

Colorado; 12th, frost western valleys of Colorado and extreme north-central and extreme northwestern New Mexico; 14th, frost southwestern Colorado valleys, extreme northwestern New Mexico and extreme southern Utah; 22d, frost extreme southwestern Colorado, extreme northwestern New Mexico, and northeastern Arizona.

The following fire-weather warnings were issued: 7th, strong shifting winds in New Mexico, Arizona, and Utah; occasional showers probable in New Mexico, northeastern Arizona, and southeastern Arizona; 31st, strong southwest winds indicated in northern and eastern Arizona, New Mexico, and southern Utah; local showers probable in Utah. The conditions that followed justified the issue of the warnings.—*J. M. Sherier.*

SAN FRANCISCO FORECAST DISTRICT

The feature of prominence as disclosed by the daily weather charts was the presence, rare for the month of May, of well-defined cyclonic areas on two occasions over the ocean off the California coast. The first of these apparently formed off the coast preceding the 10th and caused rains in California from the 10th to 13th and another formed off the coast on the 14th and 15th and caused general rains over the same State from the 16th to the 20th. The rains were detrimental to some of the fruits and to newly-mown hay; otherwise they were beneficial. In the aggregate the benefit from the rains more than offset the damage done. Forecasts of their occurrence were accurate as to time and place. The precipitation in the San Francisco Bay region was unusually heavy and brought the catch of rainfall for the season well above the normal and produced at San Francisco the heaviest May rainfall since the record began in 1849. It is not possible to say whether the cyclonic areas actually formed off the coast or whether they moved southeastward from the Gulf of Alaska. The Pacific high on these two occasions was displaced far to the westward of its normal position, being centered north of the Hawaiian Islands, and this may have permitted both storms to advance southeastward along the eastern and northeastern periphery of the anticyclone.

No storms accompanied by winds of exceptional force occurred along the coast until the night of the 27th, when south winds of gale force were reported from the Washington-Oregon coast. Storm warnings were displayed at northern ports on the morning of the 27th.

As typifying the requests for meteorological information that come to a district forecast center, the following is an example. In the Imperial Valley large quantities of cantaloupes are raised for shipment, largely to eastern markets. The output this year, it is stated, will reach 15,000 carloads. On the 14th of May the following telegram was received:

ELCENTRO (IMPERIAL VALLEY), CALIF.,
May 14, 1925.

OBSERVER, U. S. WEATHER BUREAU,
San Francisco, Calif.

Recent high humidity with fairly warm temperatures has resulted in serious outbreak of mildew on cantaloupe vines. Unless

low humidity or temperatures exceeding 100° occur in next two days growers will have to spray. Growers anxious to know whether you forecast low or high humidity or very hot weather for Imperial Valley in next two or three days. Wire reply.

(Signed) E. GARTHWAITE.

The following telegram was sent in reply:

Neither very high temperatures nor very low humidity indicated next two or three days. Advise spraying.

BOWIE.

Conditions that followed were favorable to the spread of mildew.

There were no frosts of consequence during the month, except in the more northern part of this forecast district. The fruit belts of Washington and Oregon were kept advised from day to day as to what to expect in the way of low temperatures with reference to the firing of orchards.

No general fire-weather warnings were issued during the month, although on several occasions when low humidity was expected advices to exercise caution in slash burning were issued for Washington and Oregon.—*E. H. Bowie.*

RIVERS AND FLOODS

By H. C. FRANKENFIELD

Excepting that in the Rio Grande of Texas, no floods of consequence occurred during May, 1925. The rise continuing from late April in the Sulphur River was attended by comparatively small crop losses and a saving, through Weather Bureau warnings, of property valued at about \$10,000; while in the Trinity River flood no movable property was reported lost and the saving of property through the warnings was estimated at \$22,500. Prediction of both floods was timely and accurate.

In the more severe rise in the Rio Grande, which resulted from excessive rains over southwest Texas on May 27, 28, and 29, flood stage was passed at all gaging stations on the river, six lives were reported by newspapers to have been lost, bridges were washed out, levees broken, houses destroyed, livestock drowned, and crops ruined. Total reported losses were as follows: Bridges and tangible property, \$30,000; livestock, \$15,000; growing crops, \$20,000. No estimate has been received of the value of property saved through Weather Bureau warnings, but these were accurate and issued well in advance of the flood and are known to have resulted in a large saving of movable property and livestock.

The spring rise in the Colorado River passed off without reported damage, flood stage occurring at only two stations.

The spring rise of the Columbia River was still in progress at the close of the month. Report thereon will be made in the MONTHLY WEATHER REVIEW for June, 1925.

Rivers of the Mississippi system were unusually low for the time of year, but as this condition continued during the succeeding month more detailed mention thereof will be deferred until the June report.

