

No frosts occurred in connection with this HIGH; warnings which were based on it were not verified. Another HIGH of similar type moved northeastward from the Pacific into British Columbia on the 22d. Warnings of local frosts in eastern Washington and eastern Oregon in this case were fully justified. Because of this pressure situation, fire-weather warnings were issued for western Oregon and western Washington well in advance of the event and anticipated a protracted and acute fire hazard which prevailed over the north Pacific States and northern Idaho until the 29th. The forecast officials at Portland and Seattle effectively amplified advices from the district center concerning the approach, continuation, and termination of this period of hazard. During its continuance, records of high April temperatures were exceeded at San Francisco, San Jose, Sacramento, Red Bluff, Spokane, and Walla Walla.—*T. R. Reed.*

RIVERS AND FLOODS

627.41 (73)

By H. C. FRANKENFIELD

Numerous floods of short duration and moderate intensity occurred during April—particularly along the Atlantic coast, in the streams of the Great Lakes drainage area, in the Gulf drainage, and in the interior rivers of Indiana, Illinois, and Ohio. Warnings for these floods, as well as for more severe ones which occurred in the Wabash River, and the Colorado, Guadalupe, and Brazos Rivers of Texas, were timely and in the main accurately verified. Reports of losses indicated slight damage except in the few instances given below.

Houston, Tex., district.—The following note relative to the floods in this district is quoted from the report of the official in charge of the Weather Bureau Office at Houston, Tex.:

The presence of much of moisture in the soil prior to the arrival of the locally heavy rains of the opening decade of the month and the more general and frequently excessive rains near the beginning of the last decade favored the heavy run-off which followed. The more moderate rainfall over the Brazos drainage area at Waco and above no doubt saved the lower part of that river from a great overflow, in view of the fact that this stream went to flood stage at Washington largely from the water received from the Yegua and smaller streams in that vicinity, where the precipitation was torrential; the Navasota stream carried a vast volume of water, but the flood water from this stream did not arrive at the Brazos until the crest had passed down from the junction point, thus merely delaying the natural fall of the trunk stream. The Trinity flood would have been more severe if the excessive rain within a radius of 30 or 40 miles of Riverside had been more widespread and further upstream.

The main losses from the high stages and floods in the several streams involved were from washed highways, injury or destruction of bridges, washing of soil, much of which had been plowed but little planted, delay in planting of crops, and suspension of business.

Much labor and expense was saved in the lower sections of the Brazos River bottom lands by advisory notices from this station of probable crest stages slightly under flood, thus preventing unnecessary removal of livestock and other farm property from threatened areas. On the other hand, much livestock and other property were saved in the flooded areas by timely warnings of coming flood stages. It has been impossible to secure data covering all losses and all savings. The tables inclosed herewith give data in detail on the stages of the several rivers involved, losses, and savings.

The reported losses and savings along these rivers (Trinity, Neches, Brazos, and Sabine) were as follows:

Tangible property.....	\$25, 000
Crops.....	10, 000
Prospective crops.....	20, 000
Suspension of business.....	72, 500
	127, 500
Savings through Weather Bureau warnings.....	100, 000

In addition to the above losses there was of course much damage not to be estimated in dollars and cents. The chief item of this kind was a loss of 20,000 acres of prospective crops on the Sabine. The value of the warnings also undoubtedly greatly exceeded the above figure. Farmers on both the Brazos and the Sabine reported that the warnings were responsible for saving the expense of moving to higher ground; and no estimate could be made of the value of cattle saved from the lowlands of the Sabine.

Colorado River of Texas.—Of this flood the official in charge, Weather Bureau Office at San Antonio, Tex., reports as follows:

The Colorado River was in flood from April 22 to 24, and heavy overflows occurred from Bastrop to the Gulf. * * * The warnings received wide distribution and saved considerable property. The flood caused a money loss of around \$55,000 in bridges, \$20,000 damage to roads, \$24,000 loss to farms and growing crops (8,000 acres flooded). Practically all livestock that ranged in the lowlands were saved by timely warnings, \$4,000 in saving having been reported. Many automobiles were saved from partial injury, but no estimate in money value thus saved can be obtained.

Terre Haute, Ind., district.—The flood in the Wabash River (as in the other streams of Indiana, Ohio, and Illinois) was due to a period of heavy rain near the close of the first week and at the beginning of the second, the ground having been already saturated by rains late in March. As stated by the official in charge at Terre Haute, Ind.:

Owing to rainfall on March 31, which averaged slightly over an inch over the Wabash watershed, the river began to rise rapidly throughout its course and the flood stage was exceeded at one station, Lafayette, Ind., on April 1. A series of showers in the upper portion of the valley on April 1 and 2 kept the soil saturated and prevented any marked decline in the river stage. Another period of rainfall, in which the average was about 2 inches, over the Wabash and White River watersheds from April 6 to 8, inclusive, caused a general flood throughout the valley. On the 11th and 12th of April moderate rainfall over the lower Wabash Valley and the White River Valley increased the magnitude and duration of the flood in the lower Wabash River.

