

SPECIAL WARNINGS—WEATHER AND CROPS.

STORMS AND WEATHER WARNINGS.

By H. C. FRANKENFIELD, Supervising Forecaster.

[Aug. 24, 1920.]

Storm warnings.—There were no severe storms during the month, and no storm warnings were necessary. Small craft warnings for fresh to moderately strong winds were issued on July 3 for the Maine coast, on July 18 for the lower lakes, on July 23 for Lakes Michigan and Huron, and on July 24 for the New England coast. These warnings were justified.

From July 14 to 16, inclusive, low pressure prevailed over the southern Caribbean Sea and the north coast of South America, and some heavy rains and moderately strong winds were reported over the Panama Canal Zone.

Frost warnings.—Warnings of possible light frost in the cranberry bogs of New Jersey were issued on July 26 and 27. The lowest temperature reported was 37° on the morning of July 27, but no frosts occurred, so far as is known.

Special forecasts.—Special wind and weather forecasts were issued during the progress of the International Yacht races off Sandy Hook, N. J., and for the United States Army aeroplane flight from New York to Alaska.

WARNINGS IN OTHER DISTRICTS.

Chicago, Ill., District.—No frost warnings were issued during the month, except for northwestern Wyoming on the 6th.

Owing to the protracted dry weather in the far Northwest, the fire hazard had increased to such an extent that special fire-weather forecasts for Montana were requested by the district forester at Missoula, on the 20th inst., and were telegraphed daily during the remainder of the month.—*H. J. Cox.*

New Orleans, La., District.—No storm warnings were issued during the month and no storm occurred along the Gulf coast.

Mild weather prevailed generally with a greater number of rainy days over the southeastern portion of the district than the average.—*I. M. Cline.*

Denver, Colo., District.—No warnings of any kind were issued during the month.—*A. H. Thiessen.*

San Francisco, Calif., District.—The only warnings issued during the month were fire-weather warnings in California on the 22d. There were no storms on the coast.—*G. H. Willson.*

RIVERS AND FLOODS, JULY, 1920.

By ALFRED J. HENRY, Meteorologist in charge, River and Flood Division.

[Weather Bureau, Washington, Aug. 30, 1920.]

The floods of the month were mostly local and unimportant, except in the Carolinas, where general though moderate floods prevailed from the 20th to 25th. The usual details appear in Table No. I.

In a year of remarkably low water in the rivers of the Pacific drainage, it is rather unusual to find a stream of the magnitude of the Colorado discharging a large flood flow. The snow cover in the Grand and San Juan drainage, also in the upper Rio Grande drainage was exceptionally heavy and melting was delayed by low temperature until the season was so far advanced that melting was general and rapid in the higher elevations. As a result the Colorado was in flood from its source to its mouth and the upper Rio Grande was also in moderately high flood.

It seems probable that the Elephant Butte Dam of the Reclamation Service in New Mexico took care of the peak of the Rio Grande flood.

The following report on the Colorado flood has just come to hand:

REPORT ON RIVERS IN THE DENVER DISTRICT FOR MAY AND JUNE, 1920.

Colorado River.—At the end of March, 1920, reports from the tributary watersheds of the Colorado River indicated that the water content of the snow cover was greater than the normal in the Grand and Gunnison drainage areas and considerably greater in the Yampa, White, and San Juan areas. Interests affected were advised that the seasonal flow of the Colorado would be 30 per cent or more greater than the normal flow. Data

available at the end of June showed that the discharge for the early part of the summer was about 45 per cent in excess of the normal for the past eight years. The flow for May exceeded the normal by only 5 per cent, while the flow for June was about 80 per cent greater than the normal.

Flood stages were reached at several stations on the upper tributaries early in the third decade of May and at the rating stations at Elgin, Utah, and Fruita, Colo., near the close of the month. On May 27 interests at Topock, Ariz., were advised that the highest previous stage would be exceeded at Topock. The highest previous stage, 23.3 feet, was passed on the 29th, and 24.4 feet was reached at Topock on June 2. The discharge at Yuma attained its maximum for the season, 190,000 second-feet, on June 8. On June 9 the discharge was 163,000 second-feet, and by the end of June the discharge had decreased to 74,000 second-feet. Frequent advices of the expected discharge were furnished to the public affected by high water in the lower Colorado. Owing to the absence of discharge data during the early part of May the estimates were too low. After the middle of May the estimates were generally remarkably close to the measured discharge at Yuma.

Rio Grande.—Moderate stages prevailed in the Rio Grande during April. The highest stages in the lower Rio Grande occurred, as usual, in May. At Espanola, N. Mex., a stage of 7.4 feet, or 1.6 feet below the flood stage, was reached on May 22. Three spans of the bridge near Espanola were washed away on that date. The flood stage was reached at Albuquerque, N. Mex., on May 24 and at San Marcial, N. Mex., on the 27th. Timely and accurate forecasts were issued for the lower stations; in several instances the actual stages being within one-tenth of a foot of the predicted stages.—*F. W. Brist.*

TABLE NO. 1.—Flood stages during month of July, 1920.

