December 31, 1913.

Drainage area.—7,060 square miles.

Gage.—Standard chain gage attached to right-bank end of downstream side of railroad bridge. The original wire gage was located on the downstream side of bridge near middle of river.

Channel and control.—Bed of stream rocky and permanent. For a part of the width the current is broken by a ledge above. Both banks high and do not overflow.

Discharge measurements.—Made from downstream side of railroad bridge.

Regulation.—The flow is not noticeably affected by artificial control at the comparatively few dams above. Four navigation locks have been constructed, the nearest of which is Lock 4, about 4 miles above the station.

No discharge measurements have been made since 1911. The accuracy of the rating curve depends on the permanency of the discharge relation.

Daily gage height, in feet, of Coosa River at Riverside, Ala., for 1913.

[J. E. Whitehead, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.0	11.2	14.2	12.0	3.0	2.7	2.2	3.4	1.2	5.3	1.0	3.8
2	4.2	11.0	14.4	10.8	3.0	2.7	2.2	3.0	1.3	6.2	.95	4.8
3	4.5	8.3	13.7	8.5	2.9	3.2	2.1	2.7	1.3	5.1	1.0	5.0
4	4.4	8.6	13.2	6.2	2.8	3.2	2.0	2.4	1.3	3.3	.95	3.8
5	4.6	8.8	12.4	5.8	2.7	3.4	1.8	2.2	1.2	3.0	1.0	3.2
6	4.7	8.2	9.7	5.4	2.5	3.4	1.6	1.9	1.1	1.9	.95	2.6
7	4.6	7.3	7.6	5.0	2.6	3.5	1.6	1.8	1.2	1.8	1.0	2.2
8	4.5	6.0	6.0	4.8	2.6	3.3	1.6	1.7	.95	1.4	.85	2.0
9	4.3	5.2	5.5	4.5	2.5	3.9	1.5	2.9	1.0	1.2	.9	2.0
10	4.3	5.0	6.8	4.5	2.7	3.8	1.6	3.3	.95	1.2	1.2	2.2
11	4.1	4.6	7.6	4.4	2.8	3.8	1.5	3.0	1.0	1.1	1.3	2.2
12	4.5	11.0	8.0	4.4	2.7	4.2	1.5	2.6	.95	1.0	1.1	2.0
13	5.4	13.4	8.9	4.3	2.6	3.6	1.4	1.9	.9	1.0	1.2	2.0
14	6.2	13.6	12.0	4.4	2.6	3.0	1.6	1.8	.85	.95	1.0	2.0
15	6.6	13.2	14.4	4.4	2.5	2.5	1.8	1.8	.8	1.0	1.0	2.0
16	5.9	11.7	14.5	3.9	2.4	2.3	2.1	1.6	.75	.95	.95	1.8
17	5.0	9.0	14.4	4.0	2.4	2.2	2.3	2.0	.85	1.0	.95	1.8
18	4.6	7.0	14.0	4.0	2.4	2.1	2.0	2.5	.95	1.0	1.0	1.7
19	5.5	5.7	13.7	3.7	2.3	1.9	1.7	2.2	1.0	1.0	1.0	1.6
20	5.7	5.5	13.6	3.6	2.4	2.0	1.6	2.0	.95	1.0	1.0	1.4
21	5.6	6.2	13.8	3.5	2.4	1.9	1.5	1.8	.95	1.0	1.0	1.4
22	5.5	7.3	14.0	3.4	2.4	1.8	1.4	1.6	.95	1.4	1.0	1.4
23	4.1	7.5	12.1	3.2	2.5	1.7	1.2	1.5	1.2	1.5	1.0	1.5
24	5.0	7.8	10.6	3.3	3.8	2.0	1.7	1.7	1.2	1.4	1.0	1.6
25	7.0	7.0	9.0	3.2	4.2	2.4	1.7	1.7	1.4	1.2	1.0	1.8
26	7.9	5.9	7.9	3.3	5.2	2.2	1.7	1.5	1.3	1.1	1.0	2.4
27	10.3	6.4	9.2	3.4	5.2	2.2	1.8	1.5	1.3	1.0	.9	2.5
28	12.4	13.2	12.0	3.3	5.0	2.0	2.4	1.3	1.2	1.0	.9	2.8
29	12.7	.....	12.9	3.2	3.9	1.7	3.5	1.2	1.3	.95	.9	2.8
30	12.6	.....	13.2	3.2	3.2	1.8	4.4	1.2	5.3	.95	1.2	3.5
31	12.2	.....	12.8	.....	2.8	.....	3.6	1.2	.....	1.0	.....	4.0

Daily discharge, in second-feet, of Coosa River at Riverside, Ala., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	10,300	39,200	52,000	42,600	7,140	6,250	4,900	8,380	2,620	14,900	2,260	9,660
2	11,000	38,300	52,800	37,500	7,140	6,250	4,900	7,140	2,810	18,300	2,170	13,100
3	12,000	26,900	49,800	27,700	6,840	7,750	4,640	6,250	2,810	14,200	2,260	13,800
4	11,700	28.100	47,700	18,300	6,540	7,750	4,380	5,420	2,810	8,060	2,170	9,660
5	12,400	29,000	44,300	16,800	6,250	8,380	3,890	4,900	2,620	7,140	2,260	7,750
6	12,700	26,400	32,800	15,300	5,700	8,380	3,430	4,130	2,440	4,130	2,170	5,970
7	12,400	22,700	23,900	13,800	5,970	8,700	3,430	3,890	2,620	3,890	2,260	4,900
8	12,000	17,500	17,500	13,100	5,970	8,060	3,430	3,660	2,170	3,010	2,000	4,380
9	11,300	14,500	15,600	12,000	5,700	9,980	3,220	6,840	2,260	2,620	2,080	4,380
10	11,300	13,800	20,600	12,000	6,250	9,660	3,430	8,060	2,170	2,620	2,620	4,900
11	10,600	12,400	23,900	11,700	6,540	9,660	3,220	7,140	2,260	2,440	2,810	4,900
12	12,000	38,300	25,600	11,700	6,250	11,000	3,220	5,970	2,170	2,260	2,440	4,380
13	15,300	48,500	29,400	11,300	5,970	9,020	3,010	4,130	2,080	2,260	2,620	4,380
14	18,300	49,400	42,600	11,700	5,970	7,140	3,430	3,890	2,000	2,170	2,260	4,380
15	19,800	47,700	52,800	11,700	5,700	5,700	3,890	3,890	1,920	2,260	2,260	4,380
16	17,100	41,300	53,200	9,980	5,420	5,160	4,640	3,430	1,840	2,170	2,170	3,890
17	13,800	29,800	52,800	10,300	5,420	4,900	5,160	4,380	2,000	2,260	2,170	3,890
18	12,400	21,400	51,100	10,300	5,420	4,640	4,380	5,700	2,170	2,260	2,260	3,660
19	15,600	16,400	49,800	9,340	5,160	4,130	3,660	4,900	2,260	2,260	2,260	3,430
20	16,400	15,600	49,400	9,020	5,420	4,380	3,430	4,380	2,170	2,260	2,260	3,010
21	16,000	18,300	50,200	8,700	5,420	4,130	3,220	3,890	2,170	2,260	2,260	3,010
22	15,600	22,700	51,100	8,380	5,420	3,890	3,010	3,430	2,170	3,010	2,260	3,010
23	10,600	23,500	43,000	7,750	5,700	3,660	2,620	3,220	2,620	3,220	2,260	3,220
24	13,800	24,800	36,600	8,060	9,660	4,380	3,660	3,660	2,620	3,010	2,260	3,430
25	21,400	21,400	29,800	7,750	11,000	5,420	3,660	3,660	3,010	2,620	2,260	3,890
26	25,200	17,100	25,200	8,060	14,500	4,900	3,660	3,220	2,810	2,440	2,260	5,420
27	35,300	19,000	30,700	8,380	14,500	4,900	3,890	3,220	2,810	2,260	2,080	5,700
28	44,300	47,700	42,600	8,060	13,800	4,380	5,420	2,810	2,620	2,260	2,080	6,540
29	45,600	.....	46,400	7,750	9,980	3,660	8,700	2,620	2,810	2,170	2,080	6,540
30	45,100	.....	47,700	7,750	7,750	3,890	11,700	2,620	14,900	2,170	2,620	8,700
31	43,400	.....	46,000	.....	6,540	.....	9,020	2,620	.....	2,260	.....	10,300

NOTE.—Daily discharge determined from a well-defined rating curve.

Monthly discharge of Coosa River at Riverside, Ala., for 1913.

