

RIVERS AND FLOODS

[River and Flood Division, MONTROSE W. HAYES, in charge]

By RICHMOND T. ZOCH

The noteworthy floods in the United States during the month of May are described below.

A moderate flood occurred in the Tombigbee River System in Alabama. However, due to inundations in April, little progress had been made in planting lowlands, and the May stages were not high enough to cause damage to higher ground; therefore, the damage was small, and was confined to the region south of Demopolis.

The official in charge of the Weather Bureau office at Denver comments as follows on the floods in Colorado, particularly in the South Platte Basin:

On the 26th a large volume of water which surged down Pawnee Creek, overturned an automobile a short distance south of Haxtun, Colo., drowning a mother and two children.

On the 27th, when part of the dam of Terry Lake, north and west of Longmont, went out, one life was lost and low-lying farm lands and a part of the city of Longmont were flooded, but the property damage was reported to have been slight.

During and after the occurrence of the excessive local rains along the northern slope of the Arkansas-Platte Divide, Kiowa, Bijou Badger, Beaver, and Comanche Creeks quickly overflowed their banks and sent enormous volumes of water toward the South Platte at Fort Morgan and Brush, Colo. At the same time, Cherry Creek, where it flows through Denver, reached a bankful stage, and ordinary streamlets and arroyos in this part of the State soon became raging torrents. As the month closed, the combined floods in the small streams north of the Arkansas-South Platte Divide were leaving the northeast corner of the State at Sterling and Julesburg.

The total loss of life in Colorado, as a result of the floods caused by the excessive rains of the 30th, is given as 19. Four of these deaths occurred in Colorado Springs and its immediate vicinity, and the remainder along the streams already referred to north of the Arkansas-South Platte Divide.

The best estimates of property loss and damage which it has been possible to obtain place the damage at \$6,000,000.

There was a serious flood in the Kansas River. Little loss resulted from overflows of the Kansas River itself, but serious damage resulted along two of its tributaries. On May 27 Mill Creek, in the vicinity of Paxico, reached a stage which is believed to be the highest since the coming of the white man. The total damage there approximated \$150,000. The Delaware River reached a very high stage, and the loss in its valley was close to \$100,000. There was also considerable damage along creeks emptying into the Kansas River.

There were moderate floods in some of the streams of the Wabash River system in Indiana. They were severest along the lower reaches of the West Fork of the White River, the main stream of the White River, and the Wabash below the mouth of the White. Most of the damage was to prospective crops. There were no other floods of importance in the Ohio Basin.

There were serious floods in the Arkansas Basin. On the 30th excessive local rains around Colorado Springs caused severe floods in the Monument and Fountain Creeks. Four lives were lost in Colorado Springs (as noted above) and the property damage was placed at \$1,800,000. The highest stage ever recorded was reached at Fountain, Colo.

The official in charge of the Weather Bureau office, Fort Smith, Ark., reports as follows on the flood in the Verdigris River:

The Verdigris reached a stage of 43.7 at Independence, Kans., at 11 a. m., May 30, which was 1.5 feet below the record high of 45.2 on April 20, 1927. All the lowlands of the Verdigris from Toronto in the north to the Oklahoma line were flooded. Thousands of

acres of wheat which gave promise of an excellent crop, and a large acreage of corn were destroyed.

The Neosho and North Canadian Rivers attained high stages in their upper reaches. The other floods in the Arkansas Basin were of less importance.

The floods in the Red River Basin caused five breaks in the levees near Fulton, Ark., and property damage to the extent of \$600,000. Warnings of all the rises were timely. In connection with these floods the following comments of the official in charge of the Weather Bureau office at Shreveport, La., are of interest:

These floods of April and May were of considerable proportions and caused heavy property losses along the Red River and its tributaries at and above Shreveport, in Louisiana, Texas, Arkansas, and Oklahoma. Eight persons were reported to have been drowned in the vicinity of Altus, Okla.

The heavy rainfalls that caused the floods were reported intermittently between April 19 and May 20, and were more or less irregularly distributed. Rains in 48-hour periods ending on May 5 and May 19, respectively, were the heaviest and most general.

Beginning in March and ending in May, a flood crest passed down the lower Mississippi River. It caused considerable damage, but less than the last previous one, which was in 1933. The flood in the Yazoo River Basin caused the loss of 13 lives and a great amount of property. At the close of May the river was again rising and had passed above the flood stage at many points. With the passage of the first crest the Tallahatchie and Yazoo Rivers fell below the flood stage.

Except in the Rio Grande, where there was only a slight flood, there were moderate to severe floods in all the rivers of Texas which empty into the Gulf of Mexico. Ten persons were drowned.

