items extending from the Gulf of Alaska southward to low
latitudes off our western coast. So obvious was the
trend of conditions to the westward that no hesitation
was felt in the issuance of the regular weekly weather
outlook on Saturday, February 12, predicting general
rains in the far western States with snows in the moun-
tains for the entire week. The day following storm
warnings were ordered along the California coast, and
warnings were issued to power and transportation inter-
ests to prepare for a succession of disturbances accom-
panied by heavy snows in the Sierra. The situation was
so unusual that conservatism was properly abandoned
and emergency measures were advocated.

The initial disturbance reached the California coast
on February 13 and wet weather prevailed over the
greater part of the Pacific Slope from then until the 26th,
when the weather cleared and became settled in Calif-
oria, although light rains continued in parts of the
North Pacific States. Especially stormy weather
prevailed in California from the 13th to the 17th. Warnings
were required on some part of the coast during all of this
time, and strong winds or gales occurred daily. Excep-
tionally strong gales occurred during the night of 15th-
16th, when a maximum velocity of 76 miles, southeast,
was recorded at Point Reyes. The most notable feature,
however, of this period was the extraordinary rainfall in
southern California, which was unequalled in amount
for any similar period since the deluge of January, 1916.
Precipitation totals ranged from 5 to 12 inches at a
great many observation points, and in some cases even
greater amounts were reported. Many bridges were
washed away, numerous highways rendered impassible
by washouts, and communications variously interrupted.
The pressure situation over the adjacent ocean during
this time is especially worthy of remark. It was noted
above that the Pacific high-pressure system was con-
siderably south of its normal position, with concomitant
disturbed weather on the coast north of latitude 35°
during the time that this condition prevailed. During
the period just mentioned, or more specifically, from the
11th to the 26th, inclusive, this high pressure system
was not only far south of its normal position, but for a
part of the time, namely, that when the stormiest weather
was prevailing in southern California, it disappeared
from the area of observation, and there was literally no
Pacific High in evidence. The first indication of its
reestablishment was on the morning of February 18, and
so obvious were the symptoms that special advices were
telegraphed to southern California Weather Bureau
officials and issued to the press predicting that the period
of persistent rainfall was about to terminate, a forecast
which was fully verified for the central and southern
parts of California, and especially designed to relieve the
anxiety which was entertained over a possible continua-
tion of the heavy rains in the extreme southern end of the
State, where repairs and rehabilitation were in progress.

The return to higher pressures over the lower latitudes
of the ocean was attended by the reappearance of dis-
turbances in the higher latitudes and storm warnings
were almost continuously required at north coast ports
from the 17th to the 25th, inclusive.—T. R. Reed.

RIVERS AND FLOODS
By H. C. Frankenfield

Atlantic drainage.—A period of rain from February 18
to 23 with local heavy falls on February 19 and 23 caused
moderate floods in the basins of the James River of Vir-
ginia and in the rivers of the Carolinas. The floods were
of short duration, the usual warnings were issued, and
the damage was little or nothing. Property to the value
of $35,000 was reported as having been saved by the
warnings. The Santee River of South Carolina was still
in flood at the close of the month and did not crest at
Ferguson until March 2.

East Gulf drainage.—Heavy rains on February 11-12
over the drainage area of the Alabama River caused a
rapid rise in all rivers of that district, that in the upper
reaches of the Alabama River being accentuated by the
closing of many of the gates at Lock No. 12 and Mitchell
Dam on the Coosa River. From 8 a.m., February 13,
to 8 a.m., February 14, the rise in the Coosa River at
Wetumpka, Ala., was 37.6 feet, and that in the Alabama
River at Montgomery, Ala., 23.4 feet. The floods, how-
ever, were moderate, and no losses were reported except
certain areas that had stayed back to the river after
having been driven out of the lowlands when warnings
were received.

The same general conditions prevailed over the Black
Warrior and lower Tombigbee drainage of Alabama,
although in much more pronounced form below the
mouth of the Black Warrior River. The crest stage at
Demopolis, Ala., was 52.5 feet, 13.5 feet above the flood
stage, at 5 p.m., February 22, but at Lock No. 10,
Tuscaloosa, Ala., the highest stage was 0.3 foot below
the flood stage of 46 feet. Impounding of water behind
the dam at Lock No. 17, 25 miles above, probably pre-
vented a further rise of 6 or 8 feet at Tuscaloosa, and of
a foot or two more at Demopolis. Lowlands for a dis-
tance of 175 miles below Demopolis were inundated,
but the losses were only about $10,000, as a greater flood
had occurred during January and after that flood there
was little property subject to damage left in the river
bottoms. Property valued at $4,000 was saved by the
warnings.

Floods in the Pascagoula and Pearl systems of Mis-
sissippi and Louisiana were also moderate as a rule.
The weather had been dry for several months; otherwise
the amount of rain that fell from February 12 to 14 and
on February 18 and 19 would have produced a much
greater flood. The Lower Pearl and West Pearl Rivers
were still in flood at the close of the month. Loss and
damage as reported was $65,900, while the reported value
of property saved through the warnings was $40,700.
The loss to farmers was negligible.