River and station.	Flood stage.	Above flood stages—dates.		Crest.	
		From—	To—	Stage.	Date.
Atlantic Drainage:					
Neuse: Neuse, N. C.....	<i>Fect.</i> 14	20	22	<i>Fect.</i> 17.2	21
Smithfield, N. C.....	14	21	23	19.3	22
Cape Fear: Elizabethtown, N. C.....	22	22	25	29.9	23
Fayetteville, N. C.....	35	21	23	41.8	21
Haw: Moncuro, N. C.....	22	20	23	23.2	20
Santee: Rimini, S. C.....	12	23	27	13.0	25, 26
Ferguson, S. C.....	12	25	30	12.7	27
Saluda: Pelzer, S. C.....	7	22	22	7.0	22
Mississippi Drainage:					
Little Kanawha: Glenville, W. Va.....	22	25	25	23.9	25
Des Moines: Ottumwa, Iowa.....	10	14	16	11.0	16
Grand: Brunswick, Mo.....	10	(1)	19	12.3	1, 2
West Gulf Drainage:					
Grand: State Bridge, Colo.....	9	(1)	2	9.1	1
Pacific Drainage:					
Columbia: Marcus, Wash.....	24	(1)	(2)	28.5	15-19

¹ Continued from June.
² Continued into August.

MEAN LAKE LEVELS DURING JULY, 1920.

By UNITED STATES LAKE SURVEY.

[Dated: Detroit, Mich., August 4, 1920.]

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 July, 1920:	<i>Fect.</i>	<i>Fect.</i>	<i>Fect.</i>	<i>Fect.</i>
Above mean sea level at New York.....	602.94	581.03	572.63	245.70
Above or below—				
Mean stage of June, 1920.....	+0.19	+0.17	+0.14	+0.14
Mean stage of July, 1919.....	+0.40	-0.31	-0.81	-2.05
Average stage for July, last 10 years.....	-0.50	+0.11	-0.19	-1.15
Highest recorded July stage.....	-0.88	-2.55	-1.70	-3.02
Lowest recorded July stage.....	+1.46	+1.13	+1.17	+1.11
Average relation of the July level to—				
June level.....		+0.10	-0.10	-0.10
August level.....		+0.10	+0.20	+0.30

¹ Lake St. Clair's level: In July, 575.63 feet.

EFFECT OF WEATHER ON CROPS AND FARMING OPERATIONS, JULY, 1920.

By J. B. KINCER, Meteorologist.

The weather during July was generally favorable to farming interests. As is usual in this month, precipitation was rather unevenly distributed geographically and was heavy in limited areas, particularly in portions of Florida, the extreme lower Mississippi Valley, and in some south Atlantic districts; the temperature averaged near the normal in most sections of the country. Soil moisture was mostly ample for crop needs generally, although at the close of the month rain was needed in many central and northern and some southern parts of the country. It was rather cool for best development of warm-weather crops during part of the month in most central and northern districts east of the Mississippi.

The absence of extended rainy periods was unusually favorable for harvesting and the thrashing of small grains, and the harvest of winter wheat was completed by the end of the month in nearly all central and eastern districts and in most of the Central Rocky Mountain States, under favorable conditions. At the close of the month the harvest of spring wheat was also under way in the eastern part of the belt, and this crop was nearing maturity in the western portion. Spring wheat, which was in very satisfactory condition at the beginning of the month in the principal producing areas, was favorably affected by the weather of the first half of the month generally. During the latter half, however, rust became prevalent in many districts, and there was insufficient moisture in some sections. The high temperatures during the last decade in the north-central portion of the belt was conducive to the propagation of black rust, and considerable complaint was received of damage from this disease. There was a falling off in the condition of the crop during the month in all States of the belt, except in North Dakota, the deterioration being marked in Minnesota, Nebraska, and Montana, and rather pronounced in South Dakota and Iowa. At the close of the month the condition of the crop continued above the average in North Dakota, and was near the average in Idaho and South Dakota, but elsewhere it was unsatisfactory, especially in Washington and Iowa.

The warmer weather that prevailed in central and southwestern districts the first of the month favorably affected corn, and that crop made satisfactory progress in nearly all sections; thereafter mostly favorable weather prevailed for this crop, although it was rather cool for best growth in some east-central and northeastern localities. The weather was very favorable in the lower Great Plains, and corn made excellent advance during the month in that area, where the condition at the end of the month was from 40 to 70 per cent above the 10-year average, as reported by the Bureau of Crop Estimates. Late in the month, however, rain was needed in much of the central and upper Mississippi Valley, and in the western portions of Kansas, Nebraska, and Oklahoma. At the close of the month the condition of corn was better than the 10-year average quite generally, except in portions of the South and Northeast and in Illinois, where it was somewhat below the average.

Cotton made steady improvement during the first two decades of the month under the influence of favorable weather conditions, but during the last decade the progress was variable, the weather being rather unfavorable for growth in Florida, Alabama, parts of Mississippi, and in Louisiana, where frequent rains and lack of sunshine caused shedding and weevil activity. At the close of the month the crop was in better condition than at the beginning in nearly all sections of the belt, the improvement being more substantial in Texas, Oklahoma, and Tennessee than in the other States. There was practically no change in the condition, however, in Louisiana.

Oats and barley did well during the month, and the weather was mostly favorable for harvest; while potatoes, truck, and minor crops made satisfactory advance in most sections, although near the close of the month rain was badly needed for gardens and vegetables in many central and north-central localities, in the far Northwest, and at some places in the South. Pastures, ranges, and fruit maintained mostly satisfactory condition during the month, and live stock continued in good shape.