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WATER-SUPPLY PAPER 282

SURFACE WATER SUPPLY OF THE UNITED STATES

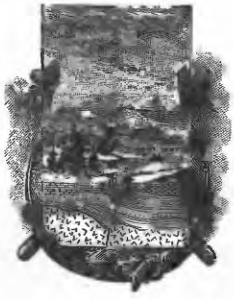
1910

PART II. SOUTH ATLANTIC COAST AND EASTERN GULF OF MEXICO

PREPARED UNDER THE DIRECTION OF M. O. LEIGHTON

BY

M. R. HALL AND J. G. MATHERS



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SURFACE WATER SUPPLY OF THE SOUTH ATLANTIC COAST AND EASTERN GULF OF MEXICO, 1910.

By M. R. HALL and J. G. MATHERS.

INTRODUCTION.

AUTHORITY FOR INVESTIGATIONS.

This volume contains results of measurements of the flow of certain streams in the United States. The work was performed by the water-resources branch of the United States Geological Survey, either independently or in cooperation with private or State organizations. The organic law of the Geological Survey (20 Stat. L., p. 394) 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.

As water is the most abundant and most valuable of the minerals, the investigation of water resources is authorized under the provision for examining mineral resources. The work has been supported since the fiscal year ending June 30, 1895, by appropriations in successive sundry civil bills passed by Congress under the following item:

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.

The various appropriations that have been made for this purpose are as follows:

Annual appropriations for the fiscal year ending June 30—

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	150,000

SCOPE OF INVESTIGATIONS.

These investigations are not complete nor are they inclusive of all the streams that might purposefully be studied. The scope of the work is limited by the appropriations available. The field covered is the widest and the character of the work is believed to be the best possible under the controlling conditions. The work would undoubtedly have greater scientific importance and ultimately be of more practical value if the money now expended for wide areas were concentrated on a few small drainage basins; but such a course is impossible, because general appropriations made by Congress are applicable to all parts of the country. Each part demands its proportionate share of the benefits.

It is essential that records of stream flow shall be kept during a period of years long enough to determine within reasonable limits the entire range of flow from the absolute maximum to the absolute minimum. The length of such a period manifestly differs for different streams. Experience has shown that the records for some streams should cover five to ten years, and those for other streams 20 years or even more, the limit being determined by the relative importance of the stream and the interdependence of the results with other long-time records on adjacent streams.

In the performance of this work an effort is made to reach the highest degree of precision possible with a rational expenditure of time and a judicious expenditure of a small amount of money. In all engineering work there is a point beyond which refinement is needless and wasteful, and this statement applies with especial force to stream-flow measurements. It is confidently believed that the stream-flow data presented in the publications of the Survey are in general sufficiently accurate for all practical purposes. Many of the records are, however, of insufficient length, owing to the unforeseen reduction of appropriations and consequent abandonment of stations. All persons are cautioned to exercise the greatest care in using such incomplete records.

Records have been obtained at nearly 2,000 different points in the United States. The surface water supply of small areas in Seward Peninsula and the Yukon-Tanana region, Alaska, and in Hawaii has also been investigated. During 1910 regular gaging stations were maintained by the Survey and cooperating organizations at about 1,100 points in the United States, and many discharge measurements were made at other points. Data were also obtained 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 surface water supply papers and in special papers from time to time.

PUBLICATIONS.

The data on stream flow collected by the United States Geological Survey have appeared in the annual reports, bulletins, and water-supply papers. Owing to natural processes of evolution and to changes in governmental requirements, the character of the work and the territory covered by these different publications have varied greatly. For the purpose of uniformity in the presentation of reports a general plan has been agreed upon by the United States Reclamation Service, the United States Forest Service, the United States Weather Bureau, and the United States Geological Survey, according to which the area of the United States has been divided into 12 parts, whose boundaries coincide with certain natural drainage lines. The areas so described are indicated by the following list of papers on surface water supply for 1910. The dividing line between the north Atlantic and south Atlantic drainage areas lies between York and James rivers.

Papers on surface water supply of the United States, 1910.

Part.	No.	Title.	Part.	No.	Title.
I	281	North Atlantic coast.	VI	286	Missouri River basin.
II	282	South Atlantic coast and eastern Gulf of Mexico.	VII	287	Lower Mississippi River basin.
			VIII	288	Western Gulf of Mexico.
III	283	Ohio River basin.	IX	289	Colorado River basin.
IV	284	St. Lawrence River basin.	X	290	Great Basin.
V	285	Upper Mississippi River and Hudson Bay basins.	XI	291	California.
			XII	292	North Pacific coast.

The following table gives the character of data regarding stream flow at regular stations to be found in the various publications of the United States Geological Survey, exclusive of special papers:

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	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.	1896.
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	Description, 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	Complete data, except descriptions	1906.
WS 241 to 252	Complete data	1907–8.
WS 261 to 272	do	1909.
WS 281 to 292	do	

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

The records at most of the stations discussed in these reports extend over a series of years. An index of the reports containing records prior to 1904 has been published in Water-Supply Paper 119.

The first table which follows gives, by years and drainage basins, the numbers of the papers on surface water supply published from 1899 to 1909. Wherever the data for a drainage basin appear in two papers the number of one is placed in parentheses and the portion of the basin covered by that paper is indicated in the second table. For example, in 1904 the data for Missouri River were published in Water-Supply Papers 130 and 131, and the portion of the records contained in Water-Supply Paper 131, as indicated by the second table, is that relating to Platte and Kansas rivers.

Numbers of water-supply papers containing results of stream measurements, 1899–1910.

	1899 [1]	1900 [2]	1901	1902	1903	1904	1905	1906	1907–8	1909	1910
Atlantic coast and eastern Gulf of Mexico:											
New England rivers	35	47	65,75	82	97	124	165	201	241	261	281
Hudson River to Delaware River, inclusive	35	47,(48)	65,75	82	97	125	166	202	241	261	281
Susquehanna River to York River, inclusive	35	48	65,75	82	97	126	167	203	241	261	281
James River to Yadkin River, inclusive	(35),36	48	65,75	(82),83	(97),98	126	167	203	242	262	282
Santee River to Pearl River, inclusive	36	48	65,75	83	98	127	168	204	242	262	282
St. Lawrence River	36	49	65,75	(82),83	97	129	170	206	244	264	284
Hudson Bay	.....	.....	66,75	85	100	130	171	207	245	265	285
Mississippi River:											
Ohio River	36	48,(49)	65,75	83	98	128	169	205	243	263	283
Upper Mississippi River	36	49	65,75	83	98,(99)	128, (130)	171	207	245	265	283
Missouri River	(36),37	49,(50)	66,75	84	99	130, (131)	172	208	246	266	286
Lower Mississippi River	37	50	(65), 66,75	(83),84	(98),99	(128), 131	(169), 173	(205), 209	247	267	287
Western Gulf of Mexico	37	50	66,75	84	99	132	174	210	248	268	288
Pacific coast and Great Basin:											
Colorado River	(37),38	50	66,75	85	100	133, (134)	175, (177)	211, (213)	249, (251)	269, (271)	289
Great Basin	38,(39)	51	66,75	85	100	133, (134)	176, (177)	212, (213)	250, (251)	270, (271)	290
South Pacific coast to Klamath River, inclusive	(38),39	51	66,75	85	100	134	177	213	251	271	291
North Pacific coast	38	51	66,75	85	100	135	(177) 178	214	252	272	292

[1] Rating tables and index to Water-Supply Papers 35–39 contained in Water-Supply Paper 39.
[2] 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.

Numbers of water-supply papers containing data covering portions of drainage basins.

No.	River basin.	Tributaries included.
35	James	
36	Missouri	Gallatin.
37	Colorado	Green, Gunnison, Grand above junction with Gunnison.
38	Sacramento	Except Kings and Kern.
39	Great Basin	Mohave.
48	Delaware	Wissahickon and Schuylkill.
49	Ohio	Scioto.
50	Missouri	Loup and Platte near Columbus, Nebr. All tributaries below junction with Platte.
65	Lower Mississippi	Yazoo.
82	James	Lake Ontario, tributaries to St. Lawrence River proper.
	St. Lawrence	
83	Lower Mississippi	Yazoo.
97	James	
98	Lower Mississippi	Do.
99	Upper Mississippi	Tributaries from the west.
128	Lower Mississippi	Yazoo.
130	Upper Mississippi	Tributaries from the west.
131	Missouri	Platte, Kans.
134	Colorado	Data near Yuma, Ariz., repeated.
	Great Basin	Susan, Owens, Mohave.
169	Lower Mississippi	Yazoo.
177	Colorado	Below junction with Gila.
	Great Basin	Susan repeated, Owens, Mohave.
	North Pacific coast	Rogue, Umpqua, Siletz.
205	Lower Mississippi	Yazoo, Homochitto.
213	Colorado	Data at Hardyville repeated; at Yuma, Salton Sea.
	Great Basin	Owens, Mohave.
251	Colorado	Yuma and Salton Sea stations repeated.
271	Great Basin	Owens River Basin.

The order of treatment of stations in any basin in these papers is downstream. The main stem of any river is determined by measuring or estimating the drainage area; that is, the headwater stream having the largest drainage area is considered the continuation of the main stream and local changes in name and lake surface are disregarded. Records for all stations from the source to the mouth of the main stem of the river are presented first, and records for the tributaries in regular order from source to mouth follow, all records in each tributary basin being given before those of the next basin below.

The exceptions to this rule occur in the records for Mississippi River, which are given in four parts, as indicated above, and in the records for large lakes, where it is simpler to take up the streams in regular order around the rim of the lake than to cross back and forth over the lake surface.

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 run-off in second-feet per square mile, and (2) those which represent the actual quantity of water, as run-off in depth in inches and acre-feet. The units used in this series of reports are second-feet, second-feet per square mile, and run-off in inches and acre-feet. They may be defined as follows:

"Second-foot" is an abbreviation for cubic foot per second and is the rate of discharge of water flowing in a stream 1 foot wide, 1 foot deep, at a rate 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 following table of equivalents.

"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 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.

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

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

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 646,272 gallons for one day.
1 second-foot equals 6.23 British imperial gallons per second.
1 second-foot for one year covers 1 square mile 1.131 feet or 13.572 inches deep.
1 second-foot for one year equals 31,536,000 cubic feet.
1 second-foot equals about 1 acre-inch per hour.
1 second-foot for one day covers 1 square mile 0.03719 inch deep.
1 second-foot for one 28-day month covers 1 square mile 1.041 inches deep.
1 second-foot for one 29-day month covers 1 square mile 1.079 inches deep.
1 second-foot for one 30-day month covers 1 square mile 1.116 inches deep.
1 second-foot for one 31-day month covers 1 square mile 1.153 inches deep.
1 second-foot for one day equals 1.983 acre-feet.
1 second-foot for one 28-day month equals 55.54 acre-feet.
1 second-foot for one 29-day month equals 57.52 acre-feet.
1 second-foot for one 30-day month equals 59.50 acre-feet.
1 second-foot for one 31-day month equals 61.49 acre-feet.
100 California miner's inches equals 18.7 United States gallons per second.
100 California miner's inches equals 96 Colorado miner's inches.
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 equals 104 California miner's inches.
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 equals 7.48 gallons.
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 kilogram-meters per second.
1 horsepower equals 746 watts.
1 horsepower equals 1 second-foot falling 8.80 feet.
1⅓ 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 drainage basin there is given a brief general description, covering such items as area, source, tributaries, topography, geology, forestation, rainfall, irrigation, storage, power, and other interesting or important facts.

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

In addition to statements regarding the location and installation of current-meter stations the descriptions give information in regard to any conditions which may affect the constancy of the relation of gage height to discharge, covering such points as ice, logging, shifting channels, and backwater; also information regarding diversions which decrease the total flow at the measuring section. Statements are also made regarding the accuracy and reliability of the data.

The discharge-measurement table gives the results of the discharge measurements made during the year, including the date, name of hydrographer, width and area of cross section, gage height, and discharge in second-feet.

The table of daily gage heights records the daily fluctuations of the surface of the river as found from the mean of the gage readings taken each day. At most stations the gage is read in the morning and in the evening. The gage height given in the table represents the elevation of the surface of the water above the zero of the gage. All gage heights affected by the presence of ice in the streams or by backwater from obstructions 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.

The discharge measurements and gage heights are the base data from which rating tables, daily discharge tables, and monthly discharge tables are computed.

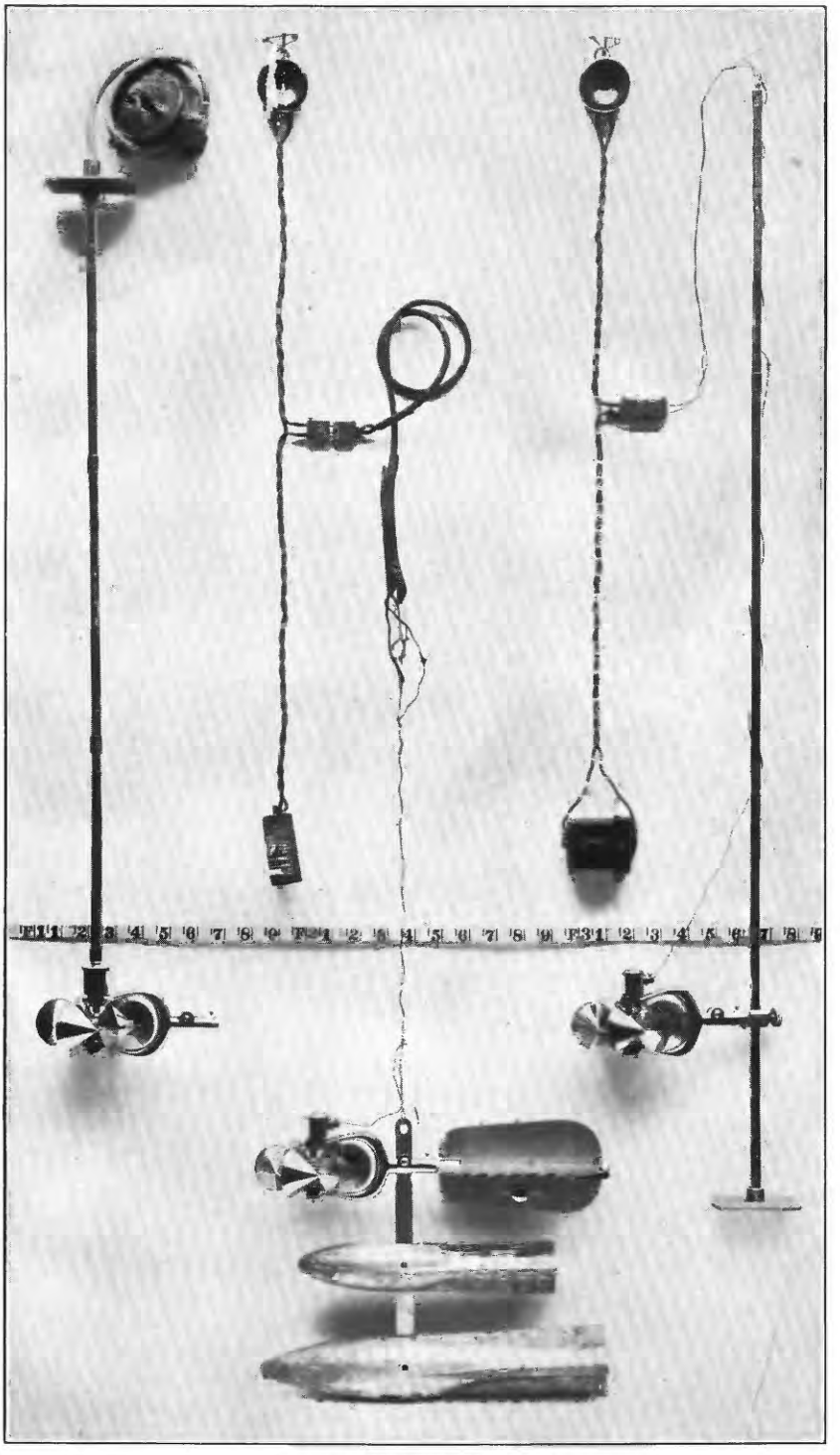
The rating table gives, either directly or by interpolation, the discharge in second-feet corresponding to every stage of the river recorded during the period for which it is applicable. It is not published in this report but can be determined from the daily gage heights and daily discharges for the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

First plot the discharge measurements for the current and earlier years on cross-section paper with gage heights in feet as ordinates

A. FOR BRIDGE MEASUREMENT.

B. FOR WADING MEASUREMENT.

TYPICAL GAGING STATIONS.



SMALL PRICE CURRENT METERS

and discharge in second-feet as abscissas. Then tabulate a number of gage heights taken from the daily gage-height table for the complete range of stage given and the corresponding discharges for the days selected from the daily discharge table and plot the values on cross-section paper. The last points plotted will define the rating curve used and will lie among the plotted discharge measurements. After drawing the rating curve a table can be developed by scaling off the discharge in second-feet for each tenth foot of gage height. These values should be so adjusted that the first differences shall always be increasing or constant, except for known backwater conditions.

The table of daily discharges gives the discharges in second-feet corresponding to the observed gage heights as determined from the rating tables.

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 page 10, are based.

The field methods used in the collection of the data presented in this series of reports are described in the introductory sections of Water-Supply Papers 261 to 272, inclusive, "Surface water supply of the United States, 1909." Plate I shows typical gaging stations. Plate II shows the various types of current meters [1] used in the work. A sample rating curve is shown on Plate III (p. 72).

ACCURACY AND RELIABILITY OF FIELD DATA AND COMPARATIVE RESULTS.

The accuracy of stream-flow data depends primarily on the natural conditions at the gaging station and on the methods and care with which the data are collected. Errors of the first group depend on the degree of permanency of channel and of permanency of the relation of discharge to stage.

Errors of the second class are due, first, to errors in observation of stage; second, to errors in measurement of flow; and third, to errors due to misinterpretation of stage and flow data.

Practically all discharge measurements made under fair conditions are well within 5 per cent of the true discharge at the time of observa-

[1] See Hoyt, J. C., and others, Use and care of the current meter as practiced by the United States Geological Survey: Trans. Am. Soc. Civil Eng., vol. 66, 1910, p. 70.

tion. Inasmuch as the errors of meter measurements are largely compensating, the mean rating curve when well defined is much more accurate than the individual measurements. Numerous experiments made to test the accuracy of current-meter work show that it compares very favorably with the results from standard weirs and, owing to simplicity of methods, usually gives results that are much more reliable than those from stations at dams, where the coefficient may be uncertain and conditions of flow are complicated.

The work is, of course, dependent on the reliability of the gage observers. With relatively few exceptions, the observers perform their work honestly. The records are, however, closely watched, and the cause of any discrepancy is investigated. It is obvious that one gage reading a day does not always give the mean height for that day. As an almost invariable rule, however, errors from this source are compensating and virtually negligible in a period of one month, although a single day's reading may, when taken by itself, be considerably in error.

An effort is made to visit every station at least once each year for the purpose of making a measurement to determine the constancy of conditions of flow since the last measurement made in the preceding year, and also to check the elevation of the gage. On account of lack of funds or for other causes some stations were not visited during the current year. If conditions of flow have been reasonably permanent up to the time of the last preceding measurement, it is considered best to publish estimates of discharge based on the latest verified rating curve rather than to omit them altogether, although it should be distinctly understood that such records are at times subject to considerable error. This is also true, although to a less degree, of the period of records since the date of the last measurement of the current year. As a rule, the accuracy notes are based on the assumption that the rating curve used is strictly applicable to the current year.

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 tables used, and an accuracy column is inserted in the monthly discharge table. For the rating tables "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 platting 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, the prob-

able reliability of the observer, 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.

USE OF THE DATA.

In general the base data which are collected in the field by the Survey engineers are published, not only to comply with the law but also for the express purpose of giving to any engineer the opportunity of examining the computed results and of changing and adjusting them as may seem best to him. Although it is believed that the rating tables and computed monthly discharges are as good as the base data up to and including the current year will warrant, it should always be borne in mind that the additional data collected at each station from year to year nearly always throw new light on data already collected and published, and hence allow more or less improvement in the computed results of earlier years. It is therefore expected that the engineer who makes serious use of the figures presented in these papers will verify all ratings and make such adjustments for earlier years as may seem necessary. The work of compiling, studying, revising, and republishing data for different drainage basins for 5 or 10 year periods or more is carried on by the United States Geological Survey so far as the funds for such work are available.

The estimates in the table of monthly discharge are so arranged as to give only a general idea of the conditions of flow at the station, and it is not expected that they will be used for other than preliminary estimates.

The daily discharges are published to allow a more detailed study of the variation in flow and to determine the periods of deficient flow.

COOPERATIVE DATA.

Cooperative data of various kinds and data regarding the run-off at many stations maintained wholly by private funds are incorporated in the surface water supply reports of the United States Geological Survey.

Many stations throughout the country are maintained for specific purposes by private parties who supply the records gratuitously to the United States Geological Survey for publication. When such records are furnished by responsible parties and appear to be reasonably accurate, they are verified, so far as possible, and estimated values of accuracy are given. Records clearly worthless or misleading are not published. As it is, however, impossible to completely verify all such records furnished—because of lack of funds or for other causes—they are published for what they are worth, as they

are of value as a matter of record and afford at least approximate information regarding stream flow at the particular localities. The Survey does not, however, assume any responsibility for inaccuracies found in such records, although most of them are believed to be reasonably good.

COOPERATION AND ACKNOWLEDGMENTS.

Special acknowledgments are due for assistance rendered or records furnished by the United States Engineer Corps, United States Weather Bureau, North Georgia Electric Co., Central Georgia Power Co., Geological Survey of Alabama, Wilson Aluminum Co., Roanoke Railway & Electric Co., Rockingham Power Co., and Tennessee Coal, Iron & Railroad Co.

DIVISION OF WORK.

The field data in the James and Roanoke drainage basins were collected under the direction of R. H. Bolster, assistant engineer, assisted by G. C. Stevens.

The field data for all drainage basins south of Roanoke River were collected by M. R. Hall, district engineer, assisted by E. H. Swett and F. P. Thomas.

The ratings, special estimates, and studies of the completed data were made by M. R. Hall and J. G. Mathers. The computations were made and the completed data prepared for publication by G. C. Stevens, J. G. Mathers, H. J. Dean, and A. H. Tuttle.

The entire report was edited by Mrs. B. D. Wood.

GAGING STATIONS MAINTAINED IN SOUTH ATLANTIC COAST AND EASTERN GULF OF MEXICO DRAINAGE BASINS.

The following list comprises the gaging stations regularly maintained in south Atlantic coast and eastern Gulf of Mexico drainage basins by the United States Geological Survey and cooperative parties. Data for these stations have appeared in the published reports as shown in tables on pages 7–9. The stations are arranged by river basins and appear in downstream order, tributaries of main streams being indicated by indention. (See p. 10.)

South Atlantic coast drainage basins:

James River basin:

Jackson River at Covington, Va., 1907–8.

James River at Buchanan, Va., 1895–1910.

James River at Holcomb Rock, Va., 1900–1910.

James River at Cartersville, Va., 1899–1910.

Cowpasture River near Clifton Forge, Va., 1907–8.

North Fork of James River near Glasgow, Va., 1895–1905.

Appomattox River at Mattoax, Va., 1900–1905.

South Atlantic coast drainage basins—Continued.
Roanoke River basin:
Roanoke River at Roanoke, Va., 1896–1910.
Roanoke River at Randolph, Va., 1900–1906.
Roanoke River above the Dan at Clarksville, Va., 1895–1898.
Roanoke River at Neal, N. C., 1896–1903.
Tinker Creek at Roanoke, Va., 1907–8.
Back Creek near Roanoke, Va., 1907–8.
Dan River at Madison, N. C., 1903–1908.
Dan River at South Boston, Va., 1900–1907.
Dan River at Clarksville, Va., 1895–1898.
Banister River at Houston, Va., 1904–5.
Tar River basin:
Tar River near Tarboro, N. C., 1896–1900.
Neuse River basin:
Neuse River near Selma, N. C., 1896–1900.
Cape Fear River basin:
Haw River near Moncure, N. C., 1898–99.
Cape Fear River near Fayetteville, N. C., 1889–1903.
Deep Creek near Cumnock, N. C., 1900–1902.
Deep Creek near Moncure, N. C., 1898–99.
Rockfish Creek near Brunt, N. C., 1902–3.
Yadkin River basin:
Yadkin River at North Wilkesboro, N. C., 1903–1909.
Yadkin River near Siloam, N. C., 1900–1901.
Yadkin River near Salisbury, N. C., 1895–1909.
Yadkin River near Norwood, N. C., 1896–1899.
Yadkin River near Pedee, N. C., 1906–1910.
Pedee River at Cheraw, S. C., 1909–10.
Santee River basin:
Catawba River at Old Fort, N. C., 1907.
Catawba River near Morganton, N. C., 1900–1909.
Catawba River near Catawba, N. C., 1896–1905.
Catawba River near Rockhill, S. C., 1895–1903.
Wateree River near Camden, S. C., 1904–1910.
Mill Creek at Old Fort, N. C., 1907.
Linville River at Fonta Flora, N. C., 1907–8.
Linville River near Bridgewater, N. C., 1900.
Johns River at Collettsville, N. C., 1907.
Johns River near Morganton, N. C., 1900–1901.
Congaree River basin:
Broad River (of the Carolinas) at Uree, N. C., 1907–1909.
Broad River (of the Carolinas) at Dellinger, S. C., 1900–1901.
Broad River (of the Carolinas) near Gaffney, S. C., 1896–1899.
Broad River (of the Carolinas) at Alston, S. C., 1896–1907.
Green River near Saluda, N. C., 1907–1909.
Second Broad River near Logan's store, N. C., 1907–8.
Saluda River near Waterloo, S. C., 1896–1905.
Saluda River near Ninety Six, S. C., 1905.
Savannah River basin:
Chattooga River near Clayton, Ga., 1907–8.
Tugaloo River near Toccoa, Ga., 1907–8.
Tugaloo River near Madison, S. C., 1898–1910.

South Atlantic coast drainage basins—Continued.
Savannah River basin—Continued.
Savannah River near Calhoun Falls, S. C., 1896–1903.
Savannah River at Woodlawn, S. C., 1905–1910.
Savannah River at Augusta, Ga., 1899–1906.
Stekoa Creek near Clayton, Ga., 1907–8.
Tallulah River at Tallulah Falls, Ga., 1900–1910.
Chauga River near Madison, S. C., 1907.
Seneca River near Clemson College, S. C., 1903–1905.
Broad River (of Georgia) near Carlton, Ga., 1897–1910.
Ogeechee River basin:
Ogeechee River near Millen, Ga., 1903.
Williamson's Swamp Creek near Davisboro, Ga., 1903–4.
Cannoochee River near Groveland, Ga., 1903–1907.
Altamaha River basin:
South River near Lithonia, Ga., 1903–4.
Ocmulgee River near Jackson, Ga., 1906–1910.
Ocmulgee River near Flovilla, Ga., 1901–1905.
Ocmulgee River at Macon, Ga., 1893–1910.
Yellow River at Almon, Ga., 1897–1901.
Alcovy River near Covington, Ga., 1901–1904.
Alcovy River near Stewart, Ga., 1905–6.
Towaliga River near Juliette, Ga., 1899–1901.
Oconee River at Barnett Shoals, near Watkinsville, Ga., 1901–2.
Oconee River near Greensboro, Ga., 1903–1910.
Oconee River at Carey, Ga., 1896–1898.
Oconee River at Fraleys Ferry, near Milledgeville, Ga., 1905–1910.
Oconee River at Milledgeville, Ga., 1893–1905.
Oconee River at Dublin, Ga., 1897–1910.
Middle Oconee River near Athens, Ga., 1901–2.
Apalachee River near Buckhead, Ga., 1901–1908.
Ohoopee River near Reidsville, Ga., 1903–1907.
St. John River basin:
Silver Springs River near Silver Springs, Fla., 1906.
Eastern Gulf of Mexico drainage basins:
Suwanee River basin:
Suwanee River near White Springs, Fla., 1906–1908.
Apalachicola River basin:
Chattahoochee River near Aerial, Ga., 1907–1909.
Chattahoochee River near Leaf, Ga., 1907.
Chattahoochee River near Gainesville, Ga., 1901–1903.
Chattahoochee River near Buford, Ga., 1901.
Chattahoochee River near Norcross, Ga., 1902–1910.
Chattahoochee River near Oakdale, Ga., 1895–1904.
Chattahoochee River at West Point, Ga., 1896–1910.
Chattahoochee River at Alaga, Ala., 1908–1910.
Soque River near Demorest, Ga., 1904–1909.
Sweetwater Creek near Austell, Ga., 1904–5.
Flint River near Woodbury, Ga., 1900–1910.
Flint River near Mussela, Ga., 1907.
Flint River near Montezuma, Ga., 1905–1910.
Flint River at Albany, Ga., 1902–1910.

Eastern Gulf of Mexico drainage basins—Continued.
Apalachicola River basin—Continued.
Chattahoochee River—Continued.
Flint River at Bainbridge, Ga., 1908–1910.
Kinchafoonee Creek near Leesburg, Ga., 1905–1909.
Kinchafoonee Creek near Albany, Ga., 1903.
Muckalee Creek near Albany, Ga., 1903.
Ichawaynochaway Creek at Milford, Ga., 1905–1907.
Choctawhatchee River basin:
Choctawhatchee River near Newton, Ala., 1906–1908.
Choctawhatchee River near Geneva, Ala., 1904.
Double Bridge Creek at Geneva, Ala., 1904.
Pea River at Pera, Ala., 1904–1910.
Pea River at Elba, Ala., 1906.
Escambia River basin:
Conecuh River at Beck, Ala., 1904–1910.
Mobile River basin:
Cartecay River near Cartecay, Ga., 1904–5, 1907.
Coosawattee River at Carters, Ga., 1896–1908.
Oostanaula River at Resaca, Ga., 1896–1910.
Coosa River at Rome, Ga., 1897–1903.
Coosa River at Lock No. 4, above Riverside, Ala., 1890–1901.
Coosa River at Riverside, Ala., 1896–1910.
Coosa River at Lock No. 5, near Childersburg, Ala., 1892–1897.
Coosa River near Wetumpka, Ala., 1896–1898.
Alabama River at Montgomery, Ala., 1899–1903.
Alabama River at Selma, Ala., 1900–1910.
Ellijay River at Ellijay, Ga., 1907.
Conasauga River at Beaverdale, Ga., 1907–8.
Etowah River near Ball Ground, Ga., 1907–1910.
Etowah River at Canton, Ga., 1892–1905.
Etowah River near Rome, Ga., 1904–1910.
Etowah River at Rome, Ga., 1903.
Amicalola River near Potts Mountain, Ga., 1907–8 and 1910.
Choccolocco Creek at Jenifer, Ala., 1903–1908.
Talladega Creek at Nottingham, Ala., 1900–1904.
Tallapoosa River at Sturdevant, Ala., 1900–1910.
Tallapoosa River near Susanna, Ala., 1900–1901.
Tallapoosa River at Milstead, Ala., 1897–1903.
Hillabee Creek near Alexander City, Ala., 1900–1903.
Big Sandy Creek near Dadeville, Ala., 1900–1901.
Cahaba River at Centerville, Ala., 1901–1908.
Tombigbee River at Columbus, Miss., 1900–1910.
Tombigbee River at Epes, Ala., 1900–1910.
Black Warrior River near Cordova, Ala., 1900–1910.
Black Warrior River near Coal, Ala., 1908–1910.
Black Warrior River at Tuscaloosa, Ala., 1889–1905.
Clear Creek near Elk, Ala., 1904–5.
Locust Fork of Black Warrior River at Palos, Ala., 1901–1905.
Village Creek near Mulga, Ala., 1909.
Camp Branch near Ensley, Ala., 1908–1910.
Venison Branch near Mulga, Ala., 1908–9.
Pearl River basin:
Pearl River at Jackson, Miss., 1901–1910.
Bogue Chitto at Warnerton, La., 1906.

SOUTH ATLANTIC STATES DRAINAGE BASINS.

JAMES RIVER BASIN.

DESCRIPTION.

The basin of James River, the most important stream in Virginia, extends entirely across the southern part of the State from east to west. It is bounded on the north by the Potomac and York River basins and on the south by the basin of the Roanoke. Its entire area comprises approximately 9,700 square miles.

James River proper is formed by the junction of Jackson and Cowpasture rivers in the northern part of Botetourt County. Jackson River drains a long, narrow basin bounded on the west by the main range of the Allegheny Mountains and on the east by a secondary range of the same system. Still other ranges divide its basin into parallel steep-sided valleys.

The basin of Cowpasture River, like that of the Jackson, is long and narrow. It lies parallel to and east of the Jackson Basin and extends as far east as the Blue Ridge.

From the junction of Jackson and Cowpasture rivers the James flows in a general easterly course leading into the lower part of Chesapeake Bay. Its length is about 335 miles. The important tributaries in descending order are Craig Creek and North, Pedlar, Buffalo, Rockfish, Hardware, Slate, Rivanna, Willis, Appomattox, and Chickahominy rivers.

Near Clifton Forge and again near Balcony Falls the James flows through ridges of the Alleghenies and makes sharp falls over beds of solid rock. At other points, as the river cuts through the lesser foothills, are similar though less pronounced falls and rapids. The fall line is crossed at Richmond.

The James traverses three distinct topographic provinces—the Allegheny Mountain region, extending from the western edge of the basin to the Blue Ridge; the Piedmont Plateau, extending from the Blue Ridge to the fall line; and the Coastal Plain, extending eastward from Richmond. In the Allegheny region the surface is much broken and slopes are steep; this section contains important deposits of limestone, marble, lead ores, and anthracite and bituminous coal. In the Piedmont Plateau region the topography is rolling, the uplands are rounded, and range in altitude is small; this section contains the bituminous coal fields of Goochland, Chesterfield, Powhatan, and Prince Edward counties. The characteristic strata of the Coastal Plain are horizontal beds of clay and sand abounding in fossil shells; the region is generally low and in some parts swampy. Altitude for the entire basin ranges from sea level to 4,000 feet on the crest of the mountains.

Except on the mountain sides in the upper part of the basin, which are forested, the drainage area is largely cleared and under cultivation.

The mean annual rainfall, as shown by the records of the United States Weather Bureau, ranges from 40 to 50 inches, being heaviest at the mouth of the river and decreasing to 45 inches at Richmond. Between this latter point and the upper part of the basin the range is between 40 and 45 inches.

The river lies so far south that its flow is affected by ice for only short periods, ranging from a few days to two or three weeks.

A study of the Survey's topographic sheets, which cover nearly the entire basin, shows that the upper valleys are so narrow and the headwaters have so much fall that few sites could be utilized for reservoirs of any considerable capacity without building dams of great height and length.

A reconnaissance made in 1897 showed 18 dams across James River between Clifton Forge and Richmond. Many of these dams were built to divert water into the old James & Kanawha Canal, which followed the river from Richmond to Buchanan and at one time was utilized through that entire distance. This canal has now been abandoned, and its right of way is owned by the Chesapeake & Ohio Railway. The use of the dams was abandoned with the canal, and although many of them are in good repair they have not been improved for power development.

The following publications contain information in regard to the surface waters of the James River basin:

Nineteenth Annual Report United States Geological Survey, part 4, pages 162–173; full report of the 1897 reconnaissance, including brief descriptions of the various dams and the profile of James River.

Hydrography of Virginia, Bulletin Geological Survey of Virginia No. 3, 1906, pages 94–162; full report of 1897 reconnaissance, description of dams, and profile of river; and all records and discharge data collected in the James River basin prior to 1906, revised by engineers of the United States Geological Survey, published by the Virginia Board of Agriculture and Immigration, Richmond, Va.

United States Forest Service Circulars Nos. 143 and 144, Relation of southern Appalachian Mountains to the development of inland water navigation and water power.

JAMES RIVER AT BUCHANAN, VA.

This station, which is located at the highway bridge near the Chesapeake & Ohio Railway depot at Buchanan, was established August 18, 1895. Previous to July 15, 1906, the observations of daily gage height were made by employees of the Geological Survey, but since that time the records have been obtained from the Weather Bureau.

Purgatory Creek, the nearest tributary, enters one-half mile below the bridge. The nearest important tributary is North Branch of James River, which enters 20 miles below Buchanan.

The ice at this station is of slight extent and usually lasts only for short periods.

The datum of the original wire gage, attached to the highway bridge, was lowered 2 feet April 3, 1897, to avoid negative readings; subsequently the datum of the gage has remained constant. The wire gage was replaced by a chain gage November 21, 1903.

The bed of the river under the bridge is composed of rock overlain with a heavy deposit of mud. There is a rock control several hundred feet below the station, but the plotting of the discharge measurements indicates changing conditions of flow at the bridge. The ratings developed are fairly accurate, however, for the periods which they cover.

The following discharge measurement was made by G. C. Stevens:

September 6: Width, 310 feet; area of section, 1,030 square feet; gage height, 2.46 feet; discharge, 859 second-feet.

Daily gage height, in feet, of James River at Buchanan, Va., for 1910.

[D. D. Booze, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.1	3.0	4.9	2.6	3.6	2.6	3.2	2.5	2.0	2.0	2.0	1.9
2	2.3	2.9	7.1	2.6	3.5	2.6	3.0	2.5	2.0	2.0	2.0	1.9
3	2.4	2.9	6.0	2.6	3.3	2.5	2.9	2.5	2.0	1.9	2.0	2.0
4	2.4	3.2	5.3	2.7	3.2	2.5	2.9	2.4	2.7	1.9	2.0	2.0
5	3.1	3.8	4.9	3.1	3 1	2.5	2.9	2.4	3.0	1.9	2.0	2.0
6	3.3	3.6	4.5	3.2	3.3	2.6	3.2	2.3	2.5	1.9	2.0	2.0
7	4.9	3.3	4.3	3.0	2.9	2.9	3.2	2.3	2.3	1.9	1.9	2.0
8	6.2	3.0	4.1	2.9	3.0	3.1	3.1	2.3	2.3	2.0	1.9	2.0
9	4.6	3.2	4.0	2.8	3.1	2.9	3.0	2.3	2.2	2.2	1.9	2.0
10	3.9	3.1	3.8	2.7	3.0	2.8	4.0	2.2	2.2	2.3	1.9	2.0
11	3.7	3.0	3.7	2.7	3.0	4.3	3.4	2.2	2.1	2.2	1.9	2.0
12	3.5	3.0	3.6	2.7	2.9	6.7	3.2	2.2	2.1	2.1	1.9	2.0
13	3.3	2.9	3.4	2.9	2.9	10.8	3.1	2.1	2.1	2.1	1.9	2.0
14	3.3	2.8	3.4	4.3	2.8	15.6	3.0	2.1	2.0	2.0	1.9	1.9
15	3.2	3.0	3.4	3.8	2.8	9.8	3.0	2.1	2.0	2.0	1.9	1.9
16	3.1	3.2	3.3	3.6	2.8	10.5	3.1	2.1	2.0	2.0	1.9	1.9
17	2.9	4.3	3.2	3.8	2.8	14.4	5.0	2.1	2.0	1.9	1.9	1.9
18	2.7	7.8	3.1	4.8	2.8	9.3	5.6	2.1	2.0	1.9	1.9	1.9
19	2.7	7.9	3.1	5.3	2.8	6.8	8.4	2.1	2.0	1.9	1.9	2.0
20	3.9	5.6	3.0	4.9	2.7	6.0	5.8	2.1	1.9	2.0	1.9	2.0
21	3.7	5.3	3.0	4.5	2.7	5.3	4.6	2.1	1.9	2.1	1.9	2.0
22	8.7	4.9	3.0	4.2	2.7	5.1	4.0	2.1	1.9	2.1	1.9	2.0
23	6.4	4.6	2.9	3.9	2.7	4.9	3.7	2.1	1.9	2.3	1.9	2.0
24	5.3	4.4	2.9	3.7	2.7	4.3	3.5	2.1	1.9	2.4	1.9	2.0
25	4.3	4.2	2.8	3.6	2.7	4.2	3.3	2.1	1.9	2.3	1.9	2.2
26	3.8	4.1	2.8	3.6	3.1	4.0	3.1	2.1	1.9	2.2	1.9	2.5
27	3.7	3.9	2.7	3.6	3.0	3.7	3.0	2.1	1.9	2.1	1.9	2.5
28	3.5	3.8	2.7	3.8	2.9	3.5	2.8	2.1	1.9	2.1	1.9	2.7
29	3.3	.....	2.7	3.9	2.8	3.5	2.7	2.1	1.9	2.1	1.9	2.9
30	3.1	.....	2.7	3.8	2.7	3.4	2.6	2.0	2.0	2.0	1.9	3.4
31	3.0	.....	2.6	.....	2.6	.....	2.5	2.0	.....	2.0	.....	3.7

Daily discharge, in second-feet, of James River at Buchanan, Va., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	585	1,480	4,880	1,030	2,340	1,030	1,740	930	515	515	515	450
2	745	1,360	10,400	1,030	2,180	1,030	1,480	930	515	515	515	450
3	835	1,360	7,460	1,030	1,880	930	1,360	930	515	450	515	515
4	835	1,740	5,780	1,140	1,740	930	1,360	835	1,140	450	515	515
5	1,610	2,680	4,880	1,610	1,610	930	1,360	835	1,480	450	515	515
6	1,880	2,340	4,030	1,740	1,880	1,030	1,740	745	930	450	515	515
7	4,880	1,880	3,620	1,480	1,360	1,360	1,740	745	745	450	450	515
8	7,970	1,480	3,240	1,360	1,480	1,610	1,610	745	745	515	450	515
9	4,240	1,740	3,040	1,240	1,610	1,360	1,480	745	660	660	450	515
10	2,860	1,610	2,680	1,140	1,480	1,240	3,040	660	660	745	450	515
11	2,500	1,480	2,500	1,140	1,480	3,620	2,030	660	585	660	450	515
12	2,180	1,480	2,340	1,140	1,360	9,300	1,740	660	585	585	450	515
13	1,880	1,360	2,030	1,360	1,360	23,600	1,610	585	585	585	450	515
14	1,880	1,240	2,030	3,620	1,240	47,000	1,480	585	515	515	450	450
15	1,740	1,480	2,030	2,680	1,240	19,500	1,480	585	515	515	450	450
16	1,610	1,740	1,880	2,340	1,240	22,300	1,610	585	515	515	450	450
17	1,360	3,620	1,740	2,680	1,240	40,700	5,100	585	515	450	450	450
18	1,140	12,500	1,610	4,660	1,240	17,600	6,480	585	515	450	450	450
19	1,140	12,800	1,610	5,780	1,240	9,580	14,400	585	515	450	450	515
20	2,860	6,480	1,480	4,880	1,140	7,460	6,960	585	450	515	450	515
21	2,500	5,780	1,480	4,030	1,140	5,780	4,240	585	450	585	450	515
22	15,400	4,880	1,480	3,430	1,140	5,330	3,040	585	450	585	450	515
23	8,500	4,240	1,360	2,860	1,140	4,880	2,500	585	450	745	450	515
24	5,780	3,820	1,360	2,500	1,140	3,620	2,180	585	450	835	450	515
25	3,620	3,430	1,240	2,340	1,140	3,430	1,880	585	450	745	450	660
26	2,680	3,240	1,240	2,340	1,610	3,040	1,610	585	450	660	450	930
27	2,500	2,860	1,140	2,340	1,480	2,500	1,480	585	450	585	450	930
28	2,180	2,680	1,140	2,680	1,360	2,180	1,240	585	450	585	450	1,140
29	1,880	.....	1,140	2,860	1,240	2,180	1,140	585	450	585	450	1,360
30	1,610	.....	1,140	2,680	1,140	2,030	1,030	515	515	515	450	2,030
31	1,480	.....	1,030	.....	1,030	.....	930	515	.....	515	.....	2,500

NOTE.—These discharges were obtained from a rating curve which is well defined below 20,300 second-feet.

Monthly discharge of James River at Buchanan, Va., for 1910.

[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	15,400	585	3,000	1.46	1.68	A
February	12,800	1,240	3,310	1.61	1.68	A
March	10,400	1,030	2,680	1.30	1.50	A
April	5,780	1,030	2,370	1.15	1.28	A
May	2,340	1,030	1,420	.689	.79	A
June	47,000	930	8,240	4.00	4.46	B
July	14,400	930	2,620	1.27	1.46	A
August	930	515	658	.319	.37	A
September	1,480	450	592	.287	.32	A
October	835	450	561	.272	.31	A
November	515	450	463	.225	.25	A
December	2,500	450	692	.336	.39	A
The year	47,000	450	2,200	1.07	14.49	

JAMES RIVER AT HOLCOMB ROCK, VA.

This station, which is located at the works of the Wilson Aluminum Co., at Holcomb Rock, was established in 1899. Since January, 1900, two readings daily have been furnished to the United States Geological Survey through the courtesy of George O. Seward, general manager of the company.

The gage consists of a copper float inclosed in a stilling box, and a vertical rod extending up through the power-house floor. No rating curve has been developed for this station.

Daily gage height, in feet, of James River at Holcomb Rock, Va., for 1910.