[Drainage area, 7,060 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	45,600	10,300	18,900	2.68	3.09	A.
February	49,400	12,400	27,600	3.91	4.07	A.
March	53,200	15,600	39,900	5.65	6.51	B.
April	42,600	7,750	13,200	1.87	2.09	A.
May	14,500	5,160	7,260	1.03	1.19	A.
June	11,000	3,660	6,340	.898	1.00	A.
July	11,700	2,620	4,400	.623	.72	A.
August	8,380	2,620	4,560	.646	.74	A.
September	14,900	1,840	2,820	.399	.45	A.
October	18,300	2,170	4,170	.591	.68	A.
November	2,810	2,000	2,270	.322	.36	A.
December	13,800	3,010	5,760	.816	.94	A.
The year	53,200	1,840	11,400	1.61	21.84	

ALABAMA RIVER AT SELMA, ALA.

Location.—At highway bridge in Selma, Ala.

Records available.—January 1, 1899, to December 31, 1913. The station was originally established by the United States Army Engineer Corps, but in 1890 gage height records were begun by the United States Weather Bureau. Although it is not thought that the discharge rating can be accurately applied further back than 1899, flow estimates based on earlier gage heights will probably be of some value.

Drainage area.—15,400 square miles.

Gage.—Standard chain gage was installed by the United States Geological Survey March 22, 1906, on the downstream side of the highway bridge. The United States Weather Bureau gage formerly used was in two sections—the low-water portion reading from −3 to +5.1 feet, being fastened to the lower side of the cofferdam on second pier, and the upper portion, reading from 5.1 to 55 feet, being fastened to the draw pier. All gages have had the same datum, but the bad condition of a short low-water section caused some error in the low-water readings prior to 1906, especially those of the year 1904.

Channel and control.—In soft limestone, deep, with swift current, and difficult to sound even at ordinary stages. Both banks are high, but the left is subject to overflow at extreme high water. Discharge relation depends on an open channel below. No rock ledges or permanent control points are known to exist. The channel is mostly composed of marl, which does not shift easily, but work of Government dredge boats below may have some effect on the discharge relation.

Discharge measurements.—Made from the highway bridge, to which gage is attached.

Accuracy.—As little field work has been done at this station in several years, the data should be used with caution.

Cooperation.—Gage heights are furnished by the United States Weather Bureau.

No discharge measurements have been made since 1911.

Daily gage height, in feet, of Alabama River at Selma, Ala., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	10.5	37.7	25.2	32.2	7.5	6.1	3.2	7.1	0.7	4.4	1.7	0.1
2	9.9	36.1	29.9	30.7	7.1	5.2	2.9	7.1	1.1	6.5	1.5	.3
3	9.5	34.4	32.2	28.6	6.9	4.6	2.6	5.9	1.0	11.9	1.3	.6
4	9.5	33.8	32.8	25.6	6.6	4.4	2.9	5.5	.9	12.5	1.2	.9
5	10.1	33.6	31.8	22.3	6.4	4.5	2.9	5.4	1.2	9.9	1.0	4.0
6	10.3	33.8	29.6	18.0	6.2	5.7	2.8	5.5	2.2	7.2	.7	6.1
7	10.1	32.9	27.0	15.7	5.9	6.5	2.8	4.3	2.4	4.9	.6	5.6
8	9.6	30.2	23.9	13.9	5.8	6.2	2.4	3.5	2.6	3.3	.4	4.2
9	9.3	25.3	19.1	12.7	5.7	7.4	2.1	3.0	2.1	2.5	.2	3.5
10	9.2	20.4	17.3	12.0	5.6	10.2	1.9	3.2	2.0	1.8	.2	3.0
11	9.2	15.6	21.2	12.6	5.5	9.9	1.7	2.9	1.6	1.2	.3	2.9
12	9.0	13.2	27.1	13.1	5.7	9.4	1.9	3.2	1.5	.6	.1	3.0
13	9.7	12.5	32.9	13.4	5.9	7.7	2.6	3.9	2.2	.5	.0	2.9
14	11.5	17.2	36.7	12.9	5.8	7.1	2.7	3.4	2.2	.3	.1	2.5
15	12.9	21.7	40.8	12.0	5.7	6.6	4.0	2.9	1.5	.0	.1	2.4
16	13.1	24.2	43.9	11.1	5.4	5.7	4.9	2.4	1.7	.0	.1	2.3
17	12.6	24.3	46.9	10.6	5.2	4.8	4.2	2.3	2.1	−.1	.3	2.1
18	11.6	23.1	48.9	10.1	5.2	4.2	3.4	2.1	2.3	.0	.4	2.0
19	10.5	20.5	49.4	9.6	5.4	3.8	3.2	1.9	2.1	.0	.4	1.8
20	10.5	16.5	48.4	9.1	5.7	3.5	3.2	1.7	2.3	.1	.3	1.7
21	11.0	13.9	46.1	8.8	5.3	3.2	2.9	2.0	2.3	.4	.2	1.6
22	11.2	14.9	44.2	8.5	5.0	2.9	2.5	2.2	2.0	.6	.2	1.5
23	10.9	16.6	42.5	8.2	5.3	2.8	2.7	1.9	1.5	1.1	.2	1.5
24	10.4	17.7	41.4	7.8	5.7	2.6	3.3	1.9	1.0	1.5	.1	1.3
25	12.1	18.0	39.8	7.6	7.2	2.4	3.9	2.0	.9	1.4	.1	1.3
26	18.1	17.1	36.8	7.5	8.8	2.4	4.0	2.2	.8	3.1	.0	2.0
27	22.8	16.8	33.0	7.6	9.0	2.7	4.3	1.6	.9	4.9	.0	2.4
28	27.9	19.8	30.9	8.3	8.8	2.9	4.5	1.4	.9	4.3	.0	2.8
29	33.1	.....	31.5	8.6	8.9	3.0	4.4	1.4	1.1	3.2	.0	3.3
30	36.3	.....	32.7	8.1	8.4	2.8	4.7	1.1	1.8	2.4	.0	4.5
31	37.8	.....	33.0	.....	7.5	.....	6.0	.9	.....	1.9	.....	3.4

Daily discharge, in second-feet, of Alabama River at Selma, Ala., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	27,400	101,000	65,800	85,400	20,700	17,700	11,900	19,800	7,290	14,200	9,060	6,270
2	26,100	96,300	78,900	81,200	19,800	15,800	11,300	19,800	7,980	18,600	8,700	6,610
3	25,200	91,500	85,400	75,300	19,400	14,600	10,700	17,300	7,800	30,800	8,340	7,120
4	25,200	89,800	87,000	66,900	18,800	14,200	11,300	16,400	7,630	32,200	8,160	7,630
5	26,500	89,300	84,200	58,000	18,300	14,400	11,300	16,200	8,160	26,100	7,800	13,400
6	27,000	89,800	78,100	46,400	17,900	16,900	11,100	16,400	9,980	20,000	7,290	17,700
7	26,500	87,300	70,800	40,400	17,300	18,600	11,100	14,000	10,400	15,200	7,120	16,700
8	25,400	79,800	62,300	35,700	17,100	17,900	10,400	12,400	10,700	12,100	6,780	13,800
9	24,700	66,100	49,400	32,700	16,900	20,500	9,790	11,500	9,790	10,600	6,440	12,400
10	24,500	52,900	44,600	31,000	16,700	26,800	9,420	11,900	9,600	9,240	6,440	11,500
11	24,500	40,200	55,000	32,400	16,400	26,100	9,060	11,300	8,880	8,160	6,610	11,300
12	24,000	34,000	71,100	33,700	16,900	24,900	9,420	11,900	8,700	7,120	6,270	11,500
13	25,600	32,200	87,300	34,400	17,300	21,100	10,700	13,200	9,980	6,950	6,100	11,300
14	29,800	44,300	98,000	33,200	17,100	19,800	10,900	12,300	9,980	6,610	6,270	10,600
15	33,200	56,400	110,000	31,000	16,900	18,800	13,400	11,300	8,700	6,100	6,270	10,400
16	33,700	63,100	119,000	28,800	16,200	16,900	15,200	10,400	9,060	6,100	6,270	10,200
17	32,400	63,400	128,000	27,700	15,800	15,000	13,800	10,200	9,790	5,940	6,610	9,790
18	30,000	60,200	134,000	26,500	15,800	13,800	12,300	9,790	10,200	6,100	6,780	9,600
19	27,400	53,200	135,000	25,400	16,200	13,000	11,900	9,420	9,790	6,100	6,780	9,240
20	27,400	42,500	132,000	24,200	16,900	12,400	11,900	9,060	10,200	6,270	6,610	9,060
21	28,600	35,700	125,000	23,600	16,000	11,900	11,300	9,600	10,200	6,780	6,440	8,880
22	29,100	38,300	120,000	22,900	15,400	11,300	10,600	9,980	9,600	7,120	6,440	8,700
23	28,400	42,800	115,000	22,200	16,000	11,100	10,900	9,420	8,700	7,980	6,440	8,700
24	27,200	45,600	112,000	21,400	16,900	10,700	12,100	9,420	7,800	8,700	6,270	8,340
25	31,200	46,400	107,000	20,900	20,000	10,400	13,200	9,600	7,630	8,520	6,270	8,340
26	46,700	44,100	98,300	20,700	23,600	10,400	13,400	9,980	7,460	11,700	6,100	9,600
27	59,400	43,300	87,600	20,900	24,000	10,900	14,000	8,880	7,630	15,200	6,100	10,400
28	73,300	51,300	81,700	22,500	23,600	11,300	14,400	8,520	7,630	14,000	6,100	11,100
29	87,900	.....	83,400	23,100	23,800	11,500	14,200	8,520	7,980	11,900	6,100	12,100
30	96,900	.....	86,800	22,000	22,700	11,100	14,800	7,980	9,240	10,400	6,100	14,400
31	101,000	.....	87,600	.....	20,700	.....	17,500	7,630	.....	9,420	.....	12,300

NOTE.—Daily discharge determined from a rating curve well defined by measurements made previous to 1911. As the accuracy of this rating curve depends on the permanency of the discharge relation, estimates of daily discharge should be used with caution.