Comments on floods in the lower Missouri River Basin will be made in a later issue of the MONTHLY WEATHER REVIEW.

Table of flood stages during May 1935

[All dates are in May unless otherwise specified]

River and station	Flood stage	Above flood stages— dates		Crest	
		From—	To—	Stage	Date
ST. LAWRENCE DRAINAGE					
St. Marys: Decatur, Ind.....	Feet 13	3	9	Feet 16.1	7
ATLANTIC SLOPE DRAINAGE					
Chenango: Sherburne, N. Y.....	8	8	8	8.2	8
Susquehanna: Oneonta, N. Y.....	12	8	8	13.0	8
Cape Fear: Lock No. 2, Elizabethtown, N. C.....	20	23	23	21.1	23
Santee: Rimini, S. C.....	12	24	24	12.94	24
EAST GULF OF MEXICO DRAINAGE					
Black Warrior: Lock No. 10, Tuscaloosa, Ala.....	46	8	8	47.1	8
Tombigbee:					
Lock No. 4, Demopolis, Ala.....	39	8	15	46.8	12
Lock No. 3, Ala.....	33	7	17	48.7	12, 13
Lock No. 2, Ala.....	46	10	15	49.7	13
Lock No. 1, Ala.....	31	10	18	35.0	15, 16
Pearl:					
Edinburg, Miss.....	20	9	11	20.5	11
Jackson, Miss.....	18	6	29	27.0	13, 14
Monticello, Miss.....	15	7	11	16.7	8
Columbia, Miss.....	17	21	24	18.3	22
		23	25	17.7	24
Pearl River, La.....	12	Mar. 9	4	14.7	Apr. 23
		11	June 3	14.6	24

Table of flood stages during May 1935—Continued

Table of flood stages during May 1935—Continued

River and station	Flood stage	Above flood stages— dates		Crest	
		From—	To—	Stage	Date
MISSISSIPPI SYSTEM					
<i>Upper Mississippi Basin</i>					
<i>Illinois:</i>					
Morris, Ill.-----	13	10	11	14.8	10
Peru, Ill.-----	17	13	15	14.6	14
Peoria, Ill.-----	18	8	20	20.0	14
Havana, Ill.-----	14	9	26	21.5	16
Beardstown, Ill.-----	14	4	(1)	20.0	17
Meramec: Valley Park, Mo.	14	3	(1)	22.4	17
Mississippi:					
Grafton, Ill.-----	18	17	17	18.2	17
Alton, Ill.-----	21	31	(1)	(1)	(1)
<i>Missouri Basin</i>					
Solomon: Beloit, Kans.-----	18	20	22	22.56	21
Smoky Hill: Lindsborg, Kans.	21	23	23	25.50	30
Republican: Concordia, Kans.	8	29	29	21.15	29
Big Blue: Blue Rapids, Kans.	20	21	31	9.55	28
Kansas:					
Manhattan, Kans.-----	17	28	28	18.2	28
Lawrence, Kans.-----	18	28	29	19.4	28, 29
Grand:					
Gallatin, Mo.-----	20	21	21	22.1	21
Chillicothe, Mo.-----	18	17	3	19.2	2
Brunswick, Mo.-----	12	20	(1)	19.9	17
Osage:					
Quenemo, Kans.-----	30	29	30	36.65	29
Ottawa, Kans.-----	24	29	31	25.8	30
La Cygne, Kans.-----	23	21	23	24.1	23
Osceola, Mo.-----	20	29	(1)	(1)	(1)
Tuscumbia, Mo.-----	25	28	(1)	(1)	(1)
St. Thomas, Mo.-----	20	29	(1)	(1)	(1)
Missouri:					
Waverly, Mo.-----	18	29	(1)	19.85	30
Boonville, Mo.-----	21	30	(1)	(1)	(1)
Hermann, Mo.-----	21	30	(1)	(1)	(1)
St. Charles, Mo.-----	25	30	(1)	(1)	(1)
<i>Ohio Basin</i>					
Walhonding: Walhonding, Ohio.-----	8	7	7	8.0	7
Hocking: Athens, Ohio.-----	17	4	4	17.45	4
Gauiley: Summersville, W. Va.	10	7	8	13.06	7
Scioto:					
La Rue, Ohio.-----	11	4	4	11.3	4
Circleville, Ohio.-----	14	4	4	14.4	4
Kentucky River, North Fork: Jackson, Ky.	28	17	17	29.5	17
White River, West Fork:					
Anderson, Ind.-----	8	3	10	11.0	4
Elliston, Ind.-----	18	3	18	25.0	6
Edwardsport, Ind.-----	12	4	23	18.7	8
White:					
Petersburg, Ind.-----	16	6	23	20.8	10, 11
Hazleton, Ind.-----	16	7	25	21.6	11
Wabash:					
Bluffton, Ind.-----	10	5	6	10.0	5, 6
LaFayette, Ind.-----	11	4	11	17.0	5
Covington, Ind.-----	16	4	13	20.7	6
Terre Haute, Ind.-----	14	4	18	18.1	9
Vincennes, Ind.-----	14	7	22	17.3	15
Mount Carmel, Ill.-----	19	9	24	21.5	12-14
New Harmony, Ind.-----	15	10	25	17.2	15, 16
Ohio:					
Dam No. 47, Newburgh, Ind.-----	38	18	24	39.1	21
Evansville, Ind.-----	35	17	26	36.9	22
Dam No. 48, near Henderson, Ky.-----	38	21	24	38.3	22
Dam No. 49, near Uniontown, Ky.-----	37	17	27	39.0	23
Dam No. 50, Fords Ferry, Ky.-----	34	10	30	41.0	23, 24
Dam No. 52, Brookport, Ill.-----	37	20	(1)	39.3	25, 26
Dam No. 53, near Mound City, Ill.-----	42	17	(1)	46.3	26, 27
Cairo, Ill.-----	40	13	(1)	45.9	26, 27
<i>White Basin</i>					
Black: Black Rock, Ark.-----	14	5	28	22.9	6
White:					
Calico Rock, Ark.-----	18	6	6	18.5	6
Batesville, Ark.-----	23	6	6	27.5	6
Newport, Ark.-----	26	7	10	26.6	8
Gerogetown, Ark.-----	21	7	(1)	24.1	11, 12
Clarendon, Ark.-----	26	11	(1)	29.0	16-19