[J. H. Webb, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.05	2.05	4.8	1.7	2.65	1.55	2.15	1.45	1.3	1.15	1.15	1.05
2	1.2	1.9	7.2	1.6	2.5	1.5	2.1	1.4	1.4	.8	.9	1.1
3	1.4	1.95	5.85	1.45	2.3	1.5	2.0	1.35	1.35	1.05	.9	.95
4	1.45	2.25	4.9	1.75	2.15	1.5	1.9	1.5	1.25	.85	1.0	.65
5	1.75	2.5	4.2	1.8	2.05	1.15	2.15	1.4	1.4	.95	1.1	1.1
6	1.95	2.5	3.55	2.0	1.85	1.55	2.0	1.3	1.7	.9	.8	1.3
7	2.85	2.35	3.35	1.9	1.8	1.6	2.55	1.15	1.35	1.0	1.0	1.0
8	5.45	2.1	3.05	1.8	1.65	1.75	2.4	1.4	1.3	1.3	1.0	1.2
9	3.7	2.2	2.85	1.8	2.05	1.7	2.4	1.3	1.4	1.45	.95	1.15
10	2.9	2.1	2.65	1.5	1.85	1.6	2.4	1.35	1.4	1.5	.95	1.05
11	2.3	2.0	2.6	1.6	1.8	2.95	2.45	1.3	.8	1.5	1.0	.8
12	2.25	2.0	2.5	1.6	1.8	7.35	2.2	1.25	1.1	1.5	1.0	1.25
13	2.15	1.6	2.35	1.85	1.8	10.35	2.1	1.3	1.05	.85	.25	1.1
14	2.0	1.85	2.25	2.35	1.8	15.6	2.25	.7	1.0	1.05	1.0	.95
15	1.9	1.9	2.2	2.4	1.65	10.2	2.9	1.35	1.1	.95	.95	1.0
16	1.75	1.95	2.2	2.3	1.7	12.65	2.9	1.3	1.2	.8	1.0	.9
17	1.8	2.7	2.1	3.65	1.7	14.5	3.75	.9	1.2	.95	1.0	.9
18	1.7	9.0	2.1	5.75	1.7	9.8	4.35	1.05	.7	.75	.9	.6
19	1.85	8.95	2.1	5.45	1.7	6.8	7.7	1.35	1.0	1.1	.8	.8
20	2.1	5.3	2.0	4.45	1.7	5.85	4.9	1.2	1.1	1.05	.65	.75
21	4.05	4.35	2.0	3.8	1.7	4.65	3.55	.85	.85	1.15	1.0	1.05
22	8.65	4.2	1.9	3.25	1.4	4.1	2.95	1.3	.95	1.35	.9	.8
23	6.45	4.45	1.9	2.85	2.95	3.75	2.65	1.3	.85	1.05	.95	1.0
24	4.35	4.25	1.7	2.65	1.7	3.7	2.0	1.5	.85	1.45	.95	1.15
25	3.4	3.55	1.75	2.55	1.85	3.9	2.15	1.15	.8	1.4	.85	1.05
26	2.95	3.2	1.75	2.7	1.9	2.85	1.95	.55	1.05	1.35	1.05	1.25
27	2.65	2.8	1.55	2.8	1.95	2.75	1.9	1.15	.95	1.1	.5	1.8
28	2.55	2.95	1.75	2.9	1.8	2.7	1.8	1.0	1.15	1.1	1.15	1.15
29	2.45	.....	1.7	2.9	1.6	2.4	1.8	1.35	.95	1.15	1.2	1.35
30	2.3	.....	1.7	2.9	1.7	2.4	1.7	1.3	.95	.85	1.15	1.6
31	2.3	.....	1.65	.....	1.55	.....	1.35	1.3	.....	.85	.....	2.75

JAMES RIVER AT CARTERSVILLE, VA.

This station, which is located at the highway bridge crossing the James between Pemberton and Cartersville, about 50 miles above Richmond, was established January 1, 1899.

Willis River enters James River from the south about 1 mile above the station, and Rivanna River comes in from the north about 7 miles above. No important tributaries enter between Cartersville and Richmond.

During severe winters the discharge at this station is affected for short periods by ice.

The datum of the chain gage, which is attached to the bridge, has remained the same since the establishment of the station.

Discharge measurements are made from the bridge. Three or four measurements must be made each year to adequately define the discharge curve, as the river shows great range in stage and in quantity of débris and sediment carried. The left bank overflows for several hundred feet at a stage of about 20 feet. Above the overflow point the discharge is uncertain. The right bank does not overflow.

The following discharge measurement was made by G. C. Stevens:

September 7: Width, 652 feet; area of section, 1,710 square feet; gage height, 1.62 feet; discharge, 2,690 second-feet.

Daily gage height, in feet, of James River at Cartersville, Va., for 1910.

[B. W. Palmore, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.45	3.40	7.79	2.17	4.00	2.13	3.03	1.55	1.15	0.79	1.18	1.27
2	1.65	3.06	8.65	2.06	3.67	2.00	2.77	1.53	1.40	.84	1.18	1.16
3	2.01	3.13	9.37	2.23	3.43	1.89	2.61	1.79	1.35	.86	1.32	1.11
4	1.97	3.73	7.63	2.43	3.20	1.83	2.55	1.44	1.43	.78	1.68	1.08
5	2.04	4.26	6.61	2.51	2.93	1.76	3.60	1.39	1.80	.71	1.58	1.08
6	1.91	3.97	6.09	2.41	2.84	1.99	3.07	1.32	1.57	.69	1.40	1.28
7	3.23	3.45	5.15	2.27	2.73	2.07	2.73	1.24	1.60	.72	1.26	1.42
8	3.76	3.17	4.67	2.26	2.79	2.03	3.60	1.17	1.58	1.38	1.28	1.58
9	5.10	3.23	4.37	2.26	2.74	2.07	4.57	1.09	1.46	2.82	1.20	1.51
10	4.57	3.30	4.07	2.17	2.73	2.63	3.70	1.19	1.16	4.06	1.21	1.42
11	3.73	2.94	3.83	2.06	2.77	3.71	2.73	1.23	1.09	2.28	1.18	1.40
12	3.47	2.91	3.61	2.01	2.59	5.93	4.05	1.06	1.02	1.86	1.12	1.42
13	2.97	2.90	3.37	2.31	2.57	10.45	3.35	1.03	1.04	1.56	1.00	1.18
14	2.73	2.79	3.23	2.46	2.53	12.95	4.50	1.06	1.07	1.34	.92	1.12
15	2.63	2.78	3.15	2.63	2.43	17.01	3.87	1.19	1.02	1.27	1.11	1.26
16	2.45	3.20	3.10	3.23	2.33	18.65	3.36	1.29	1.06	1.08	1.02	1.24
17	2.27	3.51	2.94	7.03	2.24	19.89	3.75	1.29	1.01	.99	1.11	1.28
18	2.43	7.50	2.87	10.30	2.31	16.85	4.83	1.21	1.00	.96	1.10	1.34
19	2.46	10.91	2.74	9.35	2.21	11.47	8.10	1.15	.89	.98	1.08	1.38
20	2.43	10.33	2.67	8.35	2.16	8.63	8.66	1.26	.98	1.76	1.00	1.37
21	3.15	7.28	2.60	6.70	2.14	6.87	8.60	1.19	.94	2.25	1.02	1.30
22	10.99	6.67	2.57	5.55	2.23	5.67	4.45	1.43	.89	1.88	1.02	1.25
23	9.80	6.25	2.56	5.00	2.67	4.45	3.85	1.62	.97	2.75	1.00	1.05
24	7.77	5.73	2.47	4.85	2.63	3.73	3.79	1.27	.91	2.12	1.08	1.88
25	6.77	5.47	2.35	5.13	3.01	3.63	3.57	1.17	.88	1.76	1.09	1.98
26	5.03	4.90	2.26	4.67	3.58	3.53	2.47	1.16	.80	1.81	1.08	2.18
27	4.29	4.57	2.25	4.27	3.43	3.45	2.33	1.21	.81	1.58	.96	2.08
28	3.87	4.11	2.23	4.09	2.75	3.44	2.09	1.12	.82	1.45	1.09	2.31
29	3.73	.....	2.17	4.15	2.63	3.39	1.87	1.02	.78	1.32	1.08	2.34
30	3.67	.....	2.25	4.09	2.35	3.21	1.71	.90	.68	1.39	1.18	2.40
31	3.61	.....	2.16	.....	2.16	.....	1.63	1.06	.....	1.32	.....	2.52

NOTE.—Floating ice in the river Dec. 7–16 and 18–21.

Daily discharge, in second-feet, of James River at Cartersville, Va., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,040	5,920	18,300	3,340	7,360	3,270	5,600	2,450	1,820	1,240	1,880	2,040
2	2,380	5,150	21,100	3,130	6,560	3,020	5,030	2,510	2,270	1,310	1,880	1,840
3	3,040	5,310	23,600	3,460	5,990	2,810	4,690	3,010	2,180	1,250	2,130	1,760
4	2,960	6,700	17,800	3,850	5,460	2,700	4,560	2,340	2,320	1,220	2,790	1,710
5	3,100	8,030	14,600	4,010	4,870	2,580	6,880	2,250	3,030	1,120	2,600	1,710
6	2,850	7,280	13,100	3,810	4,680	3,000	5,680	2,130	2,580	1,080	2,270	2,050
7	5,530	6,040	10,400	3,530	4,450	3,150	4,940	1,980	2,640	1,130	2,020	2,310
8	6,770	5,390	9,110	3,510	4,580	3,080	6,880	1,860	2,600	2,230	2,050	2,600
9	10,300	5,530	8,310	3,510	4,470	3,150	9,200	1,720	2,380	5,130	1,910	2,470
10	8,840	5,690	7,540	3,340	4,450	4,250	7,110	1,890	1,840	7,960	1,930	2,310
11	6,700	4,890	6,940	3,130	4,540	6,650	4,940	1,960	1,720	4,000	1,880	2,270
12	6,080	4,830	6,410	3,040	4,170	12,600	7,940	1,670	1,600	3,150	1,770	2,310
13	4,960	4,810	5,850	3,610	4,130	27,300	6,300	1,620	1,640	2,560	1,570	1,880
14	4,450	4,580	5,530	3,910	4,050	36,500	9,030	1,670	1,690	2,160	1,440	1,770
15	4,250	4,560	5,350	4,250	3,850	52,900	7,510	1,890	1,600	2,040	1,760	2,020
16	3,890	5,460	5,240	5,530	3,650	60,100	6,330	2,070	1,670	1,710	1,600	1,980
17	3,530	6,170	4,890	15,900	3,480	65,800	7,220	2,070	1,590	1,550	1,760	2,050
18	3,850	17,400	4,750	26,800	3,610	52,200	9,860	1,930	1,570	1,510	1,740	2,160
19	3,910	28,900	4,470	23,500	3,420	31,000	19,300	1,820	1,400	1,540	1,710	2,230
20	3,850	26,900	4,330	20,100	3,320	21,000	21,100	2,020	1,540	2,950	1,570	2,220
21	5,350	16,700	4,190	14,900	3,290	15,500	20,900	1,890	1,470	3,940	1,600	2,090
22	29,200	14,800	4,130	11,500	3,460	12,100	8,900	2,320	1,400	3,190	1,600	2,000
23	25,000	13,600	4,110	10,000	4,330	8,900	7,460	2,680	1,520	4,980	1,570	1,660
24	18,200	12,000	3,930	9,600	4,250	7,180	7,320	2,040	1,430	3,670	1,710	3,190
25	15,100	11,300	3,690	10,400	5,040	6,950	6,810	1,860	1,380	2,950	1,720	3,390
26	10,100	9,730	3,510	9,110	6,340	6,720	4,400	1,840	1,250	3,050	1,710	3,790
27	8,100	8,840	3,500	8,050	5,990	6,540	4,100	1,930	1,270	2,600	1,510	3,590
28	7,040	7,640	3,460	7,580	4,500	6,510	3,610	1,770	1,280	2,360	1,720	4,060
29	6,700	.....	3,340	7,740	4,250	6,400	3,170	1,600	1,220	2,130	1,710	4,120
30	6,560	.....	3,500	7,580	3,690	5,990	2,850	1,410	1,070	2,250	1,880	4,250
31	6,410	.....	3,320	.....	3,320	.....	2,700	1,670	.....	2,130	.....	4,500

NOTE.—These discharges were obtained as follows: Jan. 1 to June 20, from a rating curve which is well defined below 25,800 second-feet; above this the curve has been extended by a study of the area and velocity curves. June 21 to Dec. 31, from a well-defined rating curve.

Monthly discharge of James River at Cartersville, Va., for 1910.

[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	29,200	2,040	7,450	1.20	1.38	A
February	28,900	4,560	9,430	1.51	1.57	A
March	23,600	3,320	7,690	1.23	1.42	A
April	26,800	3,040	8,060	1.29	1.44	A
May	7,360	3,290	4,500	.722	.83	A
June	65,800	2,580	16,000	2.57	2.87	B
July	21,100	2,700	7,490	1.20	1.38	A
August	3,010	1,410	2,000	.321	.37	A
September	3,030	1,070	1,770	.284	.32	A
October	7,960	1,080	2,580	.414	.48	A
November	2,790	1,440	1,830	.294	.33	A
December	4,500	1,660	2,530	.406	.47	A
The year	65,800	1,070	5,900	.947	12.86	

ROANOKE RIVER BASIN.

DESCRIPTION.

Roanoke River is formed by the North and South forks, which rise among the eastern foothills of the Appalachian Mountains and unite near Lafayette, at the eastern edge of Montgomery County, Va. From this junction the river flows in a general southeasterly direction, across the northeast corner of North Carolina, and empties into the Atlantic through Albemarle Sound. The total drainage area is about 9,200 square miles. The section of river extending from a short distance below Roanoke to the junction of the Dan is known locally as Staunton River and was so called in the reports of the United States Geological Survey prior to 1905.

Dan River, which rises in Surry County, N. C., and Patrick County, Va., and empties into the Roanoke near Clarksville, in the southwestern part of Mecklenburg County, Va., is by far the largest tributary, the other streams of the basin being relatively small and unimportant.

The drainage basin of the Roanoke is divided into two nearly equal parts by the fall line, which crosses the river between Weldon and Gaston. The eastern part, known as the Coastal Plain, is built up of unconsolidated sands, gravels, loams, clays, and marls of recent geologic age. It is low and flat and so poorly drained that a large proportion of the area is swampy. The general slope of this section of the basin is from 1 to 3 feet per mile. The river is sluggish and is navigable by light-draft boats at all seasons as far west as Weldon. Above the fall line, in the region known as the Piedmont Plateau, the country is more broken and the river has greater fall, having cut its bed down to the underlying metamorphic rocks. Building stones are found in abundance in different sections. Along the river are many fine bottoms, which contain some of the best farming lands in the region. The surface is undulating, and the hills become higher toward the western margin. Altitudes within the basin range from sea level to 3,000 feet above.

The Coastal Plain section of the area is heavily forested, and large quantities of timber and shingles are shipped. In the Piedmont Plateau area the extent of forest covering has not been ascertained except in the area drained by the Dan, in which there are extensive timbered areas.

The mean annual rainfall for the drainage basin in the Piedmont Plateau ranges from 38 to 47 inches in different parts of the area, as determined from six Weather Bureau stations having records of 5 to 16 years in length. In the Coastal Plain section the rainfall is somewhat greater, increasing toward the coast line.

This drainage area of the Roanoke lies so far south that the flow of the stream is relatively little affected by ice.

The area contains no lakes, but owing to the hilly character of the upper basin sites for reservoirs of moderate capacity probably exist. Especially is this true for the portion of the basin drained by Dan River, where the river bed is solid rock overlain with sands and gravel between the rapids, affording excellent facilities for dams.

In 1905 a survey of Roanoke River was made by the United States Geological Survey from Roanoke, Va., to Weldon, N. C. This survey showed that the fall between the two points was 976 feet in a distance of 231 miles, or an average of 4.2 feet per mile.

The United States Geological Survey has maintained records of flow in this basin since 1896, and the records compiled since that date show the year of greatest run-off to be 1901 and that of least run-off 1904. The total flow in the latter year was less than half that of the former. The region is subject to heavy rainstorms, which produce floods that rise very rapidly and subside as quickly.

The following special reports contain information regarding the surface waters of the Roanoke River basin:

Hydrography of Virginia: Bull. Geol. Survey Virginia No. 3, 1906, pp. 163–213 (published by Virginia Board of Agriculture and Immigration, Richmond, Va.). This contains all records and discharge data collected in the Roanoke basin prior to 1906, revised by engineers of the United States Geological Survey.

Water power in North Carolina: Bull. North Carolina Geol. Survey No. 8; postage 16 cents. This publication includes information regarding the water power of the Roanoke and its tributaries in North Carolina.

Water powers of North Carolina: Bull. North Carolina Geol. Survey (in preparation), Dr. J. H. Pratt, State geologist, Chapel Hill, N. C. This includes all records of discharge in the Roanoke basin prior to 1908, collected by engineers of the United States Geological Survey, except for Roanoke River at Roanoke, Tinker Creek at Roanoke, Back Creek near Roanoke, and Banister River at Houston.

Relation of southern Appalachian Mountains to the development of inland water navigation and water power: U. S. Forest Service Circulars Nos. 143 and 144.

ROANOKE RIVER AT ROANOKE, VA.

This station was established July 10, 1896, at the Walnut Street Bridge in Roanoke. Observation of gage heights was discontinued July 14, 1906, but was resumed May 7, 1908, and the records are now being furnished to the United States Geological Survey through the courtesy of the Roanoke Railway & Electric Co.

The nearest important tributary, Tinker Creek, enters Roanoke River about 3 miles below the gaging section. The overflow from Crystal Spring, which is approximately 2 second-feet, enters the Roanoke between Walnut Street Bridge, where the chain gage is located, and Jefferson Street Bridge, one-third mile above, where

discharge measurements are usually made. Crystal Spring is the source of water supply for the city of Roanoke.

The records indicate that the discharge is not materially affected by ice.

No change has been made in the datum of the gage. Owing to varying conditions of flow frequent measurements are required at low stages to adequately define the true discharge curve from year to year.

The following discharge measurement was made by G. C. Stevens:

September 6: Width, 130 feet; area of section, 229 square feet; gage height, 1.24 feet; discharge, 278 second-feet.

Daily gage height, in feet, of Roanoke River at Roanoke, Va., for 1910.

[C. C. Hogshead, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.45	0.9	1.6	0.9	1.2	1.1	1.3	1.1	1.3	0.7	0.8	0.75
2	.6	1.1	2.85	.95	1.15	.95	1.35	1.05	1.25	.75	.8	.7
3	.9	1.2	2.1	.95	1.1	.9	1.25	1.05	1.35	.75	.75	.65
4	.9	1.4	2.0	1.1	1.15	.85	1 25	1.1	1.35	.7	.8	.7
5	.95	1.45	1.9	1.15	1.1	1.0	2.0	1.0	1.5	.75	.7	.75
6	.8	1.1	1.9	1.05	1.1	1.25	1.45	1.05	1.25	.7	.75	.9
7	1.3	1.35	1.85	1.1	1.1	1.0	1.85	.95	1.05	.85	.75	1.0
8	1.75	1.4	1.7	1.05	1.1	1.0	1.55	.95	1.05	1.25	.7	.85
9	1.5	1.3	1.6	.95	1.25	1.05	2.0	1.0	.95	1.65	.7	.9
10	1.25	1.25	1.6	1.0	1.15	1.25	1 9	.9	.95	1.2	.65	.85
11	1.15	1.1	1.5	.95	1.2	2.4	1.75	.95	.9	1.05	.7	.85
12	1.0	1.1	1.4	1.0	1.15	3.05	1.3	.9	.85	1.0	.7	.85
13	1.05	1.0	1.4	1.15	1.1	7.75	1.4	.9	.9	1.0	.65	.8
14	1.0	1.0	1.3	1.1	1.1	6.25	1.9	.9	.85	.85	.7	.85
15	.9	1.15	1.25	1.15	1.05	3.5	1.9	.85	.95	.9	.65	.8
16	.85	1.3	1.2	1.05	1.05	4.3	1.75	.9	.85	.85	.7	.75
17	.9	2.0	1.15	1.15	1.05	3.25	1.9	.8	.85	.85	.7	.75
18	.95	4.6	1.2	1.7	.95	2.7	4.25	.8	.85	.85	.65	7
19	1.0	2.55	1.2	1.55	1.0	2.25	2.35	.9	.75	.8	.65	.8
20	1.0	1.95	1.15	1.55	.9	2.0	2.0	1.0	.8	.9	.6	.7
21	1.85	1.9	1.15	1.45	1.0	1.9	1.75	.9	.75	.85	.65	.4
22	2.1	1.9	1.1	1.5	1.0	2.1	1.5	.85	.75	.9	.7	.5
23	1.9	1.85	1.1	1.45	1.0	2.05	1.35	.8	.8	.9	.65	.7
24	1.6	1.8	1.1	1.35	1.15	1.95	1.35	.85	.75	.85	.7	.9
25	1.5	1.65	1.05	1.3	1.4	2.45	1.3	.8	.8	.9	.65	.95
26	1.25	1.65	1.0	1.25	1.25	2 0	1.25	.85	.8	.85	.7	.95
27	1.2	1.6	.95	1.25	1.25	1.55	1.2	.95	.8	.9	.7	.95
28	1.2	1.45	1.0	1.25	1.2	1.9	1.15	.9	.8	.9	.7	.85
29	1.1	.....	.95	1.15	1.25	1.45	1.1	.95	.75	.8	.75	.9
30	1.0	.....	.95	1.2	1.15	1.4	1.15	.85	.....	.85	.7	1.2
31	.95	.....	.95	.....	1.15	.....	1.05	1.0	.....	.75	.....	1.4

NOTE.—The flow was probably retarded by freezing conditions on Jan. 1 and 2 and Dec. 21 and 22.

Daily discharge, in second-feet, of Roanoke River at Roanoke, Va., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	60	136	430	136	237	200	310	224	310	96	122	109
2	80	200	1,490	151	218	151	335	205	287	109	122	96
3	136	237	770	151	200	136	287	205	335	109	109	85
4	136	326	690	200	218	123	287	224	335	96	122	96
5	151	351	620	218	200	166	725	186	415	109	96	109
6	110	200	620	183	200	258	388	205	287	96	109	152
7	279	302	585	200	200	166	622	169	205	137	109	186
8	519	326	488	183	200	166	442	169	205	287	96	137
9	376	279	430	151	258	183	725	186	169	500	96	152
10	258	258	430	166	218	258	655	152	169	264	85	137
11	218	200	376	151	237	1,030	560	169	152	205	96	137
12	166	200	326	166	218	1,720	310	152	137	186	96	137
13	183	166	326	218	200	7,970	360	152	152	186	85	122
14	166	166	279	200	200	5,940	655	152	137	137	96	137
15	136	218	258	218	183	2,260	655	137	169	152	85	122
16	123	279	237	183	183	3,310	560	152	137	137	96	109
17	136	690	218	218	183	1,960	655	122	137	137	96	109
18	151	3,720	237	488	151	1,340	3,240	122	137	137	85	96
19	166	1,180	237	403	166	920	1,000	152	109	122	85	122
20	166	655	218	403	136	725	725	186	122	152	74	96
21	585	620	218	351	166	655	560	152	109	137	85	96
22	770	620	200	376	166	800	415	137	109	152	96	96
23	620	585	200	351	166	762	335	122	122	152	85	96
24	430	550	200	302	218	690	335	137	109	137	96	152
25	376	459	183	279	326	1,100	310	122	122	152	85	169
26	258	459	166	258	258	725	287	137	122	137	96	169
27	237	430	151	258	258	442	264	169	122	152	96	169
28	237	351	166	258	237	655	244	152	122	152	96	137
29	200	.....	151	218	258	388	224	169	109	122	109	152
30	166	.....	151	237	218	360	244	137	102	137	96	264
31	151	.....	151	.....	218	.....	205	186	.....	109	.....	360

NOTE.—These discharges were obtained from two well-defined rating curves, one applicable from Jan. 1 to June 13 and the other from June 14 to Dec. 31. Discharge on Jan. 1 and 2 and Dec. 21 and 22 estimated because of probable effect of ice above the station.

Monthly discharge of Roanoke River at Roanoke, Va., for 1910.

[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	770	[1] 60	250	0.644	0.74	B
February	3,720	136	506	1.30	1.35	A
March	1,490	151	361	.930	1.07	A
April	488	136	242	.624	.70	A
May	326	136	210	.541	.62	A
June	7,970	123	1,190	3.07	3.42	B
July	3,240	205	546	1.41	1.63	A
August	224	122	163	.420	.48	A
September	415	[1] 102	175	.451	.50	A
October	500	96	158	.407	.47	A
November	122	74	96.7	.249	.28	A
December	360	85	139	.358	.41	B
The year	7,970	[1] 60	334	.861	11.67	

[1] Estimated.

YADKIN OR PEDEE RIVER BASIN.

DESCRIPTION.

Yadkin River, called Pedee River below the junction with the Uharie, rises on the eastern slope of the Blue Ridge in Caldwell, Watauga, and Wilkes counties, N. C., and flows in a general southeasterly direction across North Carolina and South Carolina, emptying into the Atlantic through Winyah Bay at Georgetown, S. C. The length of the stream from source to mouth by general course is about 300 miles, and the drainage area comprises about 10,600 square miles. The head of navigation is at Cheraw, S. C, about 149 miles above its mouth.

The river has no tributaries which compare with it in size. The larger of the tributaries are Little Pedee and Lynches rivers in South Carolina and South Yadkin River in North Carolina.

The upper part of the drainage basin is in the Appalachian Mountains proper and is largely forest covered. The extreme upper portion of the basin reaches an elevation of 3,000 feet, but the streams fall rapidly to 1,500 feet elevation and reach 1,000 feet elevation above Wilkesboro, N. C. From Wilkesboro down to the fall line, near Cheraw, S. C., the basin lies in the Piedmont Plateau. Above the fall line the rocks consist of various granites, gneisses, and schists; below the fall line these pass beneath the much younger sedimentary deposits of the Coastal Plain.

Ice and snow occur in noteworthy amounts only in the higher parts of the basin, but even there they do not affect the stream flow to any appreciable degree. The average rainfall for the basin is 50 to 60 inches in the upper portion and 45 to 50 inches in the lower portion. Storage is possible at a number of places, but owing to steep slopes of the streams especially good sites are probably lacking.

In North Carolina the main stream and many of its tributaries afford a great amount of power, much of which has been developed.

The following special reports contain information regarding the hydrography of the Yadkin River basin.:

Water power in North Carolina: Bull. North Carolina Geol. Survey No. 8, pp. 172–203; postage, 16 cents.

Water powers of North Carolina (in preparation): Bull. North Carolina Geol. Survey, J. H. Pratt, State geologist, Chapel Hill, N. C. This report contains all records of discharge collected in the Yadkin River basin prior to 1908 by engineers of the United States Geological Survey.

Relation of southern Appalachian Mountains to the development of inland water navigation and water power: U. S. Forest Service Circulars Nos. 143 and 144.

Hydrography of the southern Appalachian Mountain region, part 2, by H. A. Pressey, 1902: Water-Supply Paper U. S. Geol. Survey No. 63. The Geological Survey has no copies of this paper for free distribution, but the report may be purchased (price, 15 cents) from the Superintendent of Documents, Washington, D. C.

YADKIN RIVER NEAR PEDEE, N. C.

This station is located near Pedee, N. C., about 1,500 feet below the dam of the Rockingham Power Co. A vertical gage was installed August 9, 1906, by the engineers of the power company, for the purpose of keeping daily records of river height at the power site, and the record has been maintained continuously since that time. Except for the discharge measurement made on November 13, 1908, all the measurements in 1908, 1909, and 1910 were made and furnished by the power company. Gage heights have been furnished by the company since August 9, 1906.

The measurements are made from a ferryboat at the ferry, a short distance below the gage. The section is somewhat rough and irregular but is better than any other near-by section which was examined. The extreme low portion of the rating curve is uncertain, as it is not covered by measurements.

Discharge measurements of Yadkin River near Pedee, N. C., in 1910.

Date.	Hydrographer.	Area of section.	Gage height.	Discharge.
		Sq. ft.	*Feet.*	*Sec.-ft.*
May 3	W. S. Ide	3,910	87.57	3,260
June 2	do	3,670	87.20	2,830
Aug. 2	do	3,610	87.22	3,020

Daily gage height, in feet, of Yadkin River near Pedee, N. C., for 1910.

[W. S. Ide, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	87.2	90.2	91.5	87.75	87.7	87.3	87.85	87.2	88.4	87.2	87.15	87.15
2	87.15	89.5	98.25	87.75	87.6	87.25	87.95	87.2	93.1	87.2	87.25	87.15
3	87.4	89.05	96.4	87.8	87.6	87.15	87.65	87.25	94.3	87.2	87.25	87.15
4	88.15	88.8	92.9	87.9	87.4	87.1	87.55	88.15	93.3	87.2	87.25	87.05
5	87.8	88.75	90.85	87.9	87.45	87.05	87.5	88.7	91.1	87.25	87.3	87.05
6	87.6	88.55	90.3	87.9	87.35	87.35	87.5	88.5	91.3	87.25	87.35	87.45
7	87.6	88.3	90.5	87.75	87.35	87.75	88.4	90.25	89.8	87.3	87.3	89.4
8	87.65	88.2	89.9	87.65	88.15	87.75	88.5	90.05	88.8	88.5	87.25	90.1
9	88.4	88.3	89.25	87.7	92.4	87.7	88.4	88.55	88.5	91.2	87.25	89.05
10	88.65	88.65	88.95	87.55	91.0	87.5	88.75	88.35	88.8	94.0	87.25	88.25
11	88.0	88.7	88.85	87.5	90.2	89.4	89.05	87.9	89.15	90.5	87.25	87.8
12	87.65	91.9	89.4	87.55	89.15	89.5	89.05	87.4	88.55	89.6	87.25	87.55
13	87.5	91.35	90.3	87.5	88.45	91.25	88.8	87.35	88.15	88.75	87.2	87.6
14	87.6	90.15	89.65	87.55	88.1	94.2	88.9	87.55	87.75	88.25	87.15	87.35
15	87.75	89.5	89.15	88.0	87.9	100.3	90.35	87.4	87.7	87.95	87.1	87.35
16	87.65	89.5	88.75	88.15	87.7	98.5	92.2	87.6	87.7	87.7	87.15	87.25
17	87.55	89.95	88.6	87.95	87.6	93.4	90.4	87.4	87.5	87.65	87.2	87.35
18	87.55	92.6	88.4	89.6	87.55	91.25	89.25	87.25	87.3	87.5	87.2	87.35
19	87.55	94.55	88.4	89.75	87.5	89.8	89.55	87.2	87.2	87.45	87.15	87.25
20	87.9	91.4	88.3	89.2	87.65	89.05	89.15	87.25	87.2	88.15	87.15	87.25
21	88.35	90.7	88.25	88.5	87.8	89.35	88.45	87.1	87.2	88.5	87.1	87.4
22	92.2	91.25	88.25	88.2	87.75	89.1	87.95	87.05	87.2	88.35	87.15	87.35
23	91.95	91.25	88.2	88.0	87.8	88.6	87.75	89.50	87.15	88.1	87.2	87.25
24	90.35	90.55	88.2	87.85	87.85	88.6	87.55	89.40	87.2	87.65	87.15	87.4
25	89.6	90.25	88.1	87.8	87.85	88.35	87.5	88.0	87.15	87.55	87.15	88.4
26	89.5	89.9	88.0	87.8	88.0	88.55	87.4	87.7	87.1	87.4	87.15	89.2
27	88.9	89.45	88.0	87.8	88.35	88.7	87.4	87.85	87.1	87.35	87.15	88.6
28	88.7	82.25	88.0	88.0	88.15	88.7	88.2	87.75	87.1	87.3	87.05	88.25
29	93.95	.....	87.9	88.05	87.8	87.95	88.05	87.6	87.05	87.3	87.1	87.8
30	92.95	.....	87.8	87.85	87.5	87.7	87.65	87.55	87.1	87.2	87.15	87.85
31	90.95	.....	87.85	.....	87.3	.....	87.25	87.45	.....	87.25	.....	88.3

Daily discharge, in second-feet, of Yadkin River near Pedee, N. C., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,900	9,900	13,400	4,020	3,920	3,100	4,240	2,900	5,470	2,900	2,800	2,800
2	2,800	8,100	.....	4,020	3,710	3,000	4,460	2,900	.....	2,900	3,000	2,800
3	3,300	7,000	.....	4,130	3,710	2,800	3,820	3,000	.....	2,900	3,000	2,800
4	4,900	6,400	.....	4,350	3,300	2,700	3,600	4,900	.....	2,900	3,000	.....
5	4,130	6,280	11,600	4,350	3,400	.....	3,500	6,160	12,300	3,000	3,100	.....
6	3,710	5,820	10,200	4,350	3,200	3,200	3,500	5,700	12,800	3,000	3,200	3,400
7	3,710	5,240	10,700	4,020	3,200	4,020	5,470	10,000	8,860	3,100	3,100	7,850
8	3,820	5,010	9,120	3,820	4,900	4,020	5,700	9,510	6,400	5,700	3,000	9,640
9	5,470	5,240	7,480	3,920	.....	3,920	5,470	5,820	5,700	12,500	3,000	7,000
10	6,040	6,040	6,760	3,600	12,000	3,500	6,280	5,360	6,400	.....	3,000	5,120
11	4,570	6,160	6,520	3,500	9,900	7,850	7,000	4,350	7,240	10,700	3,000	4,130
12	3,820	14,400	7,850	3,600	7,240	8,100	7,000	3,300	5,820	8,350	3,000	3,600
13	3,500	12,900	10,200	3,500	5,580	12,700	6,400	3,200	4,900	6,280	2,900	3,710
14	3,710	9,770	8,480	3,600	4,790	.....	6,640	3,600	4,020	5,120	2,800	3,200
15	4,020	8,100	7,240	4,570	4,350	.....	10,300	3,300	3,920	4,460	2,700	3,200
16	3,820	8,100	6,280	4,900	3,920	.....	.....	3,710	3,920	3,920	2,800	3,000
17	3,600	9,250	5,930	4,460	3,710	.....	10,400	3,300	3,500	3,820	2,900	3,200
18	3,600	.....	5,470	8,350	3,600	12,700	7,480	3,000	3,100	3,500	2,900	3,200
19	3,600	.....	5,470	8,730	3,500	8,860	8,220	2,900	2,900	3,400	2,800	3,000
20	4,350	13,100	5,240	7,360	3,820	7,000	7,260	3,000	2,900	4,900	2,800	3,000
21	5,360	11,200	5,120	5,700	4,130	7,720	5,580	2,700	2,900	5,700	2,700	3,300
22	.....	12,700	5,120	5,010	4,020	71,120	4,460	.....	2,900	5,360	2,800	3,200
23	14,600	12,700	5,010	4,570	4,130	5,930	4,020	8,100	2,800	4,790	2,900	3,000
24	10,300	10,800	5,010	4,240	4,240	5,930	3,600	7,850	2,900	3,820	2,800	3,300
25	8,350	10,000	4,790	4,130	4,240	5,360	3,500	4,570	2,800	3,600	2,800	5,470
26	8,100	9,120	4,570	4,130	4,570	5,820	3,300	3,920	2,700	3,300	2,800	7,360
27	6,640	7,980	4,570	4,130	5,360	6,160	3,300	4,240	2,700	3,200	2,800	5,930
28	6,160	.....	4,570	4,570	4,900	6,160	5,010	4,020	2,700	3,100	.....	5,120
29	.....	.....	4,350	4,680	4,130	4,460	4,680	3,710	.....	3,100	2,700	4,130
30	.....	.....	4,130	4,240	3,500	3,920	3,820	3,600	2,700	2,900	2,800	4,240
31	11,800	.....	4,240	.....	3,100	.....	3,000	3,400	.....	3,000	.....	5,240

NOTE.—These discharges are based on a rating curve which is fairly well defined between 3,300 and 13,400 second-feet. Discharges for all missing days were greater than 14,700 second-feet. Below 3,000 second-feet the discharges are only approximate.

PEDEE RIVER AT CHERAW, S. C.

This station, which is located at the highway bridge at Cheraw, about half a mile below the bridge of the Seaboard Air Line Railway, was established by the United States Weather Bureau April 1, 1891. The first discharge measurements by the United States Geological Survey were made during 1909.

Although the flood of August, 1908, had destroyed the gage, it was thought possible that the original gage datum could be preserved and a rating made which would apply for some of the previous years. A temporary gage was used until the new vertical gage attached to the new bridge pier was put into use on November 3, 1909. The low-water section of the temporary gage was so defective and variable that is is impossible to adjust the readings from it to the datum of the new gage, which is presumably on the original gage datum. The records from August 28, 1908, to November 2, 1909, therefore, can not be supplied. The gage heights are furnished by the United States Weather Bureau.

Before the installation of the new gage, discharge measurements were made at the railroad bridge, and by means of reference points have been correctly adjusted to the present gage datum.

Conditions of flow appear fairly good, but no rating has yet been developed.

Discharge measurements of Pedee River at Cheraw, S. C., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gage height.	Discharge.
		Feet	*Sq. ft.*	*Feet.*	*Sec.-ft.*
Feb. 17	E. H. Sweet	325	4,780	7.35	9,990
18	do	333	5,320	9.18	12,600

Daily gage height, in feet, of Pedee River at Cheraw, S. C., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.5	10.8	7.1	2.7	2.8	2.0	2.5	2.0	3.2	1.6	1.6	1.6
2	2.3	7.7	24.2	2.7	2.7	1.9	2.3	1.8	5.8	1.8	1.6	1.5
3	2.1	5.6	28.1	2.6	2.5	1.6	2.5	2.0	20.0	1.8	1.5	1.4
4	1.9	5.0	24.5	2.5	2.4	1.4	2.6	1.9	19.3	1.6	1.6	1.4
5	2.8	5.2	17.5	2.5	2.4	1.2	2.4	1.7	16.2	1.5	1.8	1.5
6	3.2	4.9	11.9	2.6	2.2	2.0	2.1	1.7	12.2	1.5	2.0	1.8
7	2.8	4.2	8.2	2.7	2.0	2.8	2.0	4.3	9.6	1.6	1.9	2.1
8	2.4	3.9	8.8	2.8	2.0	3.1	2.0	7.0	7.4	1.8	1.9	4.3
9	2.7	3.3	8.0	2.7	9.0	2.7	3.7	6.0	5.0	6.5	1.8	7.5
10	3.2	3.6	5.9	2.6	13.8	3.3	4.0	4.2	3.8	15.7	1.8	6.2
11	4.7	4.7	4.6	2.5	10.2	5.3	4.1	3.4	4.4	16.7	1.7	3.8
12	3.4	9.7	4.9	2.4	6.8	7.0	4.6	2.8	4.5	9.9	1.6	2.7
13	2.8	13.0	7.8	2.3	4.7	10.2	5.5	2.5	4.0	6.0	1.6	2.3
14	2.4	11.6	8.7	2.3	3.5	14.2	4.8	2.1	3.2	4.2	1.5	2.2
15	2.3	9.8	7.6	2.5	3.1	28.4	5.2	2.5	2.9	3.3	1.5	2.1
16	2.4	6.7	5.4	2.6	2.9	31.8	9.1	2.2	2.6	2.8	1.5	2.0
17	2.5	5.0	4.8	2.7	2.8	28.7	12.3	2.0	2.4	2.5	1.4	1.9
18	2.3	7.3	4.0	3.4	2.7	21.8	7.5	2.2	2.2	2.3	1.4	1.8
19	2.4	19.6	3.9	7.2	2.5	14.9	5.2	2.0	2.1	2.1	1.4	2.0
20	2.5	20.3	3.8	6.4	2.4	9.1	4.4	1.8	2.0	2.9	1.4	2.3
21	2.6	17.6	3.7	4.9	2.3	6.0	6.0	1.7	1.9	4.2	1.3	2.2
22	6.4	11.8	3.6	4.0	2.7	6.2	4.2	1.7	1.8	4.0	1.3	2.1
23	13.7	12.5	3.5	3.4	2.8	5.0	3.3	1.6	1.7	3.4	1.3	2.0
24	12.0	12.2	3.5	3.0	2.6	3.9	2.6	1.6	1.7	3.4	1.3	2.0
25	7.6	9.9	3.4	2.9	2.6	3.4	2.2	1.5	1.6	2.9	1.2	3.2
26	6.5	10.0	3.3	2.8	2.8	3.3	2.0	4.3	1.6	2.7	1.2	4.6
27	5.4	8.8	3.1	2.7	3.0	3.1	2.0	3.2	1.6	2.5	1.2	4.4
28	4.7	8.0	3.0	2.9	2.7	2.9	2.3	2.8	1.5	2.2	1.2	4.7
29	7.8	.....	2.9	2.9	2.4	2.6	3.5	2.5	1.5	1.9	1.4	4.5
30	20.2	.....	2.8	2.7	2.3	2.4	3.1	2.2	1.4	1.8	1.7	3.2
31	15.0	.....	2.8	.....	2.1	.....	2.1	2.6	.....	1.7	.....	3.5

SANTEE RIVER BASIN.

DESCRIPTION.

Santee River, which is formed by Congaree and Wateree rivers, drains a large area extending from the Blue Ridge in western North Carolina through the central portion of South Carolina to the Atlantic Ocean. The total length of the basin, measured in the general direction of the course of the river, is about 300 miles.

Wateree River, the more northerly of the two streams, rises on the eastern slope of the Blue Ridge in McDowell County, N. C., and flows first eastward, then southeastward across North Carolina and a portion of South Carolina to its junction with the Congaree. In North Carolina and also in that part of its course in South Carolina above Wateree Creek, it is known as Catawba River.

The Congaree is formed by the junction of Broad and Saluda rivers at Columbia, S. C., whence it flows in a southeasterly direction for about 60 miles to its junction with the Wateree. Broad River rises on the eastern slope of the Blue Ridge in McDowell and Henderson counties, N. C., and Saluda River rises in Pickens and Greenville counties, S. C.

The upper portion of the basin is mountainous, its extreme elevation being 3,000 to 5,000 feet in the Catawba basin and 2,000 to 3,000 feet in the areas drained by Broad and Saluda rivers. These upper portions, even to elevations much below 2,000 feet, are largely covered with forests, but the greater part of the area is an agricultural section where much of the land is under cultivation. As in the Yadkin River basin, the areas lying above the fall line—the mountain and Piedmont Plateau portions—are made up of various granite, gneisses, and schists, which pass below the much younger sedimentary deposits of the Coastal Plain a short distance below Columbia, S. C.

Snow and ice have little effect on stream flow and the operation of gaging stations in this region. The average annual rainfall ranges from 45 inches in the central and lower portions to 60 inches near the headwaters. In general, the storage opportunities of this basin appear somewhat meager on account of the steep slopes and narrow valleys by which it is characterized.

Excellent water-power sites are found everywhere above the fall line, which passes near Camden and Columbia, S. C., and many large powers have already been developed.

The following special reports contain information regarding the hydrography of the Santee River basin:

Water power in North Carolina: Bull. North Carolina Geol. Survey No. 8 (postage 16 cents).

Water powers of North Carolina (in preparation): Bull. North Carolina Geol. Survey, Dr. J. H. Pratt, State geologist, Chapel Hill, N. C. This report will contain all records of discharge collected in the Santee River basin prior to 1908 by engineers of the United States Geological Survey.

Relation of southern Appalachian Mountains to the development of inland water navigation and water powers: U. S. Forest Service Circulars Nos. 143 and 144.

Hydrography of the southern Appalachian Mountain region, part 2, by H. A. Pressey, 1902: Water-Supply Paper U. S. Geol. Survey No. 63. This publication is no longer available for free distribution but may be purchased (price 15 cents) from the Superintendent of Documents, Washington, D. C.

River surveys and profiles made during 1903, by W. C. Hall and J. C. Hoyt: Water-Supply Paper U. S. Geol. Survey No. 115. This report and separate sheets showing the Catawba and Broad River profiles may be obtained by applying to the Director of the United States Geological Survey, Washington, D. C.

WATEREE RIVER NEAR CAMDEN, S. C.

This station has been maintained by the United States Weather Bureau since 1891 at the toll bridge about 2 miles west of Camden.

Camden is located about 45 miles above the mouth of Wateree River and about 5 miles below the fall line. The United States Geological Survey has published records of discharge since August 12, 1904.

The United States Weather Bureau gage was in three sections, of which only the one reading from 15 to 32 feet, painted on the upstream cylindrical pier on the right bank, was in good condition up to 1908. On August 12, 1904, a chain gage was installed on the bridge at the same datum as the upper section of the United States Weather Bureau gage.

The flood of August, 1908, washed out the bridge and both the United States Geological Survey chain gage and the United States Weather Bureau vertical staff gage. This last gage was replaced September 1, 1908, at presumably the same datum, by repainting it on a pier that was left standing at the opposite end of the bridge. The exact datum of this new gage has not been accurately determined. For low and ordinary stages a temporary short section is used, which has been subject to some change in location and possibly in datum.

Some uncertainty exists regarding the datum to which the gage heights were referred prior to the establishment of the chain gage in August, 1904. Very little shift in the river bed has occurred since discharge measurements have been made at this point up to the time of the flood in August, 1908. Measurements since that time, made at the railroad bridge about half a mile above, indicate a great amount of change, which possibly may be due to change in the datum of the gage.

Both banks are high but are liable to overflow at extreme high water. The river below the station has a very small slope, which is unfavorable for good rating at high stages, as the position of the flood crest will greatly affect the slope. The high part of the curve has been somewhat modified to give a greater discharge for high stages.

The river is subject to power regulation above the station, which probably affects the daily mean gage heights considerably, especially during low water.

The station was discontinued June 30, 1910.