Monthly discharge of Alabama River at Selma, Ala., for 1913.

[Drainage area, 15,400 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	101,000	24,000	37,300	2.42	2.79	A.
February	101,000	32,200	60,000	3.90	4.06	A.
March	135,000	44,600	92,900	6.03	6.95	A.
April	85,400	20,700	35,700	2.32	2.59	A.
May	24,000	15,400	18,400	1.19	1.37	B.
June	26,800	10,400	15,700	1.02	1.14	B.
July	17,500	9,060	12,000	.779	.90	B.
August	19,800	7,630	11,700	.760	.88	B.
September	10,700	7,290	8,950	.581	.65	B.
October	32,200	5,940	11,800	.766	.88	B.
November	9,060	6,100	6,770	.440	.49	B.
December	17,700	6,270	10,600	.688	.79	B.
The year	135,000	5,940	26,700	1.73	23.49	

ETOWAH RIVER NEAR BALL GROUND, GA.

Location.—At the iron wagon bridge about 3 miles southeast of Ball Ground, Ga., and a quarter of a mile below mouth of Longswamp Creek.

Records available.—May 16, 1907, to December 31, 1913.

Drainage area.—466 square miles.

Gage.—A standard chain gage, read twice each day, attached to the upstream side of bridge, was installed August 18, 1908, replacing the vertical-staff gage, located 75 feet below bridge. The chain gage was set to read with the vertical staff at low stage, and will differ only very slightly at other stages.

Channel and control.—The left bank does not overflow, but the right bank overflows about 500 feet beyond end of bridge approach at high stages. The current is somewhat broken and is disturbed by rough, rocky bed and curved channel above.

Discharge measurements.—Made from upstream side of wagon bridge.

Regulation.—The operation of a number of mills above may cause slight variations in flow.

Accuracy.—The rating curve is somewhat affected by shifting of the stream bed some distance below the station.

The following discharge measurement was made by Warren E. Hall:
December 16: Gage height, 2.47 feet; discharge, 389 second-feet.

Daily gage height, in feet, of Etowah River near Ball Ground, Ga., for 1913.

[R. O. Ellis, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.6	4.2	5.5	5.4	4.0	3.3	3.0	2.8	2.3	3.3	2.3	3.8
2	3.4	3.9	5.0	5.2	3.9	3.6	2.9	3.2	2.2	2.65	2.3	3.1
3	3.7	5.1	4.6	5.2	3.9	3.8	2.8	2.9	2.2	2.5	2.3	2.75
4	3.6	5.4	4.4	5.1	3.8	3.4	2.9	2.8	2.2	2.4	2.3	2.6
5	3.4	4.6	4.3	4.9	3.8	3.6	3.2	2.65	2.3	2.3	2.3	2.6
6	3.4	4.2	4.2	4.8	3.8	3.4	2.9	2.5	2.5	2.3	2.3	2.6
7	3.3	4.0	4.1	4.8	3.8	3.6	2.7	3.6	2.35	2.2	2.3	3.4
8	3.3	3.8	4.0	4.7	3.9	3.6	2.6	3.7	2.2	2.2	3.2	2.9
9	3.2	3.7	4.0	4.7	3.9	3.5	2.6	2.95	2.2	2.2	2.8	2.65
10	3.3	3.7	7.6	4.6	3.9	3.4	2.7	2.7	2.1	2.2	2.6	2.6
11	3.4	5.6	6.8	4.9	3.7	3.3	2.8	2.45	1.95	2.1	2.4	2.6
12	5.2	7.2	5.4	4.7	3.7	3.2	3.3	2.45	2.1	2.1	2.4	2.5
13	4.2	5.0	8.2	4.6	3.7	3.2	3.0	3.0	2.1	2.1	2.5	2.5
14	3.7	4.5	13.1	4.6	3.7	3.1	2.9	4.0	2.1	2.0	2.4	2.4
15	3.4	4.2	13.6	4.6	3.6	3.1	2.8	4.2	2.2	1.95	2.4	2.6
16	3.4	4.1	7.9	4.5	3.6	3.0	2.7	3.3	2.4	2.0	2.5	2.5
17	3.4	4.0	6.5	4.4	3.7	3.0	2.6	2.7	2.4	2.0	2.4	2.5
18	3.8	3.9	5.8	4.4	3.6	3.0	2.6	2.5	2.4	2.2	2.4	2.5
19	3.6	3.8	5.6	4.3	3.6	3.0	2.5	2.4	2.4	2.8	2.3	2.5
20	3.6	4.8	5.4	4.3	3.7	3.0	2.5	2.3	2.3	2.75	2.4	2.5
21	3.6	4.6	7.2	4.2	3.6	3.0	2.6	2.4	2.8	2.45	2.3	2.5
22	3.4	4.8	5.9	4.2	3.6	3.2	2.5	2.4	2.65	2.3	2.3	2.5
23	3.4	4.4	5.3	4.2	7.8	3.1	2.8	2.7	2.5	2.3	2.4	2.7
24	4.4	4.2	5.2	4.1	5.0	3.0	2.95	2.5	2.4	3.4	2.3	2.75
25	4.8	4.0	5.1	4.1	4.0	3.0	4.4	2.4	2.25	3.0	2.3	3.2
26	4.4	4.0	5.3	4.1	3.7	2.9	4.7	2.3	2.1	2.6	2.3	3.4
27	9.9	9.2	11.6	4.2	3.7	2.9	5.7	2.3	2.0	2.55	2.2	3.0
28	5.9	7.6	7.4	4.2	3.7	3.5	3.9	2.3	2.0	2.5	2.2	2.7
29	4.7	.....	6.1	4.1	3.6	3.7	3.4	3.1	3.5	2.4	2.25	3.3
30	4.3	.....	5.9	4.1	3.5	3.5	3.2	2.8	5.1	2.4	2.4	4.0
31	4.3	.....	5.6	.....	3.4	.....	3.0	2.4	.....	2.4	.....	3.7

Daily discharge, in second-feet, of Etowah River near Ball Ground, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	880	1,200	2,020	1,950	1,080	735	600	520	350	735	350	980
2	780	1,030	1,680	1,810	1,030	880	560	690	325	462	350	645
3	930	1,740	1,430	1,810	1,030	980	520	560	325	410	350	500
4	880	1,950	1,310	1,740	980	780	560	520	325	380	350	445
5	780	1,430	1,250	1,620	980	880	690	462	350	350	350	445
6	780	1,200	1,200	1,550	980	780	560	410	410	350	350	445
7	735	1,080	1,140	1,550	980	880	480	880	365	325	350	780
8	735	980	1,080	1,490	1,030	880	445	930	325	325	690	560
9	690	930	1,080	1,490	1,030	830	445	580	325	325	520	462
10	735	930	3,610	1,430	1,030	780	480	480	300	325	445	445
11	780	2,090	2,970	1,620	930	735	520	395	265	300	380	445
12	1,810	3,290	1,950	1,490	930	690	735	395	300	300	380	410
13	1,200	1,680	4,100	1,430	930	690	600	600	300	300	410	410
14	930	1,370	8,680	1,430	930	645	560	1,080	300	275	380	380
15	780	1,200	9,180	1,430	880	645	520	1,200	325	265	380	445
16	780	1,140	3,850	1,370	880	600	480	735	380	275	410	410
17	780	1,080	2,740	1,310	930	600	445	480	380	275	380	410
18	980	1,030	2,230	1,310	880	600	445	410	380	325	380	410
19	880	980	2,090	1,250	880	600	410	380	380	520	350	410
20	880	1,550	1,950	1,250	930	600	410	350	350	500	380	410
21	880	1,430	3,290	1,200	880	600	445	380	520	395	350	410
22	780	1,550	2,300	1,200	880	690	410	380	462	350	350	410
23	780	1,310	1,880	1,200	3,770	645	520	480	410	350	380	480
24	1,310	1,200	1,810	1,140	1,680	600	580	410	380	780	350	500
25	1,550	1,080	1,745	1,140	1,080	660	1,310	380	338	600	350	690
26	1,310	1,080	1,880	1,140	930	560	1,490	350	300	445	350	780
27	5,590	4,900	7,200	1,200	930	560	2,160	350	275	428	325	600
28	2,300	3,610	3,450	1,200	930	830	1,030	350	275	410	325	480
29	1,490	.....	2,440	1,140	880	930	780	645	830	380	338	735
30	1,250	.....	2,300	1,140	830	830	690	520	1,740	380	380	1,080
31	1,250	.....	2,090	.....	780	.....	600	380	.....	380	.....	930

NOTE.—Daily discharge determined from a well-defined rating curve.