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
MISSISSIPPI DRAINAGE					
Sulphur:	<i>Feet</i>			<i>Feet</i>	
Ringo Crossing, Tex.....	20	(¹)	1	23.4	Apr. 28
Finley, Tex.....	24	3	7	25.0	May 4, 5
WEST GULF DRAINAGE					
Trinity:					
Dallas, Tex.....	25	7	13	34.6	11
Trinidad, Tex.....	28	13	19	35.3	17
Trinity (Elm Fork), Carrollton, Tex.....	7	10	10	7.8	10
Rio Grande:					
Del Rio, Tex.....	10	28	30	23.2	29
Eagle Pass, Tex.....	16	28	30	33.7	30
Laredo, Tex.....	27	31	31	29.0	31
Rio Grande City, Tex.....	15	31	(²)		
COLORADO DRAINAGE					
Colorado:					
Lees Ferry, Ariz.....	12	22	(³)	13.2	28
Parker, Ariz.....	7	25	(³)	8.2	31
PACIFIC DRAINAGE					
Columbia:					
Marcus, Wash.....	24	16	(³)	30.4	26
Wenatchee, Wash.....	40	24	(³)	40.8	28
Vancouver, Wash.....	15	16	(³)	21.5	25, 26
Kootenai, Bonners Ferry, Idaho.....	26	20	28	29.4	24
Pend O'Reille, Newport, Wash.....	16	21	(³)	19.9	31
Clearwater, Kamiah, Idaho.....	14	20	20	14.1	20
Willamette, Portland, Oreg.....	15	16	(³)	21.7	26

¹ Continued from last month.
² Estimated.
³ Continued at end of month.

MEAN LAKE LEVELS DURING MAY, 1925

By UNITED STATES LAKE SURVEY

[Detroit, Mich., June 5, 1925]

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

Data	Lakes ¹			
	Superior	Michi- gan and Huron	Erie	Ontario
Mean level during May, 1925—	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>	<i>Feet</i>
Above mean sea level at New York.....	600.94	578.42	571.30	245.65
Above or below—				
Mean stage of April, 1925.....	+0.09	+0.07	-0.05	+0.04
Mean stage of May, 1924.....	-0.20	-0.82	-0.86	-0.45
Average stage for May, last 10 years.....	-1.04	-2.06	-1.25	-0.72
Highest recorded May stage.....	-2.11	-5.10	-3.12	-3.30
Lowest recorded May stage.....	+0.12	-0.82	-0.01	+0.69
Average relation of the May level to—				
April level.....		+0.3	+0.4	+0.4
June level.....		-0.2	-0.2	-0.2

¹ Lake St. Clair's level: In May, 1925, 573.74 feet.

EFFECT OF WEATHER ON CROPS AND FARMING OPERATIONS, MAY, 1925

By J. B. KINCER

General summary.—The weather conditions during May were largely unfavorable for most crops in much of the country. There were wide fluctuations in temperature, particularly during the latter part of the month when an abrupt change from record-breaking warmth for the season to damaging frosts was decidedly unfavorable. There was considerable harm done by the cool wave to tender vegetation and small fruits in the North Central States, with more or less damage to corn in some localities, and all vegetative growth was set back materially.

The cool wave did not reach the Southern States and middle Atlantic area with markedly harmful effect, although the growth of crops was checked. At the close of the month, however, seasonable warmth prevailed and conditions had improved considerably, though there was a widespread need for moisture over the eastern half of the country. In the more western States moisture conditions were generally favorable, except in the Southwest where severe drought continued in most districts.

Small grains.—Winter wheat made fair to very good progress in the principal producing sections during the first half of the month, with beneficial showers in the eastern portion of the belt. The latter part was much less favorable, however, as it was too cool and dry in the eastern wheat States, and there were complaints of dry and too warm weather in the southwestern portions of the Wheat Belt. There was some frost damage in a few localities, and the crop quite generally headed short because of deficient moisture, while insects and disease were harmful in Kansas. Spring wheat made fairly good advance, though it was somewhat too cool for rapid growth, and more moisture was needed in some localities. In most of the Spring Wheat Belt, however, the conditions were favorable, especially in the heavy producing sections of North Dakota. The weather was mostly unfavorable for oats because of insufficient moisture, and at the close of the month the crop was heading short.

Corn.—There was some delay in corn planting in the upper Mississippi Valley by reason of dry soil and cool weather, but planting made fairly good advance in most districts. Germination and growth were slow, however, especially in the eastern and central portions of the Corn Belt. Conditions were more favorable in the Great Plains States. Corn was considerably cut back by frost in some of the interior States, but it recovered nicely with the return of warmer weather.

Cotton.—The rainfall about the middle of the month in the central and eastern portions of the Cotton Belt was very beneficial, and considerable seed that had lain dormant for some time germinated with the increased moisture, while rains in Texas earlier in the month were helpful. Part of the month was too cool for cotton in the northern portions of the belt, and the late-planted cotton again needed moisture in some districts during the latter part, particularly so in southern Texas. On the whole the weather was favorable for cotton, and at the close of the month the crop was generally in satisfactory condition.

Miscellaneous crops.—Truck and garden crops suffered severely from the freeze in many interior and northern districts, but these made fairly good progress in other sections of the country. At the close of the month potato planting was well advanced in the Northeastern States, but growth was slow in the interior valleys because of coolness. Tobacco setting was retarded by dry weather in the Ohio Valley, and the transplanting of sweet potatoes was hindered in the Southeast by the same cause. Pasture lands and meadows were unfavorably affected in most of the eastern half of the country, but in the Northwest and Central-Western States conditions were favorable for the range and livestock. It was too dry for grazing interests in the Southwest.