Discharge measurements of Wateree River near Camden, S. C., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gage height.	Discharge.
		Feet.	*Sq. ft.*	*Feet.*	*Sec.-ft.*
Feb. 15..	E. H. Swett	362	5,130	9.85	5,570
Feb. 16..	.....do.....	355	4,420	7.86	2,720

NOTE.—Measurements made from railroad bridge about one-half mile above the regular section.

Daily gage height, in feet, of Wateree River near Camden, S. C., for 1910.

[H. Arthur Brown, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1	5.9	11.6	14.1	7.4	5.4	6.7	16	4.5	8.6	9.0	6.7	6.6	26.2
2	5.5	8.8	25.8	7.9	6.0	6.3	17	6.0	9.3	8.1	7.8	7.3	23.0
3	5.45	8.5	25.1	6.0	6.0	7.2	18	4.9	13.4	8.2	6.6	7.8	19.4
4	6.2	7.9	20.6	6.1	6.2	6.7	19	6.1	15.2	7.4	7.6	7.2	16.4
5	6.6	7.2	16.8	6.6	7.2	5.75	20	6.9	19.8	6.0	6.8	7.9	15.6
6	6.1	6.8	12.2	7.1	6.4	7.6	21	6.8	15.8	6.0	6.6	7.7	12.2
7	5.75	7.3	10.4	7.0	5.95	8.3	22	8.0	16.4	7.9	7.2	6.2	10.7
8	5.3	7.8	10.6	6.3	5.35	7.4	23	10.6	14.8	6.8	6.4	7.1	9.9
9	5.0	7.9	10.3	6.4	10.5	7.1	24	10.8	18.3	6.4	6.1	7.1	10.0
10	6.9	8.9	8.5	5.4	14.8	8.6	25	8.6	21.2	7.0	6.1	8.9	10.7
11	9.2	9.3	9.0	5.7	13.2	8.7	26	8.4	24.3	7.5	7.2	8.7	9.6
12	5.3	14.2	8.6	6.8	12.4	9.0	27	7.3	10.8	7.4	6.8	8.1	9.8
13	6.2	14.2	9.1	7.8	10.8	14.0	28	9.1	11.3	6.8	6.5	7.1	8.6
14	7.2	12.3	9.5	7.4	7.4	20.4	29	20.2	.....	6.7	5.75	5.75	9.2
15	6.7	10.4	10.0	6.3	5.7	27.1	30	16.7	.....	6.6	6.1	6.3	9.6
							31	14.8	.....	7.3	.....	6.5	.....

Daily discharge, in second-feet, of Wateree River near Camden, S. C., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Date.	Jan.	Feb.	Mar.	Apr.	May.	June.
1	1,900	7,330	10,100	3,210	1,470	2,580	16	760	4,290	4,690	2,580	2,490	27,400
2	1,560	4,490	26,800	3,660	1,980	2,240	17	1,980	4,990	3,840	3,570	3,120	22,300
3	1,510	4,200	25,700	1,980	1,980	3,030	18	1,070	9,310	3,930	2,490	3,570	17,000
4	2,150	3,660	18,700	2,060	2,150	2,580	19	2,060	11,400	3,210	3,390	3,030	13,000
5	2,490	3,030	13,500	2,490	3,030	1,770	20	2,760	17,600	1,980	2,670	3,660	11,900
6	2,060	2,670	7,990	2,940	2,320	3,390	21	2,670	12,200	1,980	2,490	3,480	7,990
7	1,770	3,120	6,090	2,850	1,940	4,020	22	3,750	13,000	3,660	3,030	2,150	6,390
8	1,390	3,570	6,290	2,240	1,430	3,210	23	6,290	11,000	2,670	2,320	2,940	5,590
9	1,150	3,660	5,990	2,320	6,190	2,940	24	6,490	15,500	2,320	2,060	2,940	5,690
10	2,760	4,590	4,200	1,470	11,000	4,290	25	4,290	19,600	2,850	2,060	4,590	6,390
11	4,890	4,990	4,690	1,720	9,090	4,390	26	4,110	10,400	3,300	3,030	4,390	5,290
12	1,390	10,200	4,290	2,670	8,210	4,690	27	3,120	6,490	3,210	2,670	3,840	5,490
13	2,150	10,200	4,790	3,570	6,490	10,000	28	4,790	7,000	2,670	2,400	2,940	4,290
14	3,030	8,100	5,190	3,210	3,210	18,400	29	18,100	.....	2,580	1,770	1,770	4,890
15	2,580	6,090	5,690	2,240	1,720	28,900	30	13,400	.....	2,490	2,060	2,240	5,290
							31	11,000	.....	3,120	.....	2,400	.....

NOTE.—These discharges were obtained from a rating curve which is not well defined.

Monthly discharge of Wateree River near Camden, S. C., for 1910.

[Drainage area, 4,500 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	18,100	760	3,850	0.856	0.99	B
February	19,600	2,670	7,950	1.77	1.84	B
March	26,800	1,980	6,400	1.42	1.64	B
April	3,660	1,470	2,570	.571	.64	C
May	11,000	1,430	3,610	.802	.92	B
June	28,900	1,770	8,180	1.82	2.03	B

SAVANNAH RIVER BASIN.

DESCRIPTION.

Savannah River rises on the southern slope of the Blue Ridge, in the northeast corner of Georgia and the northwest corner of South Carolina, some of its headwaters coming across the State line from North Carolina. Its general course is southeast, and it forms the boundary between Georgia and South Carolina from the North Carolina line to the Atlantic Ocean. The basin is about 260 miles long and contains about 11,100 square miles.

The principal tributaries are Tallulah, Seneca, and Broad rivers. The name Tugaloo River is applied to the main stream above the mouth of the Seneca, and in turn it becomes Chattooga River above the mouth of the Tallulah.

A small area of the upper end of the basin lying in the Appalachian Mountains has an elevation of 3,000 feet and even more, but the fall is very rapid down to about 1,000 feet in the Piedmont Plateau region, in which most of the drainage basin lies. The Coastal Plain portion of this basin, from Augusta, Ga., down, is comparatively narrow.

Above the fall line, which passes a few miles above Augusta, Ga., the main streams and many smaller tributaries afford excellent water powers, having a good amount of fall and a large minimum flow.

Ice and snow have little or no effect on stream flow in this area. The average annual rainfall reaches 70 inches in the extreme upper portion and ranges from 50 to 60 inches in the other parts. The basin contains a number of fairly good sites for storage reservoirs on Tugaloo River and on the tributaries of the Seneca and on Broad River in Georgia.

The following special reports contain information regarding the hydrography of the Savannah River basin:

Water resources of Georgia, by B. M. and M. R. Hall: Water-Supply Paper U. S. Geol. Survey No. 197. This report contains data collected in this basin prior to 1906.

River surveys and profiles made during 1903, by W. C. Hall and J. C. Hoyt: Water-Supply Paper U. S. Geol. Survey No. 115. This report and separate sheets, showing the Catawba and Broad River profiles, may be obtained by applying to the Director, United States Geological Survey, Washington, D. C.

Relation of southern Appalachian Mountains to the development of inland water navigation and water power: U. S. Forest Service Circulars Nos. 143 and 144.

TUGALOO RIVER NEAR MADISON, S. C.

This station was originally established at Cooks Ferry July 19, 1898, and was discontinued December 31, 1901, when the ferry was moved. It was reestablished July 7, 1903, at Holcombs Ferry, 1 mile west of Madison, S. C., 900 feet below the Southern Railway bridge, about 1½ miles above the point where the old station

was located, and 2 miles below the mouth of Toccoa Creek. The data from this station have been used largely for water-power estimates.

The gage at Holcombs Ferry is a vertical staff in three sections. The low-water section, reading from 1 foot to 16 feet, is attached to a sycamore tree on the left bank about 30 feet above the ferry landing. The second section reads from 16 to 22 feet and is attached to another sycamore tree on the left bank about 18 feet above the ferry landing. The high-water section, reading from 21 to 31 feet, is fastened to a locust tree on the left bank at the fork of the road, about 175 feet from the ferry landing.

The gage heights are probably not seriously affected by artificial control, although there are some flash dams on headwater streams, used for booming logs, and when the water from one of these dams is released considerable rise occurs at the station for a few hours, often amounting to a foot or more.

The datum of both gages has remained constant during the period of their maintenance. There is, however, no established relation between the two gage zeros. The datum of the present gage is 630.10 feet above sea level.

Discharge measurements are made from a small boat held in place by a cable stretched across the river. Both banks are moderately high, but will overflow for about 200 feet on each side at extreme high stages. The bed of the river is sandy and changeable, necessitating frequent changes in the rating. The high-water part of the rating curve has not yet been developed.

The station was discontinued June 30, 1910.

Daily gage height, in feet, of Tugaloo River near Madison, S. C., for 1910.

[T. A. Spencer, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1	3.5	3.5	10.3	3.5	3.2	4.4	16	3.4	3.55	3.9	3.2	4.3	6.1
2	3.3	3.4	8.2	3.45	3.2	4.3	17	3.4	3.8	3.8	5.8	4.45	5.2
3	3.4	3.4	6.3	3.45	3.1	5.1	18	3.4	9.5	3.9	5.6	4.5	4.7
4	3.4	3.65	5.5	3.4	3.2	4.4	19	3.7	5.6	3.9	4.3	4.5	4.5
5	3.0	3.5	5.4	3.3	3.2	4.8	20	3.9	4.7	5.3	3.7	4.8	4.5
6	3.2	3.4	4.8	3.5	3.3	7.7	21	4.35	4.4	4.1	3.5	8.0	4.3
7	9.6	3.25	4.75	3.4	3.2	5.3	22	4.5	4.8	4.0	3.45	5.8	4.4
8	5.5	3.3	4.5	3.45	18.0	4.7	23	3.85	4.2	3.8	3.4	5.75	4.8
9	4.5	3.3	4.2	3.45	13.5	4.55	24	3.9	4.2	3.8	3.4	5.7	4.9
10	4.1	3.5	4.3	3.3	7.0	4.4	25	3.7	3.9	3.75	3.4	9.8	4.8
11	3.8	3.6	4.5	3.25	5.7	4.3	26	3.6	3.85	3.75	3.6	6.8	4.6
12	3.6	3.8	4.7	3.2	5.0	4.6	27	3.5	3.8	3.7	3.4	5.7	4.2
13	3.55	3.5	4.2	3.4	4.6	7.5	28	3.5	5.2	3.65	3.3	5.3	4.1
14	3.5	3.3	4.25	3.25	4.3	6.1	29	4.1	.....	3.6	3.4	4.9	4.0
15	3.5	3.4	4.0	3.2	4.25	6.6	30	3.7	.....	3.65	3.2	5.0	4.2
							31	3.6	.....	3.5	.....	47.	.....

Daily discharge, in second-feet, of Tugaloo River near Madison, S. C., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1	1,250	1,250	7,640	1,250	1,060	1,920	16	1,180	1,280	1,540	1,060	1,840	3,460
2	1,120	1,180	5,540	1,220	1,060	1,840	17	1,180	1,460	1,460	3,170	1,960	2,600
3	1,180	1,180	3,650	1,220	996	2,510	18	1,180	6,840	1,540	2,980	2,000	2,170
4	1,180	1,360	2,880	1,180	1,060	1,920	19	1,390	2,980	1,540	1,840	2,000	2,000
5	940	1,250	2,790	1,120	1,060	2,250	20	1,540	2,170	2,700	1,390	2,250	2,000
6	1,060	1,180	2,250	1,250	1,120	5,040	21	1,880	1,920	1,690	1,250	5,340	1,840
7	6,940	1,090	2,210	1,180	1,060	2,700	22	2,000	2,250	1,610	1,220	3,170	1,920
8	2,880	1,120	2,000	1,220	15,300	2,170	23	1,500	1,760	1,460	1,180	3,120	2,250
9	2,000	1,120	1,760	1,220	10,800	2,040	24	1,540	1,760	1,460	1,180	3,070	2,340
10	1,690	1,250	1,840	1,120	4,340	1,920	25	1,390	1,540	1,430	1,180	7,140	2,250
11	1,460	1,320	2,000	1,090	3,070	1,840	26	1,320	1,500	1,430	1,320	4,140	2,080
12	1,320	1,460	2,170	1,060	2,420	2,080	27	1,250	1,460	1,390	1,180	3,070	1,760
13	1,280	1,250	1,760	1,180	2,080	4,840	28	1,250	2,600	1,360	1,120	2,700	1,690
14	1,250	1,120	1,800	1,090	1,840	3,460	29	1,690	.....	1,320	1,180	2,340	1,610
15	1,250	1,180	1,610	1,060	1,800	3,940	30	1,390	.....	1,360	1,060	2,420	1,760
							31	1,320	.....	1,250	.....	2,170	.....

NOTE.—These discharges were obtained from a rating curve which is fairly well defined between 690 and 1,600 second-feet.

Monthly discharge of Tugaloo River near Madison, S. C., for 1910.

[Drainage area, 593 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	6,940	940	1,610	2.72	3.14	B
February	6,840	1,090	1,710	2.88	3.00	B
March	7,640	1,250	2,140	3.61	4.16	B
April	3,170	1,060	1,330	2.24	2.50	B
May	15,300	996	3,150	5.31	6.12	C
June	5,040	1,610	2,410	4.06	4.53	B

NOTE.—As no measurements were made in 1910 the accuracy of these estimates is dependent on the permanency of conditions of flow.

SAVANNAH RIVER AT WOODLAWN, S. C.

This station is located at the Charleston & Western Carolina Railway bridge 1,000 feet from the depot at Woodlawn, S. C., 17 miles above Augusta, Ga., and 10 miles above the Augusta water-power dam. It is 5 miles above Stevens Creek, which is a large tributary from the Carolina side. The station was established November 9, 1905, and has been maintained continuously except from August 27 to October 12, 1908, when the gage was destroyed by a flood which washed out the two main spans of the east-channel bridge. The gage is read twice a day in order to equalize the slight fluctuations due to water-power operations.

The original standard chain gage was attached to the railroad bridge. The present temporary staff gage used since October 12, 1908, consists of three vertical sections attached to trees from 50 to 80 feet above the bridge. The datum of both gages is the same and has not changed since their installation.

Discharge measurements are made from the upstream side of the railway bridge.

Both banks overflow slightly at extreme high stages. An island which divides the channel into two sections is also overflowed at high stages, the overflow passing through about 900 feet of wooden trestle. The bed of the stream is composed mainly of rock and is rough, causing broken and irregular current in some portions of the cross section. Conditions of flow have changed somewhat since 1908, probably because a span of iron bridge lies crosswise in the main channel a short distance below the station, in what was originally the deepest and swiftest part. This obstruction probably did not affect the 1907–8 rating materially, as the trusswork was less obstructed than later on.

The monthly estimates for August to December, 1908, as published in Water-Supply Paper 242, are liable to some error and should be used with caution. Measurements in 1909 and in January, 1910, indicate that the obstruction altered the channel conditions and necessitated a new rating for 1909 and 1910. The natural conditions appear to be constant.

The station was discontinued June 30, 1910.

Discharge measurements of Savannah River at Woodlawn, S. C., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gage height.	Discharge.
		Feet.	*Sq. ft.*	*Feet.*	*Sec.-ft.*
Jan. 21	E. H. Swett	589	3,100	4.94	6,440
22	do	596	3,580	5.77	8,620

Daily gage height, in feet, of Savannah River at Woodlawn, S. C., for 1910.

[J. C. Parks, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1	3.9	7.2	15.8	4.8	4.5	5.0	16	4.5	5.5	6.5	4.5	5.0	8.9
2	4.15	6.7	11.2	4.8	4.4	4.9	17	4.7	5.4	6.5	5.4	4.9	7.2
3	4.2	6.3	7.6	4.75	4.4	5.7	18	4.5	9.9	6.4	8.4	4.8	6.0
4	4.35	5.25	6.6	4.75	4.35	5.4	19	4.4	11.8	6.1	8.2	4.7	5.8
5	4.4	5.0	6.4	4.7	4.4	5.2	20	4.5	8.9	6.0	7.2	4.6	5.65
6	6.6	4.9	6.5	4.6	4.4	6.6	21	4.95	9.4	5.9	6.4	5.2	5.3
7	5.95	5.0	6.5	4.6	4.55	5.9	22	5.6	8.9	7.0	5.1	7.3	5.65
8	5.3	4.95	6.6	4.6	5.1	5.5	23	6.2	8.0	5.35	4.8	6.4	5.7
9	4.8	5.0	6.6	4.5	12.6	5.2	24	5.8	6.9	5.2	4.65	6.5	5.55
10	4.6	5.0	6.5	4.45	13.3	5.9	25	6.1	6.2	5.1	4.55	8.4	5.25
11	4.5	6.4	7.0	4.5	8.0	6.4	26	5.75	5.85	5.0	4.5	7.8	5.05
12	4.5	6.2	7.0	4.5	6.4	6.7	27	6.3	5.7	5.0	4.5	7.0	4.8
13	4.5	7.3	6.6	4.5	5.7	7.8	28	6.6	12.9	5.1	4.5	6.1	4.6
14	4.5	5.95	6.7	4.55	5.3	9.7	29	11.1	.....	5.0	4.5	5.8	4.8
15	4.45	5.65	6.6	4.6	5.1	10.8	30	9.6	.....	4.9	4.5	5.5	5.5
							31	8.3	.....	4.85	.....	5.15	.....

Daily discharge, in second-feet, of Savannah River at Woodlawn, S. C., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	Day.	Jan.	Feb.	Mar.	Apr.	May.	June.
1	3,980	14,200	62,400	6,080	5,350	6,590	16	5,350	8,000	11,400	5,350	6,590	22,100
2	4,540	12,200	34,900	6,080	5,110	6,330	17	5,830	7,700	11,400	7,700	6,330	14,200
3	4,650	10,600	15,800	5,960	5,110	8,620	18	5,350	27,500	11,000	19,600	6,080	9,600
4	5,000	7,270	11,800	5,960	5,000	7,700	19	5,110	38,400	9,940	18,600	5,830	8,940
5	5,110	6,590	11,000	5,830	5,110	7,130	20	5,350	22,100	9,600	14,200	5,590	8,460
6	11,800	6,330	11,400	5,590	5,110	11,800	21	6,460	24,800	9,270	11,000	7,130	7,410
7	9,440	6,590	11,400	5,590	5,470	9,270	22	8,310	22,100	13,400	6,860	14,600	8,460
8	7,410	6,460	11,800	5,590	6,860	8,000	23	10,300	17,600	7,560	6,080	11,000	8,620
9	6,080	6,590	11,800	5,350	43,000	7,130	24	8,940	13,000	7,130	5,710	11,400	8,160
10	5,590	6,590	11,400	5,230	47,200	9,270	25	9,940	10,300	6,860	5,470	19,600	7,270
11	5,350	11,000	13,400	5,350	17,600	11,000	26	8,780	9,100	6,590	5,350	16,700	6,720
12	5,350	10,300	13,400	5,350	11,000	12,200	27	10,600	8,620	6,590	5,350	13,400	6,080
13	5,350	14,600	11,800	5,350	8,620	16,700	28	11,800	44,800	6,860	5,350	9,940	5,590
14	5,350	9,440	12,200	5,470	7,410	26,400	29	34,300	.....	6,590	5,350	8,940	6,080
15	5,230	8,460	11,800	5,590	6,860	32,600	30	25,900	.....	6,330	5,350	8,000	8,000
							31	19,100	.....	6,200	.....	7,000	.....

NOTE.—These discharges are based on a rating curve that is fairly well defined between 5,400 and 20,000 second-feet.

Monthly discharge of Savannah River at Woodlawn, S. C., for 1910.

[Drainage area, 6,600 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	34,300	3,980	8,760	1.33	1.53	B
February	44,800	6,330	14,000	2.12	2.21	A
March	62,400	6,200	12,700	1.92	2.21	A
April	19,600	5,230	7,060	1.07	1.19	A
May	47,200	5,000	11,100	1.68	1.94	A
June	32,600	5,590	10,500	1.59	1.77	A

TALLULAH RIVER AT TALLULAH FALLS, GA.

This station is located at the wagon bridge at Tallulah Falls, about one-fourth mile above the beginning of the falls proper. It was established August 29, 1900, but the record for that year extended only to October 19. Readings were resumed January 18, 1901, and were again discontinued December 31, 1901. On July 15, 1904, the station was reestablished and observations have been continued without break except from July 1 to August 15, 1909. On August 16, 1909, the station was reestablished by special request of the North Georgia Electric Co.

The original staff gage, established in 1900, about 50 feet above the bridge, is still in place, and other gages which have superseded it have been set to agree with the original datum. The present gage is of the standard chain type and is located on the bridge, from which discharge measurements are made. Both banks are high and not subject to overflow. The bed of the stream is rough and composed of rocks. The flow is not perceptibly affected by artificial control of water. Conditions of flow have changed slightly since the establishment of the station.

The following measurement was made by M. R. Hall:

June 24: Width, 63 feet; area of section, 405 square feet; gage height, 2.70 feet; discharge, 904 second-feet.

Daily gage height, in feet, of Tallulah River at Tallulah Falls, Ga., 1910.

[Wyly Pitts, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.4	1.5	3.8	1.5	1 4	2.05	.....	1.6	2.25	1.3	1.0	1.0
2	1.5	1.5	3.0	1.5	1.4	2.0	.....	1.5	1.8	1.35	1.0	.9
3	1.5	1.55	2.55	1.5	1.4	2.35	.....	1.6	1.55	1.1	1.0	.9
4	1.4	1.65	2.35	1.5	1.4	2.0	.....	1.7	1.6	1.1	1.0	.9
5	1.4	1.55	2.2	1.45	1.4	2.65	.....	1.6	1.55	1.1	1.0	2.3
6	1.7	1.5	2.1	1.6	1.4	3.2	.....	1.7	1.45	1.15	1.0	3.4
7	3.2	1.4	1.95	1.4	2.0	2.6	.....	1.7	1.4	1.65	1.0	1.85
8	2.25	1.4	1.95	1.4	4.6	2.25	.....	1.6	1.4	2.2	1.0	1.55
9	1.95	1.55	1.9	1.4	3.6	2.2	.....	1.55	1.4	2.15	1.0	1.4
10	1.8	1.45	2.05	1.4	2.65	2.15	.....	1.55	1.6	1.7	1.0	1.3
11	1.7	1.55	2.1	1.4	2.4	2.1	.....	1.4	1.35	1.45	1.0	1.25
12	1.6	1.65	2.0	1.4.	2.2	2.3	.....	1.5	1.35	1.4	.9	1.2
13	1.6	1.35	1.9	1.5	2.2	2.7	.....	1.5	1.3	1.3	1.0	1.1
14	1.6	1.35	1.8	1.4	2.0	2.4	.....	1.6	1.25	1.3	1.0	1.1
15	1.5	1.5	1.75	1.4	1.9	2.9	.....	1.6	1.3	1.2	1.0	1.1
16	1.5	1.7	1.75	1.5	1.9	2.6	.....	1.45	1.1	1.2	1.0	1.1
17	1.5	1.9	1.7	3.0	2.1	2.3	.....	1.4	1.1	1.2	1.0	1.1
18	1.5	3.0	1.7	2.2	2.2	2.2	.....	1.5	1.1	1.1	1.0	1.15
19	1.65	2.3	1.7	1.9	2.0	2.15	.....	1.4	1.1	1.1	1.0	1.2
20	1.55	2.05	2.2	1.8	2.55	2.05	1.95	1.4	1.1	1.1	1.0	1.1
21	2.25	2.05	1.9	1.7	3.2	2.0	1.9	1.3	1.1	1.05	1.0	1.0
22	1.9	2.0	1.8	1.6	2.7	2.3	1.85	1.3	1.1	1.0	1.0	1.0
23	1.7	1.9	1.75	1.6	2.7	2.3	1.75	1.3	2.4	1.0	.9	1.3
24	1.65	1.8	1.7	1.55	3.3	2.5	1.8	1.3	1.95	1.0	.9	2.1
25	1.6	1.7	1.6	1.55	3.8	2.0	1.7	1.35	1.5	1.0	1.0	1.5
26	1.6	1.7	1.65	1.65	2.85	2.0	1.7	1.45	1.4	1.0	.95	1.35
27	1.6	1.95	1.6	1.6	2.55	1.9	1.95	1.4	1.25	1.0	.95	1.3
28	1.65	2.75	1.6	1.5	2.4	1.8	1.8	1.3	1.2	1.15	1.0	1.3
29	1.65	.....	1.6	1.5	2.3	1.85	1.7	1.3	1.6	1.1	1.0	1.3
30	1.6	.....	1.55	1.5	2.25	2.0	1.7	1.4	1.5	1.0	1.0	1.8
31	1.6	.....	1.5	.....	2.15	.....	1.6	2.75	.....	1.0	.....	1.55

Daily discharge, in second-feet, of Tallulah River at Tallulah Falls, Ga., 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	365	400	1,960	400	365	632	.....	440	725	330	237	237
2	400	400	1,170	400	365	610	.....	400	520	348	237	212
3	400	420	880	400	365	775	.....	440	420	265	237	212
4	365	460	775	400	365	610	.....	480	440	265	237	212
5	365	420	700	382	365	930	.....	440	420	265	237	750
6	480	400	655	440	365	1,330	.....	480	382	280	237	1,520
7	1,330	365	588	365	610	910	.....	480	365	460	237	542
8	725	365	588	365	2,970	725	.....	440	365	700	237	420
9	588	420	565	365	1,730	700	.....	420	365	672	237	365
10	520	382	632	365	940	678	.....	420	440	480	237	330
11	480	420	655	365	800	655	.....	365	348	382	237	312
12	440	460	610	365	700	750	.....	400	348	365	212	295
13	440	348	565	400	700	970	.....	400	330	330	237	265
14	440	348	520	365	610	800	.....	440	312	330	237	265
15	400	400	500	365	565	1,100	.....	440	330	295	237	265
16	400	480	500	400	565	910	.....	382	265	295	237	265
17	400	565	480	1,170	655	750	.....	365	265	295	237	265
18	400	1,170	480	700	700	700	.....	400	265	265	237	280
19	460	750	480	565	700	678	.....	365	265	265	237	295
20	420	632	700	520	880	632	588	365	265	265	237	265
21	725	632	565	480	1,330	610	565	330	265	251	237	237
22	565	610	520	440	970	750	542	330	265	237	237	237
23	480	565	500	440	970	750	500	330	800	237	212	330
24	460	520	480	420	1,420	850	520	330	588	237	212	655
25	440	480	440	420	1,960	610	480	348	400	237	237	400
26	440	480	460	460	1,060	610	480	382	365	237	224	348
27	440	588	440	440	880	565	588	365	312	237	224	330
28	460	1,000	440	400	800	520	520	330	295	280	237	330
29	460	.....	440	400	750	542	480	330	440	265	237	330
30	440	.....	420	400	725	610	480	365	400	237	237	520
31	440	.....	400	.....	678	.....	440	1,000	.....	237	.....	420

NOTE.—These discharges were obtained from a fairly well defined rating curve.

Monthly discharge of Tallulah River at Tallulah Falls, Ga., for 1910.

[Drainage area, 191 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	1,330	365	489	2.56	2.95	A
February	1,170	348	517	2.71	2.82	A
March	1,960	400	616	3.23	3.72	A
April	1,170	365	447	2.34	2.61	A
May	2,970	365	866	4.53	5.22	A
June	1,330	520	742	3.88	4.33	A
July	.....	.....	[a]682	3.57	4.12	C
August	1,000	336	413	2.16	2.49	A
September	725	265	386	2.02	2.25	B
October	700	237	318	1.66	1.91	B
November	237	212	234	1.23	1.37	B
December	1,520	212	378	1.98	2.28	B
The year	2,970	212	508	2.66	36.07	

[a] July 1–19 estimated to average 787 second-feet by comparison with Broad River near Carlton, Ga.

BROAD RIVER (OF GEORGIA) NEAR CARLTON, GA.

This station, which is located at the Seaboard Air Line Railway bridge 3 miles east of Carlton, Ga., and 2 miles above the mouth of the south fork, was established May 27, 1897. Gage readings are taken by the United States Weather Bureau and are furnished to the United States Geological Survey.

Records of this station are valuable for water-power studies, both on Broad River and on Savannah River, to which it is tributary. The flow is affected little or not at all by artificial control. Measurements are made from the upstream side of the bridge.

The datum of the chain gage, which is on the bridge, has remained constant since the establishment of the station; its elevation is 384 feet above sea level. The left bank overflows for about 400 feet at a gage height of about 16 feet. The bed of the stream is sand and gravel and is slightly changeable.

Discharge measurements of Broad River (of Georgia) near Carlton, Ga., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gage height.	Discharge.
		Feet.	*Sq. ft.*	*Feet.*	*Sec.-ft.*
Feb. 9	E. H. Swett	182	445	2.93	795
May 16	M. R. Hall	171	386	2.54	759

Daily gage height, in feet, of Broad River (of Georgia) near Carlton, Ga., for 1910.

[M. C. Power, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.5	3.5	7.5	2.4	2.3	2.0	3.9	2.7	14.5	2.1	2.2	2.2
2	2.8	3.1	6.9	2.1	2.1	2.2	5.3	2.2	9.5	2.1	2.0	2.1
3	2.5	2.8	5.2	2.3	2.2	2.4	3.9	2.5	5.2	2.2	2.1	2.0
4	2.4	3.1	4.1	2.7	2.0	3.0	3.6	2.6	4.0	2.0	2.2	2.2
5	2.2	2.3	3.1	2.4	2.2	2.2	4.0	2.2	3.3	2.2	2.0	2.5
6	2.5	2.1	3.0	2.0	2.3	2.5	4.6	2.6	3.6	2.2	2.3	4.8
7	3.0	2.3	3.3	2.3	2.1	3.4	4.5	3.1	3.1	2.5	2.2	4.0
8	3.4	2.2	3.1	2.4	2.6	4.0	4.9	2.7	2.4	3.4	2.0	3.5
9	2.7	2.8	2.8	2.6	4.3	3.2	5.5	3.9	2.6	3.0	2.1	3.3
10	2.6	2.6	2.6	2.3	4.1	2.8	4.0	3.1	2.2	2.7	2.2	2.5
11	2.6	3.3	2.4	2.3	3.7	3.5	3.5	2.6	2.2	2.3	2.1	2.3
12	2.2	3.1	2.9	2.1	3.5	4.3	2.4	2.2	2.3	2.0	2.2	2.0
13	2.1	2.8	2.3	2.0	3.2	3.9	2.8	2.7	2.1	2.2	2.1	2.2
14	2.5	2.6	2.5	2.1	3.0	4.6	2.4	2.5	2.3	2.4	2.2	2.4
15	2.5	2.4	2.3	2.3	2.8	7.1	4.9	2.2	2.2	2.1	2.0	2.2
16	2.4	2.6	2.5	2.0	2.6	4.5	3.8	2.0	2.0	2.3	2.2	2.1
17	2.4	2.5	2.9	2.3	2.7	3.0	2.3	2.3	2.2	2.1	2.1	2.0
18	2.4	6.3	2.7	4.0	2.5	2.8	3.3	2.0	2.1	2.0	2.3	2.7
19	2.4	6.1	2.5	3.8	2.4	2.3	3.7	2.2	2.2	2.2	2.2	2.3
20	2.4	4.1	2.4	2.6	3.8	2.8	3.1	2.5	2.1	2.1	2.0	2.8
21	2.7	3.9	2.6	2.3	4.5	2.7	2.7	2.6	2.2	2.2	2.2	2.4
22	3.5	4.2	2.4	2.2	3.5	3.1	2.2	2.3	2.0	2.0	2.1	2.2
23	2.6	3.6	2.4	2.3	3.1	2.2	2.8	2.2	2.6	2.2	2.0	2.4
24	3.0	3.5	2.5	2.0	2.8	2.8	3.0	2.4	3.1	2.0	2.2	2.7
25	3.2	3.6	2.7	2.3	3.7	3.2	2.5	2.7	2.6	2.1	2.1	3.0
26	3.2	3.4	2.3	2.0	4.7	2.7	2.3	2.5	2.2	2.2	2.0	2.6
27	3.1	2.9	2.1	2.2	3.7	2.3	2.7	2.2	2.0	2.0	2.2	2.2
28	3.9	2.6	2.7	2.4	3.3	2.0	2.3	2.3	2.3	2.1	2.3	2.1
29	5.1	.....	2.4	2.1	3.0	2.3	2.6	2.1	2.5	2.3	2.5	2.0
30	4.0	.....	2.0	2.3	2.7	4.5	2.2	2.3	2.3	2.2	2.3	2.3
31	3.7	.....	2.3	.....	2.3	.....	2.0	13.0	.....	2.0	.....	2.7

Daily discharge, in second-feet, of Broad River (of Georgia) near Carlton, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	750	1,450	6,060	695	645	500	1,790	865	17,200	545	595	595
2	930	1,140	5,220	545	545	595	3,210	595	8,990	545	500	545
3	750	930	3,100	645	595	695	1,790	750	3,100	595	545	500
4	695	1,140	1,970	865	500	1,070	1,540	805	1,880	500	595	595
5	595	645	1,140	695	595	595	1,880	595	1,290	595	500	750
6	750	545	1,070	500	645	750	2,450	805	1,540	595	645	2,660
7	1,070	645	1,290	645	545	1,370	2,350	1,140	1,140	750	595	1,880
8	1,370	595	1,140	695	805	1,880	2,770	865	695	1,370	500	1,450
9	865	930	930	805	2,160	1,220	3,440	1,790	805	1,070	545	1,290
10	805	805	805	645	1,970	930	1,880	1,140	595	865	595	750
11	805	1,290	695	645	1,620	1,450	1,450	805	595	645	545	645
12	595	1,140	1,000	545	1,450	2,160	695	595	645	500	595	500
13	545	930	645	500	1,220	1,790	930	865	545	595	545	595
14	750	805	750	545	1,070	2,450	695	750	645	695	595	695
15	750	695	645	645	930	5,500	2,770	595	595	545	500	595
16	695	805	750	500	805	2,350	1,700	500	500	645	595	545
17	695	750	1,000	645	865	1,070	645	645	595	545	545	500
18	695	4,430	865	1,880	750	930	1,290	500	545	500	645	865
19	695	4,180	750	1,700	695	645	1,620	595	595	595	595	645
20	695	1,970	695	805	1,700	930	1,140	750	545	545	500	930
21	865	1,790	805	645	2,350	865	865	805	595	595	595	695
22	1,450	2,060	695	595	1,450	1,140	595	645	500	500	545	595
23	805	1,540	695	645	1,140	595	930	595	805	595	500	695
24	1,070	1,450	750	500	930	930	1,070	695	1,140	500	595	865
25	1,220	1,540	865	645	865	1,220	750	865	805	545	545	1,070
26	1,220	1,370	645	500	2,560	865	645	750	595	595	500	803
27	1,140	1,000	545	595	1,620	645	865	595	500	500	595	595
28	1,790	805	865	695	1,290	500	645	645	645	545	645	545
29	2,990	.....	695	545	1,070	645	805	545	750	645	750	500
30	1,880	.....	500	645	865	2,350	595	645	645	595	645	645
31	1,620	.....	645	.....	645	.....	500	14,700	.....	500	.....	865

NOTE.—These discharges were obtained from a rating curve which is well defined below 9,800 second-feet.

Monthly discharge of Broad River (of Georgia) near Carlton, Ga., for 1910.

[Drainage area, 762 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).
	Maximum.	Minimum.	Mean.	Per square mile.	
January	2,990	545	1,020	1.34	1.54
February	4,430	545	1,330	1.75	1.82
March	6,060	500	1,230	1.61	1.86
April	1,880	500	705	.925	1.03
May	2,560	500	1,130	1.48	1.71
June	5,500	500	1,290	1.69	1.89
July	3,440	500	1,430	1.88	2.17
August	14,700	500	1,210	1.59	1.83
September	17,200	500	1,670	2.19	2.44
October	1,370	500	624	.819	.94
November	750	500	573	.752	.84
December	2,660	500	820	1.08	1.24
The year	17,200	500	1,080	1.42	19.31

NOTE.—The uniformity of the minima and also the high values of certain of the maxima render the accuracy of the records at this station somewhat questionable. The values in the above tables should be used with caution.

ALTAMAHA RIVER BASIN.

DESCRIPTION.

Altamaha River rises in the north-central part of Georgia, along the southern slope of the Chattahoochee Ridge, flows southeastward, and discharges into the Atlantic Ocean near Darien. The basin is about 250 miles long and has an area of 14,100 square miles.

The two main tributaries forming the Altamaha are Oconee and Ocmulgee rivers, which unite about 100 miles above Darien. Oconee River rises in Hall County and flows in a southeasterly direction to the Altamaha. Apalachee River enters the Oconee near the southeast corner of Morgan County. Little River enters the main stream about 15 miles above Milledgeville, Ga. Ocmulgee River, the westernmost of the main tributaries, is formed by streams that rise in Fulton, Dekalb, and Gwinnett counties; Yellow, South, and Alcovy rivers are its upper tributaries. Towaliga River enters the Ocmulgee at about the southwest corner of Jasper County, which is above Macon. Ohoopee River is a tributary of the Altamaha about 30 miles below the junction of Oconee and Ocmulgee rivers.

The portion above the fall line, which passes near Milledgeville and Macon, lies entirely in the Piedmont Plateau and contains great masses of granite, including Stone Mountain in Dekalb County, 16 miles east of Atlanta, which rises about 700 feet above the surrounding country and covers several square miles. The larger part of the basin lies in the Coastal Plain region. Very little of this basin is too steep for agriculture, and only a rather small amount of original forest remains. Probably the larger part of the lands now

wooded consists of lands once cultivated but now carrying second-growth timber in the Piedmont region and cut-over timber lands in the southern portion.

The mean annual rainfall of the basin is about 50 inches. The basin contains many good reservoir sites for partial storage in connection with power plants, and larger sites are no doubt available, especially on Oconee River. Above the fall line all the streams have considerable slope and afford many excellent sites for water-power development.

The following special reports contain information regarding the hydrography of the Altamaha River basin:

Water resources of Georgia, by B. M. and M. R. Hall: Water-Supply Paper U. S. Geol. Survey No. 197. This report contains data on stream flow, water power, and river surveys collected prior to 1906.

River surveys and profiles made during 1903, by W. C. Hall and J. C. Hoyt: Water-Supply Paper U. S. Geol. Survey No. 115. This report may be obtained by applying to the Director United States Geological Survey, Washington, D. C.

Relation of southern Appalachian Mountains to the development of inland water navigation: U. S. Forest Service Circular No. 143.

OCMULGEE RIVER NEAR JACKSON, GA.

This station, which is located at Pittmans Ferry, 8 miles southeast of Jackson and 6 miles above the old Flovilla station at Lamars Ferry, was established May 18, 1906, to take the place of the Lamars Ferry station, for which records of discharge had been obtained from July 26, 1901, to September 27, 1902; from July 1 to December 31, 1903; and from August 1, 1904, to December 31, 1905.

Yellow Water Creek comes in one-half mile below the station, and Tussahaw Creek enters 3 miles above. The station is three-fourths mile below the large dam and power plant of the Central Georgia Power Co., which was completed late in 1910. Water powers above cause moderate fluctuations of gage heights, but the mean of two readings a day is thought to be sufficiently accurate up to the time the new power plant was put in operation. Some of the 1910 records were affected by the filling of the new reservoir.

The datum of the vertical staff gage, the lowest section of which is located 15 feet above the ferry cable, has remained constant since the establishment of the station.

Both banks overflow at high stages for about 200 feet. The current is rather sluggish at low stages, and as all measurements are made from a boat it is not practicable to make flood measurements.

Conditions of discharge are constant, as a permanent rock shoal about 400 feet below the station controls the height of water at the gage. The channel at the section is deep and subject to some filling in of the bottom.

Discharge measurements of Ocmulgee River near Jackson, Ga., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gage height.	Discharge.
		Feet.	*Sq. ft.*	*Feet.*	*Sec.-ft.*
Aug. 18	F. P. Thomas	282	1,200	4.22	606
19	do	282	1,230	4.22	589
Nov. 20	G. F. Harley	.....	.....	2.80	*a* 20
b 21	do	.....	.....	3.81	256
Dec. 9	do	.....	1,480	4.85	1,400

a Estimated. *b* Made below mouth of Yellow Water Creek. Flow of the creek deducted.

Daily gage height, in feet, of Ocmulgee River near Jackson, Ga., for 1910.

[C. A. Pittman, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.6	5.2	10.6	4.7	4.6	4.4	6.7	4.4	5.0	4.3	4.2	4.3
2	4.6	5.0	9.3	4.7	4.6	4.4	6.65	4.4	4.9	4.2	4.2	4.3
3	4.6	5.0	6.95	4.65	4.55	4.4	7.0	4.3	4.95	4.2	4.1	4.3
4	4.5	5.1	6.2	4.65	4.5	4.35	6.5	4.3	5.75	4.2	4.15	4.2
5	4.5	5.0	5.75	4.6	4.5	4.4	6.35	4.55	5.2	4.2	4.2	4.3
6	4.5	4.8	5.45	4.65	4.5	4.8	5.85	4.9	4.75	4.2	4.2	4.7
7	4.8	4.8	5.3	4.6	4.5	4.75	5.8	4.9	4.45	4.25	4.2	4.65
8	5.05	4.75	5.2	4.5	4.6	4.55	6.35	4.85	4.3	4.95	4.2	3.42
9	4.85	4.75	5.1	4.6	4.75	4.45	6.4	4.6	4.3	5.15	4.3	4.85
10	4.7	4.75	5.0	4.5	4.8	4.7	6.2	4.5	4.55	4.9	4.25	4.85
11	4.65	4.9	5.2	4.55	4.65	4.85	5.7	4.4	4.45	4.65	4.25	4.8
12	4.6	5.15	5.8	4.55	4.6	5.9	5.4	4.4	4.3	4.5	4.25	4.0
13	4.6	5.1	5.55	5.0	5.25	5.5	5.1	4.35	4.3	4.4	4.2	4.55
14	4.55	5.05	5.25	4.9	4.75	5.3	5.0	4.3	4.25	4.3	4.25	4.85
15	4.55	4.85	5.15	4.7	4.6	6.3	5.2	4.3	4.2	4.25	4.2	4.1
16	4.5	4.8	5.05	4.8	4.5	5.1	5.5	4.3	4.15	4.2	4.1	4.2
17	4.5	5.0	4.95	8.0	4.6	4.85	5.6	4.25	4.15	4.2	4.0	3.85
18	4.5	7.1	4.9	9.2	4.7	4.65	5.1	4.2	4.1	4.2	3.95	4.1
19	4.5	6.65	4.9	6.2	4.7	4.6	4.75	4.3	4.1	4.2	3.6	4.25
20	4.6	5.75	4.85	5.4	4.85	4.5	4.65	4.7	4.2	4.1	2.78	4.1
21	4.9	5.8	4.85	5.2	5.1	4.5	4.6	4.3	4.3	4.15	3.8	4.25
22	5.3	6.0	4.85	5.0	5.05	5.75	4.6	4.3	4.2	4.2	3.8	4.3
23	5.0	5.7	4.8	4.9	5.1	4.85	4.5	4.2	4.2	4.05	3.85	4.3
24	5.0	8.9	4.8	4.8	5.85	4.65	5.05	4.2	4.1	4.15	4.25	4.3
25	5.2	6.9	4.8	4.8	6.1	4.6	4.9	4.5	4.05	4.15	4.1	4.3
26	5.0	6.0	4.8	4.8	5.8	4.55	4.8	4.3	4.1	4.15	3.92	4.3
27	4.9	5.55	4.75	4.8	5.2	4.4	4.55	4.2	4.1	4.15	4.4	4.3
28	5.9	10.8	4.7	4.8	4.8	4.4	4.5	4.2	4.0	4.2	4.3	4.3
29	6.3	.....	4.7	4.7	4.7	4.4	4.5	4.15	4.6	4.15	4.2	4.3
30	5.7	.....	4.7	4.7	4.55	6.3	4.5	4.2	4.4	4.1	4.3	4.3
31	5.4	.....	4.7	.....	4.5	.....	4.45	4.55	.....	4.2	.....	4.35

NOTE.—Gage heights Nov. 19–23 affected by the closing of the dam above the station. On Nov. 20, flow through the dam was entirely stopped.