Monthly discharge of Etowah River near Ball Ground, Ga., for 1913.

[Drainage area, 466 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	5,590	690	1,170	2.51	2.89	A.
February	4,960	930	1,580	3.39	3.53	A.
March	9,180	1,080	2,770	5.94	6.85	A.
April	1,950	1,140	1,400	3.00	3.35	A.
May	3,770	780	1,060	2.27	2.62	A.
June	980	560	722	1.55	1.73	B.
July	2,160	410	661	1.42	1.64	B.
August	1,200	350	538	1.15	1.33	B.
September	1,740	265	410	.880	.98	B.
October	780	265	394	.845	.97	B.
November	690	325	381	.818	.91	B.
December	1,080	380	547	1.17	1.35	B.
The year	9,180	265	967	2.08	28.15	

ETOWAH RIVER NEAR ROME, GA.

Location.—At Freemans Ferry, 5 miles above Rome, Ga., where Etowah and Oostanaula rivers unite to form Coosa River; 1 mile below mouth of Dikes Creek.

Records available.—August 17, 1904, to December 31, 1913.

Drainage area.—1,800 square miles.

Gage.—Vertical gage in three sections, on left bank 250 feet below the ferry; read twice each day.

Channel.—Both banks subject to overflow during high water.

Discharge measurements.—Made from ferryboat or from a small boat held in place by ferry cable. No measurements can be made at high stages.

Regulation.—The operation of the few milldams above will seldom affect the flow.

Accuracy.—Conditions of flow are probably permanent; rating curve excellent for low and medium stages.

No discharge measurements have been made since 1911.

Daily gage height, in feet, of Etowah River near Rome, Ga., for 1913.

[R. M. Pattillo, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.5	3.8	9.0	4.8	3.1	3.6	2.45	2.5	1.9	3.8	1.9	2.6
2	2.4	3.8	5.2	4.4	3.0	3.2	2.25	3.4	1.9	2.8	1.9	3.0
3	3.4	3.8	4.5	4.2	3.0	3.0	2.15	3.0	1.85	2.35	1.9	2.6
4	3.5	6.4	4.1	4.2	3.0	2.8	2.1	2.6	1.8	2.15	1.85	2.25
5	3.0	6.0	3.8	4.1	2.9	2.7	2.0	2.15	1.8	2.0	1.85	2.1
6	2.9	4.8	3.8	4.0	2.9	2.7	2.2	3.0	1.8	1.9	1.8	2.05
7	2.8	3.8	3.6	4.0	3.0	3.0	2.25	4.4	1.95	1.85	1.9	2.05
8	2.8	3.6	3.5	3.8	3.0	3.0	2.1	4.2	1.8	1.85	2.2	2.1
9	2.8	3.4	3.4	3.7	3.0	2.9	2.05	3.4	1.8	1.8	2.35	2.0
10	2.8	3.4	6.0	3.5	2.9	2.8	2.0	2.8	2.2	1.8	2.15	2.0
11	2.8	4.0	7.3	4.0	2.9	2.7	2.0	2.15	2.1	1.75	2.0	2.0
12	2.9	11.6	5.6	3.8	2.9	2.6	2.1	1.95	1.85	1.75	2.0	2.0
13	4.0	8.6	7.2	3.7	2.8	2.5	2.6	2.0	1.8	1.75	1.95	1.95
14	3.4	5.3	13.8	3.6	2.8	2.5	2.9	2.6	1.8	1.7	1.9	2.0
15	3.0	4.2	16.4	3.6	2.8	2.45	2.4	2.9	1.75	1.7	1.9	2.0
16	2.9	4.0	15.2	3.5	3.0	2.4	2.15	3.0	1.7	1.7	1.85	2.0
17	2.8	3.9	10.0	3.5	3.0	2.35	2.0	2.7	1.7	1.7	1.9	1.95
18	3.0	3.8	7.2	3.4	2.9	2.35	1.95	2.35	1.7	1.65	1.85	1.95
19	3.3	3.6	6.2	3.4	2.8	2.3	1.9	2.05	1.95	1.7	1.85	1.95
20	3.1	3.6	5.2	3.3	2.7	2.3	2.1	1.95	2.05	1.9	1.85	1.95
21	3.0	4.0	6.2	3.3	2.6	2.25	2.6	1.9	2.2	2.0	1.8	2.0
22	3.0	4.0	7.8	3.2	2.8	2.5	2.35	1.9	2.2	1.9	1.8	2.0
23	2.9	3.8	7.2	3.1	3.2	2.8	2.15	2.45	2.0	1.9	1.8	2.0
24	2.8	3.5	5.6	3.1	4.4	2.7	2.0	2.15	1.9	2.1	1.8	2.0
25	4.4	3.4	4.8	3.1	3.8	2.6	3.0	2.0	1.9	2.25	1.8	2.3
26	4.8	3.3	5.2	3.1	3.2	2.5	6.2	2.0	1.8	2.15	1.8	2.9
27	9.9	5.4	10.6	3.0	3.0	2.4	6.3	1.95	1.8	2.0	1.8	2.5
28	14.0	12.5	12.7	3.1	2.9	2.4	5.4	1.9	1.7	1.95	1.75	2.2
29	7.4	.....	7.2	3.2	2.8	2.3	3.4	1.95	1.9	1.9	1.75	2.35
30	3.8	.....	5.2	3.1	2.7	2.7	3.0	2.1	5.8	1.9	1.9	3.2
31	3.9	.....	4.8	.....	3.0	.....	2.6	1.95	.....	1.9	.....	3.2

Daily discharge, in second-feet, of Etowah River near Rome, Ga., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,660	3,640	13,000	5,440	2,490	3,300	1,600	1,660	990	3,640	990	1,790
2	1,540	3,640	6,160	4,720	2,340	2,640	1,360	2,960	990	2,060	990	2,340
3	2,960	3,640	4,900	4,360	2,340	2,340	1,250	2,340	942	1,480	990	1,790
4	3,130	8,320	4,180	4,360	2,340	2,060	1,200	1,790	895	1,250	942	1,360
5	2,340	7,600	3,640	4,180	2,200	1,920	1,090	1,250	895	1,090	942	1,200
6	2,200	5,440	3,640	4,000	2,200	1,920	1,300	2,340	895	990	895	1,140
7	2,060	3,640	3,300	4,000	2,340	2,340	1,360	4,720	1,040	942	895	1,140
8	2,060	3,300	3,130	3,640	2,340	2,340	1,200	4,360	895	942	1,300	1,200
9	2,060	2,960	2,960	3,470	2,340	2,200	1,140	2,960	895	895	1,480	1,090
10	2,060	2,960	7,600	3,130	2,200	2,060	1,090	2,060	1,300	895	1,250	1,090
11	2,060	4,000	9,940	4,000	2,200	1,920	1,090	1,250	1,200	848	1,090	1,090
12	2,200	17,700	6,880	3,640	2,200	1,790	1,200	1,040	942	848	1,090	1,090
13	4,000	12,300	9,760	3,470	2,060	1,660	1,790	1,090	895	848	1,040	1,040
14	2,960	6,340	21,600	3,300	2,060	1,660	2,200	1,790	895	800	990	1,090
15	2,340	4,360	26,300	3,300	2,060	1,600	1,540	2,200	848	800	990	1,090
16	2,200	4,000	24,200	3,130	2,340	1,540	1,250	2,340	800	800	942	1,090
17	2,060	3,820	14,800	3,130	2,340	1,480	1,090	1,920	800	800	990	1,040
18	2,340	3,640	9,760	2,960	2,200	1,480	1,040	1,480	800	755	942	1,040
19	2,800	3,300	7,960	2,960	2,060	1,420	990	1,140	1,040	800	942	1,040
20	2,490	3,300	6,160	2,800	1,920	1,420	1,200	1,040	1,140	990	942	1,040
21	2,340	4,000	7,960	2,800	1,790	1,360	1,790	990	1,300	1,090	895	1,090
22	2,340	4,000	10,800	2,640	2,060	1,660	1,480	990	1,300	990	895	1,090
23	2,200	3,640	9,760	2,490	2,640	2,060	1,250	1,600	1,090	990	895	1,090
24	2,060	3,130	6,880	2,490	4,720	1,920	1,090	1,250	990	1,200	895	1,090
25	4,720	2,960	5,440	2,490	3,640	1,790	2,340	1,090	990	1,360	895	1,420
26	5,440	2,800	6,160	2,490	2,640	1,660	7,960	1,090	895	1,250	895	2,200
27	14,600	6,520	15,900	2,340	2,340	1,540	8,140	1,040	895	1,090	895	1,660
28	22,000	19,300	19,700	2,490	2,200	1,540	6,520	990	800	1,040	848	1,300
29	10,100	.....	9,760	2,640	2,060	1,420	2,960	1,040	990	990	848	1,480
30	3,640	.....	6,160	2,490	1,920	1,920	2,340	1,200	7,240	990	990	2,640
31	3,820	.....	5,440	.....	2,340	.....	1,790	1,040	.....	990	.....	2,640

