

627.41 (73)

SECTION IV.—RIVERS AND FLOODS.

627.41 (282.271)

RIVERS AND FLOODS, OCTOBER, 1917.

By ALFRED J. HENRY, Professor in Charge.

[Dated: River and Flood Division, Weather Bureau, Nov. 30, 1917.]

The rainfall of October, 1917, was light and infrequent except in the States from the lower Lakes Region eastward; even in those States flood stages were not reached until toward the end of the month, when two rainstorms within a week resulted in slight floods in the rivers of the Middle Atlantic and New England States. (Table 1.) The only other floods of the month were due to heavy rains which fell in Alabama during the closing days of September. Fortunately the rivers were at a low stage when the rains began, otherwise destructive floods would have resulted.

Property loss in watershed of Alabama River, October, 1917.

Tangible property, bridges, highways, etc.	Crops.	Suspension of business.	Money value of warnings.
\$500	\$10,000	\$150	\$6,000

Hydrographs for typical points on several principal rivers are shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.

TABLE 1.—Flood stages in Atlantic coast drainage during October, 1917.

River.	Station.	Flood stage.	Above flood stages—dates.		Crest.	
			From—	To—	Stage.	Date.
Connecticut.....	White River Junction, Vt.	13	31	(†)	14.0	31
White.....	do.	15			13.5	31
Mohawk.....	Tribes Hill, N. Y.	16	31	(†)	20.2	31
Delaware (East Branch).	Fishs Eddy, N. Y.	10	31	(†)	12.0	31
Delaware (West Branch).	Hales Eddy, N. Y.	12	31	(†)	12.4	31
Lackawanna.....	Honesdale, Pa.	8	29	29	8.0	29
Susquehanna.....	Bainbridge, N. Y.	11	30	(†)	13.2	31
Do.....	Wilkes-Barre, Pa.	20			18.1	31
Neuse.....	Smithfield, N. C.	13			11.9	31
Waccamaw.....	Conway, S. C.	7			6.7	4
Black.....	Kingstree, S. C.	12			10.9	6-7
Santee.....	Rimini, S. C.	12	1	3	12.7	2
Edisto.....	Edisto, S. C.	6			5.8	4

† Continued into November.

TABLE 2.—Flood stages in various drainage areas other than the Atlantic coast drainage, during October, 1917.

River.	Station.	Flood stage.	Above flood stages—dates.		Crest.	
			From—	To—	Stage.	Date.
East Gulf drainage:		Feet.			Feet.	
Alabama.....	Selma, Ala.	35			34.0	2
Chattahoochee.....	Alaga, Ala.	30			27.0	1
West Gulf drainage:						
Rio Grande.....	Rio Grande City, Tex.	15	(*)	2	21.7	1
Mississippi River (Ohio Basin):						
Allegheny.....	Olean, N. Y.	12			10.9	30
Do.....	Warren, Pa.	12	30	30	13.0	30
Great Lakes:						
Maumee.....	Fort Wayne, Ind.	15	30	(†)	15.5	31

* Continued from September.

† Continued into November.

ANNUAL RISE OF THE COLUMBIA RIVER, 1917.

By E. M. KEYSER, Observer.

[Dated: Weather Bureau Office, Portland, Oreg., Oct. 4, 1917.]

The summer rise of the Columbia River in 1917 demonstrated conclusively that unusually heavy snow coverings at the beginning of the spring season are not necessarily precursors of unusually high water. Between January 1 and March 17 the river stages at Portland, Oreg., varied irregularly between 0.7 and 6.7 feet. On this latter date the stage was 1.8 feet and from this time on the river, except for short temporary falls, continued more or less regularly to rise till May 15, when the flood stage, 15 feet, was reached. On June 22 the crest of the rise, 23.8 feet, passed Portland. From June 22 the water subsided quite regularly and on July 22, just one month after the passage of the crest, fell below the flood stage. This stage of 23.8 feet, although 2.6 feet above the 39-year average crest stage, has been exceeded nine times during the period of record.

While it is recognized that the annual rise is due largely to the accumulated snows in the upper levels of the watershed, the snow records are not available for the whole period of river observations. However, in extensive portions of the basin, fairly reliable records are available for at least 9 years, showing the depth of snow remaining at the close of the winter month..

Bulletins issued by the Oregon section show that at the close of winter the snow covering at practically all stations was not only above the average but was the greatest of record. In Washington every station in March reported the average or more remaining, and at the close of April every station reported more than the average remaining. In Idaho all drainage basins showed plus departures for snow covering at the beginning of spring. Likewise the Canadian reports showed excessive amounts of snow held over at the end of winter. Below will be found quotations from the Section Report of Oregon for March, 1917, concerning the snowfall in all sections of the Columbia River Basin in the mountains preceding the annual rise:

SUMMARY OF SEASON'S SNOWFALL.

At the end of March, 1917, the amount of snow within the Columbia River drainage area was much greater than at the same time a year ago. The total fall during the winter of 1916-17 was considerably less than the amount last season, but owing to cold weather in February and March, 1917, very little had melted, while last year those months were mild, and the snow at low levels had nearly all disappeared by the 1st of April. Should the temperatures during May be normal, or above the normal, unusually high water is almost certain to occur in the lower portion of the Columbia River next June. Much depends upon the manner in which the snow melts. When the spring months are cool, and the season is backward, we should expect higher water with the same amount of snow than when the season is early; therefore, as this year's season is backward and there is an unusual amount of snow in the mountains, caution should be exercised not to cultivate bottom lands that were overflowed last year, as present conditions indicate that we will have even higher water than that of 1916. * * *

Washington.—The snowfall of the past winter in the elevated regions, while above the normal, was not nearly so much as in the season of 1915-16. In December it averaged somewhat above normal; in January and February it was deficient at the lower levels of the eastern slope of the Cascades, but plentiful at the higher elevations. In March, especially during the last two weeks, the snowfall was phenomenal for the season, and the absence of warm winds and rain during February and March caused an accumulation of snow, so that the depth on March 31 was greater than in 1916, and almost unprecedented. There will doubtless be an abundance of water in the streams during the summer season.—G. N. Salisbury, Meteorologist.