Daily discharge, in second-feet, of Ocmulgee River near Jackson, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,080	2,230	13,300	1,240	1,080	790	5,300	790	1,820	670	565	670
2	1,080	1,820	10,600	1,240	1,080	790	5,200	790	1,620	565	565	670
3	1,080	1,820	5,820	1,100	1,000	790	5,920	670	1,720	565	470	670
4	925	2,020	4,280	1,160	925	730	4,900	670	3,360	565	518	565
5	925	1,820	3,360	1,080	925	790	4,590	1,000	2,230	565	565	670
6	925	1,420	2,740	1,160	925	1,420	3,560	1,620	1,330	565	565	1,240
7	1,420	1,420	2,440	1,080	925	1,330	3,460	1,620	858	618	565	1,160
8	1,920	1,330	2,230	925	1,080	1,000	4,590	1,520	670	1,720	565	120
9	1,520	1,330	2,020	1,080	1,330	858	4,690	1,080	670	2,130	670	1,520
10	1,240	1,330	1,820	925	1,420	1,240	4,280	925	1,000	1,620	618	1,520
11	1,160	1,620	2,230	1,000	1,160	1,520	3,260	790	858	1,160	618	1,420
12	1,080	2,130	3,460	1,000	1,080	3,660	2,640	790	670	925	618	390
13	1,080	2,020	2,950	1,820	2,330	2,840	2,020	730	670	790	565	1,000
14	1,000	1,920	2,330	1,620	1,330	2,440	1,820	670	618	670	618	1,520
15	1,000	1,520	2,130	1,240	1,080	4,480	2,230	670	565	618	565	470
16	925	1,420	1,920	1,420	925	2,020	2,840	670	518	565	470	565
17	925	1,820	1,720	7,970	1,080	1,520	3,050	618	518	565	390	290
18	925	6,120	1,620	10,400	1,240	1,160	2,020	565	470	565	355	470
19	925	5,200	1,620	4,280	1,240	1,080	1,330	670	470	565	170	618
20	1,080	3,360	1,520	2,640	1,520	925	1,160	1,240	565	470	18	470
21	1,620	3,460	1,520	2,230	2,020	925	1,080	670	670	518	260	618
22	2,440	3,870	1,520	1,820	1,920	3,360	1,080	670	565	565	260	670
23	1,820	3,260	1,420	1,620	2,020	1,520	925	565	565	430	290	670
24	1,820	9,820	1,420	1,420	3,560	1,160	1,920	565	470	518	618	670
25	2,230	5,720	1,420	1,420	4,080	1,080	1,620	925	430	518	470	670
26	1,820	3,870	1,420	1,420	3,460	1,000	1,420	670	470	518	334	670
27	1,620	2,950	1,330	1,420	2,230	790	1,000	565	470	518	790	670
28	3,660	13,700	1,240	1,420	1,420	790	925	565	390	565	670	670
29	4,480	.....	1,240	1,240	1,240	790	925	518	1,080	518	565	670
30	3,260	.....	1,240	1,240	1,000	4,480	925	565	790	470	690	670
31	2,640	.....	1,240	.....	925	.....	858	1,000	.....	565	.....	730

NOTE.—These discharges were obtained from a rating curve which is fairly well defined.

Monthly discharge of Ocmulgee River near Jackson, Ga., for 1910.

[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	4,480	925	1,600	1.14	1.31	A
February	13,700	1,330	3,230	2.31	2.40	A
March	13,300	1,240	2,750	1.96	2.26	A
April	10,400	925	1,990	1.42	1.58	A
May	4,080	925	1,530	1.09	1.26	A
June	4,480	730	1,580	1.13	1.26	A
July	5,920	858	2,630	1.88	2.17	A
August	1,620	518	819	.585	.67	A
September	3,360	390	903	.645	.72	A
October	2,130	430	715	.511	.59	A
November	790	18	500	.357	.40	B
December	1,520	120	755	.539	.62	A
The year	13,700	18	1,570	1.12	15.24	

OCMULGEE RIVER AT MACON, GA.

This station is located at the Fifth Street Bridge in the city of Macon, near the Southern Railway passenger depot and about 500 feet above the Central of Georgia Railway bridge. The United States Weather Bureau established a gage at Macon on January 21, 1893, and October 18, 1895, discharge measurements were begun by the United States Geological Survey. Gage heights are furnished by the United States Weather Bureau.

Above Macon Ocmulgee River and most of its tributaries afford abundant water power. Some fluctuation in gage heights at low stages is probably caused by control of flow at mills above. Very great fluctuations will be caused by the operation of the large dam near Jackson, which was completed late in 1910. As at other stations situated just 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.

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. On October 9, 1905, a standard chain gage was installed on the Fifth Street Bridge, where discharge measurements are made. These gages have been referred to the same datum and have given practically the same readings, varying slightly owing to surface slope between locations.

Both banks are high and neither is subject to overflow. The bed of the river is soft and shifting, and a great amount of change in the station rating curve has occurred as the result of changes in the river bed at and below the station.

Discharge measurements of Ocmulgee River at Macon, Ga., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gage height.	Discharge.
		Feet.	*Sq. ft.*	*Feet.*	*Sec.-ft.*
Apr. 27	M. R. Hall	249	1,300	4.09	1,990
27	....do	249	1,340	4.13	2,060
Nov 9	....do	230	747	1.76	921
9	....do	230	750	1.82	940

Daily gage height, in feet, of Ocmulgee River at Macon, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.8	6.4	19.1	3.8	3.4	2.5	12.5	2.4	3.2	2.1	1.4	1.4
2	3.0	5.3	18.3	3.6	3.2	2.4	11.8	2.3	4.2	1.8	1.4	1.8
3	3.0	5.0	14.4	3.5	3.1	2.3	12.7	2.2	3.8	1.5	1.5	1.7
4	3.0	5.4	11.0	3.5	3.0	2.2	13.3	2.1	4.3	1.4	1.6	1.8
5	2.8	5.4	9.2	3.6	2.9	2.2	10.3	6.2	6.3	1.5	1.5	1.6
6	2.8	4.8	7.8	3.5	2.9	2.4	7.9	3.0	4.6	1.5	1.6	3.2
7	3.1	4.0	6.8	3.5	2.8	3.7	9.0	3.0	3.2	1.7	1.5	3.5
8	4.0	4.0	6.3	3.3	2.8	3.5	10.1	4.1	2.3	6.7	1.5	2.7
9	4.7	3.8	6.0	3.2	3.4	2.8	9.9	3.8	1.9	5.8	1.8	2.4
10	3.7	3.6	5.7	3.0	3.6	2.4	9.9	3.0	1.9	4.8	1.6	2.2
11	3.2	3.9	5.4	3.0	3.7	2.9	8.9	2.7	3.1	4.1	1.6	3.4
12	3.1	6.4	6.0	2.9	3.2	4.7	10.2	2.2	2.5	3.1	1.6	3.1
13	3.0	6.0	7.5	3.1	3.1	8.4	6.9	2.2	2.1	2.5	1.4	1.8
14	3.0	5.2	6.5	4.3	5.0	6.6	5.3	2.2	1.9	2.1	1.4	1.7
15	2.9	4.8	5.9	4.5	3.5	6.1	4.6	2.1	1.8	1.8	1.3	1.6
16	2.8	4.4	5.4	4.1	2.8	9.1	5.2	2.2	1.6	1.8	1.3	2.4
17	2.8	4.1	5.1	11.2	2.7	5.6	7.0	2.0	1.5	1.6	1.5	1.4
18	2.8	10.6	4.7	16.0	3.1	4.3	12.3	1.8	1.5	1.5	1.0	1.5
19	2.8	12.2	4.6	14.0	3.4	3.4	7.6	1.7	1.3	1.5	1.3	1.7
20	2.8	10.6	4.5	9.0	3.3	3.0	5.9	2.0	1.1	1.6	1.0	1.8
21	3.4	7.8	4.4	6.8	3.4	2.8	4.0	3.2	1.4	1.5	.8	1.6
22	4.4	10.4	5.0	5.8	4.6	2.5	3.5	2.0	1.9	1.5	.2	1.5
23	5.0	9.7	4.4	5.2	4.7	5.8	3.1	1.7	1.5	1.4	.8	1.5
24	4.6	9.4	4.4	4.8	5.1	4.0	2.9	1.7	1.3	1.3	.8	1.9
25	4.7	16.3	4.3	4.3	4.9	3.1	4.6	1.6	1.3	1.3	2.0	2.0
26	4.8	12.0	4.2	4.0	7.6	3.0	4.4	2.6	1.1	1.5	1.4	1.9
27	4.5	9.1	4.0	4.0	6.6	3.0	3.9	1.9	1.1	1.4	1.3	1.8
28	5.2	7.3	4.0	4.1	4.3	2.4	3.1	1.8	1.2	1.4	1.7	1.8
29	13.9	.....	4.1	3.9	3.4	2.2	2.8	1.6	1.4	1.4	2.4	1.8
30	10.3	.....	4.0	3.8	3.1	3.2	2.8	1.4	2.4	1.4	1.6	2.2
31	7.7	.....	4.0	.....	2.7	.....	2.5	4.6	.....	1.4	.....	2.3

NOTE.—Low gage heights Nov. 20–24 caused by stopping water at the new dam near Jackson.

Daily discharge, in second-feet, of Ocmulgee River at Macon, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,370	3,410	36,300	1,850	1,650	1,240	9,610	1,190	1,550	1,070	784	784
2	1,460	2,700	32,200	1,750	1,550	1,190	8,500	1,150	2,060	942	784	942
3	1,460	2,520	14,600	1,700	1,510	1,150	9,980	1,110	1,850	822	822	902
4	1,460	2,760	7,410	1,700	1,460	1,110	11,300	1,070	2,120	784	862	942
5	1,370	2,760	5,490	1,750	1,420	1,110	6,590	3,280	3,340	822	822	862
6	1,370	2,400	4,380	1,700	1,420	1,190	4,460	1,460	2,280	822	862	1,550
7	1,510	1,950	3,680	1,700	1,370	1,800	5,310	1,460	1,550	902	822	1,700
8	1,950	1,950	3,340	1,600	1,370	1,700	6,370	2,000	1,150	3,610	822	1,330
9	2,340	1,850	3,150	1,550	1,650	1,370	6,160	1,850	982	3,020	942	1,190
10	1,800	1,750	2,960	1,460	1,750	1,190	6,160	1,460	982	2,400	862	1,110
11	1,550	1,900	2,760	1,460	1,800	1,420	5,230	1,330	1,510	2,000	862	1,650
12	1,510	3,410	3,150	1,420	1,550	2,340	6,480	1,110	1,240	1,510	862	1,510
13	1,460	3,150	4,170	1,510	1,510	4,830	3,750	1,110	1,070	1,240	784	942
14	1,460	2,640	3,480	2,120	2,520	3,540	2,700	1,110	982	1,070	784	902
15	1,420	2,400	3,080	2,220	1,700	3,220	2,280	1,070	942	942	746	862
16	1,370	2,170	2,760	2,000	1,370	5,400	2,640	1,110	862	942	746	1,190
17	1,370	2,000	2,580	7,670	1,330	2,890	3,820	1,020	822	862	822	784
18	1,370	6,920	2,340	21,200	1,510	2,120	9,260	942	822	822	634	822
19	1,370	9,100	2,280	13,200	1,650	1,650	4,240	902	746	822	746	902
20	1,370	6,920	2,220	5,310	1,600	1,460	3,080	1,020	670	862	634	942
21	1,650	4,380	2,170	3,680	1,650	1,370	1,950	1,550	784	822	562	862
22	2,170	6,700	2,520	3,020	2,280	1,240	1,700	1,020	982	822	360	822
23	2,520	5,960	2,170	2,640	2,340	3,020	1,510	902	822	784	562	822
24	2,280	5,670	2,170	2,400	2,580	1,950	1,420	902	746	746	562	982
25	2,340	22,500	2,120	2,120	2,460	1,510	2,280	862	746	746	1,020	1,020
26	2,400	8,790	2,060	1,950	4,240	1,460	2,170	1,280	670	822	784	982
27	2,220	5,400	1,950	1,950	3,540	1,460	1,900	982	670	784	746	942
28	2,640	4,030	1,950	2,000	2,120	1,190	1,510	942	708	784	902	942
29	12,900	.....	2,000	1,900	1,650	1,110	1,370	862	784	784	1,190	942
30	6,590	.....	1,950	1,850	1,510	1,550	1,370	784	1,190	784	862	1,110
31	4,310	.....	1,950	.....	1,330	.....	1,240	2,280	.....	784	.....	1,150

NOTE.—These discharges were obtained from a well-defined rating curve.

Monthly discharge of Ocmulgee River at Macon, Ga., for 1910.

[Drainage area, 2,420 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	12,900	1,370	2,330	0.963	1.11	A
February	22,500	1,750	4,570	1.89	1.97	A
March	36,300	1,950	5,330	2.20	2.54	B
April	21,200	1,420	3,280	1.36	1.52	A
May	4,240	1,330	1,850	.764	.88	A
June	5,400	1,110	1,930	.798	.89	A
July	11,300	1,240	4,400	1.82	2.10	A
August	3,280	784	1,260	.521	.60	A
September	3,340	670	1,190	.492	.55	A
October	3,610	746	1,130	.467	.54	A
November	1,190	360	785	.324	.36	B
December	1,700	784	1,040	.430	.50	A
The year	36,300	360	2,410	.996	13.56	

OCONEE RIVER NEAR GREENSBORO, GA.

This station, which is located at the new wagon bridge about 5 miles west of Greensboro on the road to Madison, Ga., was established July 25, 1903.

Town Creek enters above the station. The operation of a number of mills and factories above may cause considerable fluctuation in the low-water flow, but the gage is read twice a day, and the mean of the two readings is believed to be sufficiently accurate.

The chain gage is attached to the downstream lower chord of the bridge from which measurements are made. The datum has not changed since the establishment of the station. The left bank is low and overflows at a stage of about 12 to 15 feet for a distance of about 600 feet.

Discharge measurements of Oconee River near Greensboro, Ga., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gage height.	Discharge.
		Feet.	*Sq. ft.*	*Feet.*	*Sec.-ft.*
Jan. 20	E. H. Swett	122	457	2.71	856
20	do	122	454	2.70	857
Apr. 30	M. R. Hall	120	507	2.82	909
30	do	120	515	2.76	897
Oct. 28	do	115	334	1.74	516
28	do	115	345	1.74	533

Daily gage height, in feet, of Oconee River near Greensboro, Ga., for 1910.

[A. M. Thurmond, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.95	4.2	16.3	3.2	2.7	2.45	.....	2.45	6.9	2.9	1.75	1.85
2	2.95	3.75	17.8	3.15	2.6	2.25	.....	2.45	8.7	2.75	1.85	1.75
3	2.9	3.7	14.8	2.9	2.55	2.5	.....	2.3	6.5	2.3	1.75	1.6
4	2.75	3.8	8.0	2.95	2.45	3.2	.....	2.3	5.8	2.0	1.8	1.7
5	2.75	3.65	5.7	2.95	2.4	3.5	.....	3.35	4.1	1.9	1.7	2.15
6	2.7	3.3	5.2	2.85	2.35	3.95	8.3	3.25	2.65	1.75	1.8	6.5
7	3.1	3.1	4.8	2.85	2.25	3.7	7.5	3.25	2.55	2.0	1.7	6.6
8	2.7	3.05	4.4	2.65	3.7	3.25	8.9	3.95	2.35	5.7	1.8	4.4
9	3.05	3.15	4.2	2.65	3.4	2.65	11.6	3.45	2.35	5.3	1.8	3.75
10	3.05	3.15	4.2	2.45	3.25	2.6	9.5	2.75	2.85	4.7	1.7	3.1
11	2.8	3.25	4.4	2.45	2.85	2.75	6.2	2.5	2.75	3.25	1.75	2.75
12	2.8	4.3	4.8	2.45	2.9	6.2	5.2	2.25	2.55	2.85	1.75	2.55
13	2.75	4.2	4.9	2.95	2.75	6.2	4.9	2.15	2.35	2.6	1.65	2.35
14	2.75	3.75	4.8	2.9	2.35	8.2	4.4	2.15	2.1	2.2	1.75	2.1
15	2.75	3.65	3.8	3.2	2.35	9.2	4.0	2.1	2.05	2.2	1.75	2.05
16	2.65	3.4	3.75	4.7	2.35	8.9	4.2	1.85	1.95	2.1	1.75	2.1
17	2.65	3.8	3.45	9.8	2.35	6.8	3.75	1.85	1.75	2.1	1.8	2.05
18	2.6	9.8	3.45	8.6	2.6	4.7	3.55	2.15	1.75	2.15	1.8	2.15
19	2.75	10.8	3.4	5.8	3.0	3.65	3.5	2.3	1.65	1.85	1.8	2.25
20	2.7	10.4	3.35	4.5	4.0	3.25	3.45	2.3	1.65	1.6	1.7	2.2
21	4.0	6.6	3.55	3.9	5.1	4.0	3.35	2.05	1.85	1.75	1.75	2.1
22	4.1	7.8	3.55	3.6	4.6	6.2	3.2	2.0	1.75	1.75	1.75	2.15
23	3.85	6.4	3.45	3.25	4.4	4.5	3.25	1.95	2.4	1.6	1.75	2.3
24	4.2	11.2	3.5	3.05	4.6	3.4	3.0	1.75	3.3	1.6	1.8	2.45
25	4.3	11.7	3.4	2.85	6.0	3.2	2.85	2.15	4.3	1.65	1.85	2.55
26	3.75	7.8	3.35	3.1	5.5	2.75	3.0	1.95	2.45	1.65	1.85	2.6
27	7.0	5.4	3.2	2.95	3.8	2.55	2.85	1.85	2.15	1.65	1.7	2.55
28	10.8	7.7	3.2	2.95	3.15	2.55	2.8	1.8	2.1	1.85	1.85	2.3
29	10.9	.....	3.35	2.9	2.75	3.75	2.75	1.8	2.5	1.7	1.95	2.45
30	6.8	.....	3.25	2.75	2.65	11.0	2.6	3.35	2.95	1.75	2.0	2.65
31	5.2	.....	3.1	.....	2.6	.....	2.5	6.4	.....	1.7	.....	2.55

Daily discharge, in second-feet, of Oconee River near Greensboro, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	951	1,460	9,300	1,050	856	764	8,000	764	2,820	932	524	556
2	951	1,270	10,500	1,030	818	692	10,000	764	3,900	875	556	524
3	932	1,250	8,180	932	800	782	9,400	710	2,600	710	524	476
4	875	1,290	3,470	951	764	1,050	7,800	710	2,220	606	540	508
5	875	1,230	2,180	951	746	1,170	5,400	1,110	1,410	572	508	657
6	856	1,090	1,920	913	728	1,350	3,650	1,070	837	524	540	2,600
7	1,010	1,010	1,720	913	692	1,250	3,170	1,070	800	606	508	2,660
8	856	990	1,540	837	1,250	1,070	4,020	1,350	728	2,180	540	1,540
9	990	1,030	1,460	837	1,130	837	5,830	1,150	728	1,980	540	1,270
10	990	1,030	1,460	764	1,070	818	4,420	875	913	1,680	508	1,010
11	894	1,070	1,540	764	913	875	2,440	782	875	1,070	524	875
12	894	1,500	1,720	764	932	2,440	1,920	692	800	913	524	800
13	875	1,460	1,780	951	875	2,440	1,780	657	728	818	492	728
14	875	1,270	1,720	932	728	3,590	1,540	657	640	674	524	640
15	875	1,230	1,290	1,050	728	4,220	1,370	640	623	674	524	623
16	837	1,130	1,270	1,680	728	4,020	1,460	556	589	640	524	640
17	837	1,220	1,150	4,610	728	2,770	1,270	556	524	640	540	623
18	818	4,610	1,150	3,830	818	1,680	1,190	657	524	657	540	657
19	875	5,270	1,130	2,220	970	1,230	1,170	710	492	556	540	692
20	856	5,000	1,110	1,590	1,370	1,070	1,150	710	492	476	508	674
21	1,370	2,660	1,190	1,330	1,880	1,370	1,110	623	556	524	524	640
22	1,410	3,350	1,190	1,210	1,640	2,440	1,050	606	524	524	524	657
23	1,310	2,550	1,150	1,070	1,540	1,590	1,070	589	746	476	524	710
24	1,460	5,550	1,170	990	1,640	1,130	970	524	1,090	476	540	764
25	1,500	5,900	1,130	913	2,330	1,050	913	657	1,500	492	556	800
26	1,270	3,350	1,110	1,010	2,080	875	970	589	764	492	556	818
27	2,880	2,020	1,050	951	1,290	800	913	556	657	492	508	800
28	5,270	3,290	1,050	951	1,030	800	894	540	640	552	556	710
29	5,340	.....	1,110	932	875	875	875	540	782	508	589	764
30	2,770	.....	1,070	875	837	5,410	818	1,110	951	524	606	837
31	1,920	.....	1,010	.....	818	.....	782	2,550	.....	508	.....	800

NOTE.—These discharges were obtained from a rating curve which is fairly well defined below 6,000 second-feet. Discharges July 1–5 estimated by means of a hydrograph comparison with the other Oconee River stations.

Monthly discharge of Oconee River near Greensboro, Ga., for 1910.

[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	5,340	818	1,430	1.30	1.50	A
February	5,900	990	2,290	2.08	2.17	A
March	10,500	1,010	2,190	1.99	2.29	A
April	4,610	764	1,260	1.15	1.28	A
May	2,330	692	1,080	.982	1.13	A
June	5,410	692	1,680	1.53	1.71	A
July	[a] 10,000	782	2,820	2.56	2.95	B
August	2,550	524	809	.735	.85	A
September	3,900	492	1,050	.955	1.07	A
October	2,180	476	753	.685	.79	A
November	606	492	534	.485	.54	A
December	2,660	476	873	.794	.92	A
The year	10,500	476	1,390	1.26	17.20	

[a] Estimated.

OCONEE RIVER AT FRALEYS FERRY, NEAR MILLEDGEVILLE, GA.

This station is located at Fraleys Ferry, 6 miles above Milledgeville Ga., and about 4 miles below the mouth of Little River. It was established May 23, 1906, to take the place of the Milledgeville station. Records were discontinued December 31, 1908, but were resumed October 6, 1909. A temporary gage was maintained from October 20, 1905, to November 14, 1905, at Fraleys Ferry, and the original station at Milledgeville was maintained from August 22, 1903, to December 31, 1905. The Milledgeville station is now maintained by the United States Weather Bureau, but on account of the daily fluctuation caused by a milldam above and the shifting channel at the station, mean monthly discharges have not been computed since 1904. At Fraleys Ferry, which is far above the influence of the dam at Milledgeville, the flow is only slightly affected by dams from above. Two gage readings a day are made in order to average any daily fluctuations which may occur.

The sloping staff gage is located 100 feet above the ferry at which discharge measurements are made. Owing to swiftness of current it has been impossible to make any measurements at high-water stages. The bed of the stream is sandy and changing, but rock shoals below control the water level at the station and a good rating has been developed for low stages.

Daily gage height, in feet, of Oconee River at Fraleys Ferry, near Milledgeville, Ga., for 1910.

[H. A. Taylor, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.7	7.0	.....	6.1	6.0	5.5	.....	5.6	6.6	5.6	5.2	5.3
2	5.75	6.5	.....	6.05	5.85	5.4	.....	5.6	7.7	5.5	5.2	5.3
3	5.75	6.55	.....	6.1	5.8	5.35	.....	5.45	7.6	5.45	5.2	5.2
4	5.8	6.75	.....	6.05	5.8	5.5	.....	5.4	7.8	5.3	5.2	5.2
5	5.8	6.6	8.0	6.0	5.7	5.7	.....	6.35	6.85	5.2	5.2	5.45
6	5.75	5.95	7.5	6.0	5.7	5.85	.....	5.9	6.1	5.2	5.2	7.0
7	6.0	6.3	7.2	5.9	5.65	6.45	8.1	5.8	5.7	5.1	5.3	7.3
8	6.35	6.2	7.0	5.9	5.95	6.2	8.0	5.9	5.5	9.1	5.2	6.9
9	6.4	6.1	6.9	5.85	6.55	5.75	8.6	6.05	5.45	8.3	5.2	6.25
10	6.1	6.2	6.8	5.85	6.4	5.55	8.8	5.75	5.55	7.2	5.2	5.85
11	6.0	6.4	6.8	5.8	6.2	5.5	7.7	5.45	6.25	6.4	5.2	5.8
12	5.85	7.4	7.0	5.8	5.95	7.1	7.2	5.5	5.9	5.85	5.2	5.7
13	5.85	7.1	7.0	5.9	6.7	7.4	6.8	5.4	5.75	5.65	5.2	5.6
14	5.8	6.65	6.85	6.15	6.35	8.0	6.45	5.4	5.45	5.5	5.2	5.5
15	5.8	6.5	6.65	5.95	6.05	.....	6.65	5.3	5.35	5.4	5.2	5.4
16	5.8	6.4	6.5	5.9	5.75	8.6	6.6	5.3	5.3	5.4	5.2	5.4
17	5.8	6.45	6.45	8.5	5.7	7.8	6.55	5.3	5.2	5.4	5.2	5.4
18	5.75	8.6	6.4	.....	5.8	6.9	6.6	5.2	5.1	5.3	5.2	5.45
19	5.75	.....	6.4	8.3	5.85	6.3	6.95	5.2	5.1	5.3	5.2	5.75
20	5.8	.....	6.4	7.2	6.0	6.05	6.75	5.2	5.1	5.25	5.3	5.75
21	6.3	.....	6.4	6.65	6.45	6.05	6.45	5.5	5.1	5.1	5.4	5.6
22	6.8	.....	6.6	6.45	7.0	6.8	6.0	5.3	5.0	5.1	5.4	5.5
23	6.55	.....	6.4	6.3	6.5	6.65	5.85	5.2	5.05	5.1	5.3	5.4
24	6.4	.....	6.3	6.2	6.15	6.3	6.0	5.2	5.1	5.1	5.3	5.5
25	6.8	.....	6.25	6.1	6.55	6.0	6.45	5.3	5.9	5.1	5.3	5.8
26	6.6	.....	6.25	6.1	7.1	6.05	5.9	5.45	5.85	5.1	5.3	5.9
27	6.4	8.2	6.2	6.1	6.55	5.85	5.75	5.35	5.3	5.1	5.3	5.7
28	7.6	8.2	6.2	6.1	6.05	5.7	5.8	5.2	5.25	5.1	5.45	5.6
29	(1)	.....	6.15	6.1	5.85	6.5	5.8	5.1	5.25	5.1	5.6	5.6
30	(1)	.....	6.15	6.0	5.7	7.8	5.7	5.1	5.35	5.1	5.4	5.65
31	8.0	.....	6.1	.....	5.6	.....	5.7	5.35	.....	5.2	.....	5.9

NOTE.—Water was over the gage on days for which no gage heights are given.

Daily discharge, in second-feet, of Oconee River at Fraleys Ferry, near Milledgeville, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,740	3,770	9,800	2,300	2,150	1,490	7,000	1,610	3,080	1,610	1,170	1,270
2	1,800	2,920	11,600	2,220	1,940	1,380	9,000	1,610	5,070	1,490	1,170	1,270
3	1,800	3,000	13,000	2,300	1,870	1,320	10,800	1,440	4,880	1,440	1,170	1,170
4	1,870	3,340	10,400	2,220	1,870	1,490	12,000	1,380	5,260	1,270	1,170	1,170
5	1,870	3,080	5,650	2,150	1,740	1,740	10,800	2,680	3,500	1,170	1,170	1,440
6	1,800	2,080	4,690	2,150	1,740	1,940	8,800	2,010	2,300	1,170	1,170	3,770
7	2,150	2,600	4,130	2,010	1,680	2,840	5,850	1,870	1,740	1,080	1,270	4,310
8	2,680	2,450	3,770	2,010	2,080	2,450	5,650	2,010	1,490	7,860	1,170	3,590
9	2,760	2,300	3,590	1,940	3,000	1,800	6,850	2,220	1,440	6,250	1,170	2,520
10	2,300	2,450	3,420	1,940	2,760	1,550	7,250	1,800	1,550	4,130	1,170	1,940
11	2,150	2,760	3,420	1,870	2,450	1,490	5,070	1,440	2,520	2,760	1,170	1,870
12	1,940	4,500	3,770	1,870	2,080	3,950	4,130	1,490	2,010	1,940	1,170	1,740
13	1,940	3,950	3,770	2,010	3,250	4,500	3,420	1,380	1,800	1,680	1,170	1,610
14	1,870	3,160	3,500	2,380	2,680	5,650	2,840	1,380	1,440	1,490	1,170	1,490
15	1,870	2,920	3,160	2,080	2,220	9,000	3,160	1,270	1,320	1,380	1,170	1,380
16	1,870	2,760	2,920	2,010	1,800	6,850	3,080	1,270	1,270	1,380	1,170	1,380
17	1,870	2,840	2,840	6,650	1,740	5,260	3,000	1,270	1,170	1,380	1,170	1,380
18	1,800	6,850	2,760	8,200	1,870	3,590	3,080	1,170	1,080	1,270	1,170	1,440
19	1,800	8,800	2,760	6,250	1,940	2,600	3,680	1,170	1,080	1,270	1,170	1,800
20	1,870	9,700	2,760	4,130	2,150	2,220	3,320	1,170	1,080	1,220	1,270	1,800
21	2,600	9,100	2,760	3,160	2,840	2,220	2,840	1,490	1,080	1,080	1,380	1,610
22	3,420	8,400	3,080	2,840	3,770	3,420	2,150	1,270	990	1,080	1,380	1,490
23	3,000	8,200	2,760	2,600	2,920	3,160	1,940	1,170	1,040	1,080	1,270	1,380
24	2,760	8,800	2,600	2,450	2,380	2,600	2,150	1,170	1,080	1,080	1,270	1,490
25	3,420	9,600	2,520	2,300	3,000	2,150	2,840	1,270	2,010	1,080	1,270	1,870
26	3,080	10,000	2,520	2,300	3,950	2,220	2,010	1,440	1,940	1,080	1,270	2,010
27	2,760	6,050	2,450	2,300	3,000	1,940	1,800	1,320	1,270	1,080	1,270	1,740
28	4,880	6,050	2,450	2,300	2,220	1,740	1,870	1,170	1,220	1,080	1,440	1,610
29	.....	.....	2,380	2,300	1,940	2,920	1,870	1,080	1,220	1,080	1,610	1,610
30	.....	.....	2,380	2,150	1,740	5,260	1,740	1,080	1,320	1,080	1,380	1,680
31	5,650	.....	2,300	.....	1,610	.....	1,740	1,320	.....	1,170	.....	2,010

NOTE.—These discharges were obtained from a rating curve which is well defined below 5,600 second-feet. Discharges for days when water was over the gage, estimated by means of a hydrograph comparison with the other Oconee River stations.

Monthly discharge of Oconee River at Fraleys Ferry, near Milledgeville, Ga., for 1910.

[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	a 8,300	1,740	2,810	0.989	1.14	A
February	a 10,000	2,080	5,090	1.79	1.86	B
March	a 13,000	2,300	4,190	1.48	1.71	B
April	a 8,200	1,870	2,780	.979	1.09	A
May	3,950	1,610	2,330	.824	.95	A
June	a 9,000	1,320	3,020	1.06	1.18	A
July	a 12,000	1,740	4,570	1.61	1.86	B
August	2,680	1,080	1,470	.518	.60	A
September	5,260	990	1,940	.684	.76	A
October	7,860	1,080	1,780	.627	.72	A
November	1,610	1,170	1,240	.437	.49	A
December	4,310	1,170	1,830	.644	.74	A
The year	13,000	990	2,740	.964	13.10	

a Estimated.

OCONEE RIVER AT DUBLIN, GA.

This station is located at the iron highway bridge in the eastern part of Dublin. Continuous records of gage heights have been obtained at this point since February 11, 1898, supplied for most of the time by the United States Weather Bureau. Fragmentary records of gage heights and discharge measurements were obtained prior to 1898.

The staff gage is attached to the lower part of the Wrightsville & Tennille Railroad bridge, 500 feet downstream from the highway bridge at which measurements are made. Its datum has remained the same since its establishment.

Fluctuation caused by water powers above the station are unimportant. This portion of the river is navigable, and although the current is good at the station the slope below is small; it is therefore to be expected that rapidly rising or falling stages will cause much difference in surface slope and consequently in the discharge.

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 of Oconee River at Dublin, Ga., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gage height.	Discharge.
		Feet.	*Sq. ft.*	*Feet.*	*Sec.-ft.*
Apr. 26	M. R. Hall	227	1,250	1.91	2,880
26	....do	227	1,260	1.83	2,860
Nov. 10	....do	195	799	−.14	1,360
10	....do	195	810	−.13	1,400

Daily gage height, in feet, of Oconee River at Dublin, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.5	7.5	14.9	2.0	1.5	1.5	2.9	0.8	−0.3	0.7	−0.5	0.5
2	1.1	10.0	14.3	1.6	1.5	1.2	6.8	.5	.4	.6	− .5	.2
3	1.2	10.4	12.4	1.4	1.4	1.0	8.1	.4	3.5	.3	− .5	.1
4	1.2	6.9	11.6	1.3	.8	− .1	9.3	.4	4.6	.3	− .5	.1
5	1.2	4.9	13.3	1.3	.7	− .2	12.0	.4	4.8	.3	− .5	.0
6	1.2	3.6	15.6	1.3	.5	− .2	13.5	.3	5.2	.2	− .5	.0
7	1.4	3.6	15.3	1.2	.6	.6	14.0	1.8	3.2	.2	− .5	.4
8	1.3	3.4	13.4	1.2	.5	1.2	14.5	1.3	1.4	.3	− .4	3.8
9	1.8	2.8	9.6	1.1	.8	2.2	14.1	1.0	.4	3.3	− .3	3.1
10	2.3	2.6	5.0	1.1	2.2	1.2	12.0	1.3	.1	6.0	− .3	3.1
11	2.1	2.0	3.8	1.0	2.0	.6	10.3	1.0	.3	6.5	− .1	2.7
12	1.5	2.9	3.8	.9	1.7	.8	8.4	.7	.5	5.1	− .2	1.1
13	1.3	4.6	4.2	.9	1.5	1.0	7.6	.5	1.1	2.7	− .2	1.2
14	1.2	5.2	4.2	.9	1.3	4.0	6.4	.4	.9	2.0	− .3	1.1
15	1.2	4.5	4.1	1.0	1.2	7.2	4.2	.1	.5	.8	− .3	1.1
16	1.2	3.2	3.2	1.3	1.6	9.6	3.3	.1	.1	.4	− .3	.6
17	1.2	3.2	3.4	1.6	1.2	10.6	3.4	.0	− .1	.3	− .3	.4
18	1.2	3.5	2.7	3.8	.6	10.7	3.1	.0	− .2	.3	− .3	.3
19	1.2	6.4	2.2	6.0	.6	10.0	4.4	.0	− .3	.3	− .3	.4
20	1.4	7.1	2.2	7.5	.6	7.8	5.1	− .1	− .4	.3	.1	.9
21	1.7	7.8	2.3	9.0	.8	3.2	4.8	− .1	− .4	.2	.3	1.0
22	2.1	8.7	2.4	9.7	1.0	2.3	4.3	− .2	− .5	.4	.3	1.1
23	3.1	9.2	2.4	6.3	2.3	3.0	3.0	− .2	− .5	.4	.2	.9
24	3.9	9.9	2.2	3.3	2.7	3.3	2.4	− .2	− .5	− .1	.2	.7
25	2.7	10.4	2.2	2.6	2.8	2.8	1.9	− .2	− .6	− .3	.1	.6
26	2.9	11.0	2.2	2.0	2.7	2.2	2.8	− .3	− .6	− .4	.1	.6
27	2.9	11.8	2.1	1.7	2.5	1.9	2.4	− .3	1.1	− .4	.1	.8
28	3.1	13.3	2.2	1.6	2.4	1.4	1.4	− .2	1.0	− .4	.1	1.0
29	3.4	.....	2.2	1.6	2.2	1.2	.9	− .3	.8	− .5	.1	.7
30	6.8	.....	2.1	1.6	1.7	1.1	1.1	− .4	.6	− .5	.1	.6
31	7.5	.....	2.1	.....	1.7	.....	1.0	− .4	.....	− .5	.....	.6

Daily discharge, in second-feet, of Oconee River at Dublin, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,560	8,540	19,600	2,980	2,560	2,560	3,740	2,000	1,200	1,920	1,070	1,770
2	2,240	11,900	18,600	2,640	2,560	2,320	7,690	1,770	1,700	1,840	1,070	1,540
3	2,320	12,500	15,500	2,480	2,480	2,160	9,310	1,700	4,280	1,620	1,070	1,470
4	2,320	7,810	14,300	2,400	2,000	1,330	10,900	1,700	5,320	1,620	1,070	1,470
5	2,320	5,620	17,000	2,400	1,920	1,260	14,900	1,700	5,520	1,620	1,070	1,400
6	2,320	4,370	20,800	2,400	1,770	1,260	17,300	1,620	5,920	1,540	1,070	1,400
7	2,480	4,370	20,300	2,320	1,840	1,840	18,100	2,800	4,010	1,540	1,070	1,700
8	2,400	4,190	17,100	2,320	1,770	2,320	19,000	2,400	2,480	1,620	1,140	4,560
9	2,800	3,660	11,300	2,240	2,000	3,140	18,300	2,160	1,700	4,100	1,200	3,920
10	3,230	3,480	5,720	2,240	3,140	2,320	14,900	2,400	1,470	6,780	1,200	3,920
11	3,060	2,980	4,560	2,160	2,980	1,840	12,400	2,160	1,620	7,340	1,330	3,570
12	2,560	3,740	4,560	2,080	2,720	2,000	9,700	1,920	1,770	5,820	1,260	2,240
13	2,400	5,320	4,940	2,080	2,560	2,160	8,670	1,770	2,240	3,570	1,260	2,320
14	2,320	5,920	4,940	2,080	2,400	4,740	7,230	1,700	2,080	2,980	1,200	2,240
15	2,320	5,220	4,840	2,160	2,320	8,170	4,940	1,470	1,770	2,000	1,200	2,240
16	2,320	4,010	4,010	2,400	2,640	11,300	4,100	1,470	1,470	1,700	1,200	1,840
17	2,320	4,010	4,190	2,640	2,320	12,800	4,190	1,400	1,330	1,620	1,200	1,700
18	2,320	4,280	3,570	4,560	1,840	13,000	3,920	1,400	1,260	1,620	1,200	1,620
19	2,320	7,230	3,140	6,780	1,840	11,900	5,120	1,400	1,200	1,620	1,200	1,700
20	2,480	8,050	3,140	8,540	1,840	8,920	5,820	1,330	1,140	1,620	1,470	2,080
21	2,720	8,920	3,230	10,500	2,000	4,010	5,520	1,330	1,140	1,540	1,620	2,160
22	3,060	10,100	3,320	11,500	2,160	3,230	5,030	1,260	1,070	1,700	1,620	2,240
23	3,920	10,800	3,320	7,120	3,230	3,830	3,830	1,260	1,070	1,700	1,540	2,080
24	4,650	11,800	3,140	4,100	3,570	4,100	3,320	1,260	1,070	1,330	1,540	1,920
25	3,570	12,500	3,140	3,480	3,660	3,660	2,890	1,260	1,000	1,200	1,470	1,840
26	3,740	13,400	3,140	2,980	3,570	3,140	3,660	1,200	1,000	1,140	1,470	1,840
27	3,740	14,600	3,060	2,720	3,400	2,890	3,320	1,200	2,240	1,140	1,470	2,000
28	3,920	17,000	3,140	2,640	3,320	2,480	2,480	1,260	2,160	1,140	1,470	2,160
29	4,190	.....	3,140	2,640	3,140	2,320	2,080	1,200	2,000	1,070	1,470	1,920
30	7,690	.....	3,060	2,640	2,720	2,240	2,240	1,140	1,840	1,070	1,470	1,840
31	8,540	.....	3,060	.....	2,720	.....	2,160	1,140	.....	1,070	.....	1,840

NOTE.—These discharges were obtained from a rating curve which is not well defined.

Monthly discharge of Oconee River at Dublin, Ga., for 1910.

[Drainage area, 4,180 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	8,540	2,240	3,200	0.766	0.88	B
February	17,000	2,980	7,730	1.85	1.93	B
March	20,800	3,060	7,640	1.83	2.11	B
April	11,500	2,080	3,670	.878	.98	B
May	3,660	1,770	2,550	.610	.70	B
June	13,000	1,260	4,310	1.03	1.15	B
July	19,000	2,080	7,640	1.83	2.11	B
August	2,800	1,140	1,610	.385	.44	B
September	5,920	1,000	2,140	.512	.57	B
October	7,340	1,070	2,200	.526	.61	B
November	1,620	1,070	1,290	.309	.34	B
December	4,560	1,400	2,150	.514	.59	B
The year	20,800	1,000	3,820	.914	12.41	

NOTE.—Intercomparisons with the other Oconee stations show rather unfavorable results for Dublin. The means appear generally low, especially for May, June, August, September, October, and November.

EASTERN GULF OF MEXICO DRAINAGE BASINS.

APALACHICOLA RIVER BASIN.

DESCRIPTION.

This Apalachicola basin is drained almost entirely by Chattahoochee and Flint rivers. These two main streams unite at the extreme southwest corner of Georgia to form Apalachicola River, which flows southward through Florida and empties into the Gulf of Mexico at Apalachicola. The basin is about 350 miles long and comprises an area of 19,500 square miles.

Chattahoochee River rises in the Blue Ridge in Lumpkin, White, and Habersham counties, Ga., near the northeast corner of the State, and flows southwestward until it reaches the Alabama line at West Point, Ga.; thence it flows southward, forming the western boundary of Georgia, until it reaches Apalachicola River at the southern boundary of the State. Its upper tributaries are Chestatee and Soque rivers, which join the Chattahoochee in Hall and Habersham counties, respectively. The basin of the Chattahoochee, which is slightly larger than that of the Flint, is peculiarly narrow, especially for the portion in the mountain and plateau regions. It lies between two ridges, higher than the country on either side, like two great levees, rescuing its water from the many encroaching tributaries of Tallulah, Broad, Oconee, Ocmulgee, and Flint rivers on the south and Ocoee, Etowah, and Tallapoosa rivers on the north. The fall line is well defined at Columbus, Ga., where the river breaks through the southern rim of its plateau basin. The greatest amount of fall after leaving the small headwater streams occurs at and immediately above Columbus. The mountain portion of the basin above Gainesville, Ga., is largely in forests and contains much land too steep

for cultivation. The Piedmont Plateau and Coastal Plain areas are mostly cleared.

Flint River rises in Fulton County, Ga., a few miles south of Atlanta, and flows in a southerly direction to Apalachicola River. It drains the south-central portion of Georgia, extending from Atlanta south to the Florida line. The principal tributaries of the Flint are Whitewater, Elkins, Big Potato, Muckalee, Kinchafoonee, Ichawaynochaway, and Spring creeks. The upper portion of the Flint drains the granitic areas of the Piedmont Plateau, passing to the quartzites on the southern border, and, with less change in elevation than other Georgia streams, into the Coastal Plain. The fall line is not so well defined as it is on Chattahoochee River. The entire basin of the Flint is an agricultural country, and the lands are mostly cleared, both in the Plateau and Coastal Plain areas. Their roughest section, containing the most waste lands, is the pine mountain region at the southern border of the Piedmont Plateau. An unusual feature of the regimen of its flow is that the lower area contributes more low-water flow per square mile than the upper portions. The river at Albany has a greater minimum run-off per square mile than it has at Woodbury.

The mean annual rainfall for the Apalachicola basin is about 50 inches, except for the upper portion of the Chattahoochee drainage, where it reaches 60 inches.

Opportunities for water-power development are great, and in most parts of the basin the demand for power is good.

The following special reports contain information regarding the hydrography of the Apalachicola River basin:

Water resources of Georgia, by B. M. and M. R. Hall: Water-Supply Paper U. S. Geol. Survey No. 197. This contains data on stream flow, river surveys, and water power collected prior to 1906.

River surveys and profiles made during 1903, by W. C. Hall and J. C. Hoyt: Water-Supply Paper U. S. Geol. Survey No. 115. This report may be obtained by applying to the Director United States Geological Survey, Washington, D. C.

Relation of southern Appalachian Mountains to the development of inland water navigation and water power: United States Forest Service circulars Nos. 143 and 144.

CHATTAHOOCHEE RIVER NEAR NORCROSS, GA.

This station, which is located at Medlocks Bridge, about 4½ miles north of Norcross, 1½ miles above the mouth of John Creek, and 5 miles below the mouth of Suwanee Creek, was established January 9, 1903, to take the place of the Oakdale station about 30 miles below, which was maintained from July 30, 1896, to May 31, 1904, when its records became unreliable on account of the Bull Sluice power plant above.

Artificially controlled flow from water powers above causes some daily fluctuation in gage heights. To eliminate the error from this source the gage is read twice a day.

The original gage was a vertical staff attached to an oak tree on the right bank about 100 feet above the gage. A chain gage, established March 14, 1903, was read in connection with the vertical gage until June 28, 1905, when a standard chain gage was installed on the toll bridge. The datum of the vertical staff gage originally used and of the present chain gage has not been changed.

The 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. The bed of the stream is sandy and changeable, necessitating frequent discharge measurements and occasional changes in the rating.

Since May 1, 1910, the gage heights have been furnished by the United States Weather Bureau.

Discharge measurements of Chattahoochee River near Norcross, Ga., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gage height.	Discharge.
		Feet.	*Sq. ft.*	*Feet.*	*Sec.-ft.*
Apr. 28	M. R. Hall	164	1,100	2.64	1,660
28	do	164	1,090	2.62	1,640
June 23	do	166	1,230	3.46	2,430
Sept. 7	F. P. Thomas	168	1,090	2.45	1,460
7	do	168	1,080	2.41	1,390
Oct. 29	M. R. Hall	165	1,010	2.41	1,320

Daily gage height, in feet, of Chattahoochee River near Norcross, Ga., for 1910.