NOTE.—Daily discharge determined from a rating curve well defined below 4,000 second-feet based on measurements made previous to 1912. Above 6,000 second-feet the rating curve is an extension. As the accuracy of this curve depends on the permanence of the discharge relation, estimates of daily discharge should be used with caution.

Monthly discharge of Etowah River near Rome, Ga., for 1913.

[Drainage area, 1,800 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	22,000	1,540	3,900	2.17	2.50	B.
February	19,300	2,800	5,510	3.06	3.19	B.
March	26,300	2,960	9,480	5.27	6.08	C.
April	5,440	2,340	3,310	1.84	2.05	A.
May	4,720	1,790	2,350	1.31	1.51	A.
June	3,300	1,360	1,870	1.04	1.16	A.
July	8,140	990	2,050	1.14	1.31	A.
August	4,720	990	1,740	.967	1.11	A.
September	7,240	800	1,190	.661	.74	A.
October	3,640	755	1,110	.617	.71	A.
November	1,480	848	986	.548	.61	A.
December	2,640	1,040	1,370	.761	.88	A.
The year	26,300	755	2,900	1.61	21.85	

AMICALOLA RIVER NEAR POTTS MOUNTAIN, GA.

Location.—At a covered wagon bridge known as Steeles Bridge, 2 miles east of Potts Mountain post office, and a quarter of a mile above the mouth of Holley Creek; 15 miles from Ball Ground, Ga., the nearest railroad station.

Records available.—June 21, 1907, to December 31, 1908; June 7, 1910, to December 31, 1913.

Drainage area.—80 square miles.

Gage.—Vertical staff attached to a tree on the left bank 30 feet below bridge.

Channel and control.—Rocky and permanent at station, but may shift at a bar of small bowlders a short distance below.

Discharge measurements.—Made from wagon bridge or by wading at low stages.

No discharge measurements have been made since 1911, and because of this fact and the possbility of change in discharge relation, estimates of discharge for 1913 are withheld.

Daily gage height, in feet, of Amicalola River near Potts Mountain, Ga., for 1913.

[J. A. Whitmore, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.5	1.8	2.2	2.3	1.9	1.95	1.8	1.8	.....	1.4	1.2	1.1
2	1.5	1.8	2.1	2.25	1.9	1.95	1.8	1.8	.....	1.4	1.2	1.1
3	1.5	4.0	2.0	2.2	1.9	2.5	1.8	1.8	.....	1.4	1.2	1.1
4	1.5	2.5	2.0	2.2	1.9	2.1	1.8	1.75	.....	1.4	1.2	1.1
5	1.5	2.1	1.95	2.2	1.9	2.0	1.95	1.75	.....	1.35	1.2	1.1
6	1.6	2.0	1.9	2.15	1.9	2.0	1.9	1.7	.....	1.35	1.2	1.1
7	1.8	1.9	1.9	2.15	1.9	2.1	1.85	1.7	1.5	1.35	1.2	1.25
8	1.8	1.85	1.9	2.1	1.95	3.2	1.8	1.7	1.5	1.35	1.2	1.2
9	1.8	1.8	1.9	2.1	2.1	2.2	1.8	1.7	1.5	1.35	1.15	1.2
10	1.9	1.8	3.0	2.0	2.0	2.1	1.75	1.65	1.5	1.35	1.15	1.15
11	1.9	2.9	3.1	2.0	2.0	2.0	1.9	1.65	1.5	1.35	1.15	1.15
12	2.5	2.6	2.4	2.0	1.95	1.95	1.9	1.65	1.5	1.35	1.15	1.15
13	1.9	2.4	2.5	2.0	1.95	1.95	1.8	1.75	1.5	1.35	1.15	1.15
14	1.9	2.0	11.0	2.05	1.95	1.95	1.8	1.7	1.5	1.35	1.15	1.15
15	1.8	1.9	9.0	2.0	1.95	1.95	1.75	1.7	1.5	1.35	1.15	1.25
16	1.8	1.85	3.0	2.0	2.0	1.9	1.75	1.7	1.5	1.35	1.15	1.15
17	1.8	1.8	2.9	2.0	2.1	1.9	1.7	1.65	1.5	1.35	1.1	1.15
18	1.9	1.8	2.7	2.0	2.0	1.85	1.7	1.65	1.5	1.35	1.1	1.15
19	1.8	1.8	2.6	2.0	2.0	1.85	1.7	1.6	1.5	1.3	1.1	1.15
20	1.7	5.0	2.4	2.0	2.0	1.85	1.7	1.6	1.5	1.3	1.1	1.15
21	1.7	2.25	3.5	1.9	1.95	1.8	1.7	1.6	1.45	1.3	1.1	1.15
22	1.7	2.0	2.9	1.9	1.95	1.8	1.65	1.55	1.45	1.3	1.1	1.25
23	1.8	1.85	2.6	1.9	3.0	1.8	1.65	1.55	1.45	1.3	1.1	1.25
24	1.9	1.8	2.4	1.9	2.5	1.8	1.65	.....	1.45	1.25	1.1	1.3
25	1.9	1.8	2.2	1.9	2.1	1.8	1.75	.....	1.45	1.25	1.05	1.35
26	1.85	1.8	2.2	1.9	2.1	1.8	1.75	.....	1.45	1.25	1.05	1.35
27	4.0	3.6	7.0	1.9	2.0	1.9	1.8	.....	1.45	1.25	1.05	1.35
28	2.2	2.5	3.0	2.0	2.0	1.9	1.8	.....	1.45	1.25	1.05	1.4
29	2.0	.....	2.6	2.0	1.95	1.85	1.8	.....	1.45	1.25	1.05	1.5
30	1.8	.....	2.4	1.95	1.95	1.8	1.75	.....	1.45	1.2	1.1	1.5
31	1.8	.....	2.4	.....	1.9	.....	1.75	.....	.....	1.2	.....	2.0

TALLAPOOSA RIVER AT STURDEVANT, ALA.

Location.—At the Central of Georgia Railway bridge a quarter of a mile west of Sturdevant, Ala., and 5 miles below mouth of Hillabee Creek.

Records available.—July 19, 1900, to December 31, 1913.

Drainage area.—2,460 square miles.

Gage.—A vertical staff gage on right bank of river about 2,000 feet above bridge. The original gage was a staff in two sections attached to pier of railroad bridge. A standard chain gage installed July 10, 1905, was read until summer of 1906, when present gage was installed. The readings of new staff gage are all corrected to agree with readings of standard chain gage referred to its original datum at railroad bridge.

Channel and control.—Rocky and permanent; one side deep and sluggish at low stage. Both banks overflow for about 200 feet at extreme high stages. Control, a rocky ledge across river just below bridge.

Discharge measurements.—Made from a plank walk resting on the lower members of the deck railroad bridge. Some low-water measurements made from boat.

Regulation.—The flow is under no artificial control except at a number of small mills a great distance upstream.

Accuracy.—A good rating has been developed and excellent results secured at this station.

No discharge measurements made since 1911.

Daily gage height, in feet, of Tallapoosa River at Sturdevant, Ala., for 1913.