River and station	Flood stage	Above flood stages— dates		Crest	
		From—	To—	Stage	Date
MISSISSIPPI SYSTEM—continued					
<i>Arkansas Basin</i>					
Fountain: Fountain, Colo.-----	8	30	30	20.0	30
Little Arkansas: Sedgwick, Kans.-----	18	27	27	22.1	27
Cimarron: Perkins, Okla.-----	11	19	20	13.8	19
Cottonwood: Emporia, Kans.-----	20	21	22	20.4	21
Neosho:					
Neosho Rapids, Kans.-----	22	30	30	23.7	30
Le Roy, Kans.-----	18	28	31	25.47	29
Iola, Kans.-----	15	28	31	18.2	29
Oswego, Kans.-----	17	20	24	22.82	22
Fort Gibson, Okla.-----	22	29	31	24.94	30
North Canadian:					
Woodward, Okla.-----	6	14	14	8.4	14
Canton, Okla.-----	6	18	18	10.4	18
Yukon, Okla.-----	8	14	15	7.0	15
Oklahoma City, Okla.-----	12	20	20	10.2	19
Canadian: Union, Okla.-----	6	17	17	8.7	17
Poteau, Poteau, Okla.-----	21	19	25	11.1	23
Petit Jean: Danville, Ark.-----	20	29	31	8.8	23
Arkansas:					
Fort Lyon, Colo.-----	6	19	19	6.4	19
Great Bend, Kans.-----	5	29	30	7.0	30
Wichita, Kans.-----	9	29	29	9.3	29
Arkansas City, Kans.-----	15	16	16	16.0	16
Webbers Falls, Okla.-----	23	20	22	17.0	22
Fort Smith, Ark.-----	22	30	31	18.6	31
Van Buren, Ark.-----	22	6	7	22.6	6
Dardanelle, Ark.-----	22	19	25	25.8	20
Morrilton, Ark.-----	20	6	7	22.5	7
Morrilton, Ark.-----	20	20	25	25.4	20-23
Morrilton, Ark.-----	20	21	21	22.5	21
Morrilton, Ark.-----	20	21	26	21.8	7
Morrilton, Ark.-----	20	21	26	22.3	21
<i>Red Basin</i>					
Ouachita:					
Arkadelphia, Ark.-----	17	4	8	26.97	6
Camden, Ark.-----	26	5	16	39.04	9
Black: Jonesville, La.-----	50	9	(1)	51.9	22-29
Little: Whitecliffs, Ark.-----	25	4	14	29.6	8
Sulphur:					
Ringo Crossing, Tex.-----	20	5	10	29.7	6
Naples, Tex.-----	22	16	23	25.0	20
Cypress: Jefferson, Tex.-----	18	30	30	38.3	30
Red:					
Arthur City, Tex.-----	27	20	23	31.0	23
Index, Ark.-----	25	7	12	27.9	10
Fulton, Ark.-----	25	18	28	31.1	25
Grand Ecore, La.-----	33	6	8	34.1	26
Alexandria, La.-----	32	11	(1)	38.0	31
<i>Lower Mississippi Basin</i>					
Big Lake Outlet: Manila, Ark.-----	10	8	29	13.0	13, 14
St. Francis:					
Fisk, Mo.-----	20	5	11	23.5	8
St. Francis, Ark.-----	18	21	26	22.6	23
Tallahatchie: Swan Lake, Miss. ¹ -----	26	8	18	21.6	10
Yazoo: Yazoo City, Miss.-----	29	26	(1)	20.8	27
Mississippi:					
New Madrid, Mo.-----	34	June 10	12	31.6	{Mar. 16-17 Apr. 11
Helena, Ark.-----	39	Mar. 19	(1)	36.7	27, 28
Arkansas City, Ark.-----	42	Mar. 18	(1)	49.2	Apr. 2
Greenville, Miss.-----	36	Mar. 18	(1)	(1)	(1)
Vicksburg, Miss.-----	43	Mar. 22	(1)	51.8	Apr. 6
Natchez, Miss.-----	46	Mar. 22	(1)	(1)	(1)
Angola, La.-----	45	Mar. 23	5	45.5	{Apr. 6, 7 Apr. 15
		21	(1)	(1)	(1)
		Apr. 1	5	46.7	{Apr. 15 Apr. 17-24
		Apr. 2	10	50.3	{Apr. 17-24 Apr. 20-27
		Apr. 6	11	48.0	{Apr. 20-27 (1)
		31	(1)	(1)	(1)