[W. O. Medlock, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.6	2.9	5.0	2.5	2.4	3.15	4.2	2.6	6.8	2.7	1.9	2.15
2	2.6	2.8	6.0	2.5	2.4	3.1	4.2	2.5	4.1	2.2	2.15	2.15
3	2.55	2.8	4.6	2.5	2.4	3.65	4.0	2.7	3.55	2.1	2.2	2.1
4	2.5	2.85	3.9	2.5	2.35	3.7	4.7	2.5	3.0	2.1	2.1	2.1
5	2.5	2.8	3.6	2.5	2.35	3.2	4.6	3.4	2.75	2.1	2.1	3.9
6	2.6	2.65	3.4	2.5	2.3	6.6	5.5	3.05	2.55	2.2	1.92	6.2
7	3.65	2.6	3.25	2.5	2.35	5.4	6.0	4.6	2.45	2.3	a1.52	4.9
8	4.4	2.55	3.15	2.4	4.7	3.85	5.0	3.95	2.4	2.9	1.92	3.2
9	3.4	2.6	3.1	2.4	10.4	3.45	4.7	3.1	2.9	4.0	2.0	2.75
10	3.05	2.6	3.05	2.4	6.4	3.4	4.4	2.75	3.5	3.25	2.0	2.6
11	2.9	2.6	3.3	2.4	4.2	3.4	4.1	2.65	2.8	2.6	2.1	2.4
12	2.75	2.85	3.55	2.4	3.6	4.8	3.6	2.5	2.45	2.4	2.2	a2.3
13	2.7	3.0	3.25	2.45	3.6	6.1	3.45	2.5	2.35	2.3	2.2	2.5
14	2.7	2.8	3.1	2.4	3.15	5.0	3.5	2.6	2.3	2.25	a1.58	2.3
15	2.65	2.75	3.0	2.4	3.0	4.5	3.85	2.5	2.25	2.2	2.05	2.4
16	2.55	2.75	2.9	2.7	2.9	4.2	3.45	2.55	2.2	2.1	2.15	2.4
17	2.5	3.65	2.9	6.1	3.05	3.6	3.3	2.45	2.15	2.1	2.1	2.25
18	2.55	7.1	2.8	5.9	3.4	3.35	3.1	2.4	2.1	2.05	1.92	2.2
19	2.55	5.5	2.8	3.75	3.45	3.2	3.05	2.3	2.1	2.1	1.88	a1.8
20	2.6	3.9	2.8	3.2	5.1	3.1	3.05	2.3	2.1	2.1	1.88	2.05
21	3.2	3.75	2.85	2.95	8.8	3.2	2.9	2.3	2.1	2.1	a1.5	2.15
22	3.55	4.0	2.8	2.85	6.4	3.25	2.8	2.25	2.05	2.1	1.82	2.1
23	3.1	3.7	2.75	2.75	5.4	3.35	2.8	2.2	2.1	2.0	1.98	2.2
24	3.2	3.5	2.75	2.7	7.1	3.25	2.75	2.2	2.5	a1.65	1.92	2.4
25	3.15	3.3	2.7	2.7	8.4	3.35	2.8	2.2	2.4	2.0	1.9	2.8
26	3.0	3.15	2.7	2.7	6.6	3.15	2.7	2.45	2.1	1.98	1.95	2.5
27	2.9	3.05	2.6	2.75	4.6	2.9	2.7	2.5	2.05	2.1	1.85	2.35
28	3.1	3.2	2.6	2.65	4.0	2.8	2.85	2.4	2.05	2.2	a1.6	2.25
29	3.45	.....	2.6	2.6	3.65	4.0	2.7	2.2	2.0	2.3	2.3	2.25
30	3.3	.....	2.6	2.5	3.45	3.95	2.8	2.2	2.9	2.0	2.15	2.3
31	3.05	.....	2.6	.....	3.35	.....	2.7	3.4	.....	a1.6	.....	2.4

a After the middle of October the low stages on Mondays were the result of stored water at the Gainesville power plant.

Daily discharge, in second-feet, of Chattahoochee River near Norcross, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,560	1,820	3,940	1,470	1,380	2,040	3,070	1,560	6,220	1,640	970	1,170
2	1,560	1,730	5,150	1,470	1,380	2,000	3,070	1,470	2,970	1,220	1,170	1,170
3	1,510	1,730	3,480	1,470	1,380	2,520	2,870	1,640	2,420	1,130	1,220	1,130
4	1,470	1,780	2,770	1,470	1,340	2,570	3,590	1,470	1,910	1,130	1,130	1,130
5	1,470	1,730	2,470	1,470	1,340	2,090	3,480	2,270	1,680	1,130	1,130	2,770
6	1,560	1,600	2,270	1,470	1,300	5,940	4,540	1,960	1,510	1,220	986	5,410
7	2,520	1,560	2,140	1,470	1,340	4,420	5,150	3,480	1,430	1,300	670	3,820
8	3,270	1,510	2,040	1,380	3,590	2,720	3,940	2,820	1,380	1,820	986	2,090
9	2,270	1,560	2,000	1,380	11,900	2,320	3,590	2,000	1,820	2,870	1,050	1,680
10	1,960	1,560	1,960	1,380	5,670	2,270	3,270	1,680	2,370	2,140	1,050	1,560
11	1,820	1,560	2,180	1,380	3,070	2,270	2,970	1,600	1,730	1,560	1,130	1,380
12	1,680	1,780	2,420	1,380	2,470	3,700	2,470	1,470	1,430	1,380	1,220	1,300
13	1,640	1,910	2,140	1,430	2,470	5,280	2,320	1,470	1,340	1,300	1,220	1,470
14	1,640	1,730	2,090	1,380	2,040	3,940	2,370	1,560	1,300	1,260	710	1,300
15	1,600	1,680	1,910	1,380	1,910	3,370	2,720	1,470	1,260	1,220	1,090	1,380
16	1,510	1,680	1,820	1,640	1,820	3,070	2,320	1,510	1,220	1,130	1,170	1,380
17	1,470	2,520	1,820	5,280	1,960	2,470	2,180	1,430	1,170	1,130	1,130	1,260
18	1,510	6,640	1,730	5,020	2,270	2,220	2,000	1,380	1,130	1,090	986	1,220
19	1,510	4,540	1,730	2,620	2,320	2,090	1,960	1,300	1,130	1,130	954	890
20	1,560	2,770	1,730	2,090	4,060	2,000	1,960	1,300	1,130	1,130	954	1,090
21	2,090	2,620	1,780	1,860	9,280	2,090	1,820	1,300	1,130	1,130	650	1,170
22	2,420	2,870	1,730	1,780	5,670	2,140	1,730	1,260	1,090	1,130	906	1,130
23	2,000	2,570	1,680	1,680	4,420	2,220	1,730	1,220	1,130	1,050	1,030	1,220
24	2,090	2,370	1,680	1,640	6,640	2,140	1,680	1,220	1,470	770	986	1,380
25	2,040	2,180	1,640	1,640	8,640	2,220	1,730	1,220	1,380	1,050	970	1,730
26	1,910	2,040	1,640	1,640	5,940	2,040	1,640	1,430	1,130	1,030	1,010	1,470
27	1,820	1,960	1,560	1,680	3,480	1,820	1,640	1,470	1,090	1,130	930	1,340
28	2,000	2,090	1,560	1,600	2,870	1,730	1,780	1,380	1,090	1,220	730	1,260
29	2,320	.....	1,560	1,560	2,520	2,870	1,640	1,220	1,050	1,300	1,300	1,260
30	2,180	.....	1,560	1,470	2,320	2,820	1,730	1,220	1,820	1,050	1,170	1,300
31	1,960	.....	1,560	.....	2,220	.....	1,640	2,270	.....	730	.....	1,380

NOTE.—These discharges were obtained from a rating curve well defined below 8,000 second-feet.

Monthly discharge of Chattahoochee River near Norcross, Ga., for 1910.

[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	3,270	1,470	1,870	1.60	1.84	A
February	6,640	1,510	2,220	1.90	1.98	A
March	5,150	1,560	2,120	1.81	2.09	A
April	5,280	1,380	1,820	1.56	1.74	A
May	11,900	1,300	3,520	3.01	3.47	A
June	5,940	1,730	2,710	2.32	2.59	A
July	5,150	1,640	2,540	2.17	2.50	A
August	3,480	1,220	1,610	1.38	1.59	A
September	6,220	1,090	1,630	1.39	1.55	A
October	2,870	730	1,270	1.09	1.26	A
November	1,300	670	1,020	.872	.97	A
December	5,410	890	1,590	1.36	1.57	A
The year	11,900	670	1,990	1.70	23.15	

CHATTAHOOCHEE RIVER AT WEST POINT, GA.

This station, which is located at the Montgomery Street Bridge in West Point, was established July 30, 1896, for the purpose of obtaining run-off data especially valuable for estimating the water power afforded by the river, the best of which occurs in the 35 miles lying between West Point and Columbus, Ga.

The operation of power plants above causes some fluctuations of flow at low stages, but is not thought to affect the mean gage height seriously, as the gage is read twice a day.

The chain gage is attached to the handrail of the downstream footway, from which measurements are made. Its datum has remained the same since the station was established.

The right bank is high and overflows only at high water, when most of the town is flooded; the left bank is somewhat lower and overflows for about 800 feet at a gage height of 20 feet.

The bed is sandy and shifts considerably, but the rating curve has been good and constant owing to a rocky ledge below which has controlled the heights at the gage. During 1910 and probably part of 1909 gage heights have been affected by backwater from a new dam 4 feet higher than the old one at the water-power plant at Langdale, Ala., 5 miles below. The daily filling and lowering of the pond causes considerable variation in the relation of velocity to gage height. Besides the daily variation, which probably extends even to high water, the effect of the higher dam is to change the rating curve.

Discharge measurements of Chattahoochee River at West Point, Ga., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gauge height.	Discharge.
		Feet.	*Sq. ft.*	*Feet.*	*Sec.-ft.*
May 7	M. R. Hall	383	2,680	2.87	2,840
Aug. 25	F. P. Thomas	375	2,510	2.28	2,250
26	do	375	2,530	2.27	2,100
Nov. 4	M. R. Hall	371	2,180	1.80	1,690
5	do	371	2,250	1.96	1,580

Daily gage height, in feet, of Chattahoochee River at West Point, Ga., for 1910.

[A. V. Dunn, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.15	4.2	6.6	3.05	3.2	3.3	11.1	2.9	2.7	2.85	2.2	2.1
2	3.2	3.8	8.0	3.1	3.0	3.1	8.4	3.0	4.2	3.05	2.1	2.45
3	3.2	3.9	7.3	3.15	2.8	3.1	8.6	3.2	6.4	2.6	2.0	2.25
4	3.15	4.2	6.3	3.05	2.8	3.2	7.7	2.6	4.8	2.6	2.0	2.4
5	3.1	4.0	5.2	3.1	2.65	3.4	6.6	4.9	3.75	2.2	2.1	3.85
6	3.15	3.65	4.6	3.2	2.8	3.7	5.5	5.7	3.2	2.15	2.5	4.7
7	4.1	3.45	4.3	3.1	2.9	3.8	5.1	7.6	2.9	2.65	2.4	5.0
8	5.0	3.4	4.1	3.1	3.1	5.1	5.7	7.4	2.7	3.0	2.25	5.4
9	4.6	3.45	3.95	3.1	3.5	4.2	5.6	5.8	2.85	3.8	2.15	4.2
10	4.4	3.4	3.85	2.95	5.4	4.1	5.2	4.4	3.0	3.65	2.1	3.5
11	3.8	3.65	4.2	2.95	7.5	4.3	5.0	3.6	3.05	3.7	2.1	3.3
12	3.5	4.3	4.3	2.9	4.8	4.2	4.6	3.6	3.0	3.25	2.3	3.0
13	3.3	4.2	4.4	3.0	3.9	4.5	4.0	3.75	3.0	3.0	2.2	2.7
14	3.3	3.85	4.1	3.0	3.8	5.6	3.65	3.0	2.65	2.6	2.1	2.4
15	3.35	3.6	3.8	2.95	3.5	5.6	3.55	2.8	2.3	2.6	2.1	2.5
16	3.2	3.6	3.7	3.6	3.3	4.8	3.5	2.8	2.3	2.6	2.2	2.65
17	3.2	4.0	3.6	7.2	3.1	4.4	3.85	2.95	2.4	2.25	1.95	2.7
18	3.1	6.7	3.55	7.9	3.55	4.2	4.6	3.0	2.5	2.25	2.05	2.6
19	3.2	8.6	3.55	7.0	3.2	3.55	3.9	2.85	2.3	2.2	2.35	2.7
20	3.45	7.6	3.65	5.2	3.35	3.3	3.45	3.1	2.1	2.1	2.5	2.6
21	4.0	6.0	3.55	4.2	5.3	3.4	3.2	2.9	2.0	2.1	2.2	2.3
22	4.5	6.2	3.4	3.6	6.6	4.3	3.1	2.65	2.35	2.2	2.1	2.2
23	4.2	5.8	3.4	3.55	7.2	4.0	3.1	2.45	2.25	2.25	2.1	2.35
24	4.4	5.6	3.35	3.55	7.6	3.7	3.75	2.45	2.3	2.1	2.2	2.9
25	4 4	6.0	3.3	3.4	11.2	3.6	3.6	2.4	2.3	2.1	2.1	3.3
26	4.1	5.4	3.3	3.45	9.2	3.45	3.3	2.4	2.1	2.1	2.3	3.3
27	3.95	4.6	3.3	3.45	6.8	3.3	3.1	2.6	2.4	1.95	2.3	2.8
28	4.3	4.9	3.3	3.3	5.2	3.15	2.9	2.6	2.2	2.1	2.5	2.85
29	5.3	.....	3.25	3.3	4.3	3.5	2.8	2.55	2.7	2.3	2.6	2.8
30	5.1	.....	3.25	3.3	3.7	7.3	3.3	2.4	3.4	2.3	2.1	3.3
31	4.4	.....	3.2	.....	3.5	.....	3.05	2.5	.....	2.1	.....	3.4

Daily discharge, in second-feet, of Chattahoochee River at West Point, Ga., for 1910.

[A. V. Dunn, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,360	5,250	10,400	3,200	3,440	3,610	22,500	2,960	2,660	2,880	1,980	1,860
2	3,440	4,490	13,900	3,280	3,120	3,280	14,900	3,120	2,250	3,200	1,860	2,310
3	3,440	4,680	12,100	3,360	2,810	3,280	15,400	3,440	9,950	2,520	1,740	2,040
4	3,360	5,250	9,720	3,200	2,810	3,440	13,100	2,520	6,450	2,520	1,740	2,240
5	3,280	4,870	7,290	3,280	2,590	3,780	10,400	6,660	4,400	1,980	1,860	4,580
6	3,360	4,220	6,050	3,440	2,810	4,310	7,930	8,370	3,440	1,920	2,380	6,250
7	5,060	3,860	5,450	3,280	2,960	4,490	7,080	12,800	2,960	2,590	2,240	6,870
8	6,870	3,780	5,060	3,280	3,280	7,080	8,370	12,400	2,660	3,120	2,040	7,710
9	6,050	3,860	4,780	3,280	3,950	5,250	8,150	8,590	2,880	4,490	1,920	5,250
10	5,650	3,780	4,580	3,040	7,710	5,060	7,290	5,650	3,120	4,220	1,860	3,950
11	4,490	4,220	5,250	3,040	12,600	5,450	6,870	4,130	3,200	4,310	1,860	3,610
12	3,950	5,450	5,450	2,960	6,450	5,250	6,050	4,130	3,120	3,520	2,110	3,120
13	3,610	5,250	5,650	3,120	4,680	5,850	4,870	4,400	3,120	3,120	1,980	2,660
14	3,610	4,580	5,060	3,120	4,490	8,150	4,220	3,120	2,590	2,520	1,860	2,240
15	3,700	4,130	4,490	3,040	3,950	8,150	4,040	2,810	2,110	2,520	1,860	2,380
16	3,440	4,130	4,310	4,130	3,610	6,450	3,950	2,810	2,110	2,520	1,980	2,590
17	3,440	4,870	4,130	11,800	3,280	5,650	4,580	3,040	2,240	2,040	1,680	2,660
18	3,280	10,600	4,040	13,600	4,040	5,250	6,050	3,120	2,380	2,040	1,800	2,520
19	3,440	15,400	4,040	11,400	3,440	4,040	4,680	2,880	2,110	1,980	2,180	2,660
20	3,860	12,800	4,220	7,290	3,700	3,610	3,860	3,280	1,860	1,860	2,380	2,520
21	4,870	9,030	4,040	5,250	7,500	3,780	3,440	2,960	1,740	1,860	1,980	2,110
22	5,850	9,490	3,780	4,130	10,400	5,450	3,280	2,590	2,180	1,980	1,860	1,980
23	5,250	8,590	3,780	4,040	11,800	4,870	3,280	2,310	2,040	2,040	1,860	2,180
24	5,650	8,150	3,700	4,040	12,800	4,310	4,400	2,310	2,110	1,860	1,980	2,960
25	5,650	9,030	3,610	3,780	22,800	4,130	4,130	2,240	2,110	1,860	1,860	3,610
26	5,060	7,710	3,610	3,860	17,000	3,860	3,610	2,240	1,860	1,860	2,110	3,610
27	4,780	6,050	3,610	3,860	10,900	3,610	3,280	2,520	2,240	1,680	2,110	2,810
28	5,450	6,660	3,610	3,610	7,290	3,360	2,960	2,520	1,980	1,860	2,380	2,880
29	7,500	.....	3,520	3,610	5,450	3,950	2,810	2,450	2,660	2,110	2,520	2,810
30	7,080	.....	3,520	3,610	4,310	12,100	3,610	2,240	3,780	2,110	1,860	3,610
31	5,650	.....	3,440	.....	3,950	.....	3,200	2,380	.....	1,860	.....	3,780

NOTE.—These discharges were obtained from a rating curve which is fairly well defined below 22,200 second-feet.

Monthly discharge of Chattahoochee River at West Point, Ga., for 1910.

[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	7,500	3,280	4,630	1.40	1.61	B
February	15,400	3,780	6,440	1.95	2.03	B
March	13,900	3,440	5,360	1.62	1.87	B
April	13,600	2,960	4,530	1.37	1.53	B
May	22,800	2,590	6,450	1.95	2.25	B
June	12,100	3,280	5,030	1.52	1.70	B
July	22,500	2,810	6,530	1.98	2.28	B
August	12,800	2,240	4,100	1.24	1.43	B
September	9,950	1,740	3,040	.921	1.03	B
October	4,490	1,680	2,480	.752	.87	B
November	2,520	1,680	1,990	.603	.67	B
December	7,710	1,860	3,300	1.00	1.15	B
The year	22,800	1,680	4,480	1.36	18.42	

CHATTAHOOCHEE RIVER AT ALAGA, ALA.

This station, which is located at the Atlantic Coast Line Railway bridge one-fourth mile east of Alaga, 4 miles east of Gordon, and one-half mile west of Saffold, Ga., is about 35 miles above the junction of Chattahoochee and Flint rivers. The station was originally established in 1904 by the United States Weather Bureau and discharge measurements were begun by the United States Geological Survey June 15, 1908. On this date the gage-chain length was determined and its datum referred to a reference point on the iron bridge, accepting the chain length as it was. The original datum could not be determined, although the chain had no doubt stretched somewhat.

The river is navigable from its mouth to Columbus, Ga., a long distance above the station. Conditions of flow are probably changing on account of silting of the river bed.

Only three low-water measurements have been made at this station, one in 1908 and two in 1909. No rating curve has yet been developed.

Daily gage height, in feet, of Chattahoochee River near Alaga, Ala., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.3	10.0	13.6	4.7	5.4	5.2	5.4	4.2	2.5	1.7	1.1	2.5
2	3.9	8.2	24.0	4.5	5.1	4.6	6.8	5.2	2.5	1.7	1.2	2.4
3	3.6	6.8	22.5	4.5	4.9	4.2	15.5	4.4	3.4	3.0	1.4	2.2
4	3.6	6.1	18.5	4.3	4.8	3.9	14.7	3.8	4.0	2.4	1.2	1.8
5	3.8	6.3	15.2	4.1	4.4	3.7	16.2	3.8	8.1	2.4	1.2	1.6
6	3.4	7.8	12.5	4.4	4.2	3.6	15.4	4.1	8.0	2.1	1.4	1.8
7	3.7	7.0	10.6	4.3	4.0	3.7	12.8	6.1	5.5	2.2	1.4	2.5
8	4.2	5.9	9.2	4.3	3.9	4.5	9.9	8.8	4.3	2.4	1.2	5.7
9	5.3	5.3	8.5	4.3	3.9	4.9	8.8	9.7	3.3	2.5	1.4	6.6
10	6.8	4.9	7.8	4.0	4.3	5.7	9.2	11.6	3.0	2.9	1.9	6.5
11	6.3	4.9	7.4	3.8	5.3	8.1	9.3	9.3	4.1	3.7	1.7	6.0
12	6.2	5.6	7.4	3.7	5.3	7.5	8.4	7.3	4.9	4.0	1.5	5.6
13	5.4	6.6	8.4	4.1	9.6	8.0	8.0	5.5	4.1	3.9	1.4	4.6
14	4.6	7.7	8.7	5.9	8.4	7.8	8.1	4.6	3.6	3.8	1.2	3.3
15	4.2	7.3	8.1	5.7	5.8	7.1	6.7	5.3	3.2	3.1	1.1	3.0
16	4.0	6.3	7.4	5.0	5.1	7.6	5.6	4.6	3.1	2.5	1.0	2.5
17	3.8	5.5	6.7	7.8	4.8	8.7	5.1	3.5	3.0	2.0	1.5	2.5
18	3.6	6.2	6.3	26.4	4.4	7.8	5.2	3.4	2.5	1.8	1.3	2.1
19	3.7	12.2	6.0	27.6	4.1	6.4	6.3	3.3	1.9	1.6	1.6	2.9
20	3.6	15.0	5.8	23.0	4.1	5.6	10.6	3.6	1.5	1.7	2.1	2.9
21	3.7	14.8	5.7	15.7	4.3	4.8	9.5	3.9	1.6	1.4	2.1	2.9
22	4.3	13.8	5.7	11.1	4.0	4.4	7.2	3.6	2.0	1.3	1.6	2.8
23	4.7	13.8	5.7	8.7	5.7	4.9	5.6	3.2	1.5	1.2	1.8	2.0
24	6.0	13.7	5.5	7.5	8.3	6.7	5.6	3.3	1.4	1.0	2.0	2.6
25	6.0	14.2	5.4	6.8	9.7	6.6	6.1	2.7	1.7	.9	1.6	2.0
26	6.0	16.9	5.2	6.4	11.0	6.1	6.0	2.5	1.6	.9	1.5	1.9
27	6.0	14.6	5.1	6.1	15.1	5.2	6.6	2.3	1.4	1.1	1.2	2.7
28	5.8	12.0	5.1	5.6	14.1	5.0	5.6	2.2	1.4	1.3	1.4	2.7
29	8.3	.....	4.9	5.6	10.4	4.7	5.0	2.1	1.5	1.4	1.9	2.6
30	13.0	.....	4.9	5.5	8.1	4.3	4.4	1.8	1.4	1.3	1.9	2.8
31	12.0	.....	4.8	.....	6.2	.....	3.9	2.0	.....	1.2	.....	3.5

FLINT RIVER NEAR WOODBURY, GA.

This station, which is located at the Macon & Birmingham Railroad bridge 3 miles east of Woodbury, Ga., was established March 29, 1900. It is below the mouth of Elkins Creek and above Cane Creek.

Up to June 30, 1910, the gage was read twice a day to eliminate or lessen the effect of fluctuations which may be caused by the operation of power plants above, but since that time the gage heights have been furnished by the United States Weather Bureau and the readings have been made once a day.

The vertical staff gage is located 300 feet above the Macon & Birmingham Railroad bridge, from which discharge measurements are usually made. The datum of the gage, which is 660 feet above sea level, has remained the same since the establishment of the station. 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 of Flint River near Woodbury, Ga., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gage height.	Discharge.
		Feet.	*Sq. ft.*	*Feet.*	*Sec.-ft.*
May 25	M. R. Hall	278	990	1.18	955
25	.....do	278	990	1.18	931

Daily gage height, in feet, of Flint River near Woodbury, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	0.9	1.85	6.0	1.0	0.9	0.5	1.2	0.5	0.5	1.1	0.2
2	.9	1.55	4.6	.9	.85	.4	2.0	.4	.6	.....	.3
3	.9	1.65	4.6	.9	.8	.4	2.8	.5	.7	.5	.3
4	.9	2.05	3.6	.9	.8	.4	2.8	.5	.....	.4	.3
5	.9	1.75	2.8	.9	.7	.45	3.1	.8	1.6	.3	.3
6	.9	1.55	2.2	.9	.7	.65	3.2	1.5	1.4	.3	.....
7	1.45	1.35	1.85	.9	.7	.8	2.5	1.2	1.3	.3	.6
8	1.45	1.2	1.65	.8	.85	.75	1.7	1.7	.....	.5	.6
9	1.4	1.2	1.45	.8	1.0	.7	1.5	1.6	1.0	.....	.....
10	1.25	1.2	.....	.8	.9	.9	1.3	1.4	.....	.8	.5
11	1.15	1.35	1.7	.8	.95	1.55	1.0	1.0	.9	.8	.5
12	1.0	1.9	1.95	.8	.8	1.35	1.4	1.2	.6	.....	.....
13	.9	1.75	2.15	.9	.8	1.3	2.1	1.0	.5	.....	.4
14	.9	1.6	2.15	1.3	.75	1.25	1.4	.9	.4	.7	.4
15	.9	1.45	1.7	1.15	.65	1.5	.9	.7	.3	.4	.4
16	.9	1.35	1.5	1.15	.6	1.55	.9	.6	.3	.4	.4
17	.8	1.35	1.35	4.7	.6	1.25	.9	.5	.2	.3	.4
18	.8	4.3	1.25	6.0	.8	.95	1.5	.5	.1	.3	.5
19	.9	4.4	1.2	4.8	.85	.8	4.0	.5	.1	.2	.....
20	.9	3.6	1.2	3.7	.8	.7	2.3	.7	.1	.2	.5
21	1.3	3.1	1.2	2.55	1.0	.55	1.2	.8	.1	.2	.5
22	1.5	3.6	1.2	1.6	1.15	.85	.9	.7	.1	.1	.5
23	1.55	3.0	1.15	1.35	1.15	1.0	.7	.6	.1	.....	.5
24	1.55	5.1	1.1	1.25	1.15	.85	1.7	.4	.1	.1	.5
25	1.55	4.7	1.1	1.15	1.2	1.0	1.7	.4	.0	.1	.4
26	1.5	3.4	1.1	1.15	1.4	1.05	1.2	.4	.0	.1	.5
27	1.35	2.75	1.1	1.1	1.85	.75	.9	.4	.0	.1	.6
28	2.2	4.3	1.0	1.15	1.4	.65	.7	.3	.0	.2	.6
29	3.2	.....	1.0	1.1	1.15	.55	.7	.2	.1	.....	.7
30	2.9	.....	1.0	1.0	.75	.95	.7	.2	.7	.....	.8
31	2.5	.....	1.0	.....	.6	.....	.6	.3	.....	.2	.....

Daily discharge, in second-feet, of Flint River near Woodbury, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1	700	1,710	8,450	785	700	410	970	410	410	875	260
2	700	1,340	5,820	700	660	355	1,900	355	475	642	305
3	700	1,460	5,820	700	620	355	3,000	410	545	410	305
4	700	1,970	4,160	700	620	355	3,000	410	972	355	305
5	700	1,580	3,000	700	545	382	3,420	620	1,400	305	305
6	700	1,340	2,180	700	545	510	3,560	1,280	1,180	305	390
7	1,230	1,120	1,710	700	545	620	2,580	970	1,070	305	475
8	1,230	970	1,460	620	660	582	1,520	1,520	928	410	475
9	1,180	970	1,230	620	785	545	1,280	1,400	785	515	442
10	1,020	970	1,380	620	700	700	1,070	1,180	742	620	410
11	925	1,120	1,520	620	740	1,340	785	785	700	620	410
12	785	1,780	1,840	620	620	1,120	1,180	970	475	595	382
13	700	1,580	2,110	700	620	1,070	2,040	785	410	570	355
14	700	1,400	2,110	1,070	582	1,020	1,180	700	355	545	355
15	700	1,230	1,520	925	510	1,280	700	545	305	355	355
16	700	1,120	1,280	925	475	1,340	700	475	305	355	355
17	620	1,120	1,120	5,990	475	1,020	700	410	260	305	355
18	620	5,310	1,020	8,450	620	740	1,280	410	220	305	410
19	700	5,480	970	6,160	660	620	4,800	410	220	260	410
20	700	4,160	970	4,320	620	545	2,310	545	220	260	410
21	1,070	3,420	970	2,650	785	442	970	620	220	260	410
22	1,280	4,160	970	1,400	925	660	700	545	220	220	410
23	1,340	3,280	925	1,120	925	785	545	475	220	220	410
24	1,340	6,700	875	1,020	925	660	1,520	355	220	220	410
25	1,340	5,990	875	925	970	785	1,520	355	190	220	355
26	1,280	3,850	875	925	1,180	830	970	355	190	220	410
27	1,120	2,930	875	875	1,710	582	700	355	190	220	475
28	2,180	5,310	785	925	1,180	510	545	305	190	260	475
29	3,560	.....	785	875	925	442	545	260	220	260	545
30	3,140	.....	785	785	582	740	545	260	545	260	620
31	2,580	.....	785	.....	475	.....	475	305	.....	260	.....

NOTE.—These discharges were obtained from a rating curve which is fairly well defined below 6,500 second-feet. Discharges interpolated for days when gage was not read.

Monthly discharge of Flint River near Woodbury, Ga., for 1910.

[Drainage area, 990 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	3,560	620	1,170	1.18	1.36	A
February	6,700	970	2,620	2.65	2.76	A
March	8,450	785	1,910	1.93	2.22	A
April	8,450	620	1,600	1.62	1.81	A
May	1,710	475	738	.745	.86	A
June	1,340	355	712	.719	.80	A
July	4,800	475	1,520	1.54	1.78	A
August	1,520	260	606	.612	.71	A
September	1,400	190	479	.484	.54	B
October	875	220	372	.376	.43	B
November	620	260	400	.404	.45	B
December	.....	.....	[a] 520	.525	.61	C
The year	8,450	.....	1,040	1.05	14.33	

[a] Estimated by comparison with other Flint River stations.

FLINT RIVER NEAR MONTEZUMA, GA.

This station, which is located at the iron highway bridge about 1 mile west of Montezuma, was established in 1904 by the United States Weather Bureau, by whom gage heights are supplied. Discharge measurements were made by the United States Geological Survey during 1905 and succeeding years.

The flow is not appreciably affected by artificial control.

The chain gage is attached to the upstream side of the bridge from which measurements are made. The datum of the gage has remained the same since the establishment of the station.

The right bank will overflow for a great distance at a stage of about 12 feet. The overflowed portion is largely covered with a dense growth of brush. The left bank is not liable to overflow. The current toward the left bank becomes sluggish at low stages, and at times there is considerable back current near the bank. Conditions of flow are permanent and a fairly good rating has been developed, but the gage heights for 1910 were very uncertain, and hence they have been omitted, together with the daily and monthly discharges.

The following discharge measurement was made by M. R. Hall:

December 13: Width, 190 feet; area of section, 1,480 square feet; gage height, 2.92 feet; discharge, 1,480 second-feet.

FLINT RIVER AT ALBANY, GA.

The station is located at the Dougherty County bridge in Albany, about 700 feet below the Atlantic Coast Line bridge, where the discharge measurements are made. It was originally established by the United States Weather Bureau in 1893 and was maintained with some interruptions until the United States Geological Survey began

to make discharge measurements in 1901. Since that time it has been maintained continuously, all gage heights being furnished by the United States Weather Bureau except those for a portion of 1903.

This station is about 2 miles below the mouth of Muckalee Creek. The operation of the power plant on that creek just above its mouth probably causes some fluctuations in the flow of Flint River at the station.

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.

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, installed by the United States Geological Survey April 20, 1904, on this same bridge, has the same datum and reads in conformity with the United States Weather Bureau gage.

The river overflows both banks but only under the approaches to the bridge. The bed is rock and very rough and the current is irregular. Conditions of flow are permanent and a very good rating has been developed.

The following discharge measurement was made at the Georgia Northern Railway bridge, about 1 mile above the station, by M. R. Hall:

December 14: Width, 105 feet; area of section, 1,950 square feet; gage height, 1.10 feet; discharge, 2,760 second-feet.

Daily gage height, in feet, of Flint River at Albany, Ga., for 1910.

[D. W. Brosnan, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.8	3.5	9.0	1.6	3.1	1.1	3.8	1.8	−0.4	−0.2	−0.6	0.3
2	1.7	4.6	9.5	1.5	2.6	1.0	3.6	1.6	− .4	− .2	− .6	.3
3	1.5	6.0	10.1	1.5	2.3	.8	3.6	1.5	− .2	− .2	− .6	.3
4	1.4	6.6	10.2	1.5	2.0	.5	3.7	1.2	.0	− .2	− .4	.3
5	1.4	6.6	9.8	1.4	1.8	.2	4.1	1.2	.4	− .2	− .2	.2
6	1.4	5.8	9.6	1.4	1.6	.1	4.4	1.1	1.1	.1	− .2	.5
7	1.6	4.9	9.3	1.5	1.5	.5	5.8	1.0	1.3	.3	− .2	.7
8	1.7	4.5	8.8	1.3	1.3	.8	6.8	1.0	1.2	.4	− .1	.7
9	1.7	3.9	9.5	1.3	1.2	.4	7.0	.9	.8	.9	− .1	.6
10	1.5	3.4	10.1	1.2	1.2	.2	6.5	.7	.6	.8	− .1	1.0

Daily gage height, in feet, of Flint River at Albany, Ga., for 1910—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
11	1.4	3.2	9.6	1.1	1.2	0.2	5.5	1.2	0.8	0.7	0.2	2.0
12	1.4	3.9	6.2	1.1	1.7	.8	5.0	2.0	1.3	.5	.2	2.1
13	1.6	3.5	4.8	1.1	1.9	1.5	3.9	2.5	1.8	.5	.1	1.8
14	1.8	3.2	4.2	1.1	1.7	2.1	3.6	3.2	2.2	.6	.0	1.4
15	2.0	3.2	3.9	1.1	1.5	3.5	3.2	4.0	2.5	.6	— .1	1.1
16	2.0	3.1	3.9	1.2	1.4	4.7	2.7	3.8	2.5	.6	— .1	1.0
17	1.8	3.1	3.8	2.1	1.1	5.0	2.6	2.8	1.8	.6	— .2	.9
18	1.6	3.6	3.4	2.7	.8	5.2	2.6	2.2	1.0	.4	— .2	1.0
19	1.6	3.6	3.1	3.3	.6	5.0	2.5	1.8	.8	.2	.2	.7
20	1.5	4.0	3.0	5.9	.5	5.0	2.2	1.6	.3	.2	.2	.5
21	2.0	5.5	2.8	7.6	.4	4.0	2.2	1.5	.0	.1	.2	.5
22	2.2	6.9	2.6	11.1	.3	3.1	2.1	1.5	— .1	— .1	.1	1.0
23	2.2	8.7	2.2	12.4	.8	2.6	5.0	1.2	— .2	— .3	.3	1.1
24	2.4	9.3	2.0	12.7	1.2	2.5	5.0	1.0	— .2	— .5	.7	1.2
25	2.5	9.6	2.0	11.1	1.8	2.5	4.6	.4	— .3	— .6	1.1	.9
26	2.6	9.8	1.8	7.5	1.5	2.4	3.7	.1	— .4	— .6	1.4	.7
27	2.6	9.7	1.7	5.5	1.3	2.4	3.2	.0	— .4	— .5	1.3	.6
28	2.6	9.2	1.7	5.1	1.3	2.4	2.8	.0	— .4	— .2	1.0	.5
29	2.8	.....	1.7	4.2	1.2	2.8	2.8	— .1	— .4	— .2	.8	.9
30	3.2	.....	1.6	3.5	1.2	3.3	2.4	— .3	— .3	— .4	.4	1.5
31	3.5	.....	1.6	.....	1.1	.....	2.0	— .4	.....	— .6	.....	1.7

NOTE.—Comparisons indicate that there may be occasional errors in the above record of gage heights.

Daily discharge, in second-feet, of Flint River at Albany, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,380	5,210	11,900	3,200	4,750	2,760	5,560	3,380	1,550	1,700	1,400	2,090
2	3,290	6,480	12,500	3,110	4,190	2,670	5,320	3,200	1,550	1,700	1,400	2,090
3	3,110	8,170	13,300	3,110	3,870	2,500	5,320	3,110	1,700	1,700	1,400	2,090
4	3,020	8,920	13,400	3,110	3,570	2,250	5,440	2,840	1,850	1,700	1,550	2,090
5	3,020	8,920	12,900	3,020	3,380	2,010	5,900	2,840	2,170	1,700	1,700	2,010
6	3,020	7,920	12,700	3,020	3,200	1,930	6,240	2,760	2,760	1,930	1,700	2,250
7	3,200	6,820	12,300	3,110	3,110	2,250	7,920	2,670	2,930	2,090	1,700	2,420
8	3,290	6,360	11,700	2,930	2,930	2,500	9,170	2,670	2,840	2,170	1,780	2,420
9	3,290	5,670	12,500	2,930	2,840	2,170	9,420	2,580	2,500	2,580	1,780	2,330
10	3,110	5,100	13,300	2,840	2,840	2,010	8,800	2,420	2,330	2,500	1,780	2,670
11	3,020	4,860	12,700	2,760	2,840	2,010	7,540	2,840	2,500	2,420	2,010	3,570
12	3,020	5,670	8,420	2,760	3,290	2,500	6,940	3,570	2,930	2,250	2,010	3,670
13	3,200	5,210	6,700	2,760	3,480	3,110	5,670	4,080	3,380	2,250	1,930	3,380
14	3,380	4,860	6,020	2,760	3,290	3,670	5,320	4,860	3,770	2,330	1,850	3,020
15	3,570	4,860	5,670	2,760	3,110	5,210	4,860	5,780	4,080	2,330	1,780	2,760
16	3,570	4,750	5,670	2,840	3,020	6,590	4,300	5,560	4,080	2,330	1,780	2,670
17	3,380	4,750	5,560	3,670	2,760	6,940	4,190	4,410	3,380	2,330	1,700	2,580
18	3,200	5,320	5,100	4,300	2,500	7,180	4,190	3,770	2,670	2,170	1,700	2,670
19	3,200	5,320	4,750	4,980	2,330	6,940	4,080	3,380	2,500	2,010	2,010	2,420
20	3,110	5,780	4,640	8,040	2,250	6,940	3,770	3,200	2,090	2,010	2,010	2,250
21	3,570	7,540	4,410	10,200	2,170	5,780	3,770	3,110	1,850	1,930	2,010	2,250
22	3,770	9,300	4,190	14,600	2,090	4,750	3,670	3,110	1,780	1,780	1,930	2,670
23	3,770	11,500	3,770	16,300	2,500	4,190	6,940	2,840	1,700	1,620	2,090	2,760
24	3,980	12,300	3,570	16,700	2,840	4,080	6,940	2,670	1,700	1,480	2,420	2,840
25	4,080	12,700	3,570	14,600	3,380	4,080	6,480	2,170	1,620	1,400	2,760	2,580
26	4,190	12,900	3,380	10,000	3,110	3,980	5,440	1,930	1,550	1,400	3,020	2,420
27	4,190	12,800	3,290	7,540	2,930	3,980	4,860	1,850	1,550	1,480	2,930	2,330
28	4,190	12,200	3,290	7,060	2,930	3,980	4,410	1,850	1,550	1,700	2,670	2,250
29	4,410	.....	3,290	6,020	2,840	4,410	4,410	1,780	1,550	1,700	2,500	2,580
30	4,860	.....	3,200	5,210	2,840	4,980	3,980	1,620	1,620	1,550	2,170	3,110
31	5,210	.....	3,200	.....	2,760	.....	3,570	1,550	.....	1,400	.....	3,290

NOTE.—These discharges were obtained from a rating curve which is well defined above 2,600 second-feet. Although the daily discharges compare fairly well with those at Woodbury, there are occasional discrepancies, and they should be used with caution.

Monthly discharge of Flint River at Albany, Ga., for 1910.

[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	5,210	3,020	3,570	0.714	0.82	B
February	12,900	4,750	7,580	1.52	1.58	A
March	13,400	3,200	7,450	1.49	1.72	A
April	16,700	2,760	5,870	1.17	1.30	A
May	4,750	2,090	3,030	.606	.70	B
June	7,180	1,930	3,940	.788	.88	B
July	9,420	3,570	5,630	1.13	1.30	A
August	5,780	1,550	3,050	.610	.70	B
September	4,080	1,550	2,330	.466	.52	B
October	2,580	1,400	1,920	.384	.44	B
November	3,020	1,400	1,980	.396	.44	B
December	3,670	2,010	2,600	.520	.60	B
The year	16,700	1,400	4,060	.812	11.00	

FLINT RIVER AT BAINBRIDGE, GA.

This station, which is located at the county wagon bridge one-half mile from Bainbridge and about 25 miles above the junction of the Flint with Chattahoochee River, was established in 1904 by the United States Weather Bureau. Discharge measurements at this point were begun by the United States Geological Survey June 11, 1908, the daily gage heights being furnished by the United States Weather Bureau.

The boxed chain gage is attached to the bridge. The datum has not been changed since June 11, 1908, at which time it was adjusted to its original datum. During part of the time prior to this date the chain was wrongly adjusted. Gage heights for 1908 were all corrected before publishing in Water-Supply Paper 242. A good low-water rating has been obtained. No measurements were made in 1910, but it is probable that the 1909 rating will apply for 1910.

Daily gage height, in feet, of Flint River at Bainbridge, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.5	5.5	11.0	5.2	6.2	3.7	4.6	7.3	3.2	2.0	1.9	2.6
2	4.4	6.8	11.1	5.1	6.0	3.9	4.9	7.0	2.8	2.0	1.9	3.0
3	4.3	7.5	11.6	5.0	5.7	4.2	5.2	6.6	2.8	2.1	1.9	3.0
4	4.3	8.0	11.8	4.9	5.5	3.9	5.6	6.0	3.0	2.0	1.9	2.6
5	4.4	8.1	12.0	4.8	5.3	3.5	5.9	5.5	3.4	3.1	1.9	2.9
6	4.2	7.3	11.9	4.8	5.5	3.2	6.0	5.0	3.7	2.9	1.9	2.6
7	4.1	6.5	12.5	4.7	5.3	3.0	5.8	4.7	4.3	2.6	1.9	2.5
8	4.2	6.2	12.8	4.5	5.0	2.8	5.7	4.5	4.9	2.4	1.9	2.7
9	4.2	6.1	13.8	4.6	4.6	2.6	5.5	4.5	5.4	2.5	2.0	2.9
10	4.1	5.9	14.1	4.5	4.6	2.8	6.4	5.0	4.7	2.4	2.2	3.3

Daily gage height, in feet, of Flint River at Bainbridge, Ga., for 1910—Continued.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
11	4.0	6.1	14.6	4.4	4.7	3.1	7.0	4.7	4.0	2.2	2.3	3.6
12	4.0	6.3	13.4	4.6	4.6	3.2	7.5	4.9	3.6	2.9	2.2	3.9
13	4.2	5.9	11.6	4.4	4.4	3.5	8.0	4.9	3.5	3.0	2.2	3.8
14	4.4	5.5	10.2	4.4	4.2	4.1	7.8	4.6	3.8	3.0	2.2	3.5
15	4.5	5.4	9.3	4.6	4.4	4.5	7.2	4.4	3.4	3.0	2.1	3.4
16	4.4	6.3	7.8	4.5	4.4	4.3	6.8	4.2	3.7	2.9	2.0	3.2
17	4.2	6.4	7.6	4.8	4.2	4.4	6.4	3.9	3.3	2.7	2.0	3.0
18	4.0	6.4	7.4	5.3	4.1	5.6	6.8	3.8	2.8	2.6	2.0	2.9
19	4.1	6.7	7.6	6.2	4.0	6.3	5.8	3.6	2.9	2.4	2.0	2.8
20	4.3	6.5	7.1	6.6	3.8	7.1	5.6	3.6	3.4	2.4	2.2	3.0
21	4.1	6.6	6.5	8.9	3.8	7.6	5.7	3.5	3.7	2.4	2.3	3.2
22	4.0	6.8	6.4	11.1	3.7	8.0	5.9	3.4	4.1	2.3	2.4	3.3
23	4.1	8.2	6.6	12.1	3.6	7.1	6.3	3.4	4.0	2.1	3.0	3.3
24	4.2	9.0	6.3	13.0	3.9	6.4	6.8	3.6	3.7	2.0	3.1	3.7
25	4.4	9.7	6.1	12.9	3.8	5.8	7.4	3.9	3.3	1.9	2.9	3.5
26	4.6	10.4	5.8	13.7	3.9	5.6	7.0	4.5	3.0	1.9	2.6	3.3
27	4.8	10.7	5.7	11.5	4.0	5.3	6.5	4.8	2.7	1.9	2.6	3.2
28	5.0	10.5	5.6	8.0	3.9	5.0	6.4	4.7	2.5	2.0	2.7	3.2
29	5.0	.....	5.4	6.8	3.8	4.8	6.6	4.5	2.4	2.0	2.4	3.4
30	5.2	.....	5.3	6.4	3.6	4.5	6.8	4.1	2.1	2.0	2.4	3.4
31	5.4	.....	5.2	.....	3.5	.....	7.1	3.5	.....	1.9	.....	3.4

Daily discharge, in second-feet, of Flint River at Bainbridge, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4,670	5,450	.....	5,210	6,040	4,120	4,740	7,030	3,800	3,120	3,070	3,440
2	4,590	6,570	.....	5,130	5,870	4,250	4,970	6,750	3,560	3,120	3,070	3,680
3	4,520	7,230	.....	5,050	5,610	4,450	5,210	6,390	3,560	3,170	3,070	3,680
4	4,520	7,740	.....	4,970	5,450	4,250	5,530	5,870	3,680	3,120	3,070	3,440
5	4,590	7,840	.....	4,890	5,290	3,990	5,780	5,450	3,930	3,740	3,070	3,620
6	4,450	7,030	.....	4,890	5,450	3,800	5,870	5,050	4,120	3,620	3,070	3,440
7	4,380	6,300	.....	4,820	5,290	3,680	5,700	4,820	4,520	3,440	3,070	3,390
8	4,450	6,040	.....	4,670	5,050	3,560	5,610	4,670	4,970	3,330	3,070	3,500
9	4,450	5,960	.....	4,740	4,740	3,440	5,450	4,670	5,370	3,390	3,120	3,620
10	4,380	5,780	.....	4,670	4,740	3,560	6,220	5,050	4,820	3,330	3,230	3,860
11	4,310	5,960	.....	4,590	4,820	3,740	6,750	4,820	4,310	3,230	3,280	4,050
12	4,310	6,130	.....	4,740	4,740	3,800	7,230	4,970	4,050	3,620	3,230	4,250
13	4,450	5,780	.....	4,590	4,590	3,990	7,740	4,970	3,990	3,680	3,230	4,180
14	4,590	5,450	.....	4,590	4,450	4,380	7,530	4,740	4,180	3,680	3,230	3,990
15	4,670	5,370	9,100	4,740	4,590	4,670	6,940	4,590	3,930	3,680	3,170	3,930
16	4,590	6,130	7,530	4,670	4,590	4,520	6,570	4,450	4,120	3,620	3,120	3,800
17	4,450	6,220	7,330	4,890	4,450	4,590	6,220	4,250	3,860	3,500	3,120	3,680
18	4,310	6,220	7,130	5,290	4,380	5,530	6,570	4,180	3,560	3,440	3,120	3,620
19	4,380	6,480	7,330	6,040	4,310	6,130	5,700	4,050	3,620	3,330	3,120	3,560
20	4,520	6,300	6,840	6,390	4,180	6,840	5,530	4,050	3,930	3,330	3,230	3,680
21	4,380	6,390	6,300	8,680	4,180	7,330	5,610	3,990	4,120	3,330	3,280	3,800
22	4,310	6,570	6,220	.....	4,120	7,740	5,780	3,930	4,380	3,280	3,330	3,860
23	4,380	7,950	6,390	.....	4,050	6,840	6,130	3,930	4,310	3,170	3,680	3,860
24	4,450	8,780	6,130	.....	4,250	6,220	6,570	4,050	4,120	3,120	3,740	4,120
25	4,590	9,540	5,960	.....	4,180	5,700	7,130	4,250	3,860	3,070	3,620	3,990
26	4,740	.....	5,700	.....	4,250	5,530	6,750	4,670	3,680	3,070	3,440	3,860
27	4,890	.....	5,610	.....	4,310	5,290	6,300	4,890	3,500	3,070	3,440	3,800
28	5,050	.....	5,530	7,740	4,250	5,050	6,220	4,820	3,390	3,120	3,500	3,800
29	5,050	.....	5,370	6,570	4,180	4,890	6,390	4,670	3,330	3,120	3,330	3,930
30	5,210	.....	5,290	6,220	4,050	4,670	6,570	4,380	3,170	3,120	3,330	3,930
31	5,370	.....	5,210	.....	3,990	.....	6,840	3,990	.....	3,070	.....	3,930

NOTE.—These discharges were obtained from a rating curve which is well defined between 3,800 and 9,880 second-feet. On days for which no discharge is given it was greater than 9,880 second-feet.