[C. J. Stowe, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.4	6.0	7.3	5.1	3.1	2.4	3.2	2.0	2.3	4.9	1.6	1.8
2	3.2	4.7	5.6	4.8	3.0	2.3	2.8	2.7	2.3	3.6	1.5	3.0
3	3.5	6.3	4.7	4.5	3.0	3.0	2.2	3.4	1.6	2.5	1.45	3.0
4	3.7	8.3	4.1	4.5	3.0	4.1	2.0	2.9	1.8	2.0	1.45	3.0
5	3.6	6.8	4.1	4.3	2.9	3.0	2.0	2.2	2.2	1.6	1.4	2.3
6	3.3	5.5	4.0	4.2	2.8	4.0	1.7	1.9	2.0	1.35	1.35	2.2
7	3.0	4.5	3.9	4.1	2.8	6.8	1.7	1.7	2.4	1.15	1.45	2.5
8	3.1	4.1	3.8	4.1	2.8	5.5	1.6	1.5	1.7	1.15	1.35	2.3
9	3.4	3.9	3.7	4.0	2.9	4.8	1.4	2.0	1.3	1.05	1.45	2.2
10	3.2	3.8	8.6	4.0	2.9	4.0	1.4	1.8	1.15	1.05	1.45	2.0
11	3.0	3.7	9.2	4.5	2.9	3.4	2.0	1.7	2.9	1.0	1.4	1.9
12	4.1	4.0	7.7	4.3	2.8	3.0	4.0	2.0	2.2	.9	1.35	1.8
13	4.8	5.2	11.2	4.1	2.7	2.7	5.0	1.7	1.8	.85	1.35	1.7
14	4.3	4.6	12.5	4.0	2.7	2.5	3.6	1.35	1.4	.8	1.35	1.7
15	3.6	4.0	11.6	3.9	2.6	2.4	2.8	1.2	1.25	.75	1.35	1.9
16	3.2	3.8	9.0	3.8	2.5	2.3	2.7	2.3	1.25	.7	1.35	1.9
17	3.0	3.6	6.9	3.7	3.5	2.2	2.3	2.5	1.5	.7	1.35	1.8
18	3.0	3.5	5.8	3.6	3.4	2.2	2.0	1.9	1.45	1.2	1.45	1.8
19	3.4	3.4	5.2	3.5	3.0	2.1	1.7	1.6	1.35	3.1	1.45	1.7
20	3.4	4.0	5.0	3.5	2.8	2.0	1.7	1.3	1.5	3.4	1.45	1.7
21	3.2	4.3	7.3	3.4	2.7	1.9	3.0	1.15	1.7	2.8	1.45	1.7
22	3.0	5.5	8.6	3.3	2.6	2.0	2.3	1.0	2.1	2.4	1.35	1.7
23	3.0	4.7	6.7	3.2	4.0	2.2	2.7	1.25	1.7	2.5	1.35	1.7
24	3.5	4.1	5.6	3.2	5.1	2.1	3.0	2.0	1.6	3.9	1.35	1.7
25	6.7	3.9	5.0	3.2	4.3	2.0	3.1	1.7	1.4	3.4	1.25	2.0
26	5.6	3.7	4.9	3.4	3.6	1.8	2.9	1.1	1.2	2.9	1.25	2.2
27	13.3	5.7	11.8	3.5	3.0	1.7	2.5	1.3	1.1	2.4	1.25	2.2
28	13.3	7.4	9.2	3.5	2.7	1.7	2.2	1.0	.95	2.2	1.35	2.0
29	9.4	.....	7.8	3.4	2.5	1.8	2.9	.9	.95	1.8	1.45	3.6
30	7.1	.....	6.6	3.2	2.4	2.0	2.7	1.2	2.7	1.7	1.4	3.8
31	6.5	.....	6.0	.....	2.3	.....	2.2	2.2	.....	1.7	.....	3.8

Daily discharge, in second-feet, of Tallapoosa River at Sturdevant, Ala., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,430	9,440	13,300	7,020	2,960	2,020	3,110	1,560	1,900	6,500	1,180	1,360
2	3,110	6,010	8,330	6,250	2,810	1,900	2,530	2,400	1,900	3,770	1,100	2,810
3	3,600	10,300	6,010	5,550	2,810	2,810	1,780	3,430	1,180	2,140	1,060	2,810
4	3,950	16,500	4,710	5,550	2,810	4,710	1,560	2,670	1,360	1,560	1,060	2,810
5	3,770	11,700	4,710	5,120	2,670	2,810	1,560	1,780	1,780	1,180	1,020	1,900
6	3,270	8,060	4,510	4,910	2,530	4,510	1,270	1,460	1,560	985	985	1,780
7	2,810	5,550	4,320	4,710	2,530	11,700	1,270	1,270	2,020	848	1,060	2,140
8	2,960	4,710	4,130	4,710	2,530	8,060	1,180	1,100	1,270	848	985	1,900
9	3,430	4,320	3,950	4,510	2,670	6,250	1,020	1,560	950	782	1,060	1,780
10	3,110	4,130	17,500	4,510	2,670	4,510	1,020	1,360	848	782	1,060	1,560
11	2,810	3,950	19,400	5,550	2,670	3,430	1,560	1,270	2,670	750	1,020	1,460
12	4,710	4,510	14,600	5,120	2,530	2,810	4,510	1,560	1,780	690	985	1,360
13	6,250	7,280	25,800	4,710	2,400	2,400	6,760	1,270	1,360	662	985	1,270
14	5,120	5,770	30,000	4,510	2,400	2,140	3,770	985	1,020	635	985	1,270
15	3,770	4,510	27,100	4,320	2,270	2,020	2,530	880	915	608	985	1,460
16	3,110	4,130	18,800	4,130	2,140	1,900	2,400	1,900	915	580	985	1,460
17	2,810	3,770	12,000	3,950	3,600	1,780	1,900	2,140	1,100	580	985	1,360
18	2,810	3,600	8,880	3,770	3,430	1,780	1,560	1,460	1,060	880	1,060	1,360
19	3,430	3,430	7,280	3,600	2,810	1,670	1,270	1,180	985	2,960	1,060	1,270
20	3,430	4,510	6,760	3,600	2,530	1,560	1,270	950	1,100	3,430	1,060	1,270
21	3,110	5,120	13,300	3,430	2,400	1,460	2,810	848	1,270	2,530	1,060	1,270
22	2,810	8,060	17,500	3,270	2,270	1,560	1,900	750	1,670	2,020	985	1,270
23	2,810	6,010	11,400	3,110	4,510	1,780	2,400	915	1,270	2,140	985	1,270
24	3,600	4,710	8,330	3,110	7,020	1,670	2,810	1,560	1,180	4,320	985	1,270
25	11,400	4,320	6,760	3,110	5,120	1,560	2,960	1,270	1,020	3,430	915	1,560
26	8,330	3,950	6,500	3,430	3,770	1,360	2,670	815	880	2,670	915	1,780
27	32,500	8,600	27,700	3,600	2,810	1,270	2,140	950	815	2,020	915	1,780
28	32,500	13,600	19,400	3,600	2,400	1,270	1,780	750	720	1,780	985	1,560
29	20,000	.....	14,900	3,430	2,140	1,360	2,670	690	720	1,360	1,060	3,770
30	12,700	.....	11,100	3,110	2,020	1,560	2,400	880	2,400	1,270	1,020	4,130
31	10,800	.....	9,440	.....	1,900	.....	1,780	1,780	.....	1,270	.....	4,130

NOTE.—Daily discharge determined from a rating curve well defined by measurements made previous to 1912.

Monthly discharge of Tallapoosa River at Sturdevant, Ala., for 1913.

[Drainage area, 2,500 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	32,500	2,810	6,850	2.74	3.16	A.
February	16,500	3,430	6,450	2.58	2.69	A.
March	30,000	3,950	12,500	5.00	5.76	A.
April	7,020	3,110	4,310	1.72	1.92	A.
May	7,020	1,900	2,910	1.16	1.34	A.
June	11,700	1,270	2,850	1.14	1.27	A.
July	6,760	1,020	2,260	.904	1.04	A.
August	3,430	690	1,400	.560	.65	A.
September	2,670	720	1,320	.528	.59	A.
October	6,500	580	1,810	.724	.83	A.
November	1,180	915	1,020	.408	.46	A.
December	4,130	1,270	1,880	.752	.87	A.
The year	32,500	580	3,790	1.52	20.58	

LITTLE TALLAPOOSA RIVER NEAR WEDOWEE, ALA.

Location.—Six miles northwest of Wedowee, Ala., and about 4 miles above mouth. Wedowee Creek enters from the south about 2 miles above station.

Records available.—August 29, to December 31, 1913. Three discharge measurements were made in 1904 and referenced to a datum 0.22 foot lower than that of the present gage.

Drainage area.—Not measured.

Gage.—Vertical staff.

Channel and control.—Probably slightly shifting. Control a rock ledge extending across the river about 1,000 feet below gage.

Point of zero flow.—At about gage height −0.5 foot.

Discharge measurements.—Made from a single span highway bridge about 20 feet below gage.

Regulation.—Considerable fluctuation caused by small mills some distance above.

Data insufficient for estimate of daily discharge.

The following discharge measurement was made by Warren E. Hall:
August 29, 1913: Gage height, 0.58 foot; discharge, 165 second-feet.

Daily gage height, in feet, of Little Tallapoosa River near Wedowee, Ala., for 1913.

[Elbert Cummings, observer.]