¹ Flood continued into June.
² More than 1 crest occurred during the period the river remained above flood stage that given is the highest crest.

Table of flood stages during May 1935—Continued

River and station	Flood stage	Above flood stages— dates		Crest	
		From—	To—	Stage	Date
MISSISSIPPI SYSTEM—continued					
<i>Lower Mississippi Basin—Continued</i>					
Mississippi—Continued.					
Baton Rouge, La.....	35	Apr. 6 30	12 (1)	38.4 (1)	7 (1)
Donaldsonville, La.....	28	Apr. 7	11	30.0	Apr. 25-27, May 7
Reserve, La.....	22	Apr. 9	10	23.2	7
New Orleans, La.....	17	Apr. 6	7	17.31	6
<i>Atchafalaya Basin</i>					
Atchafalaya:					
Simmesport, La.....	41	Apr. 4	10	41.7	7,8
Melville, La.....	37	Apr. 6 20	17 (1)	39.3 (1)	7,8 (1)
Atchafalaya, La.....	22	Mar. 15	(1)	24.5	5-10
WEST GULF OF MEXICO DRAINAGE					
Sabine:					
Logansport, La.....	25	6	31	34.4	8
Bon Wier, Tex.....	21	20	29	23.4	22
Orange, Tex.....	4	25	30	4.7	26,27
Neches:					
Rockland, Tex.....	22	7	14	28.5	9
Beaumont, Tex.....	7	20	28	28.9	22
West Fork: Fort Worth, Tex.....	17	18	31	7.7	29,30
Elm Fork: Carrollton, Tex.....	6	5	19	17.9	18
		15	23	13.0	6
Trinity:					
Dallas, Tex.....	28	5	8	34.9	6
		16	24	42.1	20
Trinidad, Tex.....	28	7	June 2	42.6	25

Table of flood stages during May 1935—Continued

River and station	Flood stage	Above flood stages— dates		Crest	
		From—	To—	Stage	Date
WEST GULF OF MEXICO DRAINAGE—contd.					
Trinity—Continued.					
Long Lake, Tex.....	40	11	31	44.2	24
Riverside, Tex.....	40	20	22	41.8	21
Liberty, Tex.....	25	6	31	26.9	24,25
Brazos:					
Rainbow, Tex.....	20	18	19	26.1	18
Waco, Tex.....	27	18	20	34.9	19
Valley Junction, Tex.....	44	20	22	48.5	21
Washington, Tex.....	45	22	25	47.2	24
Hempstead, Tex.....	42	24	26	43.2	25
Richmond, Tex.....	35	24	28	36.5	27
Colorado:					
Marble Falls, Tex.....	21	18	19	29.8	18
Austin, Tex.....	21	18	19	28.0	19
Smithville, Tex.....	25	20	21	26.7	20
Columbus, Tex.....	29	19	25	33.3	23
Wharton, Tex.....	26	20	27	36.7	25
Guadalupe:					
Gonzales, Tex.....	20	19	22	27.3	20
Victoria, Tex.....	21	5	10	27.9	8
		21	25	28.7	24
Nueces: Cotulla, Tex.....	15	24	27	18.6	24
Rio Grande:					
Del Rio, Tex.....	15	30	30	15.1	30
Eagle Pass, Tex.....	16	18	18	16.8	18
Brownsville, Tex.....	18	26	26	18.2	26
PACIFIC SLOPE DRAINAGE					
<i>Columbia Basin</i>					
Clearwater: Kamiah, Idaho.....					
	12	23	(1) 25	12.6	(1)
Columbia: Vancouver, Wash.....					
	15	29	(1)	(1)	(1)