Monthly discharge of Flint River at Bainbridge, Ga., for 1910.

[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	5,370	4,310	4,580	0.618	0.71	A
May	6,040	3,990	4,660	.629	.73	A
June	7,740	3,440	4,880	.659	.74	A
July	7,740	4,740	6,200	.837	.96	A
August	7,030	3,930	4,770	.644	.74	A
September	5,370	3,170	3,990	.538	.60	B
October	3,740	3,070	3,320	.448	.52	C
November	3,740	3,070	3,250	.439	.49	C
December	4,250	3,390	3,780	.510	.59	B

NOTE.—Monthly discharges are published only for those months during which the gage heights were 10 feet and under. When sufficient measurements are obtained to develop the high-water portion of the rating curve the tables will be completed and published in a later report.

CHOCTAWHATCHEE RIVER BASIN.

DESCRIPTION.

Choctawhatchee River drains the southeastern part of Alabama and that portion of Florida lying immediately south. The main river rises in Barbour County, Ala., a short distance west of Eufaula, and flows in a southwesterly and southerly direction through Choctawhatchee Bay to the Gulf of Mexico. Pea River, the principal tributary, enters from the west at Geneva, Ala. This branch is the longer of the two above the junction, having its head in Bullock County near Union Springs, Ala.

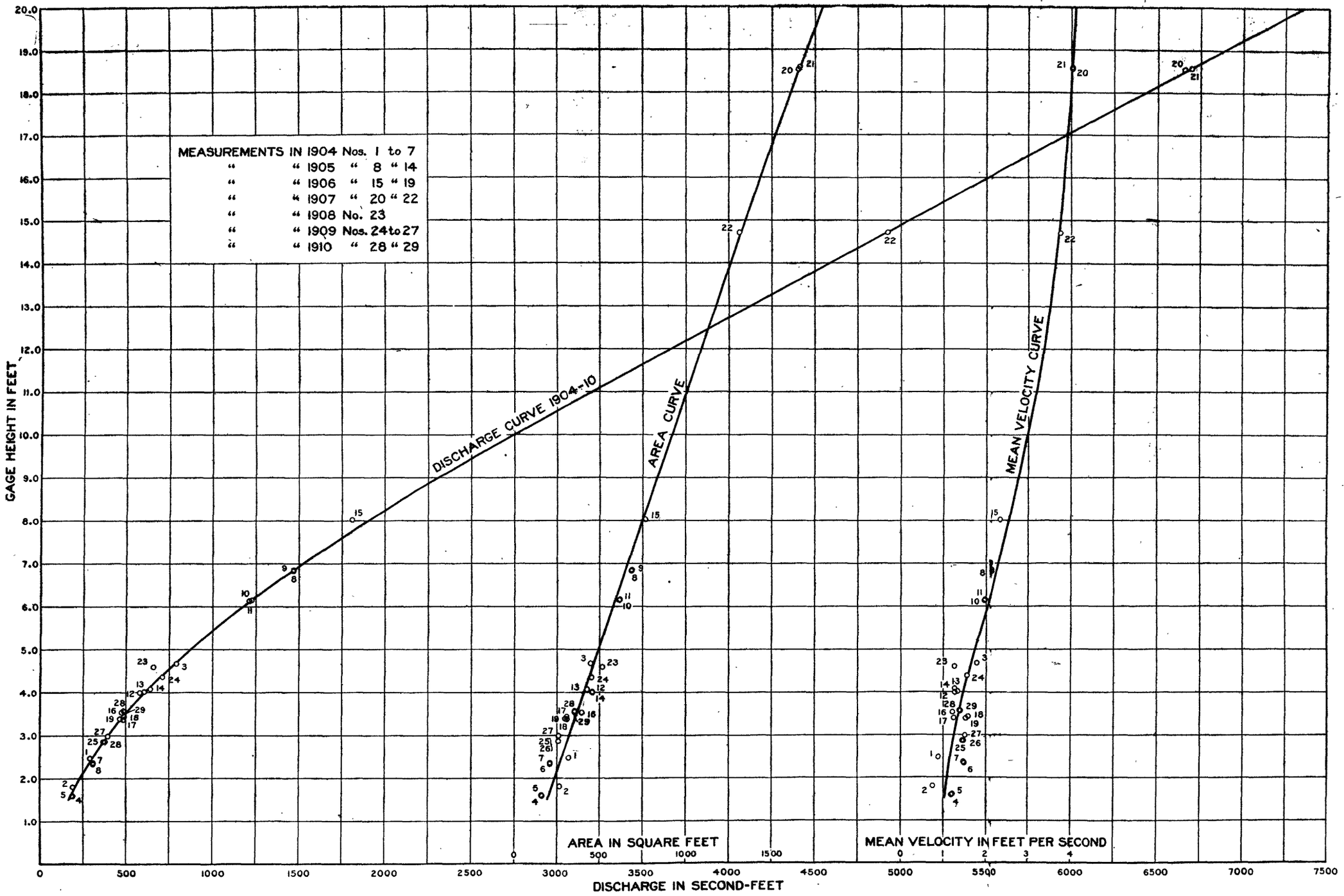
The basin is small, lying entirely in the Coastal Plain. The land is usually well elevated above the streams and is rolling and even hilly at places. The surface is as a rule sandy and is underlain by sandy limestones and clays, which are exposed in many places in the stream beds as solid rocks but are usually soft.

The mean annual rainfall in the area is about 55 inches. The streams are moderately swift, even at low water, and at places the fall is sufficient to make considerable shoals or rapids and offer practicable sites for water-power development.

PEA RIVER AT PERA, ALA.

This station, which is located at the Elton wagon bridge, about one-half mile west of Pera, on the Georgiana & Graceville branch of the Louisville & Nashville Railroad, was established August 27, 1904.

Power plants above the station cause daily fluctuations in the low-water flow. The gage is read twice a day to eliminate or lessen the effect of such fluctuations. Both banks are subject to overflow during extreme high water. Conditions of flow appear to be very nearly permanent and a good rating curve has been developed.



DISCHARGE, AREA, AND MEAN VELOCITY CURVES FOR PEA RIVER AT PERA, ALA.

Discharge measurements are made from the downstream side of the bridge to which the chain gage is attached. The datum of the gage has remained the same since the establishment of the station.

Discharge, area, and mean velocity curves for this station are shown in Plate III.

Discharge measurements of Pea River at Pera, Ala., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gage height.	Discharge.
		Feet.	*Sq. ft.*	*Feet.*	*Sec.-ft.*
Dec. 15	M. R. Hall	70	350	3.56	486
15	do	70	350	3.55	490

Daily gage height, in feet, of Pea River at Pera, Ala., for 1910.

[W. G. Early, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.0	8.9	20.8	5.3	4.7	2.75	5.7	5.4	3.55	2.4	2.4	4.3
2	3.9	8.2	22.3	5.3	4.5	2.7	5.2	5.2	3.4	2.25	2.55	4.1
3	3.85	7.6	22.5	5.0	4.4	2.65	7.2	4.8	3.15	2.15	2.45	3.65
4	3.85	7.6	21.9	4.9	4.2	2.65	9.0	5.1	4.9	2.25	2.45	3.5
5	3.8	7.0	20.8	5.2	4.2	2.85	13.0	6.9	4.2	2.3	2.5	3.35
6	3.95	6.0	17.0	5.4	3.9	3.35	10.2	5.3	3.7	2.45	3.25	3.8
7	7.0	5.5	13.0	5.3	4.1	3.75	8.8	5.8	3.4	3.0	3.8	4.6
8	6.4	5.2	10.9	5.0	3.55	3.75	7.9	5.2	3.4	3.1	3.8	4.8
9	6.0	5.2	9.9	5.0	3.8	3.55	8.3	4.7	3.6	3.2	3.35	4.3
10	5.3	5.0	9.1	4.6	4.6	4.4	8.0	4.2	3.85	3.7	3.0	4.2
11	4.8	5.4	8.8	4.4	4.7	5.6	6.4	3.8	3.8	3.75	2.9	4.0
12	4.7	8.8	10.6	4.4	4.6	6.6	7.8	3.95	4.2	3.05	2.85	3.85
13	4.4	7.6	9.8	5.4	4.3	6.5	5.8	4.2	3.5	2.75	2.7	3.8
14	4.2	7.0	8.8	6.1	4.0	6.1	5.0	5.8	3.25	2.7	2.7	3.7
15	4.2	6.6	8.3	6.4	3.65	5.8	4.4	4.8	3.55	2.55	2.75	3.5
16	4.0	6.2	7.8	6.5	3.45	5.4	4.2	4.0	2.85	2.45	2.65	3.55
17	3.9	6.2	7.3	10.0	3.35	5.5	4.5	3.75	2.8	2.2	2.55	3.5
18	3.85	13.2	7.2	14.2	3.3	5.8	6.2	3.55	3.65	2.3	2.65	4.5
19	3.9	14.5	7.0	15.2	3.15	4.2	6.0	3.35	2.85	2.2	3.35	5.4
20	4.0	11.0	6.7	16.4	3.2	5.0	6.1	3.2	3.05	2.2	4.1	5.2
21	4.6	9.8	6.5	17.0	3.2	4.2	6.0	5.6	2.75	2.2	4.4	4.8
22	5.4	11.6	6.4	12.5	3.35	4.4	5.4	5.9	2.6	2.15	4.2	4.4
23	4.9	11.3	6.3	8.6	3.5	5.4	5.4	4.6	2.55	2.05	3.9	4.2
24	4.6	13.8	6.2	7.4	3.8	5.0	10.8	3.75	2.5	2.0	3.55	5.0
25	4.5	17.5	6.2	6.4	3.9	4.6	16.0	3.5	2.35	2.1	3.4	5.1
26	4.4	14.8	6.2	5.8	3.85	4.4	17.6	3.45	2.25	2.15	3.4	4.8
27	4.3	12.0	6.2	5.6	3.55	4.2	13.6	3.4	2.3	2.05	3.15	4.6
28	5.1	15.6	5.8	5.3	3.3	3.85	9.8	3.15	2.4	2.8	3.55	4.2
29	10.1	.....	5.6	5.2	3.25	3.85	8.0	2.9	2.3	2.6	4.7	4.2
30	9.6	.....	5.6	5.0	3.05	4.2	7.6	2.8	2.55	2.95	5.2	4.4
31	10.4	.....	5.4	.....	2.8	.....	5.6	3.05	.....	2.7	.....	5.8

Daily discharge, in second-feet, of Pea River at Pera, Ala., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	600	2,270	7,720	935	767	353	1,060	965	505	295	295	667
2	578	1,980	8,410	935	715	344	906	906	476	273	318	622
3	567	1,740	8,500	850	691	335	1,590	794	428	259	302	525
4	567	1,740	8,220	822	644	335	2,310	878	822	273	302	495
5	556	1,510	7,720	906	644	372	4,130	1,470	644	280	310	466
6	589	1,160	5,970	965	578	466	2,840	935	535	302	448	556
7	1,510	995	4,130	935	622	546	2,230	1,090	476	400	556	741
8	1,290	906	3,160	850	505	546	1,860	906	476	419	556	794
9	1,160	906	2,710	850	556	505	2,020	767	515	438	466	667
10	935	850	2,350	741	741	691	1,900	644	567	535	400	644
11	794	965	2,230	691	767	1,030	1,290	556	556	546	381	600
12	767	2,230	3,030	691	741	1,360	1,820	589	644	410	372	567
13	691	1,740	2,660	965	667	1,320	1,090	644	495	353	344	556
14	644	1,510	2,230	1,190	600	1,200	850	1,090	448	344	344	535
15	644	1,360	2,020	1,290	525	1,090	691	794	505	318	353	495
16	600	1,220	1,820	1,320	486	965	644	600	372	302	335	505
17	578	1,220	1,620	2,750	466	995	715	546	362	266	318	495
18	567	4,220	1,590	4,680	457	1,090	1,220	505	525	280	335	715
19	578	4,820	1,510	5,140	428	644	1,160	466	372	266	466	965
20	600	3,210	1,400	5,690	438	850	1,190	438	410	266	622	906
21	741	2,660	1,320	5,970	438	644	1,160	1,030	353	266	691	794
22	965	3,490	1,290	3,900	466	691	965	1,120	326	259	644	691
23	822	3,350	1,260	2,140	495	965	965	741	318	246	578	644
24	741	4,500	1,220	1,660	556	850	3,120	546	310	239	505	850
25	715	6,200	1,220	1,290	578	741	5,510	495	288	252	476	878
26	691	4,960	1,220	1,090	567	691	6,250	486	273	259	476	794
27	667	3,670	1,220	1,020	505	644	4,410	476	280	246	428	741
28	878	5,330	1,090	935	457	567	2,660	428	295	362	505	644
29	2,800	.....	1,030	906	448	567	1,900	381	280	326	767	644
30	2,570	.....	1,030	850	410	644	1,740	362	318	390	906	691
31	2,930	.....	965	.....	362	.....	1,030	410	.....	344	.....	1,090

NOTE.—These discharges were obtained from a well-defined rating curve.

Monthly discharge of Pea River at Pera, Ala., for 1910.

[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	2,930	556	946	0.802	0.92	A
February	6,200	850	2,530	2.14	2.23	A
March	8,500	965	2,960	2.51	2.89	A
April	5,970	691	1,770	1.50	1.67	A
May	767	362	559	.474	.55	B
June	1,360	335	735	.623	.70	A
July	6,250	644	1,980	1.68	1.94	A
August	1,470	362	712	.603	.70	A
September	822	273	439	.372	.42	B
October	546	239	323	.274	.32	B
November	906	295	460	.390	.44	B
December	1,090	466	677	.574	.66	A
The year	8,500	239	1,170	.992	13.44	

ESCAMBIA RIVER BASIN.

DESCRIPTION.

Escambia River drains the south-central portion of Alabama and discharges into the Gulf of Mexico through Escambia Bay and Pensacola Bay. Conecuh River joins the Escambia about 5 miles south of the Alabama-Florida State line and is very much the larger of the two. Conecuh River rises in Bullock County, Ala., close to the headwaters of Pea River, in the Choctawhatchee drainage basin, and flows southwestward throughout its course. Pigeon and Patsaliga creeks, both from the west, are the principal tributaries of Conecuh River. The Conecuh and its tributaries are swift streams, and at places on them there are rocky shoals and rapids.

This small basin lies directly west of the Choctawhatchee River basin, to which it is very similar in topographic, geologic, and climatic features.

CONECUH RIVER AT BECK, ALA.

This station, which was established August 24, 1904, is located at Simmons Bridge at Beck, about 12 miles below the mouth of Patsaliga Creek. The nearest railway station is Andalusia, Ala., 8 miles east, on the Central of Georgia and Louisville & Nashville railroads.

The flow is probably not affected by artificial control but at times may be affected by logging operations. Both banks are subject to overflow. The chain gage is attached to the upstream side of the bridge from which the measurements are made. The datum of the gage has remained the same since the establishment of the station. Conditions of flow at this station are practically permanent and a good rating has been developed.

Discharge measurements of Conecuh River at Beck, Ala., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gage height.	Discharge.
		Feet.	*Sq. ft.*	*Feet.*	*Sec.-ft.*
Dec. 16	M. R. Hall	115	324	2.27	456
16	do	115	320	2.27	450

Daily gage height, in feet, of Conecuh River at Beck, Ala., for 1910.

[J. F. Hicks, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	5.6	9.8	3.2	.....	1.9	6.2	4.6	1.8	1.4	1.8	3.1
2	.....	4.9	10.7	3.0	3.3	1.9	3.8	4.4	2.0	.....	1.7	2.8
3	2.7	4.6	10.7	.....	3.1	1.9	.....	4.1	2.1	1.3	1.6	2.5
4	2.6	4.7	9.8	2.9	2.9	1.6	.....	3.8	.....	1.3	1.5	.....
5	2.6	4.3	8.6	2.8	2.8	.....	8.8	5.4	.....	1.8	1.5	2.3
6	2.6	.....	.....	3.5	2.6	3.4	8.8	4.2	1.9	2.3	.....	2.6
7	3.1	3.9	7.6	3.3	2.6	2.4	7.0	.....	1.8	2.2	2.1	2.2
8	2.9	3.7	7.1	3.6	.....	2.2	7.1	3.7	1.7	2.3	2.2	2.5
9	.....	3.6	6.7	3.5	3.2	2.9	6.5	3.0	1.8	.....	2.3	2.6
10	3.2	3.4	6.2	.....	2.9	3.0	.....	2.8	2.1	3.2	2.2	2.7
11	3.1	4.0	6.2	2.9	3.0	4.4	4.4	2.5	.....	2.9	2.1	.....
12	2.9	5.3	5.9	2.8	2.9	.....	9.5	3.0	2.9	2.5	1.9	2.4
13	2.7	.....	.....	5.9	2.8	6.6	5.2	2.7	2.8	2.3	.....	2.4
14	2.7	4.9	5.2	5.2	2.6	6.4	4.3	.....	2.3	1.9	1.8	2.4
15	2.6	4.7	5.0	3.8	.....	7.6	3.6	3.0	2.0	1.9	1.7	2.3
16	.....	4.7	4.7	3.6	2.3	6.8	3.2	3.0	1.9	.....	1.6	2.2
17	2.5	4.4	4.5	.....	2.2	5.6	.....	2.6	1.8	1.7	1.5	2.3
18	2.5	8.7	4.3	10.0	2.1	4.5	3.2	2.5	.....	1.7	1.6	.....
19	2.5	7.5	4.1	10.5	2.1	.....	4.2	2.3	1.5	1.6	2.3	3.3
20	2.4	.....	.....	11.6	2.0	3.3	4.7	2.2	1.5	1.6	.....	2.5
21	3.4	6.4	3.8	15.8	2.4	2.9	4.3	.....	1.5	1.5	2.4	2.7
22	3.0	.....	3.8	16.0	.....	5.9	4.0	3.4	1.4	1.5	2.9	2.7
23	.....	10.2	3.7	14.2	3.2	4.6	3.7	2.8	1.4	.....	3.1	2.7
24	3.3	13.7	3.6	.....	4.1	6.5	.....	2.3	1.5	1.4	.....	3.5
25	3.2	10.8	3.6	6.7	3.5	5.6	10.2	2.3	.....	1.4	2.5	.....
26	3.0	10.1	3.6	6.2	3.4	.....	10.9	2.2	1.4	1.4	2.3	3.2
27	2.9	.....	.....	5.0	3.1	4.0	11.7	2.1	1.4	1.4	.....	3.2
28	5.6	8.8	3.7	4.3	2.8	3.3	13.6	.....	1.4	2.2	3.5	3.0
29	7.7	.....	3.6	3.9	.....	3.3	10.6	1.9	1.4	1.7	2.8	2.4
30	.....	.....	3.5	3.7	.....	3.5	6.9	1.8	1.4	.....	2.9	4.8
31	6.0	.....	3.3	.....	2.1	.....	.....	1.7	.....	1.8	.....	3.8

Daily discharge, in second-feet, of Conecuh River at Beck, Ala., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	585	1,830	4,140	757	875	373	2,160	1,350	352	278	352	720
2	585	1,490	4,640	684	795	373	996	1,260	395	270	332	617
3	585	1,350	4,640	667	720	373	1,860	1,120	418	262	313	524
4	554	1,400	4,140	650	650	313	2,720	996	403	262	295	496
5	554	1,210	3,470	617	617	574	3,580	1,730	388	352	295	469
6	554	1,120	3,190	874	554	834	3,580	1,170	373	469	356	554
7	720	1,040	2,910	795	554	496	2,590	1,060	352	443	418	443
8	650	955	2,640	914	656	443	2,640	955	332	469	443	524
9	704	914	2,430	874	757	650	2,320	684	352	613	469	554
10	757	834	2,160	762	650	684	1,790	617	418	757	443	585
11	720	1,080	2,160	650	684	1,260	1,260	524	534	650	418	540
12	650	1,680	2,000	617	650	1,820	3,970	684	650	524	373	496
13	585	1,580	1,820	2,000	617	2,370	1,640	585	617	469	362	496
14	585	1,490	1,640	1,640	554	2,270	1,210	634	469	373	352	496
15	554	1,400	1,540	996	512	2,910	914	684	395	373	332	469
16	539	1,400	1,400	914	469	2,480	757	684	373	352	313	443
17	524	1,260	1,300	2,580	443	1,830	757	554	352	332	295	469
18	524	3,520	1,210	4,250	418	1,300	757	524	324	332	313	632
19	524	2,860	1,120	4,530	418	1,050	1,170	469	295	313	469	795
20	496	2,560	1,060	5,150	395	795	1,400	443	295	313	482	524
21	834	2,270	996	7,550	496	650	1,210	638	295	295	496	585
22	684	3,320	996	7,660	626	2,000	1,080	834	278	295	650	585
23	740	4,360	955	6,630	757	1,350	955	617	278	286	720	585
24	795	6,350	914	4,530	1,120	2,320	2,660	469	295	278	622	874
25	757	4,700	914	2,430	874	1,830	4,360	469	286	278	524	816
26	684	4,310	914	2,160	834	1,460	4,750	443	278	278	469	757
27	650	3,840	934	1,540	720	1,080	5,210	418	278	278	672	757
28	1,830	3,580	955	1,210	617	795	6,290	396	278	443	874	684
29	2,970	.....	914	1,040	551	795	4,590	373	278	332	617	617
30	2,510	.....	874	955	484	874	2,540	352	278	342	650	1,260
31	2,050	.....	795	.....	418	.....	1,940	332	.....	352	.....	996

NOTE.—These discharges were obtained from a rating curve which is fairly well defined below 7,000 second-feet. Discharges interpolated for days when gage was not read.

Monthly discharge of Conecuh River at Beck, Ala., for 1910.

[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	2,970	496	853	0.661	0.76	B
February	6,350	834	2,280	1.77	1.84	A
March	4,640	795	1,930	1.50	1.73	A
April	7,660	617	2,220	1.72	1.92	A
May	1,120	395	629	.488	.56	B
June	2,910	313	1,210	.938	1.05	B
July	6,290	757	2,380	1.84	2.12	A
August	1,730	332	712	.552	.64	B
September	650	278	364	.282	.31	B
October	757	262	376	.291	.34	B
November	874	295	457	.354	.40	B
December	1,260	443	625	.484	.56	B
The year	7,660	262	1,160	.899	12.23	

MOBILE RIVER BASIN.

DESCRIPTION.

The waters of the Mobile basin enter the Gulf of Mexico through Mobile River, which is formed by the union of Alabama and Tombigbee rivers at a point near the coast. The system drains a triangular basin almost 300 miles wide near the headwaters in Georgia, Alabama, and Mississippi, having a total area of more than 40,000 square miles, and including about two-thirds of the State of Alabama and large areas in Georgia and Mississippi.

The main stream of the Alabama River branch, which has a somewhat greater drainage area than the Tombigbee branch, has many names. Beginning at the headwaters it is Cartecay River, which with Ellijay River makes the Coosawattee. This, with Conasauga River, forms Oostanaula River and at Rome, Ga., the Oostanaula and the Etowah unite to form Coosa River. Six miles above Montgomery, Ala., Tallapoosa River joins the Coosa and forms Alabama River. Hillabee Creek flows into Tallapoosa River just above Sturdevant. Talladega and Choccolocco creeks are tributaries of the Coosa.

The Coosa heads in the Appalachian Mountains of middle-north Georgia, mostly in the southwestern extremity of the Blue Ridge system. Its headwater streams, which include the Coosawattee, the Etowah, and the extreme upper portion of the Conasauga, rising at elevations of 2,000 to 3,000 feet above sea level, descend rapidly over hard beds of schistose rocks to the limestones and dolomites beginning in the northwestern part of Georgia and comprising a large portion of the northern and northeastern sections of the State of Alabama. These streams drain large areas of forested lands, much of which is too steep for ordinary agricultural use. About 30

miles above Wetumpka, Ala., the Coosa again enters an area of granitic rocks of the Piedmont Plateau, from which it passes with considerable drop to the Coastal Plain at Wetumpka.

The Alabama River proper is entirely in the Coastal Plain. It flows first through an extensive bed of pure, soft limestone and afterward through the newer limestones and sandstones extending to the coast.

Tallapoosa River is entirely in the Piedmont Plateau above Tallassee, Ala., where its greatest falls occur as it passes to the Coastal Plain.

Cahaba River heads in the coal measures of central Alabama and flows southward to Alabama River, about 10 miles below Selma, Ala.

Tombigbee River rises in the northeastern part of Mississippi and enters Alabama in Pickens County. Its principal tributary is the Black Warrior, which is formed by the junction of Mulberry Fork and Sipsey Fork. Locust Fork enters the Black Warrior some distance below the junction.

The main stream of the Tombigbee system, which is entirely in the Coastal Plain, heads very close to Tennessee River at the northeast corner of Mississippi, where it drains a wide area of flat country lower in elevation than the upper portion of the Black Warrior River basin, and much lower than the corresponding portion of the Alabama River basin. The Tombigbee, from its headwaters, drains a region whose rocks correspond, in general, with those along the Alabama below Montgomery. The Black Warrior River basin drains the coal measures of north-central Alabama, in which are found a large part of the extensive coal and iron deposits of the State.

The Mobile basin contains abundant and valuable deposits of such minerals as coal, iron, manganese, bauxite, barytes, marbles, and other limestones, cement materials, and clays.

The mean annual rainfall in this drainage area is about 50 inches. The basin contains a number of good reservoir sites, especially on Etowah, Coosawattee, and Conasauga rivers. Some of these have recently been surveyed by the Army engineers.

Coosa and Tallapoosa rivers and their tributaries are important water-power streams and offer many exceptionally good locations for development.

The following special reports contain information regarding the hydrography of the Mobile River drainage basin:

Water powers of Alabama, with an appendix on stream measurements in Mississippi, by B. M. Hall: Water-Supply Paper U. S. Geol. Survey No. 107. Contains data on stream flow, river surveys, and water power collected in Alabama prior to 1904.

Water resources of Georgia, by B. M. and M. R. Hall: Water-Supply Paper U. S. Geol. Survey No. 197. Contains data on stream flow, water power, and river surveys collected in the Mobile basin in Georgia prior to 1906.

Sheets showing the profile of Tallapoosa River between Tallapoosa, Ga., and Matilda, Ala., may be obtained by applying to the Director, United States Geological Survey, Washington, D. C.

OOSTANAULA RIVER AT RESACA, GA.

This station, which is located at the bridge of the Western & Atlantic Railroad in the town of Resaca, 800 feet south of the depot, is 3 miles below the junction of Conasauga and Coosawattee rivers and 1 mile above the mouth of Camp Creek. The station was originally established by the United States Weather Bureau in 1891. In 1896 discharge measurements were made by the United States Geological Survey, and until the end of 1898 half-year gage-height records were kept, completing the Weather Bureau's half-year records. From 1899 to 1904 only partial records of gage height were obtained. At present the gage heights are furnished by the United States Weather Bureau.

Except on the smaller tributaries there are very few milldams, and these have little or no effect on the flow at the station.

The left bank is low and overflows during high water for 480 feet. Discharge measurements are usually made from the downstream side of the bridge but at times are made from a boat at the ferry, about 200 feet above, where the section is somewhat better.

The gage is a heavy vertical staff attached to the downstream side of the pier in the middle of the river. The datum of the gage has not been changed since the establishment of the station. Conditions of flow at this station are practically permanent and a good rating has been developed for low and medium stages.

Discharge measurements of Oostanaula River at Resaca, Ga., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gage height.	Discharge.
		Feet.	*Sq. ft.*	*Feet.*	*Sec.-ft.*
Mar. 14	M. R. Hall	146	910	4.20	1,840
May 28	do	186	2,070	10.30	6,960
28	do	185	1,850	9.15	6,060

Daily gage height, in feet, of Oostanaula River at Resaca, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.4	3.4	8.2	3.0	3.8	5.2	8.2	4.2	9.3	5.2	2.2	2.6
2	3.0	3.4	10.4	2.8	3.6	5.0	8.2	4.0	10.0	3.4	2.2	2.4
3	3.0	3.2	8.8	2.6	3.4	5.0	11.0	3.8	8.3	3.0	2.4	2.4
4	2.8	3.4	7.4	2.6	3.2	5.0	12.6	3.8	5.3	3.0	2.4	2.6
5	2.8	3.6	6.6	2.4	3.0	5.2	10.2	7.2	4.3	3.0	2.5	3.6
6	2.8	3.6	5.5	2.4	3.2	11.8	9.6	6.0	4.0	3.0	2.6	13.6
7	5.4	3.6	5.2	2.4	3.4	10.6	10.2	7.0	3.8	3.0	2.6	11.6
8	7.2	3.4	4.8	2.4	5.6	8.0	9.2	6.5	3.8	3.0	2.5	8.2
9	6.8	3.4	4.6	2.4	13.0	6.0	8.4	5.8	3.8	3.4	2.5	5.0
10	4.6	3.2	4.4	2.4	11.4	5.8	9.0	4.8	3.8	3.2	2.4	4.2
11	4.0	3.3	5.6	2.3	8.6	9.8	8.6	4.4	3.6	3.2	2.4	4.0
12	3.8	6.0	5.4	2.3	6.2	10.0	8.8	4.0	3.2	3.0	2.3	4.0
13	3.6	6.2	4.8	2.4	5.4	8.6	8.6	4.0	2.8	3.0	2.3	3.8
14	3.6	5.0	4.4	2.4	5.2	7.6	8.2	3.8	2.8	2.8	2.3	3.4
15	3.4	4.2	4.2	2.4	4.8	6.8	7.5	3.8	2.8	2.8	2.3	3.0
16	3.4	3.8	3.6	3.8	4.6	6.0	7.0	3.6	2.8	2.6	2.2	2.8
17	3.2	4.8	3.4	10.8	5.6	6.6	6.4	3.4	2.8	2.6	2.2	2.6
18	2.8	12.8	3.4	11.6	7.0	6.4	5.8	3.4	2.8	2.6	2.2	2.5
19	3.6	13.2	3.4	7.4	7.4	5.2	5.6	3.4	2.8	2.4	2.2	2.5
20	4.0	10.0	3.4	5.2	10.4	5.2	5.4	3.4	2.8	2.4	2.2	2.4
21	4.8	6.4	3.8	4.0	18.0	6.8	5.0	3.4	2.8	2.4	2.2	2.4
22	5.4	5.4	3.6	4.0	19.8	6.0	5.2	3.6	2.8	2.2	2.2	2.4
23	5.0	5.2	3.4	4.0	18.2	5.6	5.0	3.8	2.8	2.2	2.2	2.4
24	5.0	5.2	3.4	4.0	14.0	5.4	4.8	3.8	2.6	2.0	2.2	3.0
25	4.8	5.0	3.3	4.0	15.6	5.6	4.7	3.8	2.6	2.0	2.2	3.4
26	4.8	4.7	3.3	4.2	14.2	5.8	4.5	3.8	2.6	2.0	2.2	3.2
27	4.6	4.6	3.3	4.2	13.8	5.4	4.7	3.8	2.6	2.0	2.2	3.0
28	4.6	4.6	3.2	4.6	11.0	5.4	6.0	3.8	2.6	2.4	2.8	3.0
29	4.7	.....	3.2	4.2	6.6	7.6	4.7	3.8	2.8	2.8	3.0	3.0
30	4.4	.....	3.1	4.0	6.2	5.8	4.2	3.8	4.6	2.6	3.0	3.6
31	4.2	.....	3.1	.....	5.5	.....	4.2	3.8	.....	2.4	.....	4.0

Daily discharge, in second-feet, of Oostanaula River at Resaca, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,380	1,380	5,160	1,140	1,630	2,650	5,160	1,900	6,140	2,650	726	920
2	1,140	1,380	7,160	1,030	1,500	2,500	5,160	1,760	6,780	1,380	726	820
3	1,140	1,260	5,690	920	1,380	2,500	7,730	1,630	5,240	1,140	820	820
4	1,030	1,380	4,450	920	1,260	2,500	9,270	1,630	2,730	1,140	820	920
5	1,030	1,500	3,770	820	1,140	2,650	6,970	4,280	1,970	1,140	870	1,500
6	1,030	1,500	2,880	820	1,260	8,500	6,410	3,270	1,760	1,140	920	10,200
7	2,800	1,500	2,650	820	1,380	7,350	6,970	4,110	1,630	1,140	920	8,310
8	4,280	1,380	2,350	820	2,960	4,980	6,050	3,680	1,630	1,140	870	5,160
9	3,940	1,380	2,200	820	9,660	3,270	5,330	3,110	1,630	1,380	870	2,500
10	2,200	1,260	2,040	820	8,110	3,110	5,870	2,350	1,630	1,260	820	1,900
11	1,760	1,320	2,960	772	5,510	6,600	5,510	2,040	1,500	1,260	820	1,760
12	1,630	3,270	2,800	772	3,430	6,780	5,690	1,760	1,260	1,140	772	1,760
13	1,500	3,430	2,350	820	2,800	5,510	5,510	1,760	1,030	1,140	772	1,630
14	1,500	2,500	2,040	820	2,650	4,630	5,160	1,630	1,030	1,030	772	1,380
15	1,380	1,900	1,900	820	2,350	3,940	4,540	1,630	1,030	1,030	772	1,140
16	1,380	1,630	1,500	1,630	2,200	3,270	4,110	1,500	1,030	920	726	1,030
17	1,260	2,350	1,380	7,540	2,960	3,770	3,600	1,380	1,030	920	726	920
18	1,030	9,460	1,380	8,310	4,110	3,600	3,110	1,380	1,030	920	726	870
19	1,500	9,860	1,380	4,450	4,450	2,650	2,960	1,380	1,030	820	726	870
20	1,760	6,780	1,380	2,650	7,160	2,650	2,800	1,380	1,030	820	726	820
21	2,350	3,600	1,630	1,760	14,600	3,940	2,500	1,380	1,030	820	726	820
22	2,800	2,800	1,500	1,760	16,400	3,270	2,650	1,500	1,030	726	726	820
23	2,500	2,650	1,380	1,760	14,800	2,960	2,500	1,630	1,030	726	726	820
24	2,500	2,650	1,380	1,760	10,600	2,800	2,350	1,630	920	640	726	1,140
25	2,350	2,500	1,320	1,760	12,200	2,960	2,270	1,630	920	640	726	1,380
26	2,350	2,270	1,320	1,900	10,800	3,110	2,120	1,630	920	640	726	1,260
27	2,200	2,200	1,320	1,900	10,400	2,800	2,270	1,630	920	640	726	1,140
28	2,200	2,200	1,320	2,200	7,730	2,800	3,270	1,630	920	820	1,030	1,140
29	2,270	.....	1,320	1,900	3,770	4,630	2,270	1,630	1,030	1,030	1,140	1,140
30	2,040	.....	1,200	1,760	3,430	3,110	1,900	1,630	2,200	920	1,140	1,500
31	1,900	.....	1,200	.....	2,880	.....	1,900	1,630	.....	820	.....	1,760

NOTE.—These discharges were obtained from a rating curve which is well defined below 7,700 second-feet.

Monthly discharge of Oostanaula River at Resaca, Ga., for 1910.

[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	4,280	1,030	1,940	1.20	1.38	A
February	9,860	1,260	2,760	1.71	1.78	A
March	7,160	1,200	2,330	1.45	1.67	A
April	8,310	772	1,870	1.16	1.29	A
May	16,400	1,140	5,660	3.52	4.06	A
June	8,500	2,500	3,860	2.40	2.68	A
July	9,270	1,900	4,320	2.68	3.09	A
August	4,280	1,380	1,970	1.22	1.41	A
September	6,780	920	1,770	1.10	1.23	A
October	2,650	640	1,030	.640	.74	A
November	1,140	726	810	.503	.56	A
December	10,200	820	1,880	1.17	1.35	A
The year	16,400	640	2,520	1.57	21.24	

COOSA RIVER AT RIVERSIDE, ALA.

This station, which is located at the Southern Railway bridge in the village of Riverside, Ala., was established September 25, 1896, and has been maintained continuously since that date.

The station is 1 mile above Blue Eye and about 7 miles above Choccolocco Creek. The flow is not noticeably affected by artificial control at the comparatively few dams above. Four navigation locks have been constructed above, the nearest of which is Lock 4, about 4 miles above.

The standard chain gage is attached to the right-bank end of the downstream side of the railroad bridge from which discharge measurements are made. The original wire gage was located on the downstream side of the bridge near the middle of the river. The gage datum has not been changed since the station was established.

For a part of the width the current is broken by a ledge above. Both banks are high and do not overflow, and the bed of the stream is rocky and permanent. A good rating curve has been developed.

Discharge measurements of Coosa River at Riverside, Ala., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gage height.	Discharge.
		Feet.	*Sq. ft.*	*Feet.*	*Sec.-ft.*
July 28	F. P. Thomas	557	4,820	3.68	9,460
29	do	556	4,740	3.49	8,920

Daily gage height, in feet, of Coosa River at Riverside, Ala., for 1910.

[A. J. Morris, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.0	3.5	6.1	2.2	2.4	4.0	6.9	2.8	2.2	1.3	1 0	1.25
2	2.0	3.3	7.3	2.2	2.4	3.5	8.5	2.8	2.5	1.3	1.0	1.3
3	2.0	3.0	8.8	2.2	2.4	3.1	10.3	2.8	3.0	1.4	1.0	1.3
4	2.0	2.8	8.7	2.2	2.3	2.9	11.9	2.8	3.6	1.4	1.0	1.25
5	2.2	2.7	7.5	2.1	2.3	2.9	11.3	2.7	4.0	1.5	1.0	1.4
6	2.2	2.7	6.3	2.1	2.2	3.0	10.6	3.0	4.2	1.8	1.0	1.8
7	3.6	2.7	5.5	2.0	2.2	4.3	10.3	4.1	4.5	1.8	1.1	3.1
8	5.0	2.6	4.7	1.9	2.2	5.8	10.9	5.0	4.0	2.1	1.1	5.7
9	5.8	2.5	4.2	1.9	2.3	5.9	10.7	5.0	3.2	2.1	1.1	6.3
10	5.4	2.4	4.0	1.9	2.8	6.0	9.3	4.5	2.9	2.0	1.1	5.3
11	4.7	2.4	4.7	1.9	3.6	6.7	8.5	3.7	2.5	2.0	1.1	4.1
12	4.0	2.3	5.3	2.0	5.6	6.5	8.4	3.0	2.3	1.8	1.1	3.0
13	3.3	3.0	5.0	2.0	6.0	6.4	7.8	2.6	2.0	1.7	1.1	2.2
14	3.0	3.4	4.7	2.0	4.5	6.4	7.5	2.5	1.7	1.6	1.1	2.0
15	2.7	3.4	4.1	2.1	3.8	6.2	6.8	2.5	1.6	1.6	1.1	1.8
16	2.9	3.3	3.8	2.2	2.8	6.0	5.7	2.5	1.6	1.5	1.1	1.7
17	3.0	3.3	3.5	3.5	2.5	4.8	6.0	2.4	1.5	1.5	1.1	1.6
18	2.8	7.1	3.2	5.0	3.5	4.0	5.5	2.3	1.4	1.4	1.1	1.6
19	2.8	8.3	3.0	4.2	6.0	3.8	4.2	2.2	1.4	1.4	1.1	1.5
20	3.0	9.9	3.0	4.0	8.5	3.8	3.7	2.1	1.4	1.35	1.1	1.5
21	3.1	9.7	2.9	3.5	10.2	3.8	3.6	2.2	1.35	1.3	1.1	1.5
22	3.5	8.2	2.8	3.1	11.3	4.0	3.6	2.2	1.3	1.3	1.1	1.5
23	3.4	6.7	2.7	3.0	12.1	3.8	3.5	2.1	1.3	1.2	1.1	1.6
24	3.3	5.7	2.7	2.8	12.8	3.4	3.4	2.0	1.3	1.2	1.1	1.6
25	3.3	5.3	2.5	2.7	12.2	3.3	3.4	2.0	1.3	1.2	1.1	1.5
26	3.5	4.9	2.5	2.6	11.9	3.0	3.3	2.0	1.3	1.1	1.1	1.4
27	3.5	4.6	2.5	2.5	11.0	3.2	3.2	1.9	1.2	1.1	1.1	1.4
28	3.7	4.4	2.3	2.5	10.0	4.5	3.0	1.9	1.2	1.1	1.1	1.6
29	3.7	.....	2.3	2.4	8.4	5.0	3.0	2.0	1.2	1.1	1.15	1.7
30	3.6	.....	2.3	2.4	6.9	7.0	3.0	2.0	1.3	1.1	1.2	1.9
31	3.5	.....	2.3	.....	5.5	.....	2.9	2.1	.....	1.1	.....	1.9

Daily discharge, in second-feet, of Coosa River at Riverside, Ala., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4,380	8,700	17,900	4,900	5,420	10,300	21,000	6,540	4,900	2,810	2,260	2,720
2	4,380	8,060	22,700	4,900	5,420	8,700	27,700	6,540	5,700	2,810	2,260	2,810
3	4,380	7,140	29,000	4,900	5,420	7,440	35,300	6,540	7,140	3,010	2,260	2,810
4	4,380	6,540	28,500	4,900	5,160	6,840	42,200	6,540	9,020	3,010	2,260	2,720
5	4,900	6,250	23,500	4,640	5,160	6,840	39,600	6,250	10,300	3,220	2,260	3,010
6	4,900	6,250	18,700	4,640	4,900	7,140	36,600	7,140	11,000	3,890	2,260	3,890
7	9,020	6,250	15,600	4,380	4,900	11,300	35,300	10,600	12,000	3,890	2,440	7,440
8	13,800	5,970	12,700	4,130	4,900	16,800	37,900	13,800	10,300	4,640	2,440	16,400
9	16,800	5,700	11,000	4,130	5,160	17,100	37,000	13,800	7,750	4,640	2,440	18,700
10	15,300	5,420	10,300	4,130	6,540	17,500	31,100	12,000	6,840	4,380	2,440	14,900
11	12,700	5,420	12,700	4,130	9,020	20,200	27,700	9,340	5,700	4,380	2,440	10,600
12	10,300	5,160	14,900	4,380	16,000	19,400	27,300	7,140	5,160	3,890	2,440	7,140
13	8,060	7,140	13,800	4,380	17,500	19,000	24,800	5,970	4,380	3,660	2,440	4,900
14	7,140	8,380	12,700	4,380	12,000	19,000	23,500	5,700	3,660	3,430	2,440	4,380
15	6,250	8,380	10,600	4,640	9,660	18,300	20,600	5,700	3,430	3,430	2,440	3,890
16	6,840	8,060	9,660	4,900	6,540	17,500	16,400	5,700	3,430	3,220	2,446	3,660
17	7,140	8,060	8,700	8,700	5,700	13,100	17,500	5,420	3,220	3,220	2,440	3,430
18	6,540	21,800	7,750	13,800	8,700	10,300	15,600	5,160	3,010	3,010	2,440	3,430
19	6,540	26,900	7,140	11,000	17,500	9,660	11,000	4,900	3,010	3,010	2,440	3,220
20	7,140	33,600	7,140	10,300	27,700	9,660	9,340	4,640	3,010	2,910	2,440	3,220
21	7,440	32,800	6,840	8,700	34,900	9,660	9,020	4,900	2,910	2,810	2,440	3,220
22	8,700	26,400	6,540	7,440	39,600	10,300	9,020	4,900	2,810	2,810	2,440	3,220
23	8,380	20,200	6,250	7,140	43,000	9,660	8,700	4,640	2,810	2,620	2,440	3,430
24	8,060	16,400	6,250	6,540	46,000	8,380	8,380	4,380	2,810	2,620	2,440	3,430
25	8,060	14,900	5,700	6,250	43,400	8,060	8,380	4,380	2,810	2,620	2,440	3,220
26	8,700	13,400	5,700	5,970	42,200	7,140	8,060	4,380	2,810	2,440	2,440	3,010
27	8,700	12,400	5,700	5,700	38,300	7,750	7,750	4,130	2,620	2,440	2,440	3,010
28	9,340	11,700	5,160	5,700	34,100	12,000	7,140	4,130	2,620	2,440	2,440	3,430
29	9,340	.....	5,160	5,420	27,300	13,800	7,140	4,380	2,620	2,440	2,530	3,660
30	9,020	.....	5,160	5,420	21,000	21,400	7,140	4,380	2,810	2,440	2,620	4,130
31	8,700	.....	5,160	.....	15,600	.....	6,840	4,640	.....	2,440	.....	4,130

NOTE.—These discharges were obtained from a well-defined rating curve.