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1.0	2.05	1.0	2.0	16	.....	1.05	0.8	0.85	1.4
2	.....	1.6	1.65	.9	2.6	17	.....	1.1	.65	.95	1.35
3	.....	1.15	1.05	.95	1.8	18	.....	1.15	1.0	.85	1.35
4	.....	1.1	1.05	.95	2.7	19	.....	1.15	2.75	.9	1.0
5	.....	1.2	1.55	.9	1.95	20	.....	1.0	2.1	.85	1.0
6	.....	1.2	1.7	.85	1.65	21	.....	1.1	1.2	.8	1.15
7	.....	1.0	2.05	.9	2.4	22	.....	1.2	1.35	.85	1.0
8	.....	1.6	1.05	1.0	1.25	23	.....	1.0	1.25	.9	.95
9	.....	2.35	1.05	1.05	1.0	24	.....	1.0	2.85	.8	.9
10	.....	2.0	1.0	1.05	1.4	25	.....	1.1	2.25	.85	1.05
11	.....	1.1	1.0	.95	1.2	26	.....	1.0	1.65	.9	.9
12	.....	1.05	1.0	.9	1.0	27	.....	1.0	1.3	.8	.85
13	.....	1.05	1.05	.85	1.0	28	.....	2.05	1.15	.9	1.15
14	.....	1.05	1.1	.85	1.7	29	0.7	1.65	1.2	.9	2.0
15	.....	1.15	1.0	.9	1.4	30	.....	1.05	1.15	1.0	2.45
						31	1.0	.....	1.05	.....	2.5

TOMBIGBEE RIVER AT EPES, ALA.

Location.—At the Alabama Great Southern Railroad bridge just below the mouth of Jones Creek, about half a mile from Epes, Ala.

Records available.—1900 to 1901 (discharge measurements were made by the United States Geological Survey and a rating was developed for those years); November 29, 1904, to August 31, 1913. A record of approximate gage heights, based on a gage painted on one of the bridge piers, has been kept by the Alabama Great Southern Railroad for a number of years.

Drainage area.—8,830 square miles.

Gage.—Standard chain gage attached to the railroad bridge.

Channel and control.—At flood stages—gage heights of 38 feet and over—the left bank overflows for about seven-eighths of a mile under the trestle approach to the bridge. Some changes in section have probably occurred since the station was established.

Discharge measurements.—Made from downstream side of railroad bridge.

Accuracy.—Good results have been obtained at this station in the years when sufficient discharge measurements were made to determine the rating curve.

No discharge measurements made since 1911.

Daily gage height, in feet, of Tombigbee River at Epes, Ala., for 1913.

[George Haven, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1	18.7	40.2	33.4	27.2	5.6	7.0	1.8	2.8
2	18.4	40.5	36.3	26.8	5.2	6.2	2.0	2.8
3	19.5	41.4	38.2	25.3	4.8	5.4	2.2	3.6
4	20.2	42.2	39.6	25.1	4.6	4.4	2.6	3.4
5	20.5	42.6	40.8	27.3	4.4	4.0	3.7	3.2
6	20.0	42.4	41.6	26.9	4.2	4.0	3.9	2.9
7	20.0	41.9	42.2	25.5	4.0	4.0	3.4	2.5
8	21.0	40.5	42.5	24.0	3.8	4.6	2.8	2.2
9	21.5	37.8	42.3	23.1	3.8	6.6	2.4	1.9
10	22.6	34.0	43.1	22.3	4.2	6.4	2.2	1.8
11	23.6	28.0	42.2	19.6	4.2	6.0	2.0	1.6
12	26.6	27.1	40.8	16.2	4.0	5.6	1.8	1.5
13	28.7	29.8	40.4	15.6	3.8	5.0	2.2	1.4
14	30.0	32.0	40.4	16.4	3.6	4.4	2.7	1.3
15	30.9	33.7	40.6	17.2	3.6	3.8	4.8	1.3
16	31.2	34.6	40.6	15.8	3.6	3.4	5.6	1.3
17	30.6	36.2	40.2	13.8	3.6	3.0	4.2	1.3
18	31.4	37.0	39.7	12.0	3.8	2.8	3.2	1.3
19	31.1	37.6	39.2	10.8	4.2	2.6	2.7	1.3
20	30.2	37.6	39.0	10.0	4.6	2.5	2.4	1.2
21	29.4	35.9	39.4	8.9	5.0	2.4	2.0	1.4
22	28.4	32.7	39.8	7.8	9.0	2.3	1.8	1.4
23	27.6	28.4	39.8	7.0	23.0	2.2	2.2	1.3
24	28.9	24.2	39.2	6.6	27.0	2.1	1.8	1.2
25	31.0	20.1	37.6	6.0	28.1	2.0	2.0	1.2
26	31.1	16.6	35.6	5.8	27.2	2.0	2.6	1.2
27	35.2	19.4	34.0	5.6	24.2	1.9	2.3	1.2
28	37.0	28.6	31.8	5.7	19.0	1.8	2.2	1.4
29	38.0	.....	29.8	5.8	14.3	1.8	2.9	1.4
30	38.6	.....	28.4	5.8	10.6	1.8	3.3	1.4
31	39.6	.....	27.6	.....	8.0	.....	3.0	1.2

Daily discharge, in second-feet, of Tombigbee River at Epes, Ala., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.
1	18,300	40,600	33,600	27,100	4,890	6,220	1,530	2,330
2	18,000	40,900	36,600	26,700	4,510	5,460	1,680	2,330
3	19,100	41,900	38,500	25,100	4,130	4,700	1,840	3,040
4	19,800	42,700	40,000	24,900	3,940	3,760	2,160	2,860
5	20,100	43,100	41,300	27,200	3,760	3,400	3,130	2,680
6	19,600	42,900	42,100	26,800	3,580	3,400	3,310	2,420
7	19,600	42,400	42,700	25,300	3,400	3,400	2,860	2,080
8	20,700	40,900	43,000	23,800	3,220	3,940	2,330	1,840
9	21,200	38,100	42,800	22,800	3,220	5,840	2,000	1,600
10	22,300	34,200	43,600	22,000	3,580	5,650	1,840	1,530
11	23,400	27,900	42,700	19,200	3,580	5,270	1,680	1,380
12	26,500	27,000	41,300	15,700	3,400	4,890	1,530	1,310
13	28,700	29,800	40,800	15,000	3,220	4,320	1,840	1,240
14	30,000	32,100	40,800	15,900	3,040	3,760	2,240	1,170
15	31,000	33,900	41,000	16,700	3,040	3,220	4,130	1,170
16	31,300	34,800	41,000	15,300	3,040	2,860	4,890	1,170
17	30,600	36,500	40,600	13,200	3,040	2,500	3,580	1,170
18	31,500	37,300	40,100	11,300	3,220	2,330	2,680	1,170
19	31,200	37,900	39,600	10,100	3,580	2,160	2,240	1,170
20	30,200	37,900	39,400	9,220	3,940	2,080	2,000	1,100
21	29,400	36,200	39,800	8,100	4,320	2,000	1,680	1,240
22	28,400	32,800	40,200	7,000	8,200	1,920	1,530	1,240
23	27,500	28,400	40,200	6,220	22,700	1,840	1,840	1,170
24	28,900	24,000	39,600	5,840	26,900	1,760	1,530	1,100
25	31,100	19,700	37,900	5,270	28,000	1,680	1,680	1,100
26	31,200	16,100	35,800	5,080	27,100	1,680	2,160	1,100
27	35,400	19,000	34,200	4,890	24,000	1,600	1,920	1,100
28	37,300	28,600	31,900	4,980	18,600	1,530	1,840	1,240
29	38,300	.....	29,800	5,080	13,700	1,530	2,330	1,240
30	39,000	.....	28,400	5,080	9,840	1,530	2,770	1,240
31	40,000	.....	27,500	.....	7,200	.....	2,500	1,100

NOTE.—Daily discharge determined from a rating curve fairly well defined by measurements made previous to 1912; because of the possibility of change in discharge relation estimates of daily discharge should be used with caution.

Monthly discharge of Tombigbee River at Epes, Ala., for 1913.

[Drainage area, 8,830 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	40,000	18,000	27,700	3.14	3.62	C.
February	43,100	16,100	33,800	3.83	3.99	C.
March	43,600	27,500	38,600	4.37	5.04	C.
April	27,200	4,890	15,000	1.70	1.90	C.
May	28,000	3,040	8,450	.957	1.10	B.
June	6,220	1,530	3,210	.364	.41	B.
July	4,890	1,530	2,300	.260	.30	B.
August	3,040	1,100	1,540	.174	.20	B.

PEARL RIVER BASIN.

PEARL RIVER AT JACKSON, MISS.

Location.—At county highway bridge at Jackson, one-eighth mile above Alabama & Vicksburg Railway bridge; about 5 miles above mouth of Richland Creek.