1 Flood continued into June.

WEATHER OF THE ATLANTIC AND PACIFIC OCEANS

[The Marine Division, W. F. McDONALD in Charge]

NORTH ATLANTIC OCEAN, MAY 1935

By H. C. HUNTER

Atmospheric pressure.—Over waters adjacent to Europe and Iceland the pressure averaged greater than normal. The northeasternmost portion showed a large excess; Lerwick, in the Shetland Islands, had a mean pressure 0.42 inch above normal. Over the central and most western portions of the North Atlantic pressure averaged a little less than normal, but over the Gulf of Mexico and nearby areas a very little greater than normal.

At coast and island stations, the highest pressures were mostly recorded during the period 5th to 12th, and the lowest during 12th to 22d.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic Ocean and its shores, May 1935

Station	Average pressure	Departure	Highest	Date	Lowest	Date
Julianaaba, Greenland.....	29.78		30.24	9	29.18	5
Reykjavik, Iceland.....	30.19	+0.27	30.58	12	29.78	1
Lerwick, Shetland Islands.....	30.22	+0.42	30.53	8	29.73	17
Valencia, Ireland.....	30.14	+0.19	30.50	7	29.73	3
Lisbon, Portugal.....	29.99	+0.02	30.23	6	29.72	22,23
Madeira.....	30.05	+0.04	30.17	30	29.88	13
Horta, Azores.....	30.13	-0.03	30.34	3	29.74	12
Belle Isle, Newfoundland.....	29.76	-0.18	30.24	10	29.32	20
Halifax, Nova Scotia.....	29.87	-0.10	30.25	5,9	29.54	1,15
Nantucket.....	29.96	-0.03	30.37	5	29.55	21
Hatteras.....	30.01	-0.00	30.26	9	29.54	21
Bermuda.....	30.05	-0.06	30.28	10	29.78	18
Turks Island.....	29.93	-0.11	30.12	7,8	29.82	16
Key West.....	29.98	+0.01	30.12	8	29.82	18
New Orleans.....	30.00	+0.03	30.16	26	29.74	20

NOTE.—All data based on a. m. observations only, with departures compiled from best available normals related to time of observation, except Hatteras, Key West, Nantucket, and New Orleans, which are 24-hour corrected means.

The highest pressure thus far reported by a vessel was 30.58 inches by the Swedish steamship *Braheholm*, during the forenoon of the 9th, when near latitude 58° N., longitude 10° W. The lowest reading was 28.66 inches, by the American steamship *Scanstates*, during the forenoon of the 10th, near 46° N., 42° W.

Cyclones and gales.—There was considerable storminess for the time of the year, but no wind of force 12 has been reported. Two vessels encountered force 11; the earlier instance was the Dutch motorship *Tabian*, on the evening of the 5th, when northwest of Horta. The ship was then near the southern end of a long trough of low pressure. Very few other vessels noted gales in connection with this trough.

The principal period of storminess was from the 7th to 11th, when gales were met by numerous steamships, chiefly between 55° and 35° west longitude, along or near the chief lanes to northern Europe. During this time low pressure prevailed in the Grand Banks area, and for a moderate distance to eastward; at the same time pressure was mainly higher than normal in the far north, as well as on the continental coasts and over the tropical ocean; strong gradients resulted as the low moved slowly northeastward.

During this period of storminess, whole gales (force 10) were noted by numerous vessels; and the second instance of force 11 was noted by the German liner *Stuttgart* during the night of the 7-8th. By the 11th the high pressure to northward was decreasing, and the low moved in that direction and lost strength.

A brief gale was encountered south of Jamaica on the 13th; and on the 17th a whole gale was met a considerable distance south of Bermuda. The low with which this latter gale was connected was noted near Haiti on the