Monthly discharge of Coosa River at Riverside, Ala., for 1910.

[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	16,800	4,380	8,240	1.17	1.35	A
February	33,600	5,160	12,400	1.76	1.83	A
March	29,000	5,160	11,600	1.64	1.89	A
April	13,800	4,130	6,020	.853	.95	A
May	46,000	4,900	18,300	2.59	2.99	A
June	21,400	6,840	12,500	1.77	1.98	A
July	42,200	6,840	20,200	2.86	3.30	A
August	13,800	4,130	6,410	.908	1.05	A
September	12,000	2,620	5,020	.711	.79	A
October	4,640	2,440	3,180	.450	.52	A
November	2,620	2,260	2,410	.341	.38	A
December	18,700	2,720	5,200	.737	.85	A
The year	46,000	2,260	9,290	1.32	17.88	

ALABAMA RIVER AT SELMA, ALA.

This station is located at the iron highway bridge in Selma, Ala. It was originally established by the United States Army Engineer Corps but is now maintained by the United States Weather Bureau. Discharge measurements were begun by the United States Geological Survey in 1900, and the station ratings were applied to the gage heights for 1899.

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 the second pier, and the upper portion, reading from 5.1 to 55 feet, being fastened to the draw pier. The present gage, which is of the standard chain type, is the property of the United States Geological Survey and was installed March 22, 1906, on the downstream side of the highway bridge from which the measurements are made.

The datum of the gage has remained the same since the establishment of the station, but the bad condition and probable change in the low-water section of the staff gage has introduced some uncertainty in the low-water gage heights prior to the establishment of the present chain gage. The channel is deep and swift and is difficult to sound even at ordinary stages. Both banks are high, but the left is subject to overflow at extreme high water.

Conditions of flow are somewhat changeable, but a fairly good rating has been developed for recent years. Gage heights are available prior to 1899, but owing to changing conditions of flow the ratings for later years are not applicable.

Daily gage height, in feet, of Alabama River at Selma, Ala., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.2	10.2	14.5	3.7	3.1	12.0	11.2	4.9	1.1	−0.2	−0.5	0.1
2	4.4	9.0	18.4	3.5	3.0	9.3	14.9	4.8	1.1	− .1	− .5	.2
3	3.7	7.7	21.6	3.4	3.0	7.1	20.4	4.5	1.3	.8	− .4	.4
4	3.2	7.0	23.1	3.3	2.9	5.5	25.4	4.0	1.4	.8	− .4	.2
5	2.9	7.6	22.8	3.1	2.7	4.4	29.0	3.9	2.0	.3	− .3	.3
6	2.6	8.3	21.1	3.3	2.6	4.2	31.0	3.6	4.6	.3	− .2	.7
7	2.6	7.2	18.2	3.4	2.5	3.9	31.5	4.2	7.7	1.0	− .1	1.8
8	3.2	6.0	15.0	3.5	2.3	4.0	30.0	5.9	7.2	1.4	.0	4.2
9	6.0	5.3	12.4	3.4	2.2	5.7	28.0	8.8	5.5	1.4	.0	4.9
10	8.9	4.8	10.6	3.2	2.1	7.7	25.7	11.6	3.9	2.1	− .1	5.3
11	9.7	4.3	9.6	2.9	2.2	10.2	23.1	10.9	2.8	2.9	.0	7.7
12	9.2	5.1	8.9	2.7	2.7	11.5	20.5	9.1	2.6	3.1	− .1	7.9
13	8.1	6.9	8.9	2.9	4.2	12.7	18.0	8.1	2.4	2.3	− .2	6.5
14	6.8	8.7	9.7	3.1	6.9	13.1	16.6	9.0	2.2	1.9	− .2	4.9
15	5.6	8.5	9.8	3.7	7.1	12.1	14.6	9.4	2.0	1.9	− .3	3.5
16	4.7	7.8	9.1	4.0	5.9	11.2	12.3	7.0	1.9	1.7	− .3	2.4
17	4.1	7.2	8.1	5.5	4.4	11.1	10.5	5.0	1.5	1.3	− .3	1.7
18	3.7	8.5	7.3	7.5	3.4	10.6	9.8	3.9	1.0	.8	− .3	1.5
19	3.4	13.7	6.6	12.3	3.0	9.0	9.4	3.3	1.2	.4	− .4	1.5
20	3.3	19.1	6.1	14.1	3.1	7.4	9.0	3.0	1.0	.3	− .3	1.4
21	3.2	21.2	5.7	13.8	3.4	6.2	8.5	2.9	.6	.1	− .2	1.4
22	3.4	22.4	5.6	12.8	3.9	5.7	7.4	3.2	.4	− .1	− .2	1.3
23	3.8	22.7	5.5	10.8	7.2	5.2	6.3	3.2	.2	− .2	− .2	1.2
24	4.9	22.2	5.2	8.4	13.5	5.9	6.4	2.8	.1	− .3	− .1	1.1
25	5.7	20.7	5.0	6.4	17.2	6.0	11.4	2.3	.1	− .4	− .2	1.1
26	6.2	19.4	4.8	5.2	19.4	6.0	11.8	2.0	.0	− .5	− .2	1.0
27	6.6	17.9	4.7	4.4	20.4	5.8	10.3	1.9	.0	− .5	− .2	1.1
28	6.9	15.7	4.5	3.9	20.2	5.5	8.0	1.7	.1	− .4	− .2	1.1
29	7.7	.....	4.3	3.6	19.0	5.0	5.8	1.5	.0	− .4	.0	1.0
30	9.7	.....	4.1	3.3	17.3	6.9	5.0	1.3	− .1	− .3	− .1	1.3
31	11.0	.....	3.9	.....	14.8	.....	5.2	1.1	.....	− .4	.....	1.8

Daily discharge, in second-feet, of Alabama River at Selma, Ala., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	15,800	26,800	37,300	12,800	11,700	31,000	29,100	15,200	7,980	5,780	5,300	6,270
2	14,200	24,000	47,500	12,400	11,500	24,700	38,300	15,000	7,980	5,940	5,300	6,440
3	12,800	21,100	56,100	12,300	11,500	19,800	52,900	14,400	8,340	7,460	5,460	6,780
4	11,900	19,600	60,200	12,100	11,300	16,400	66,400	13,400	8,520	7,460	5,460	6,440
5	11,300	20,900	59,400	11,700	10,900	14,200	76,400	13,200	9,600	6,610	5,620	6,610
6	10,700	22,500	54,800	12,100	10,700	13,800	82,000	12,600	14,600	6,610	5,780	7,290
7	10,700	20,000	46,900	12,300	10,600	13,200	83,400	13,800	21,100	7,800	5,940	9,240
8	11,900	17,500	38,600	12,400	10,200	13,400	79,200	17,300	20,000	8,520	6,100	13,800
9	17,500	16,000	32,000	12,300	9,980	16,900	73,600	13,600	16,400	8,520	6,100	15,200
10	23,800	15,000	27,700	11,900	9,790	21,100	67,200	30,000	13,200	9,790	5,940	16,000
11	25,600	14,000	25,400	11,300	9,980	26,800	60,200	28,400	11,100	11,300	6,100	21,100
12	24,500	15,600	23,800	10,900	10,900	29,800	53,200	24,200	10,700	11,700	5,940	21,600
13	22,000	19,400	23,800	11,300	13,800	32,700	46,400	22,000	10,400	10,200	5,780	18,600
14	19,200	23,300	25,600	11,700	19,400	33,700	42,800	24,000	9,980	9,420	5,780	15,200
15	16,700	22,900	25,800	12,800	19,800	31,200	37,600	24,900	9,600	9,420	5,620	12,400
16	14,800	21,400	24,200	13,400	17,300	29,100	31,700	19,600	9,420	9,060	5,620	10,400
17	13,600	20,000	22,000	16,400	14,200	28,800	27,400	15,400	8,700	8,340	5,620	9,060
18	12,800	22,900	20,300	20,700	12,300	27,700	25,800	13,200	7,800	7,460	5,620	8,700
19	12,300	35,200	18,800	31,700	11,500	24,000	24,900	12,100	8,160	6,780	5,460	8,700
20	12,100	49,400	17,700	36,300	11,700	20,500	24,000	11,500	7,800	6,610	5,620	8,520
21	11,900	55,000	16,900	35,500	12,300	17,900	22,900	11,300	7,120	6,270	5,780	8,520
22	12,300	58,300	16,700	33,000	13,200	16,900	20,500	11,900	6,780	5,940	5,780	8,340
23	13,000	59,100	16,400	28,100	20,000	15,800	18,100	11,900	6,440	5,780	5,780	8,160
24	15,200	57,700	15,800	22,700	34,700	17,300	18,300	11,100	6,270	5,620	5,940	7,980
25	16,900	53,700	15,400	18,300	44,300	17,500	29,600	10,200	6,270	5,460	5,780	7,980
26	17,900	50,200	15,000	15,800	50,200	17,500	30,500	9,600	6,100	5,300	5,780	7,800
27	18,800	46,100	14,800	14,200	52,900	17,100	27,000	9,420	6,100	5,300	5,780	7,980
28	19,400	40,400	14,400	13,200	52,300	16,400	21,800	9,060	6,270	5,460	5,780	7,980
29	21,100	.....	14,000	12,600	49,100	15,400	17,100	8,700	6,100	5,460	6,100	7,800
30	25,600	.....	13,600	12,100	44,600	19,400	15,400	8,340	5,940	5,620	5,940	8,340
31	28,600	.....	13,200	.....	38,100	.....	15,800	7,980	.....	5,460	.....	9,240

NOTE.—These discharges were obtained from a well-defined rating curve.

Monthly discharge of Alabama River at Selma, Ala., for 1910.

[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	28,600	10,700	16,600	1.08	1.24	B
February	59,100	14,000	31,000	2.01	2.09	A
March	60,200	13,200	27,600	1.79	2.06	A
April	36,300	10,900	16,800	1.09	1.22	B
May	52,900	9,790	21,300	1.38	1.59	A
June	33,700	13,200	21,300	1.38	1.54	A
July	83,400	15,400	40,600	2.64	3.04	A
August	30,000	7,980	14,900	.968	1.12	B
September	21,100	5,940	9,490	.616	.69	B
October	11,700	5,300	7,300	.474	.55	B
November	6,100	5,300	5,750	.373	.42	B
December	21,600	6,270	10,300	.669	.77	B
The year	83,400	5,300	18,500	1.20	16.33	

ETOWAH RIVER NEAR BALL GROUND, GA.

This station, which is located at the iron bridge about 3 miles from Ball Ground, was established May 16, 1907, in cooperation with the Forest Service.

The station is one-fourth mile below the mouth of Long Swamp Creek, which is a large tributary of Etowah River. No diversions are made above the station unless by the mining ditches near the headwaters, which have at times been in operation. The operation of a number of mills above may cause slight variations in flow, and on this account the gage is read twice a day.

The vertical staff gage, located 75 feet below the bridge was, on August 18, 1908, replaced by a standard chain gage attached to the upstream side of the bridge from which the measurements are made. The chain gage was set to read with the vertical staff at low stage and will differ only very slightly at other stages.

The left bank does not overflow, but the right bank overflows about 500 feet beyond the end of the bridge approach at high stages. The current is somewhat broken and is disturbed by rough, rocky bed and curved channel above. The rating has undergone some change that is due probably to silting of the bed below the station.

Discharge measurements of Etowah River near Ball Ground, Ga., in 1910.

Date.	Hydrographer.	Width.	Area of section.	Gage height.	Discharge.
		Feet.	*Sq ft.*	*Feet.*	*Sec.-ft.*
Apr. 21	M. R. Hall	80	292	3.18	677
21	....do	80	294	3.18	645
21	....do	80	292	3.18	725
May 20	....do	99	533	5.70	2,160
21	....do	115	1,100	10.98	6,530
21	....do	115	1,100	10.98	6,550
Sept. 9	F. P. Thomas	97	358	3.45	802
9	....do	97	357	3.32	782
10	....do	79	296	2.90	578
10	....do	79	273	2.88	532
Nov. 3	M. R. Hall	78	243	2.41	390
3	....do	78	236	2.34	352

Daily gage height, in feet, of Etowah River near Ball Ground, Ga., for 1910.

[R. O. Ellis, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.15	3.2	5.2	2.9	2.8	3.6	4.0	3.0	3.2	2.55	2.35	2.3
2	2.95	3.1	4.6	2.9	2.8	3.5	4.2	3.2	3.1	2.4	2.4	2.3
3	2.9	3.35	4.1	2.9	2.75	4.3	4.4	3.1	3.5	2.35	2.3	2.4
4	2.9	3.3	3.8	2.85	2.75	3.6	4.3	3.3	3.0	2.4	2.3	2.4
5	2.8	3.1	3.6	2.9	2.75	5.6	5.2	3.7	2.75	2.7	2.4	6.3
6	3.0	3.1	3.6	2.9	2.8	6.4	5.4	3.3	2.7	2.6	2.3	6.5
7	5.2	3.0	3.4	2.8	3.2	4.45	5.2	4.3	2.7	3.05	2.3	4.7
8	3.7	3.0	3.3	2.8	8.0	4.0	4.3	3.6	2.6	3.65	2.3	4.5
9	3.4	3.0	3.3	2.8	6.6	3.8	5.2	3.25	3.7	3.25	2.3	3.7
10	3.2	3.0	3.45	2.8	4.3	4.2	4.3	3.1	2.8	2.8	2.4	2.9
11	3.1	3.05	3.8	2.75	3.7	4.0	3.8	2.95	2.7	2.6	2.3	2.6
12	3.05	3.3	3.7	2.8	3.65	4.6	3.7	2.9	2.6	2.6	2.3	2.5
13	3.0	3.25	3.4	2.9	3.75	4.3	3.6	2.9	2.5	2.5	2.35	2.4
14	3.05	3.1	3.3	2.8	3.4	3.9	4.1	3.0	2.5	2.5	2.35	2.4
15	3.0	3.1	3.2	2.8	3.2	4.0	3.5	3.2	2.45	2.45	2.3	2.5
16	3.0	3.2	3.2	4.2	3.2	3.95	3.3	2.9	2.45	2.4	2.3	2.55
17	2.9	4.5	3.2	6.3	3.7	3.6	3.45	2.9	2.4	2.4	2.3	2.5
18	2.9	6.7	3.15	4.25	4.75	3.5	3.4	2.8	2.5	2.35	2.3	2.6
19	3.0	4.4	3.1	3.5	4.0	3.4	3.3	2.75	2.4	2.3	2.3	2.55
20	3.0	3.8	3.1	3.3	7.4	3.35	3.2	2.75	2.4	2.3	2.25	2.5
21	4.0	4.1	3.1	3.2	10.0	3.8	3.1	2.7	2.4	2.3	2.3	2.5
22	3.5	4.1	3.1	3.1	6.2	3.75	3.1	2.7	2.35	2.4	2.35	2.4
23	3.3	3.8	3.05	3.05	5.8	3.5	3.1	2.7	2.4	2.4	2.3	2.55
24	3.6	3.6	3.05	3.1	6.5	3.45	3.2	2.65	2.4	2.3	2.4	3.3
25	3.6	3.45	3.0	3.1	6.8	3.5	3.3	2.8	2.4	2.3	2.3	2.8
26	3.4	3.3	3.0	3.1	5.0	3.3	3.1	2.85	2.3	2.3	2.3	2.7
27	3.3	3.3	3.0	3.1	4.4	3.3	3.3	2.8	2.3	2.35	2.3	2.6
28	3.6	4.05	3.0	3.1	4.1	3.3	3.1	2.7	2.3	2.6	2.5	2.5
29	3.8	.....	2.95	3.0	3.9	3.55	3.1	2.65	2.45	2.4	2.35	2.5
30	3.45	.....	2.95	2.9	3.85	3.75	3.15	2.6	3.9	2.3	2.3	3.0
31	3.3	.....	2.95	.....	3.7	.....	3.1	3.6	.....	2.4	.....	2.7

Daily discharge, in second-feet, of Etowah River near Ball Ground, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	668	690	1,810	560	520	880	1,080	600	690	428	360	345
2	580	645	1,430	560	520	830	1,200	690	645	375	375	345
3	560	758	1,140	560	500	1,250	1,310	645	830	360	345	375
4	560	735	980	540	500	880	1,250	735	600	375	345	375
5	520	645	880	560	500	2,090	1,810	930	500	480	375	2,600
6	600	645	880	560	520	2,670	1,950	735	480	445	345	2,740
7	1,810	600	780	520	690	1,340	1,810	1,250	480	622	345	1,490
8	930	600	735	520	3,930	1,080	1,250	880	445	905	345	1,370
9	780	600	735	520	2,820	980	1,810	712	930	712	345	930
10	690	600	805	520	1,250	1,200	1,250	645	520	520	375	560
11	645	622	980	500	930	1,080	980	580	480	445	345	445
12	622	735	930	520	905	1,430	930	560	445	445	345	410
13	600	712	780	560	955	1,250	880	560	410	410	360	375
14	622	645	735	520	780	1,030	1,140	600	410	410	360	375
15	600	645	690	520	690	1,080	830	690	392	392	345	410
16	600	690	690	1,200	690	1,060	735	560	392	375	345	428
17	560	1,370	690	2,600	930	880	805	560	375	375	345	410
18	560	2,900	668	1,220	1,520	830	780	520	410	360	345	445
19	600	1,310	645	830	1,080	780	735	500	375	345	345	428
20	600	980	645	735	3,450	758	690	500	375	345	330	410
21	1,080	1,140	645	690	5,680	980	645	480	375	345	345	410
22	830	1,140	645	645	2,520	955	645	480	360	375	360	375
23	735	980	622	622	2,230	830	645	480	375	375	345	428
24	880	880	622	645	2,740	805	690	462	375	345	375	735
25	880	805	600	645	2,970	830	735	520	375	345	345	520
26	780	735	600	645	1,680	735	645	540	345	345	345	480
27	735	735	600	645	1,310	735	735	520	345	360	345	445
28	880	1,110	600	645	1,140	735	645	480	345	445	410	410
29	980	.....	580	600	1,030	855	645	462	392	375	360	410
30	805	.....	580	560	1,000	955	668	445	1,030	345	345	600
31	735	.....	580	.....	930	.....	645	880	.....	375	.....	480

NOTE.—These discharges were obtained from a fairly well defined rating curve.

Monthly discharge of Etowah River near Ball Ground, Ga., for 1910.

[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	1,810	520	743	1.59	1.83	B
February	2,900	600	880	1.89	1.97	B
March	1,810	580	784	1.68	1.94	B
April	2,600	500	699	1.50	1.67	B
May	5,680	500	1,510	3.24	3.74	A
June	2,670	735	1,060	2.27	2.53	A
July	1,950	645	986	2.12	2.44	A
August	1,250	445	619	1.33	1.53	B
September	1,030	345	483	1.04	1.16	B
October	905	345	424	.910	1.05	B
November	410	330	353	.758	.85	B
December	2,740	345	663	1.42	1.64	B
The year	5,680	330	768	1.65	22.35	

ETOWAH RIVER NEAR ROME, GA.

This station, which is located at Freemans Ferry, about 5 miles above Rome and 1 mile below Dikes Creek, was established August 17, 1904, to take the place of the station maintained at Rome about 5 miles below the present station. The original station at Rome was maintained from July 1 to December 31, 1903.

The few milldams above will seldom affect the flow, but to provide for possible daily fluctuations the gage is read twice a day. The vertical gage in three sections is located on the left bank about 250 feet below the measuring section at the ferry. No change has occurred in the datum of the gage. Discharge measurements are made from a boat attached to the ferry cable.

Both banks are subject to overflow during high water. Conditions of flow are probably permanent, and an excellent rating has been developed for low stages.

The following discharge measurement was made by M. R. Hall:

November 26: Width, 288 feet; area of section, 687 square feet; gage height, 1.82 feet; discharge, 928 second-feet.

Daily gage height, in feet, of Etowah River near Rome, Ga., for 1910.

[R. M. Pattillo, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.55	3.0	5.9	2.5	2.35	2.85	4.3	2.5	2.15	2.2	1.8	1.88
2	2.55	2.9	5.4	2.5	2.3	2.8	4.0	2.4	3.3	2.05	1.8	1.85
3	2.5	2.8	4.3	2.5	2.3	2.75	5.0	2.35	3.9	1.88	1.8	1.8
4	2.4	2.75	3.75	2.5	2.25	2.9	4.7	3.25	2.7	1.8	1.8	1.85
5	2.4	2.7	3.45	2.45	2.25	3.0	4.5	4.3	2.45	1.78	1.8	2.55
6	2.4	2.6	3.25	2.5	2.25	5.2	4.8	4.1	2.2	1.78	1.8	5.8
7	4.2	2.5	3.1	2.5	2.3	4.4	4.5	3.9	2.15	1.92	1.8	4.5
8	4.2	2.5	3.05	2.45	3.55	3.2	4.4	3.85	2.1	2.1	1.8	3.3
9	3.15	2.5	3.0	2.45	6.2	2.9	5.0	3.05	2.1	2.9	1.8	2.45
10	2.85	2.65	3.2	2.4	4.6	3.05	4.4	2.8	2.3	2.6	1.8	2.2
11	2.8	2.75	3.35	2.4	3.3	3.4	3.6	2.55	2.25	2.3	1.8	2.1
12	2.75	2.65	3.5	2.4	2.85	3.7	3.3	2.5	2.1	2.05	1.8	2.0
13	2.7	2.85	3.2	2.45	2.7	4.7	3.05	2.4	2.1	1.95	1.8	2.0
14	2.65	2.95	3.0	2.5	2.85	3.6	2.95	2.4	2.0	1.9	1.8	2.0
15	2.6	2.7	2.9	2.4	2.6	3.35	3.0	2.35	1.95	1.9	1.8	1.95
16	2.5	2.7	2.9	2.5	2.5	3.4	2.95	2.3	1.95	1.9	1.8	1.92
17	2.4	3.0	2.8	3.9	2.55	3.0	2.8	2.3	1.9	1.88	1.8	1.95
18	2.4	10.5	2.8	4.5	2.7	2.85	2.75	2.3	1.9	1.82	1.8	2.0
19	2.5	6.9	2.8	3.5	3.25	2.75	2.7	2.2	1.9	1.8	1.8	2.0
20	2.8	4.2	2.75	2.85	4.4	3.1	2.85	2.2	1.9	1.8	1.8	2.0
21	3.5	3.6	2.75	2.7	8.6	3.2	2.7	2.2	1.9	1.8	1.8	1.98
22	3.4	4.2	2.75	2.6	9.0	3.3	2.6	2.15	1.85	1.75	1.8	1.95
23	3.05	3.75	2.7	2.55	5.8	3.3	2.5	2.1	1.82	1.75	1.8	1.9
24	3.5	3.45	2.7	2.5	5.1	2.95	2.65	2.1	1.8	1.75	1.8	2.1
25	3.75	3.4	2.6	2.5	7.0	2.9	2.7	2.1	1.8	1.72	1.8	2.3
26	3.25	3.15	2.65	2.5	5.4	2.75	2.75	2.15	1.82	1.7	1.78	2.2
27	3.1	3.1	2.6	2.5	4.2	2.6	2.9	2.2	1.82	1.7	1.8	2.1
28	3.0	3.5	2.6	2.5	3.5	2.5	3.0	2.2	1.8	1.78	1.85	2.1
29	3.9	.....	2.6	2.5	3.2	3.5	2.6	2.1	1.78	1.9	1.92	2.0
30	3.4	.....	2.55	2.4	3.05	3.35	2.6	2.05	1.8	1.85	2.0	2.05
31	3.1	.....	2.5	.....	2.95	.....	2.5	2.1	.....	1.8	.....	2.2

Daily discharge, in second-feet, of Etowah River near Rome, Ga., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,730	2,340	7,420	1,660	1,480	2,120	4,540	1,660	1,250	1,300	895	971
2	1,730	2,200	6,520	1,660	1,420	2,060	4,000	1,540	2,800	1,140	895	942
3	1,660	2,060	4,540	1,660	1,420	1,990	5,800	1,480	3,820	971	895	895
4	1,540	1,990	3,560	1,660	1,360	2,200	5,260	2,720	1,920	895	895	942
5	1,540	1,920	3,050	1,600	1,360	2,340	4,900	4,540	1,600	876	895	1,730
6	1,540	1,790	2,720	1,660	1,360	6,160	5,440	4,180	1,300	876	895	7,240
7	4,360	1,660	2,490	1,660	1,420	4,720	4,900	3,820	1,250	1,010	895	4,900
8	4,360	1,660	2,420	1,600	3,220	2,640	4,720	3,730	1,200	1,200	895	2,800
9	2,570	1,660	2,340	1,600	7,960	2,200	5,800	2,420	1,200	2,200	895	1,600
10	2,120	1,860	2,640	1,540	5,080	2,420	4,720	2,060	1,420	1,790	895	1,300
11	2,060	1,990	2,880	1,540	2,800	2,960	3,300	1,730	1,360	1,420	895	1,200
12	1,990	1,860	3,130	1,540	2,120	3,470	2,800	1,660	1,200	1,140	895	1,090
13	1,920	2,120	2,640	1,600	1,920	5,260	2,420	1,540	1,200	1,040	895	1,090
14	1,860	2,270	2,340	1,660	2,120	3,300	2,270	1,540	1,090	990	895	1,090
15	1,790	1,920	2,200	1,540	1,790	2,880	2,340	1,480	1,040	990	895	1,040
16	1,660	1,920	2,200	1,660	1,660	2,960	2,270	1,420	1,040	990	895	1,010
17	1,540	2,340	2,060	3,820	1,730	2,340	2,060	1,420	990	971	895	1,040
18	1,540	15,700	2,060	4,900	1,920	2,120	1,990	1,420	990	914	895	1,090
19	1,660	9,220	2,060	3,130	2,720	1,990	1,920	1,300	990	895	895	1,090
20	2,060	4,360	1,990	2,120	4,720	2,490	2,120	1,300	990	895	895	1,090
21	3,130	3,300	1,990	1,920	12,300	2,640	1,920	1,300	990	895	895	1,070
22	2,960	4,360	1,990	1,790	13,000	2,800	1,790	1,250	942	848	895	1,040
23	2,420	3,560	1,920	1,730	7,240	2,800	1,660	1,200	914	848	895	990
24	3,130	3,050	1,920	1,660	5,980	2,270	1,860	1,200	895	848	895	1,200
25	3,560	2,960	1,790	1,660	9,400	2,200	1,920	1,200	895	819	895	1,420
26	2,720	2,570	1,860	1,660	6,520	1,990	1,990	1,250	914	800	876	1,300
27	2,490	2,490	1,790	1,660	4,360	1,790	2,200	1,300	914	800	895	1,200
28	2,340	3,130	1,790	1,660	3,130	1,660	2,340	1,300	895	876	942	1,200
29	3,820	.....	1,790	1,660	2,640	3,130	1,790	1,200	876	990	1,010	1,090
30	2,960	.....	1,730	1,540	2,420	2,880	1,790	1,140	895	942	1,090	1,140
31	2,490	.....	1,660	.....	2,270	.....	1,660	1,200	.....	895	.....	1,300

NOTE.—These discharges were obtained from a rating curve which is fairly well defined below 4,000 second-feet. Above 10,200 second-feet the curve is only approximate.

Monthly discharge of Etowah River near Rome, Ga., for 1910.

[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	4,360	1,540	2,360	1.31	1.51	A
February	15,700	1,660	3,150	1.75	1.82	A
March	7,420	1,660	2,630	1.46	1.68	A
April	4,900	1,540	1,890	1.05	1.17	A
May	13,000	1,360	3,830	2.13	2.46	A
June	6,160	1,660	2,760	1.53	1.71	A
July	5,800	1,660	3,050	1.69	1.95	A
August	4,540	1,140	1,820	1.01	1.16	A
September	3,820	876	1,260	.700	.78	A
October	2,200	800	1,030	.572	.66	A
November	1,090	876	906	.503	.56	A
December	7,240	895	1,520	.844	.97	A
The year	15,700	800	2,180	1.21	16.43	

AMICALOLA CREEK NEAR POTTS MOUNTAIN, GA.

This station is located at Steeles Bridge, 2 miles east of Potts Mountain and 15 miles from Ball Ground, Ga. It is one-fourth mile above the mouth of Holly Creek. It was established June 21, 1907, discontinued December 31, 1908, and reestablished June 7, 1910.

The bed of the stream is rocky and not very rough. The current is medium swift. A rocky shoal with considerable slope, 150 feet below, favors a constant rating, but sufficient measurements have not been made to define the rating curve.

Measurements are made from a covered wagon bridge. The vertical staff gage is attached to a tree on the right bank just below the bridge.

Daily gage height, in feet, of Amicalola Creek near Potts Mountain, Ga., for 1910.

[J. A. Whitmore, observer.]

Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Day.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1....	.....	1.8	1.55	1.6	1.4	1.3	1.25	16....	1.85	1.7	1.6	1.4	1.35	1.25	1.3
2....	.....	2.0	1.55	1.5	1.35	1.3	1.25	17....	1.85	1.7	1.55	1.4	1.35	1.25	1.3
3....	.....	2.1	1.5	1.6	1.35	1.3	1.25	18....	1.8	1.7	1.55	1.4	1.35	1.25	1.3
4....	.....	2.0	1.85	1.75	1.35	1.3	1.25	19....	1.75	1.7	1.5	1.4	1.35	1.25	1.3
5....	.....	2.9	1.7	1.65	1.4	1.3	3.0	20....	1.7	1.7	1.5	1.4	1.3	1.25	1.3
6....	.....	2.2	2.95	1.55	1.4	1.25	2.2	21....	1.7	1.65	1.5	1.35	1.3	1.25	1.3
7....	2.0	2.3	1.8	1.5	1.4	1.25	2.1	22....	1.7	1.65	1.5	1.35	1.3	1.25	1.3
8....	1.95	2.1	2.1	1.45	1.5	1.25	2.0	23....	1.7	1.6	1.45	1.35	1.3	1.25	1.5
9....	1.9	2.0	1.9	1.6	1.5	1.25	1.9	24....	1.7	1.6	1.45	1.3	1.3	1.25	1.5
10....	1.9	1.9	1.7	1.45	1.4	1.25	1.75	25....	1.7	1.6	1.45	1.3	1.3	1.25	1.4
11....	1.9	1.85	1.6	1.45	1.4	1.25	1.6	26....	1.7	1.6	1.5	1.3	1.3	1.25	1.4
12....	1.9	1.85	1.55	1.45	1.35	1.25	1.5	27....	1.65	1.6	1.5	1.3	1.3	1.25	1.4
13....	1.9	1.8	1.55	1.45	1.35	1.25	1.35	28....	1.65	1.6	1.45	1.3	1.3	1.25	1.4
14....	1.9	1.75	1.55	1.45	1.35	1.25	1.35	29....	1.8	1.55	1.45	1.3	1.3	1.25	1.4
15....	1.9	1.7	1.8	1.45	1.35	1.25	1.3	30....	1.8	1.55	1.5	1.9	1.3	1.25	1.4
								31....	.....	1.55	1.6	.....	1.3	.....	1.4

TALLAPOOSA RIVER AT STURDEVANT, ALA.

This station, which is located at the Central of Georgia Railway bridge one-fourth mile west of Sturdevant, 6 miles east of Alexander City, and about 5 miles below the mouth of Hillabee Creek, was established July 19, 1900, to take the place of the Milstead, Ala., station, which was to be abandoned when the great water-power plants immediately above were put in operation.

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

Prior to 1906 a standard chain gage was attached to the bridge. During 1906 the bridge was replaced by a new one and the present vertical staff gage was located at Stowe's boat landing, about 2,000 feet upstream. All gage readings on the new gage are reduced to conform to the standard gage readings at the bridge.

At low stage the current in a portion of the channel becomes very sluggish, making measurements inaccurate at such stages, and for this reason some of the low-water measurements have been made from a boat at swifter sections near by. Both banks overflow for about 200 feet at extreme high stages. Conditions of flow appear to be somewhat changeable, but a fairly good rating curve has been developed. No measurements were made in 1910, but one made in 1911 indicates that the 1909 rating is applicable for 1910.

Daily gage height, in feet, of Tallapoosa River at Sturdevant, Ala., for 1910.

[C. J. Stowe, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.25	3.25	8.1	2.5	2.25	1.9	16.5	1.95	1.4	2.25	1.05	1.65
2	2.25	2.95	7.8	2.5	2.15	1.85	14.2	1.9	1.55	1.6	1.05	1.4
3	2.25	3.65	6.4	2.5	2.05	1.75	11.9	1.8	1.8	1.4	1.2	1.35
4	2.25	3.8	5.1	2.5	2.05	1.65	9.4	1.7	2.6	1.2	1.15	1.45
5	2.25	3.3	4.3	2.55	2.05	1.7	7.0	3.0	2.8	1.1	1.3	3.9
6	2.35	3.1	3.9	2.8	2.05	1.85	5.3	4.7	1.9	1.15	1.5	5.0
7	3.25	2.85	3.7	2.8	2.0	1.95	5.0	6.1	1.65	2.4	1.6	4.3
8	4.0	2.75	3.5	2.65	2.3	1.9	5.2	7.0	1.5	3.25	1.5	3.3
9	3.7	2.7	3.4	2.4	2.65	1.9	4.7	4.7	1.65	2.95	1.4	2.65
10	3.15	2.6	3.3	2.35	3.4	3.0	4.1	3.85	1.9	2.8	1.35	2.3
11	2.8	3.15	3.55	2.35	2.8	3.3	4.0	3.45	1.95	2.55	1.25	2.1
12	2.6	4.4	3.6	2.4	2.35	3.7	3.9	4.4	1.95	2.05	1.25	1.9
13	2.45	4.3	3.45	3.1	2.1	3.25	3.85	4.1	1.8	1.75	1.2	1.9
14	2.4	4.3	3.3	3.25	2.0	3.8	3.35	2.85	1.5	1.55	1.2	1.8
15	2.35	3.4	3.1	2.8	1.95	3.65	2.85	2.5	1.5	1.4	1.25	1.7
16	2.35	3.1	3.0	2.75	1.9	2.95	2.55	2.3	1.4	1.4	1.15	1.7
17	2.25	3.6	2.95	4.9	1.9	2.45	2.95	2.15	1.25	1.25	1.2	1.7
18	2.25	6.5	2.85	4.5	2.5	2.3	2.8	2.05	1.05	1.2	1.25	1.8
19	2.35	7.0	3.0	3.7	2.6	2.0	2.65	2.05	.96	1.15	1.3	1.9
20	2.45	6.0	3.2	3.25	2.65	1.9	2.6	2.35	1.05	1.05	1.45	1.9
21	3.1	4.5	3.0	2.8	3.55	2.9	2.45	2.35	.96	1.05	1.35	1.8
22	3.3	5.3	2.9	2.65	3.6	3.3	2.4	2.05	.95	1.0	1.35	1.7
23	3.3	4.9	2.85	2.6	4.5	2.85	2.45	1.75	1.35	.94	1.35	1.7
24	3.3	4.8	2.85	2.5	4.2	2.55	2.45	1.7	1.2	.85	1.25	1.9
25	3.3	5.2	2.8	2.4	4.3	2.3	2.7	1.7	.96	.88	1.3	1.95
26	3.25	4.6	2.8	2.4	3.8	2.3	2.6	1.7	.82	.81	1.35	1.9
27	3.05	4.1	2.75	2.35	3.2	2.35	2.6	1.6	.72	.98	1.3	1.9
28	3.5	4.8	2.7	2.4	2.7	1.95	2.3	1.6	.80	1.2	1.35	1.8
29	4.3	.....	2.65	2.4	2.4	2.8	2.1	1.5	1.90	1.25	2.45	1.8
30	4.1	.....	2.6	2.4	2.15	5.8	2.15	1.45	3.3	1.2	1.95	2.85
31	3.65	.....	2.6	.....	1.95	.....	2.1	1.45	.....	1.15	.....	3.3

Daily discharge, in second-feet, of Tallapoosa River at Sturdevant, Ala., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,840	3,190	15,900	2,140	1,840	1,460	42,800	1,510	1,020	1,840	782	1,220
2	1,840	2,740	14,900	2,140	1,720	1,410	35,400	1,460	1,140	1,180	782	1,020
3	1,840	3,860	10,600	2,140	1,620	1,320	28,000	1,360	1,360	1,020	880	985
4	1,840	4,130	7,020	2,140	1,620	1,220	20,000	1,270	2,270	880	848	1,060
5	1,840	3,270	5,120	2,200	1,620	1,270	12,400	2,810	2,530	815	950	4,320
6	1,960	2,960	4,320	2,530	1,620	1,410	7,540	6,010	1,460	848	1,100	6,760
7	3,190	2,600	3,950	2,530	1,560	1,510	6,760	9,720	1,220	2,020	1,180	5,120
8	4,510	2,460	3,600	2,340	1,900	1,460	7,280	12,400	1,100	3,190	1,100	3,270
9	3,950	2,400	3,430	2,020	2,340	1,460	6,010	6,010	1,220	2,740	1,020	2,340
10	3,040	2,270	3,270	1,960	3,430	2,810	4,710	4,220	1,460	2,530	985	1,900
11	2,530	2,880	3,680	1,960	2,530	3,270	4,510	3,520	1,510	2,200	915	1,670
12	2,270	5,330	3,770	2,020	1,960	3,950	4,320	5,330	1,510	1,620	915	1,460
13	2,080	5,120	3,520	2,960	1,670	3,190	4,220	4,710	1,360	1,320	880	1,460
14	2,020	5,120	3,270	3,190	1,560	4,130	3,350	2,600	1,100	1,140	880	1,360
15	1,960	3,430	2,960	2,530	1,510	3,860	2,600	2,140	1,100	1,020	915	1,270
16	1,960	2,960	2,810	2,460	1,460	2,740	2,200	1,900	1,020	1,020	848	1,270
17	1,840	3,770	2,740	6,500	1,460	2,080	2,740	1,720	915	915	880	1,270
18	1,840	10,800	2,600	5,550	2,140	1,900	2,530	1,620	782	880	915	1,360
19	1,960	12,400	2,810	3,950	2,270	1,560	2,340	1,620	726	848	950	1,460
20	2,080	9,440	3,110	3,190	2,340	1,460	2,270	1,960	782	782	1,060	1,460
21	2,960	5,550	2,810	2,530	3,680	2,670	2,080	1,960	726	782	985	1,360
22	3,270	7,540	2,670	2,340	3,770	3,270	2,020	1,620	720	750	985	1,270
23	3,270	6,500	2,600	2,270	5,550	2,600	2,080	1,320	985	714	985	1,270
24	3,270	6,250	2,600	2,140	4,910	2,200	2,080	1,270	880	662	915	1,460
25	3,270	7,280	2,530	2,020	5,120	1,900	2,400	1,270	726	679	950	1,510
26	3,190	5,770	2,530	2,020	4,130	1,900	2,270	1,270	646	640	985	1,460
27	2,880	4,710	2,460	1,960	3,110	1,960	2,270	1,180	591	738	950	1,460
28	3,600	6,250	2,400	2,020	2,400	1,510	1,900	1,180	635	880	985	1,360
29	5,120	.....	2,340	2,020	2,020	2,530	1,670	1,100	1,460	915	2,080	1,360
30	4,710	.....	2,270	2,020	1,720	8,880	1,720	1,060	3,270	880	1,510	2,600
31	3,860	.....	2,270	.....	1,510	.....	1,670	1,060	.....	848	.....	3,270

NOTE.—These discharges were obtained from a well-defined rating curve.

Monthly discharge of Tallapoosa River at Sturdevant, Ala., for 1910.

[Drainage area, 2,500 sqare miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	5,120	1,840	2,770	1.11	1.28	A
February	12,400	2,270	5,030	2.01	2.09	A
March	15,900	2,270	4,220	1.69	1.95	A
April	6,500	1,960	2,590	1.04	1.16	A
May	5,550	1,460	2,450	.980	1.13	A
June	8,880	1,220	2,430	.972	1.08	A
July	42,800	1,670	7,230	2.89	3.33	A
August	12,400	1,060	2,840	1.14	1.31	A
September	3,270	591	1,210	.484	.54	A
October	3,190	640	1,200	.480	.55	A
November	2,080	782	1,000	.400	.45	A
December	6,760	985	1,950	.780	.90	A
The year	42,800	591	2,910	1.16	15.77	

TOMBIGBEE RIVER AT COLUMBUS, MISS.

This station is located at the county highway bridge at the south end of Main Street in the city of Columbus, Miss. Gage heights from 1900 to 1904 have been furnished by the United States Weather Bureau, and estimates of discharge are based thereon. On July 13, 1905, the present chain gage was installed by the United States Geological Survey at the highway bridge 1,000 feet above the original location of the gage of the United States Weather Bureau. The new gage was set to read the same as the first United States Weather Bureau gage at low water, which makes it practically on the same datum, as the low-water surface is almost level. In 1906 a new gage was put in by the United States Weather Bureau. It is fastened to the channel pier of the Mobile & Ohio Railroad bridge. Discharge measurements are made from the bridge.

The right bank is high and seldom overflows. The left bank overflows only under the bridge approach at a gage height of about 20 feet. The bed of the stream is of soft limestone or chalk, and conditions of flow are somewhat changeable at low stages. No measurements were made in 1910, but one in 1911 indicates that the 1909 rating is applicable for 1910.

Daily gage height, in feet, of Tombigbee River at Columbus, Miss., for 1910.