Records available.—June 24, 1901, to December 31, 1913.

Drainage area.—3,120 square miles.

Gage.—Standard chain gage attached to highway bridge.

Channel.—Channel is somewhat obstructed by old piles. Right bank high and does not overflow. Left bank is of clear ground and overflows for several hundred feet at a stage of about 20 feet.

Discharge measurements.—Made from highway bridge.

Regulation.—Flow is subject to little or no regulation above or near station.

Accuracy.—Some slight changes in controlling section may affect accuracy of low-water estimates.

Cooperation.—Gage heights are furnished by the United States Weather Bureau.

No discharge measurements made since 1911; because of this fact and the possibility of change in discharge relation, estimates for 1913 are withheld.

Daily gage height, in feet, of Pearl River at Jackson, Miss., for 1913.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	17.4	27.3	20.8	18.0	6.3	9.5	1.2	5.4	0.8	8.5	1.8	2.0
2	17.5	27.6	21.6	17.1	5.8	8.1	1.1	6.5	.8	8.6	1.7	2.5
3	17.1	28.7	22.4	16.2	5.3	7.0	1.3	7.0	.8	9.5	1.6	2.9
4	16.6	28.9	22.8	16.1	4.9	6.4	1.4	6.8	.8	8.5	1.5	3.7
5	16.1	28.8	22.8	17.8	4.5	6.0	1.3	6.4	.8	6.7	1.4	4.2
6	15.6	28.5	23.0	17.8	4.2	5.3	2.0	5.7	.8	4.3	1.3	4.5
7	15.6	27.9	23.5	17.5	4.0	4.4	2.3	4.7	.8	3.9	1.3	4.4
8	16.4	27.2	24.0	16.8	3.7	3.6	1.7	3.8	.8	3.5	1.2	4.3
9	16.9	26.4	24.2	16.1	3.3	3.1	1.4	3.1	.8	3.4	1.1	4.2
10	16.9	25.5	25.7	16.7	3.1	3.5	1.5	3.0	.8	3.2	1.0	4.0
11	16.3	24.6	26.3	18.3	2.9	3.2	1.7	2.2	.8	2.9	1.0	3.7
12	16.1	25.6	26.2	18.7	2.8	3.4	2.4	2.0	.8	2.6	1.0	3.4
13	16.1	25.3	27.4	18.4	3.0	3.1	2.9	1.7	.7	2.3	1.0	2.9
14	16.4	24.8	28.1	17.6	2.5	2.8	3.5	1.6	.7	2.1	1.0	2.7
15	16.9	24.2	28.3	16.7	3.3	2.8	3.7	1.5	.8	1.9	1.0	2.5
16	17.1	23.2	28.6	15.6	3.0	2.8	2.9	1.5	.9	1.8	1.0	2.3
17	17.1	23.1	28.9	14.5	2.9	2.8	3.2	1.4	.9	1.6	.9	2.2
18	17.9	22.5	29.0	13.2	2.6	2.6	3.0	1.3	2.1	1.5	.9	2.1
19	19.5	22.2	29.0	11.8	3.4	2.5	1.5	1.2	4.0	1.4	.9	2.3
20	20.0	22.0	28.9	9.7	2.9	2.5	2.3	1.2	4.6	1.3	.9	2.3
21	20.1	21.7	28.8	9.0	2.8	2.5	1.9	1.2	4.7	1.2	.9	2.2
22	19.8	21.4	28.2	8.0	3.3	2.2	1.7	1.1	4.6	1.1	.9	2.3
23	19.1	20.7	27.6	7.0	6.0	2.0	1.6	1.2	5.0	1.5	.9	2.4
24	19.0	20.0	26.7	6.3	4.7	1.8	1.6	1.1	5.1	1.5	.8	2.5
25	20.0	18.6	25.7	11.6	6.1	1.6	2.1	1.0	4.7	1.4	.8	3.0
26	20.4	17.0	24.6	15.4	7.4	1.3	3.2	1.0	4.2	1.4	.8	3.5
27	23.0	16.8	23.4	14.0	7.7	1.3	5.0	.9	4.3	1.3	.8	4.3
28	24.6	20.1	22.3	12.1	8.5	1.3	4.6	.9	3.3	2.0	.8	5.5
29	25.8	.....	21.1	8.6	9.5	1.3	4.6	.8	2.2	2.2	1.0	6.0
30	26.6	.....	19.9	7.0	10.3	1.2	4.1	.8	4.5	2.1	2.7	6.7
31	27.0	.....	19.0	.....	10.3	.....	4.0	.8	.....	2.0	.....	7.3

SUMMARY OF DISCHARGE PER SQUARE MILE.

The following summary of discharge per square mile is given to allow ready comparison of relative rates of run-off from different areas in the south Atlantic and eastern Gulf of Mexico basins. It shows in a general way the seasonal distribution of run-off and the effect of snow, ground, surface, and artificial storage; but the most important fact worth noting is the almost entire lack of uniformity or agreement between any two stations. It indicates that the discharge of each stream is a law unto itself and that all projects dependent upon stream flow, if they are to be developed along the safest and most economical lines, must be based on records of stream flow collected with great care over a long series of years as near the location of the project under consideration as possible.

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Summary of discharge, in second-feet per square mile, of south Atlantic and eastern Gulf of Mexico basins for 1913.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
James River at Buchanan, Va.													
James River at Cartersville, Va.	1.21	0.78	3.00	2.54	1.83	1.30	0.64	0.60	0.34	0.67	1.32	1.03	1.27
Roanoke River at Roanoke, Va.	.70	.69	2.49	1.05	1.56	.80	.72	.39	.27	.47	.71	.75	.89
Roanoke River at Old Gaston, N. C.	.87	.60	2.43	1.34	1.16	.82	.63	.52	.76	.74	1.00	.91	.98
Yadkin River at Donnaha, N. C.					2.49	1.66	1.19	1.88	1.48	1.25	1.07	1.41	
Yadkin River near Salisbury, N. C.	1.29	1.03	3.53	1.72	1.66	.98	.76	1.43	1.21	1.09	.99	1.33	1.42
Tallulah River at Mathis, Ga.				4.62	3.38	2.61	1.93	1.48	1.20	1.12	.96	1.77	
Ocmulgee River near Jackson, Ga.	1.47	1.69	3.92	1.34	.89	1.20	.89	.86	.84	.64	.47	.74	1.25
Oconee River near Greensboro, Ga.	1.97	1.55	4.65	1.63	.88	1.15	.84	.82	.82	.86	.54	1.08	1.40
Oconee River at Fraleys Ferry, near Milledgeville, Ga.	1.29	1.47	4.15	1.48	.77	.98	.75	.75	.70	.76	.51	.76	1.20
Chattahoochee River near Norcross, Ga.	2.18	2.56	4.58	2.22	1.68	1.43	1.18	1.20	.88	.87	.74	1.07	1.71
Chattahoochee River near West Point, Ga.	2.37	2.41	4.79	1.76	1.27	1.19	1.16	.97	.62	.78	.59	.90	1.56
Flint River near Woodbury, Ga.	1.30	1.95	5.68	.98	.63	.87	1.28	.55	.56	.44	.37	.63	1.28
Flint River near Culloden, Ga.				1.02	.62	.80	.96	.58	.64	.45	.40	.61	
Flint River at Albany, Ga.	1.48	2.06	5.44	2.22	.89	.91	.86	1.02	.85	.59	.56	.67	1.46
Flint River at Bainbridge, Ga.	1.44				1.09	1.03	.91	.99	.85	.70	.68	.69	
Pea River at Pera, Ala.	1.94	2.58	6.18	2.02	.80	.86	1.48	.56					
Conecuh River at Beck, Ala.	2.32	3.40	7.83	2.26	.75	.54	1.05	.55	.80	.64	.43	.66	1.76
Oostanaula River at Resaca, Ga.	2.91	3.34	6.17	1.81	1.63	1.56	.87	.53	.45	.38	.34	.66	1.71
Coosa River at Riverside, Ala.	2.68	3.91	5.65	1.87	1.03	.90	.62	.65	.40	.59	.32	.82	1.61
Alabama River at Selma, Ala.	2.42	3.90	6.03	2.32	1.19	1.02	.78	.76	.58	.77	.44	.69	1.73
Etowah River near Ball Ground, Ga.	2.51	3.39	5.94	3.00	2.27	1.55	1.42	1.15	.88	.84	.82	1.17	2.08
Etowah River near Rome, Ga.	2.17	3.06	5.27	1.84	1.31	1.04	1.14	.97	.66	.62	.55	.76	1.61
Tallapoosa River at Sturdevant, Ala.	2.74	2.58	5.00	1.72	1.16	1.14	.90	.56	.53	.72	.41	.75	1.52
Tombigbee River at Epes, Ala.	3.14	3.83	4.37	1.70	.96	.36	.26	.17					

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