In view of the magnitude of the Wabash flood, the losses were comparatively slight. The following figures for losses and savings are partly estimated:

Tangible property (mainly bridges, highways, etc).....	\$8, 400
Crops.....	1, 200
Suspension of business.....	5, 000

14, 600

Savings through Weather Bureau warnings (estimated).... 30, 000

Meridian, Miss., district.—The floods in the Pearl and West Pearl Rivers resulted from moderately heavy rains over an extended period in late March. The warnings, issued well in advance of damaging stages, resulted in a saving of \$5,500 in movable property in addition to much livestock, the value of which could not be estimated. Losses were reported as follows:

Tangible property.....	\$14, 700
Suspension of business.....	5, 900

In New England and eastern New York a continuation of cool and moderately dry weather served to prevent any serious materialization of the threatening conditions noted in that section in previous issues of this REVIEW. For those floods which did occur (see table) warnings were issued whenever necessary, and the resulting losses and damage were small. The Connecticut River at Hartford, Conn., was above flood stage from 12:30 p. m., April 24, to 4 p. m., May 1, with a crest stage of 20.8 feet (4.8 feet above flood stage) at 4 p. m., April 27,

In addition to the foregoing losses and savings, the following were reported:

River	Losses	Savings
Hudson.....	\$12,000	\$3,000
White (Indiana).....	5,750	*1,000
Guadalupe.....	14,000	Unreported.
Trinity.....	None.	5,000

* Incomplete.

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
<i>Atlantic drainage</i>					
Connecticut:	<i>Feet</i>			<i>Feet</i>	
White River Junction, Vt.....	15	23	30	20.3	25-26.
Holyoke, Mass.....	9	27	27	9.0	27.
Hartford, Conn.....	16	24	(1)	20.8	27.
Hudson:					
Corinth, N. Y.....	10			10.8	26.
Albany, N. Y.....	12	26	27	13.0	26.
Susquehanna, Oneonta, N. Y.....	12	8	12	14.5	9.
Unadilla, New Berlin, N. Y.....	8	9	9	9.8	9.
Chenango, Sherburne, N. Y.....	8	9	11	8.6	9.
Cape Fear, Elizabethtown, N. C.....	22	15	16	22.5	15.
Peedee, Mars Bluff, S. C.....	17	16	18	17.7	17.
Lynches, Effingham, S. C.....	14	18	19	14.0	18-19.
Santee:					
Rimini, S. C.....	12	1	19	14.3	5.
Ferguson, S. C.....	12	3	21	13.4	6.
Altamaha, Everett City, Ga.....	10	11	20	11.0	14-15.
Oconee, Milledgeville, Ga.....	22	(2)	1	22.8	1.
Ocmulgee:					
Macon, Ga.....	18	(2)	1	20.0	Mar. 31.
Abbeville, Ga.....	11	5	10	12.9	Apr. 7.
<i>East Gulf drainage</i>					
Apalachicola:					
River Junction, Fla.....	18	2	5	20.8	4.
Blountstown, Fla.....	20	3	7	21.7	5.
Chattahoochee:					
Columbus, Ga.....	20	(2)		35.0	2.
Alaga, Ala.....	30	1	3	34.0	2.
Pearl, Columbia, Miss.....	18	1	3	18.6	2.
West Pearl, Pearl River, La.....	13	(2)	20	15.8	4.
		28	30	13.4	29.
<i>Great Lakes Drainage</i>					
Maumee:					
Fort Wayne, Ind.....	15	8	13	20.0	9.
Napoleon, Ohio.....	10	8	12	12.5	9.
St. Joseph, Montpelier, Ohio.....	10	1	2	10.8	2.
				10	12.2
				12	12.4
Auglaize, Defiance, Ohio.....	10	8	12	12.4	10-11.
Sandusky, Upper Sandusky, Ohio.....	13	9	9	13.0	9.
Grand:					
Eaton Rapids, Mich.....	5	(2)	16	5.7	Mar. 22-26.
Grand Ledge, Mich.....	7	1	3	7.8	Apr. 2.
				8	13
				11	11.3
Grand Rapids, Mich.....	11	10	11	11.3	10.
Red Cedar:					
Williamston, Mich.....	6	2	7	7.4	5.
				10	6.3
				10	8.0
East Lansing, Mich.....	8	10	10	8.0	10.
<i>Mississippi drainage</i>					
Shenango, Sharon, Pa.....	9	9	9	9.2	9
Tuscarawas:					
Gnadenhutten, Ohio.....	9	9	11	10.9	10
Coshocton, Ohio.....	8	9	10	8.6	10
Walhonding, Walhonding, Ohio.....	8	9	10	10.3	9
Scioto:					
Larue, Ohio.....	11	8	9	12.2	9
Prospect, Ohio.....	10	9	10	10.9	10
Circleville, Ohio.....	10	9	10	13.0	9
Wabash:					
Bluffton, Ind.....	11	8	10	12.5	8
Logansport, Ind.....	14	9	9	14.5	9
Lafayette, Ind.....	11	2	13	21.0	10
Terre Haute, Ind.....	16	7	16	20.4	13
Vincennes, Ind.....	14	8	20	18.9	15-16
Mount Carmel, Ill.....	16	7	21	22.9	6-7
Tippecanoe:					
Rochester, Ind.....	6	8	11	7.2	9
Norway, Ind.....	6	1	11	6.8	7
				14	6.5
				24	6.4