[C. R. Shackelford, observer.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	−1.1	−0.6	10.8	−1.7	−2.1	−1.4	4.3	−1.1	−3.4	−3.9	−3.5	−3.0
2	−1.5	− .8	8.9	−1.8	−2.2	−1.8	6.8	−1.2	−3.4	−3.9	−3.5	−2.6
3	−1.8	−1.0	8.2	−1.8	−2.4	−2.1	7.2	−1.6	−2.8	−3.9	−3.5	−2.8
4	−1.9	−1.2	7.3	−1.8	−2.5	−2.3	7.3	−2.0	−3.1	−3.9	−3.5	−3.0
5	−2.0	−1.2	5.9	−1.8	−2.6	−2.4	7.3	−2.3	−2.2	−3.9	−3.5	−3.1
6	−1.7	−1.0	4.3	−1.6	−2.6	−2.5	7.6	− .7	−2.5	−3.9	−3.5	−2.3
7	2.7	− .7	3.0	−1.2	−2.7	−2.6	8.9	−1.3	−2.8	−3.9	−3.6	−1.3
8	4.1	− .9	2.1	−1.0	−2.8	−2.5	10.9	− .6	−2.9	−3.9	−3.6	− .5
9	4.9	−1.1	1.5	− .7	−2.9	−2.5	13.2	− .8	−3.2	−3.7	−3.6	− .2
10	5.3	−1.3	1.0	−1.0	−3.0	− .1	14.9	− .7	−3.2	−3.4	−3.5	− .9
11	5.0	−1.5	1.0	−1.3	−3.0	5.7	17.4	−1.1	−3.3	−3.3	−3.5	−1.2
12	4.1	−1.3	1.0	−1.7	−3.0	7.2	19.1	−1.5	−3.5	−3.4	−3.5	−1.9
13	3.0	−1.0	1.3	−1.9	−3.0	7.7	19.1	−1.6	−3.6	−3.5	−3.5	−2.3
14	2.1	− .7	1.2	−2.0	−3.1	8.0	17.8	−2.1	−3.6	−3.5	−3.5	−2.5
15	1.6	− .5	.5	−2.1	−3.1	7.3	15.4	−2.2	−3.7	−3.3	−3.6	−2.6
16	.9	− .4	.1	−1.9	−3.2	4.5	12.5	−2.3	−3.8	−2.6	−3.5	−2.8
17	.2	.1	− .2	− .8	−3.2	1.7	10.4	−2.5	−3.8	−1.5	−3.6	−2.9
18	− .2	8.2	− .5	1.2	−3.3	.1	8.0	−2.7	−3.8	−1.8	−3.6	−3.0
19	− .4	9.3	− .7	2.1	−3.3	−1.0	5.2	−2.9	−3.9	−2.5	−3.6	−3.0
20	.0	9.9	− .8	2.1	−3.0	−1.5	3.0	−3.0	−3.9	−2.9	−3.6	−3.0
21	4.8	11.4	− .9	1.4	−2.4	−1.6	2.6	−3.1	−3.9	−3.2	−3.6	−3.0
22	5.8	13.3	−1.0	.7	− .4	−1.3	2.6	−2.9	−3.9	−3.4	−3.6	−3.0
23	6.3	13.7	−1.0	.1	2.8	2.3	1.3	−2.4	−3.9	−3.5	−3.6	−2.9
24	6.7	13.2	−1.1	− .7	4.2	2.1	.6	−1.0	−3.8	−3.5	−3.6	−1.6
25	6.6	12.7	−1.2	−1.3	4.9	1.3	.1	−2.2	−3.9	−3.6	−3.6	− .6
26	5.7	12.3	−1.2	−1.5	5.4	.2	1.2	−2.6	−3.9	−3.6	−3.6	− .1
27	3.3	11.8	−1.3	−1.7	4.9	.1	.3	−2.7	−3.9	−3.7	−3.4	.0
28	2.1	11.6	−1.4	−1.9	3.2	− .3	− .1	−2.8	−4.0	−3.7	−3.2	− .6
29	1.0	.....	−1.5	−1.9	1.4	− .2	− .6	−3.0	−4.0	−3.7	−3.3	−1.2
30	.2	.....	−1.6	−2.1	.2	3.9	−1.4	−3.1	−4.0	−3.7	−3.2	−1.6
31	− .3	.....	−1.7	.....	− .8	.....	−1.7	−3.2	.....	−3.5	.....	−1.6

Daily discharge, in second-feet, of Tombigbee River at Columbus, Miss., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,730	2,090	16,800	1,320	1,070	1,520	7,310	1,730	420	250	380	590
2	1,460	1,940	13,900	1,260	1,010	1,260	10,800	1,660	420	250	380	785
3	1,260	1,800	12,800	1,260	895	1,070	11,400	1,390	685	250	380	685
4	1,200	1,660	11,500	1,260	840	950	11,500	1,130	545	250	380	590
5	1,130	1,660	9,480	1,260	785	895	11,500	950	1,010	250	380	545
6	1,320	1,800	7,310	1,390	785	840	11,900	2,020	840	250	380	950
7	5,340	2,020	5,680	1,660	735	785	13,900	1,590	685	250	345	1,590
8	7,050	1,870	4,650	1,800	685	840	17,000	2,090	635	250	345	2,170
9	8,100	1,730	4,000	2,020	635	840	20,800	1,940	500	310	345	2,410
10	8,640	1,590	3,500	1,800	590	2,500	23,700	2,020	500	420	380	1,870
11	8,240	1,460	3,500	1,590	590	9,200	28,000	1,730	460	460	380	1,660
12	7,050	1,590	3,500	1,320	590	11,400	30,900	1,460	380	420	380	1,200
13	5,680	1,800	3,800	1,200	590	12,100	30,900	1,390	345	380	380	950
14	4,650	2,020	3,700	1,130	545	12,500	28,700	1,070	345	380	380	840
15	4,110	2,170	3,020	1,070	545	11,500	24,600	1,010	310	460	345	785
16	3,400	2,250	2,660	1,200	500	7,570	19,600	950	280	785	380	685
17	2,760	2,660	2,410	1,940	500	4,220	16,200	840	280	1,460	345	635
18	2,410	12,800	2,170	3,700	460	2,660	12,500	735	280	1,260	345	590
19	2,250	14,500	2,020	4,650	460	1,800	8,510	635	250	840	345	590
20	2,580	15,400	1,940	4,650	590	1,460	5,680	590	250	635	345	590
21	7,970	17,800	1,870	3,900	895	1,390	5,220	545	250	500	345	590
22	9,340	21,000	1,800	3,210	2,250	1,590	5,220	635	250	420	345	590
23	10,000	21,700	1,800	2,660	5,450	4,880	3,800	895	250	380	345	635
24	10,600	20,800	1,730	2,020	7,180	4,650	3,120	1,800	280	380	345	1,390
25	10,500	20,000	1,660	1,590	8,100	3,800	2,660	1,010	250	345	345	2,090
26	9,200	19,300	1,660	1,460	8,780	2,760	3,700	785	250	345	345	2,500
27	6,660	18,500	1,590	1,320	8,100	2,660	2,840	735	250	310	420	2,580
28	4,650	18,100	1,520	1,200	5,920	2,330	2,500	685	220	310	500	2,090
29	3,500	.....	1,460	1,200	3,900	2,410	2,090	590	220	310	460	1,660
30	2,760	.....	1,390	1,070	2,760	6,790	1,520	545	220	310	500	1,390
31	2,330	.....	1,320	.....	1,940	.....	1,320	500	.....	380	.....	1,390

NOTE.—These discharges were obtained from a well-defined rating curve.

Monthly discharge of Tombigbee River at Columbus, Miss., for 1910.

[Drainage area, 4,440 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	1,130	5,090	1.15	1.33	A
February	21,700	1,460	8,290	1.87	1.95	A
March	16,800	1,320	4,390	.989	1.14	A
April	4,650	1,070	1,900	.428	.48	B
May	8,780	460	2,220	.500	.58	B
June	12,500	785	3,970	.894	1.00	B
July	30,900	1,320	12,200	2.75	3.17	A
August	2,090	500	1,150	.259	.30	B
September	1,010	220	395	.089	.10	C
October	1,460	250	445	.100	.12	C
November	500	345	376	.085	.09	C
December	2,580	545	1,210	.273	.31	B
The year	30,900	220	3,450	.777	10.57	

TOMBIGBEE RIVER AT EPES, ALA.

This station is located at the bridge of the Alabama Great Southern Railroad one-half mile from Epes, Ala.

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. During 1900 and 1901 discharge measurements were made by the United States Geological Survey and a rating was developed for these years. November 29, 1904, the station was reestablished by the United States Geological Survey.

Discharge measurements are made from the downstream side of the railroad bridge.

The datum of the chain gage, which is attached to the railroad bridge, is practically the same as that of the old gage and has not been changed since its installation. The right bank is high and is not subject to overflow. The left bank will not overflow until the river reaches a stage of 38 feet. During floods it overflows for seven-eighths of a mile under the trestle approach to the bridge.

Conditions of flow at this point are practically permanent and a good rating has been developed. No measurements were made in 1910, but measurements made in 1911 indicate that the 1909 rating is applicable for 1910.

Daily gage height, in feet, of Tombigbee River at Epes, Ala., for 1910.

[J. C. Horton and George Haven, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.65	5.0	26.4	3.25	2.75	4.25	11.8	4.3	1.55	0.6	0.8	1.2
2	3.95	5.0	26.4	3.2	2.65	3.35	12.5	4.85	1.5	.5	.9	1.3
3	3.55	6.0	25.4	3.2	2.5	2.9	13.5	4.5	1.4	.5	.95	1.75
4	3.05	5.0	23.0	3.1	2.35	2.45	15.6	4.2	1.4	.6	1.0	1.85
5	2.85	4.2	20.6	3.1	2.2	2.95	16.0	4.2	1.5	.6	1.0	2.0
6	4.7	3.95	18.1	3.3	2.1	4.25	16.2	5.8	1.6	.7	1.0	1.9
7	7.0	3.8	14.9	3.9	2.0	4.55	16.4	5.6	2.0	1.4	1.0	1.8
8	7.5	4.05	12.0	3.9	1.9	3.5	17.2	6.0	1.75	1.15	1.0	2.35
9	9.9	4.05	10.1	4.0	1.8	3.0	19.2	6.4	1.6	1.05	1.1	3.35
10	11.0	3.85	9.0	4.15	1.7	6.7	22.4	5.8	1.55	1.1	1.1	4.05
11	11.6	4.75	8.8	4.15	1.7	14.2	24.4	5.2	1.4	1.2	1.15	4.05
12	11.7	5.8	8.6	3.95	1.65	16.8	26.3	4.55	1.3	1.35	1.1	3.35
13	10.5	5.2	8.4	3.5	1.6	16.7	27.4	4.1	1.2	1.3	1.1	3.2
14	9.2	4.8	8.2	3.15	1.6	16.2	28.6	3.9	1.1	1.3	1.1	2.85
15	8.1	4.8	7.5	2.85	1.55	16.0	29.3	3.4	1.0	1.3	1.0	2.45
16	7.3	4.95	6.4	3.1	1.4	15.2	29.6	3.2	.9	1.3	1.0	2.15
17	6.5	5.8	5.7	6.5	1.4	12.5	29.0	3.2	.8	1.3	.9	2.0
18	5.6	10.0	5.2	7.2	1.3	9.0	27.3	2.9	.8	2.15	1.0	2.15
19	5.0	15.4	4.85	8.9	1.3	6.6	24.3	3.0	.7	2.85	1.0	2.1
20	4.75	17.8	4.8	8.4	1.3	5.1	19.3	2.2	.7	2.6	.95	2.0
21	5.0	19.0	4.6	8.2	1.5	4.05	13.2	1.95	.7	2.2	.9	1.9
22	8.3	20.8	4.45	8.0	1.95	3.4	10.0	1.95	.6	1.85	.95	1.9
23	11.0	21.8	4.25	7.8	3.05	3.2	9.2	1.9	.6	1.35	.9	2.05
24	12.0	22.9	4.15	5.9	6.8	5.9	8.9	2.0	.7	1.2	.9	2.45
25	12.5	23.6	4.05	4.8	8.4	6.6	9.2	2.3	.7	1.15	.9	2.6
26	12.8	23.6	4.0	4.05	9.5	6.4	9.4	2.8	.85	1.0	.9	3.65
27	12.1	24.1	3.9	3.6	10.2	5.8	9.4	2.45	.85	.9	.9	4.45
28	10.8	26.2	3.85	3.25	10.4	5.3	8.8	2.15	.7	.85	.95	4.9
29	9.2	.....	3.65	3.05	8.8	5.2	7.6	2.0	.65	.85	1.0	4.8
30	6.8	.....	3.45	2.9	6.8	12.0	6.2	1.85	.6	.85	1.2	4.5
31	5.8	.....	3.35	.....	5.4	.....	5.0	1.65	.....	.8	.....	3.8

Daily discharge, in second-feet, of Tombigbee River at Epes, Ala., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,710	4,060	26,300	2,380	1,950	3,310	11,100	3,360	1,080	592	682	886
2	3,020	4,060	26,300	2,340	1,870	2,480	11,800	3,910	1,060	550	730	941
3	2,660	5,060	25,200	2,340	1,740	2,080	12,900	3,560	997	550	755	1,210
4	2,200	4,060	22,700	2,250	1,620	1,700	15,000	3,260	997	592	780	1,270
5	2,030	3,260	20,200	2,250	1,510	2,120	15,500	3,260	1,060	592	780	1,370
6	3,760	3,020	17,600	2,430	1,440	3,310	15,700	4,860	1,120	636	780	1,300
7	6,100	2,890	14,300	2,980	1,370	3,610	15,900	4,650	1,370	997	780	1,240
8	6,620	3,120	11,300	2,980	1,300	2,610	16,700	5,060	1,210	859	780	1,620
9	9,120	3,120	9,320	3,070	1,240	2,160	18,800	5,480	1,120	806	832	2,480
10	10,300	2,920	8,180	3,210	1,180	5,790	22,100	4,860	1,080	832	832	3,120
11	10,900	3,810	7,970	3,210	1,180	13,600	24,200	4,250	997	886	859	3,120
12	11,000	4,860	7,760	3,020	1,140	16,300	26,200	3,610	941	969	832	2,480
13	9,740	4,250	7,560	2,610	1,120	16,200	27,300	3,170	886	941	832	2,340
14	8,390	3,860	7,350	2,300	1,120	15,700	28,600	2,980	832	941	832	2,030
15	7,240	3,860	6,620	2,030	1,080	15,500	29,300	2,520	780	941	780	1,700
16	6,410	4,010	5,480	2,250	997	14,600	29,600	2,340	730	941	780	1,480
17	5,580	4,860	4,750	5,580	997	11,800	29,000	2,340	682	941	730	1,370
18	4,650	9,220	4,250	6,310	941	8,180	27,200	2,080	682	1,480	780	1,480
19	4,060	14,800	3,910	8,080	941	5,680	24,100	2,160	636	2,030	780	1,440
20	3,810	17,300	3,860	7,560	941	4,160	18,900	1,510	636	1,820	755	1,370
21	4,060	18,600	3,660	7,350	1,060	3,120	12,500	1,340	636	1,510	730	1,300
22	7,450	20,500	3,510	7,140	1,340	2,520	9,220	1,340	592	1,270	755	1,300
23	10,300	21,500	3,310	6,930	2,200	2,340	8,390	1,300	592	969	730	1,400
24	11,300	22,600	3,210	4,960	5,890	4,960	8,080	1,370	636	886	730	1,700
25	11,800	23,400	3,120	3,860	7,560	5,680	8,390	1,580	636	859	730	1,820
26	12,100	23,400	3,070	3,120	8,700	5,480	8,600	1,990	706	780	730	2,750
27	11,400	23,900	2,980	2,700	9,430	4,860	8,600	1,700	706	730	730	3,510
28	10,100	26,100	2,930	2,380	9,640	4,350	7,970	1,480	636	706	755	3,960
29	8,390	.....	2,750	2,200	7,970	4,250	6,720	1,370	614	706	780	3,860
30	5,890	.....	2,560	2,080	5,890	11,300	5,270	1,270	592	706	886	3,560
31	4,860	.....	2,480	.....	4,450	.....	4,060	1,140	.....	682	.....	2,890

NOTE.—These discharges were obtained from a rating curve which is well defined between 1,300 and 15,000 second-feet.

Monthly discharge of Tombigbee River at Epes, Ala., for 1910.

[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	12,100	2,030	7,060	0.800	0.92	A
February	26,100	2,890	10,200	1.16	1.21	A
March	26,300	2,480	8,850	1.00	1.15	A
April	8,080	2,080	3,740	.424	.47	B
May	9,640	941	2,900	.328	.38	B
June	16,300	1,700	6,660	.754	.84	A
July	29,600	4,060	16,400	1.86	2.14	A
August	5,480	1,140	2,750	.311	.36	B
September	1,370	592	841	.095	.11	B
October	2,030	550	926	.105	.12	B
November	886	682	775	.088	.10	B
December	3,960	886	2,010	.228	.26	B
The year	29,600	550	5,240	.593	8.06	

BLACK WARRIOR RIVER NEAR CORDOVA, ALA.

This station is located at the Kansas City, Memphis & Birmingham Railroad bridge which crosses the river below the mouth of Cane Creek, 1 mile east of Cordova. It is 12 miles below the junction of Mulberry and Sipsey forks and 6 miles below Blackwater Creek.

On May 21, 1900, discharge measurements were begun by the United States Geological Survey, and the gage which had formerly

been used by the United States Weather Bureau was repaired and read daily. Since 1904 the United States Army Engineer Corps has maintained the gage and furnished readings to the United States Geological Survey.

The portion of the gage below 12 feet has been changed a number of times and also its location. Although the datum has been supposed to remain the same, it is probable that the readings have been affected by these changes. The portion from 12 to 55 feet is a vertical timber fastened to the bridge pier on the left bank of the river. This section, although still in place, has been superseded by two new vertical sections on the right bank, the upper one being attached to the bridge abutment, and a new sloping section reading up to 10 feet has replaced the older one, which was washed out during 1910.

Discharge measurements are made at the railroad bridge when possible to get good results. At extreme low water the current becomes too sluggish for accurate measurement, and the lowest measurements are made by wading or from a boat at swifter sections near by. The minimum flow is especially low per square mile of drainage area, and the rating at this stage is liable to considerable change. The right bank will not overflow. The left bank overflows only under the bridge.

Daily gage height, in feet, of Black Warrior River near Cordova, Ala., for 1910.

[Don Smith and C. R. Jones, observers.]

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	−0.1	0.6	9.8	0.1	−0.1	0.7	3.8	1.1	−0.3	−0.5	−0.5	−0.6
2	− .1	.5	9.5	.05	− .15	.5	5.9	.8	.0	− .5	− .5	− .6
3	− .1	.45	10.0	.05	.2	.3	5.3	.5	.5	− .6	− .5	− .6
4	− .15	.45	6.6	.0	.6	.2	5.1	.5	.0	− .6	− .6	− .5
5	− .15	.4	4.9	.05	.3	.1	6.2	.6	− .1	− .6	− .6	.4
6	.5	.4	4.1	.3	.05	.8	6.9	.8	− .2	− .7	− .5	3.5
7	11.1	.4	3.3	.2	− .1	1.5	10.5	3.8	− .2	1.1	− .5	5.8
8	8.5	.35	2.7	.15	.2	.9	9.8	5.3	− .4	.5	− .5	2.7
9	4.8	.35	2.2	.1	.7	.35	7.3	2.6	− .6	.5	− .6	1.1
10	3.75	.35	1.8	.05	.35	1.6	6.4	2.1	− .7	.4	− .6	.7
11	3.0	.3	3.4	.05	.15	7.8	5.3	1.3	− .7	.4	− .6	.5
12	2.3	.4	3.1	.0	.0	4.3	4.1	.8	− .7	.3	− .6	.4
13	1.7	.8	2.2	.0	− .1	3.8	3.15	.7	− .8	.3	− .6	.3
14	1.3	.5	1.9	.0	− .2	3.2	3.6	.7	− .8	1.5	− .6	.3
15	1.0	.4	1.5	− .05	− .25	2.6	3.9	.6	− .9	2.4	− .7	.2
16	.8	.3	1.3	.0	.0	2.0	2.1	.3	− .9	2.3	− .7	.1
17	.7	.5	1.1	1.3	.8	1.5	2.8	.0	− .9	1.0	− .7	.0
18	.6	13.4	1.0	2.0	.4	1.1	3.3	− .2	− .95	.7	− .7	− .1
19	1.2	11.5	.9	1.5	.0	.7	4.2	− .3	− .95	.0	− .7	− .2
20	.8	6.8	.8	1.0	− .1	.4	3.7	− .4	−1.0	− .2	− .7	− .2
21	2.5	5.0	.7	.7	.5	2.7	3.1	− .3	−1.0	− .4	− .7	− .3
22	5.0	5.6	.6	.5	7.2	3.5	2.8	− .4	−1.0	− .5	− .7	− .3
23	3.7	4.9	.55	.4	8.6	3.6	1.7	− .4	−1.0	− .5	− .7	− .3
24	2.8	4.4	.5	.3	6.1	2.0	.7	− .4	− .7	− .6	− .7	.0
25	2.2	4.3	.45	.2	6.6	1.3	.9	− .4	− .4	− .6	− .7	.9
26	1.7	4.0	.4	.1	8.0	1.6	1.4	− .5	− .5	− .6	− .7	.8
27	1.5	3.5	.35	.05	4.7	1.2	1.0	− .5	− .6	− .7	− .7	.6
28	1.3	6.5	.3	.0	3.0	1.6	.7	− .5	− .7	− .3	− .5	.5
29	1.1	.....	.25	− .05	2.1	1.9	.7	− .5	− .6	− .4	− .5	.5
30	.9	.....	.2	− .05	1.5	2.6	.4	− .5	− .5	− .4	− .5	.5
31	.75	.....	.15	.....	1.0	.....	1.3	− .3	.....	− .4	.....	.4

BLACK WARRIOR RIVER NEAR COAL, ALA.

This station, which was established September 2, 1908, is located one-fourth mile below the mouth of Locust Fork of Black Warrior River, near the foot of the rapids known as Fork Shoals. It is one-half mile above Taylors Ferry, which is 3 miles from Coal and 20 miles from Bessemer, Ala., the nearest railroad station. The gage heights and discharge measurements have been furnished by the Tennessee Coal, Iron & Railroad Co.

The vertical staff gage is located at Taylors Ferry, one-half mile below the measuring section. The left bank is high and does not overflow. The right bank overflows for about 200 feet at high stages. An excellent rating has been developed. No measurements were made in 1910, but the 1909 ratings appear to be permanent enough to apply for 1910.

Daily gage height, in feet, of Black Warrior River near Coal, Ala., for 1910.

Day.	Jan.	Feb.	Mar	Apr.	May.	Day.	Jan.	Feb.	Mar.	Apr.	May.
1	1.65	2.5	9.4	1.9	1.7	16	2.65	2.55	3.0	1.7	1.4
2	1.6	2.5	9.3	1.9	1.7	17	2.45	2.8	3.0	2.1	2.1
3	1.6	2.4	9.55	1.8	1.7	18	2.4	10.05	3.0	3.45	2.85
4	1.55	2.4	7.75	1.8	1.6	19	2.4	10.35	2.9	4.0	2.0
5	1.5	2.4	6.25	1.9	2.25	20	2.7	7.25	3.3	3.55	2.6
6	7.5	2.3	5.5	1.9	2.5	21	4.1	6.3	3.7	3.05	5.9
7	11.0	2.15	4.95	2.0	2.4	22	5.75	7.0	3.55	2.55	9.7
8	9.25	2.0	4.45	2.0	2.4	23	5.45	6.5	2.5	2.25	9.15
9	6.0	2.0	4.05	2.0	2.3	24	4.35	6.1	2.4	2.2	7.7
10	4.85	2.0	4.0	2.0	2.2	25	3.75	5.85	2.3	2.1	8.05
11	4.0	2.0	4.8	1.9	2.1	26	3.55	5.4	2.3	2.0	8.25
12	3.55	2.35	4.95	1.9	2.0	27	3.4	4.95	2.2	1.9	6.1
13	3.15	2.8	4.35	1.8	1.7	28	3.4	8.25	2.1	1.8	4.75
14	3.0	2.75	3.9	1.8	1.5	29	3.15	.....	2.0	1.8	4.05
15	2.85	2.55	3.4	1.7	1.4	30	3.05	.....	2.0	1.8	3.45
						31	2.75	.....	1.9	.....	3.05

Daily discharge, in second-feet, of Black Warrior River near Coal, Ala., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	Day.	Jan.	Feb.	Mar.	Apr.	May.
1	1,240	2,570	23,700	1,600	1,310	16	2,840	2,660	3,500	1,310	895
2	1,170	2,570	23,300	1,600	1,310	17	2,480	3,120	3,500	1,910	1,910
3	1,170	2,400	24,300	1,450	1,310	18	2,400	26,300	3,500	4,420	3,220
4	1,100	2,400	17,200	1,450	1,170	19	2,400	27,500	3,310	5,630	1,750
5	1,030	2,400	11,700	1,600	2,150	20	2,930	15,200	4,110	4,640	2,750
6	16,200	2,230	9,420	1,600	2,570	21	5,860	11,800	4,960	3,600	10,600
7	30,100	1,990	7,940	1,750	2,400	22	10,200	14,300	4,640	2,660	24,900
8	23,100	1,750	6,690	1,750	2,400	23	9,280	12,600	2,570	2,150	22,700
9	10,900	1,750	5,740	1,750	2,230	24	6,450	11,200	2,400	2,070	17,000
10	7,680	1,750	5,630	1,750	2,070	25	5,070	10,400	2,230	1,910	18,300
11	5,630	1,750	7,560	1,600	1,910	26	4,640	9,140	2,230	1,750	19,100
12	4,640	2,320	7,940	1,600	1,750	27	4,320	7,940	2,070	1,600	11,200
13	3,800	3,120	6,450	1,450	1,310	28	4,320	19,100	1,910	1,450	7,440
14	3,500	3,020	5,400	1,450	1,030	29	3,800	.....	1,750	1,450	5,740
15	3,220	2,660	4,320	1,310	895	30	3,600	.....	1,750	1,450	4,420
						31	3,020	.....	1,600	.....	3,600

NOTE.—These discharges were obtained from a rating curve which is well defined below 26,100 second-feet.

Monthly discharge of Black Warrior River near Coal, Ala., for 1910.

[Drainage area, 3,560 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	30,100	1,030	6,070	1.71	1.97	A
February	27,500	1,750	7,350	2.06	2.14	A
March	24,300	1,600	6,880	1.93	2.22	A
April	5,630	1,310	2,060	.579	.65	A
May	24,900	895	5,850	1.64	1.89	A

VILLAGE CREEK NEAR MULGA, ALA.

This station, which was established by the Tennessee Coal, Iron & Railroad Co., is located on Village Creek about one-fourth mile below the mouth of Venison Branch, in sec. 7, R. 4 W., T. 17 S., near Mulga, Ala.

The gage consists of a 16-foot rod located on the left bank of the creek. About 200 feet below this point is a runway suspended from a cable across the creek, from which discharge measurements are made.

Discharge measurements and gage heights have been furnished by the Tennessee Coal, Iron & Railroad Co. There may have been a change in the rating during 1910, and as no measurements have been made no estimates are published.

Daily gage height, in feet, of Village Creek near Mulga, Ala., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	.....	1.4	1.75	1.2	1.1	1.1	2.4	1.2	0.8	1.05	0.7	0.6
2	.....	1.4	1.55	1.2	1.1	1.05	6.7	1.2	.8	.8	.7	.6
3	.....	1.4	2.25	1.2	1.0	.95	4.1	1.15	1.1	.75	.65	.6
4	.....	1.4	2.0	1.2	1.7	.9	4.8	2.6	1.2	.6	.6	2.1
5	.....	1.4	1.75	1.3	1.3	2.4	3.4	1.9	1.25	1.2	.9	2.15
6	.....	1.35	1.8	1.25	1.2	1.65	3.3	2.0	1.25	1.95	.95	2.75
7	.....	1.3	1.5	1.2	1.2	1.3	2.9	2.55	1.0	1.15	.8	1.25
8	.....	1.3	1.25	1.2	1.45	1.2	2.2	2.05	.95	1.1	.8	1.15
9	.....	1.3	1.2	1.1	1.25	1.8	1.9	1.45	.9	1.0	.8	1.0
10	.....	1.2	1.95	1.1	1.2	2.85	2.2	1.75	2.65	.9	.8	1.0
11	.....	1.4	1.85	1.1	1.1	2.35	3.2	1.35	1.2	.9	.75	1.0
12	.....	1.58	1.6	1.7	1.1	2.4	2.7	4.5	1.0	.9	.7	.95
13	.....	1.4	1.55	1.4	1.1	1.5	2.5	2.3	.9	.8	.7	.9
14	1.4	1.3	1.4	1.25	1.05	1.3	3.6	1.65	.95	.8	.6	.8
15	1.4	1.25	1.3	1.25	1.0	1.3	1.1	1.35	.9	.8	.6	.8
16	1.3	1.2	1.3	2.0	1.05	1.2	1.7	1.25	.8	.8	.6	.8
17	1.2	1.32	1.3	2.05	1.65	1.1	1.8	1.2	.8	.8	.6	.75
18	1.3	2.66	1.3	1.5	.95	1.1	6.4	1.2	.8	.8	.6	.9
19	1.4	1.95	1.3	1.4	.95	1.0	1.4	1.15	.8	.8	.6	.8
20	1.4	1.5	1.3	1.35	2.75	1.05	1.2	1.1	.8	.8	.7	.8
21	2.2	1.8	1.3	1.3	2.3	1.1	1.2	1.1	.8	.8	.8	.75
22	1.8	2.25	1.3	1.25	.....	1.1	1.2	1.05	.8	.8	.8	.7
23	1.6	2.0	1.3	1.3	.....	1.15	1.2	1.0	.8	.8	.7	1.0
24	1.6	2.2	1.2	1.3	.....	1.6	3.7	1.0	1.35	.75	.75	.9
25	1.5	1.85	1.2	1.3	1.7	1.15	2.2	1.0	.9	.7	.65	.9
26	1.5	1.75	1.2	1.2	1.45	1.1	1.6	1.0	.8	.6	.6	.8
27	1.5	2.55	1.2	1.15	1.35	1.0	1.4	1.05	.8	.75	.8	.8
28	1.6	3.4	1.2	1.1	1.3	1.0	1.3	.9	.8	.8	2.5	.8
29	1.6	.....	1.2	1.1	1.3	1.55	1.3	.9	.98	.8	1.1	.9
30	1.5	.....	1.2	1.1	1.25	1.3	1.2	.8	.9	.8	.9	1.55
31	1.5	.....	1.2	.....	1.15	.....	1.3	.8	.....	.8	.....	1.15

CAMP BRANCH NEAR ENSLEY, ALA.

Camp Branch is tributary to Village Creek in sec. 16, R. 4 W., T. 17 S., about 5 miles northwest of Ensley, Ala.

The station, established by the Tennessee Coal, Iron & Railroad Co., is located at the weir about 1,000 feet above the steel bridge on the Mulga road, at the mouth of Camp Branch. The weir is built of timbers grouted into the bedrock of the branch. It is a triangular section with 90° angle up to 1.5 feet and rectangular section 5 feet long up to 2 feet. The hook gage is on the right bank about 25 feet from the opening of the weir and about 8 feet from the end of the dam. The weir opening is about 6 feet from the left end of the dam. In order that discharge measurements can be made when water is over the weir a 14-foot gage rod is located above the weir at a point near a foot log, from which meter discharge measurements are made during high water.

The data for this station were furnished by the Tennessee Coal, Iron & Railroad Co.

Daily discharge, in second-feet, of Camp Branch near Ensley, Ala., for 1910.

Day.	Jan.	Feb.	Day.	Jan.	Feb.	Day.	Jan.	Feb.
1	3.05	6.57	11	7.72	7.66	21	28.25	41.40
2	2.77	5.64	12	7.44	7.49	22	16.20	34.75
3	2.32	6.63	13	6.64	7.10	23	11.45	23.25
4	2.22	5.34	14	6.78	6.57	24	9.65	21.10
5	2.48	4.90	15	5.26	6.57	25	8.14	12.85
6	265.00	4.30	16	4.62	6.28	26	7.47	11.56
7	66.60	3.99	17	4.56	128.96	27	6.93	11.45
8	21.10	3.82	18	4.76	66.60	28	10.33	83.20
9	12.20	4.12	19	4.48	28.25	29	8.18	.....
10	9.01	4.21	20	11.91	14.92	30	7.72	.....
						31	7.25	.....

Monthly discharge of Camp Branch near Ensley, Ala., for 1910.

[Drainage area, 7.43 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).
	Maximum.	Minimum.	Mean.	Per square mile.	
January	265.00	2.22	18.4	2.44	2.81
February	128.96	3.82	20.4	2.74	2.85

PEARL RIVER BASIN.

DESCRIPTION.

Pearl River drains the south-central part of Mississippi. It rises near the center of the State and flows south into Lake Borgne, an arm of the Gulf of Mexico. The basin is about 200 miles long and comprises an area of 8,000 square miles.

Although lying in a low portion of the Coastal Plain, the lands of this basin are generally well elevated above the stream beds. The surface is largely rolling and hilly, with sandy soils underlain by heavy clays, which at many places show in the stream beds. Much of the area was originally covered with the best class of southern forest pine, known as long-leaf yellow-heart pine. Although these forests have been rapidly cut for 10 to 15 years, they are by no means exhausted.

Pearl River has been for many years a logging stream of first importance among southern rivers, although the railroads and tramways now deliver the bulk of the timber directly to the mills.

PEARL RIVER AT JACKSON, MISS.

This station, which is located at the county highway bridge at Jackson, Miss., one-eighth mile above the Alabama & Vicksburg Railway bridge and two blocks east from the end of the South State Street car line, was established June 24, 1901.

Richland Creek enters the river from the east side about 5 miles below the station. The flow is subject to little or no artificial control above or near the station.

The chain gage is attached to the downstream lower chord of the bridge. Its datum has remained the same since the station was established. The gage-height records for 1909 and 1910 were furnished by the United States Weather Bureau.

The channel is somewhat obstructed by old piles and the bed is shifting, causing slight changes in the rating. The right bank is high and does not overflow. The left bank is of cleared ground and overflows for several hundred feet at a stage of about 20 feet.

Two measurements made in 1911 indicate that the 1909 rating will probably apply for 1910.

Daily gage height, in feet, of Pearl River at Jackson, Miss., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.1	3.3	12.6	2.3	4.0	2.7	5.5	2.8	1.9	0.6	0.5	0.8
2	2.7	3.4	12.4	2.2	3.5	2.5	6.1	2.7	1.8	.5	.5	1.0
3	2.5	3.7	12.3	2.4	3.2	2.2	9.0	2.4	1.7	.5	.5	1.2
4	2.3	3.7	12.1	2.3	2.6	1.9	11.0	2.2	1.6	.5	.5	1.4
5	2.1	3.3	11.8	2.2	2.5	3.3	11.5	2.2	1.5	.5	.5	1.3
6	2.5	3.7	11.3	2.1	2.4	6.4	11.5	3.5	1.4	.5	.6	1.2
7	2.9	3.7	10.8	2.0	2.3	6.4	11.6	3.8	1.5	.8	.7	1.2
8	3.0	3.6	10.1	2.1	2.8	6.8	11.8	4.1	1.4	1.0	.8	1.2
9	4.5	3.6	9.4	2.7	2.3	7.5	12.5	3.9	1.3	1.3	.8	1.2
10	5.5	3.5	8.5	3.0	2.1	6.4	12.2	4.2	1.5	1.6	1.2	1.3
11	5.8	3.5	8.5	3.1	2.0	6.2	12.3	4.1	1.7	1.6	1.4	1.3
12	6.1	3.6	7.6	3.0	1.9	5.0	13.1	3.9	1.5	1.4	1.3	1.3
13	6.0	3.4	7.3	3.0	2.0	5.4	12.7	3.5	1.4	1.4	1.1	1.4
14	5.8	3.1	7.0	2.8	2.0	5.8	12.1	3.2	1.3	1.5	.9	1.4
15	5.2	3.6	6.7	2.6	1.9	6.0	11.5	2.9	1.1	1.4	.8	1.4
16	4.6	4.3	6.3	11.6	1.8	6.0	10.5	2.7	1.0	1.4	.7	1.3
17	4.0	4.7	6.0	14.9	1.7	5.7	9.5	2.4	.9	1.5	.7	1 3
18	3.6	5.1	5.6	15.5	1.6	5.4	9.0	2.4	.9	1.4	.8	1.4
19	3.6	5.2	5.0	16.3	1.5	4.8	8.6	2.2	.9	1.7	.7	1.4
20	3.4	7.0	4.6	16.4	1.5	4.5	7.7	2.0	.9	1.6	.6	1.3
21	4.0	7.9	4.2	15.1	2.2	3.8	6.9	2.0	.9	1.4	.6	1.3
22	3.6	9.4	4.0	13.4	2.1	3.5	6.0	1.9	.8	1.3	.5	1.2
23	4.5	10.0	3.7	13.2	2.0	3.3	5.7	2.3	.8	1.1	.6	1.5
24	4.9	11.0	3.5	13.2	2.7	4.2	4.7	2.2	.8	.9	.6	3.0
25	5.0	11.4	3.2	12.4	2.9	4.4	4.2	2.1	.8	.8	.7	3.8
26	5.3	11.7	3.0	10.5	3.3	3.5	3.7	2.3	.7	.7	.6	4.6
27	5.0	11.7	2.8	8.2	3.5	2.7	3.4	2.4	.7	.7	.6	4.9
28	4.8	12.7	2.7	6.4	3.4	3.0	3.1	2.4	.6	.7	.6	4.5
29	4.5	.....	2.6	5.2	3.3	4.2	2.9	2.3	.6	.6	.6	4.4
30	4.1	.....	2.5	4.5	3.0	5.1	2.6	2.0	.6	.6	.7	4.3
31	3.7	.....	2.4	.....	2.9	.....	2.5	1.9	.....	.5	.....	4.1

Daily discharge, in second-feet, of Pearl River at Jackson, Miss., for 1910.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	910	1,000	6,320	590	1,320	750	2,040	790	450	130	120	160
2	750	1,040	6,200	555	1,090	670	2,360	750	415	120	120	200
3	670	1,180	6,130	630	955	555	4,040	630	380	120	120	240
4	590	1,180	6,000	590	710	450	5,280	555	350	120	120	290
5	520	1,000	5,800	555	670	1,000	5,610	555	320	120	120	265
6	670	1,180	5,480	520	630	2,530	5,610	1,090	290	120	130	240
7	830	1,180	5,160	485	590	2,530	5,680	1,220	320	160	145	240
8	870	1,140	4,700	520	790	2,750	5,800	1,360	290	200	160	240
9	1,540	1,140	4,280	750	590	3,140	6,260	1,270	265	265	160	240
10	2,040	1,090	3,740	870	520	2,530	6,060	1,400	320	350	240	265
11	2,200	1,090	3,740	910	485	2,420	6,130	1,360	380	350	290	265
12	2,360	1,140	3,200	870	450	1,770	6,670	1,270	320	290	265	265
13	2,310	1,040	3,020	870	485	1,980	6,390	1,090	290	290	220	290
14	2,200	910	2,860	790	485	2,200	6,000	955	265	320	180	290
15	1,870	1,140	2,700	710	450	2,310	5,610	830	220	290	160	290
16	1,580	1,450	2,480	5,680	415	2,310	4,960	750	200	290	145	265
17	1,320	1,630	2,310	7,930	380	2,140	4,340	630	180	320	145	265
18	1,140	1,820	2,090	8,350	350	1,980	4,040	630	180	290	160	290
19	1,140	1,870	1,770	8,940	320	1,680	3,800	555	180	380	145	290
20	1,040	2,860	1,580	9,020	320	1,540	3,260	485	180	350	130	265
21	1,320	3,380	1,400	8,070	555	1,220	2,800	485	180	290	130	265
22	1,140	4,280	1 320	6,880	520	1,090	2,310	450	160	265	120	240
23	1,540	4,640	1,180	6,740	485	1,000	2,140	590	160	220	130	320
24	1,720	5,280	1,090	6,740	750	1,400	1,630	555	160	180	130	870
25	1,770	5,540	955	6,200	830	1,500	1,400	520	160	160	145	1,220
26	1,920	5,740	870	4,960	1,000	1,090	1,180	590	145	145	130	1,580
27	1,770	5,740	790	3,560	1,090	750	1,040	630	145	145	130	1,720
28	1,680	6,390	750	2,530	1,040	870	910	630	130	145	130	1,540
29	1,540	.....	710	1,870	1,000	1,400	830	590	130	130	130	1,500
30	1,360	.....	670	1,540	870	1,820	710	485	130	130	145	1,450
31	1,180	.....	630	.....	830	.....	670	450	.....	120	.....	1,360

NOTE.—These discharges were obtained from a fairly well-defined rating curve.

Monthly discharge of Pearl River at Jackson, Miss., for 1910.

[Drainage area, 3,120 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area mile).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
January	2,360	520	1,400	0.449	0.52	B
February	6,390	910	2,400	.769	.80	B
March	6,320	630	2,900	.929	1.07	B
April	9,020	485	3,310	1.06	1.18	B
May	1,320	320	677	.217	.25	B
June	3,140	450	1,650	.529	.59	B
July	6,670	670	3,730	1.20	1.38	B
August	1,400	450	779	.250	.29	B
September	450	130	243	.078	.09	C
October	380	120	220	.071	.08	C
November	290	120	153	.049	.05	C
December	1,720	160	555	.178	.21	B
The year	9,020	120	1,490	.478	6.51	

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 coast and eastern Gulf of Mexico drainage 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.

Summary of discharge, in second-feet per square mile, of south Atlantic coast and eastern Gulf of Mexico drainage basins for 1910.

	Drainage area (square miles).	Jan.	Feb.	Mar.	Apr.	May.	June	July.	Aug.	Sept	Oct.	Nov.	Dec.	Year.
James River at Buchanan, Va.	2,060	1.46	1.61	1.30	1.15	0.689	4.00	1.27	0.319	0.287	0.272	0.225	0.336	1.07
James River at Cartersville, Va.	6,230	1.20	1.51	1.23	1.29	.722	2.57	1.20	.321	.284	.414	.294	.406	.947
Roanoke River at Roanoke, Va.	388	.644	1.30	.930	.624	.541	3.07	1.41	.420	.451	.407	.249	.358	.861
Wateree River near Camden, S. C.	4,500	.856	1.77	1.42	.571	.802	1.82	.....	.....	.....	.....	.....	.....	.....
Tugaloo River near Madison, S. C.	593	2.72	2.88	3.61	2.24	5.31	4.06	.....	.....	.....	.....	.....	.....	.....
Savannah River at Woodlawn, S. C.	6,600	1.33	2.12	1.92	1.07	1.68	1.59	.....	.....	.....	.....	.....	.....	.....
Tallulah River at Tallulah Falls, Ga.	191	2.56	2.71	3.23	2.34	4.53	3.88	3.57	2.16	2.02	1.66	1.23	1.98	2.66
Broad River (of Georgia) near Carlton, Ga.	762	1.34	1.75	1.61	.925	1.48	1.69	1.88	1.59	2.19	.819	.752	1.08	1.42
Ocmulgee River near Jackson, Ga.	1,400	1.14	2.31	1.96	1.42	1.09	1.13	1.88	.585	.645	.511	.357	.539	1.12
Ocmulgee River at Macon, Ga.	2,420	.963	1.89	2.20	1.36	.764	.798	1.82	.521	.492	.467	.324	.430	.996
Oconee River near Greensboro, Ga.	1,100	1.30	2.08	1.99	1.15	.982	1.53	2.56	.735	.955	.685	.485	.794	1.26
Oconee River at Fraleys Ferry, near Milledgeville, Ga.	2,840	.989	1.79	1.48	.979	.824	1.06	1.61	.518	.684	.627	.437	.644	.964
Oconee River at Dublin, Ga.	4,180	.766	1.85	1.83	.878	.610	1.03	1.83	.385	.512	.526	.309	.514	.914
Chattahoochee River near Norcross, Ga.	1,170	1.60	1.90	1.81	1.56	3.01	2.32	2.17	1.38	1.39	1.09	.872	1.36	1.70
Chattahoochee River at West Point, Ga.	3,300	1.40	1.95	1.62	1.37	1.95	1.52	1.98	1.24	.921	.752	.603	1.00	1.36
Flint River near Woodbury, Ga.	990	1.18	2.65	1.93	1.62	.745	.719	1.54	.612	.484	.376	.404	.525	1.05
Flint River at Albany, Ga.	5,000	.714	1.52	1.49	1.17	.606	.788	1.13	.610	.466	.384	.396	.520	.812
Flint River at Bainbridge, Ga.	7,410	.618	.....	.....	.....	.629	.659	.837	.644	.538	.448	.439	.510	.....
Pea River at Pera, Ala.	1,180	.802	2.14	2.51	1.50	.474	.623	1.68	.603	.372	.274	.390	.574	.992
Conecuh River at Beck, Ala.	1,290	.661	1.77	1.50	1.72	.488	.938	1.84	.552	.282	.291	.354	.484	.899
Oostanaula River at Resaca, Ga.	1,610	1.20	1.71	1.45	1.16	3.52	2.40	2.68	1.22	1.10	.640	.503	1.17	1.57
Coosa River at Riverside, Ala.	7,060	1.17	1.76	1.64	.853	2.59	1.77	2.86	.908	.711	.450	.341	.737	1.32
Alabama River at Selma, Ala.	15,400	1.08	2.01	1.79	1.09	1.38	1.38	2.64	.968	.616	.474	.373	.669	1.20
Etowah River near Ball Ground, Ga.	466	1.59	1.89	1.68	1.50	3.24	2.27	2.12	1.33	1.04	.910	.758	1.42	1.65
Etowah River near Rome, Ga.	1,800	1.31	1.75	1.46	1.05	2.13	1.53	1.69	1.01	.700	.572	.503	.844	1.21
Tallapoosa River at Sturdevant, Ga.	2,500	1.11	2.01	1.69	1.04	.980	.972	2.89	1.14	.484	.480	.400	.780	1.16
Tombigbee River at Columbus, Miss.	4,440	1.15	1.87	.989	.428	.500	.894	2.75	.259	.089	.100	.085	.273	.777
Tombigbee River at Epes, Ala.	8,830	.800	1.16	1.00	.424	.328	.754	1.86	.311	.095	.105	.088	.228	.593
Black Warrior River near Coal, Ala.	3,560	1.71	2.06	1.93	.579	1.64	.....	.....	.....	.....	.....	.....	.....	.....
Camp Branch near Ensley, Ala.	743	2.44	2.74	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Pearl River at Jackson, Miss.	3,120	.449	.769	.929	1.06	.217	.529	1.20	.250	.078	.071	.049	.178	.478

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