¹ Continued at end of month.

² Continued from last month.

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
<i>Mississippi drainage—Continued</i>					
	<i>Feet</i>			<i>Feet</i>	
White, Decker, Ind.....	18	10	18	22.2	16
White, East Fork, Seymour, Ind.....	10	9	10	10.5	9-10
White, West Fork:					
Anderson, Ind.....	12	8	8	12.9	8
Noblesville, Ind.....	14	8	9	15.7	9
Elliston, Ind.....	19	8	14	24.1	11
Edwardsport, Ind.....	15	5	16	19.0	13
Mississippi, Louisiana, Mo.....	12	8	10	12.5	10
Illinois:					
Morris, Ill.....	13	7	14	16.4	11
Peu, Ill.....	14	4	(1)	19.4	12-13
Henry, Ill.....	10	9	(1)	13.8	14
Peoria, Ill.....	18	10	30	20.4	15
Havana, Ill.....	14	8	(1)	17.6	16-18
Beardstown, Ill.....	14	7	(1)	19.6	17-18
Pearl, Ill.....	12	7	(1)	15.9	15-19
Missouri, Washburn, N. Dak.....	15	19	22	17.0	22
Arkansas, Yancopin, Ark.....	29	16	29	30.9	21-22
Black:					
Corning, Ark.....	11	2	17	11.7	3-4
Black Rock, Ark.....	14	1	1	14.0	1
Sulphur, Kingo Crossing, Tex.....	20	23	24	22.4	23
<i>West Gulf drainage</i>					
Sabine, Logansport, La.....	25	(2)	2	28.9	Mar. 27
		23	28	29.6	Apr. 25
Neches, Rockland, Tex.....	22	26	28	22.7	26-27
Trinity:					
Dallas, Tex.....	25	11	11	25.5	11
		22	24	32.0	23
Trinidad, Tex.....	28	24	(1)	34.1	28
Liberty, Tex.....	25	Mar. 26	Apr. 11	26.5	Mar. 30
		Apr. 24	(1)	27.4	Apr. 30
Brazos, Washington, Tex.....	45	24	26	45.5	24
Little, Little River, Tex.....	30	22	25	41.2	22
Colorado, Columbus, Tex.....	28	22	24	35.8	23
Guadalupe:					
New Braunfels, Tex.....	20	22	22	22.4	22
Gonzales, Tex.....	22	21	24	36.4	21
Victoria, Tex.....	16	22	28	25.6	25
Nueces, Cotulla, Tex.....	15	23	25	15.3	24
Rio Grande:					
San Marcial, N. Mex.....	2	20	(1)	3.8	30
San Benito, Tex.....	21	24	24	22.1	24
<i>Pacific drainage</i>					
Colorado, Parker, Ariz.....	7	25	(1)	7.7	30
Salt, Phoenix, Ariz.....	5	7	7	5.0	7

¹ Continued at end of month.

² Continued from last month.

³ Estimated.

MEAN LAKE LEVELS DURING APRIL, 1926

By UNITED STATES LAKE SURVEY

[Detroit, Mich., May 4, 1926]

The following data are reported in the "Notice to Mariners" of the above date:

Data	Lakes ¹			
	Superior	Michigan and Huron	Erie	Ontario
Mean level during April, 1926;				
Above mean sea level at New York.....	<i>Feet</i> 600.12	<i>Feet</i> 577.82	<i>Feet</i> 570.80	<i>Feet</i> 244.92
Above or below—				
Mean stage of March, 1926.....	-0.07	+0.30	+0.78	+0.78
Mean stage of April, 1925.....	-0.72	-0.56	-0.52	-0.69
Average stage for April last 10 years.....	-1.54	-2.22	-1.37	-1.13
Highest recorded April stage.....	-2.57	-5.41	-3.38	-3.51
Lowest recorded April stage.....	-0.42	-0.56	-0.52	+0.08
Average departure (since 1860) April level from the March level.....	+0.06	+0.23	+0.54	+0.59

¹ Lake St. Clair's level: In April, 1926, 573.10 feet.