Ohio drainage.—The January floods in the Wabash and
White Rivers of Indiana continued during the early days
of February, an ice gorge in the Wabash below Covington,
Ind., causing a stage at Covington of 24 feet, or 8 feet
above the flood stage, on February 1. There was a
slight additional swell caused by the rains of February 5,
but nothing more, and no damage was reported except
that given in the Monthly Weather Review for January,
1927.

The Green River of Kentucky was generally in flood
from about January 22, and it was not until February 10
that the flood waters subsided over the lower reaches.
The crest stages were from 12 to 14 feet above the flood
stages, with a maximum at Lock No. 4, Woodbury, Ky.
Warnings were issued and warnings were widely distributed before and during the
high water, and the total of reported losses was small.
The American Red Cross contributed effectively to relief
work along the middle reaches of Green River.

Heavy rains over the upper Tennessee River drainage
on February 22 and 23 caused a decided rise in all upper
tributaries and the upper river, with moderate flood
stages in several of the former and at Rockwood, Tenn.,
on the latter. No damage was reported. At the end of

FEBRUARY, 1927 MONTHLY WEATHER REVIEW
the month the crest of this rise had just reached Guntersville, Ala.

Ohio River.—The Ohio River passed below the flood stage of 28 feet at Louisville, Ky., on February 1, and at Cloveport, Ky., during February 4, but not until 10:30 p.m., February 9, at Evansville, Ind., and during the night of February 14 at Cairo, Ill. At Evansville a crest of 44.8 feet was reached on January 30, and at Cairo a crest of 46.9 feet on February 6 and 7. These latter dates marked the end of the flood that began at Pittsburgh, Pa., on January 21. During this flood the Cumberland and Tennessee Rivers were not in flood, but the Ohio above the mouth of the Cumberland was much higher than in late December and early January. The upper Mississippi was also low.

This flood did not differ much from other great Ohio River floods, except in the remarkable smallness of the loss and damage. In the Evansville district, direct Ohio River losses were $69,940, and in the Cairo district, $48,950, of which $39,250 was in crops, mostly in the State of Kentucky. Reported savings through flood warnings were between $50,000 and $100,000 in the Evansville district and $77,000 in the Cairo district. About 23,000 acres of land were overflowed in Illinois and 15,000 acres in Kentucky.

Lower Mississippi River.—The flood in the lower Mississippi River was virtually continuous throughout the month. The river at New Madrid, Mo., reached the flood stage of 34 feet on February 1, a crest of 37.6 feet on February 8, and had fallen only to 29.3 feet on February 26, when another and greater rise set in. Report on this flood must be further delayed, as the river did not reach the flood stage of 17 feet at New Orleans until February 13, and was still rising at the end of the month. The Yazoo River of Mississippi remained high throughout the month, and the Atchafalaya and Ouachita Rivers of Louisiana moderately so.

Illinois River.—Heavy rains and melting snows around February 4 and 5 caused another marked flood in the Illinois River with crests from 4.5 to about 8 feet above the flood stages. A full river when the rains began and a low Mississippi River balanced one another and the rise was about normal for the amount of rain and melted snow. Warnings were issued for 10 days, and below Peoria the river was still in flood at the close of the month.

White and Black Rivers of Arkansas.—The floods in these rivers began about January 22 and were due to a series of heavy rains from January 19 to 26. While the floods were not severe, several thousand acres of farm land were overflowed in the territory back of White River Levee and about 1,000 residents were driven from their homes for two weeks or more. The levee broke in a few places, but the greater portion stood. Most of the stock and portable property had been removed as soon as the first warnings were received. The lower St. Francis River of Arkansas was also somewhat above flood stage during the greater portion of the month, as was also the Arkansas River near its mouth, mainly on account of the flood in the Mississippi River.

Colorado River and tributaries.—Precipitation from February 11 to 17 was heavy at times over northern and central Arizona and rises unusual for the season occurred in the lower Colorado and the Gila Rivers. While flood stages were not reached in the Colorado, the situation was such as to necessitate warnings. River conditions in the lower valley were precarious, the people were much alarmed, and the warnings proved of great value. There was no damage. In the Gila and Salt and other tributary streams flood conditions prevailed, with a crest of 10 feet, 5 feet above the flood stage, in the Salt River at Phoenix, Ariz., on February 17. Warnings were issued for the lower districts, but little could be done to protect crops. Losses reported were $11,800. The heaviest rains occurred over a limited area in the central portion of the State, and at Prescott the rainfall was the greatest recorded in any one month since 1866.

Pacific drainage—Sacramento system.—Five days of excessive rains within a week over the upper drainage of the Sacramento River of California could have but one sequence, and the only question was of the intensity of the flood. At Kennett, the total rainfall from February 14 to 20, inclusive, was 13.15 inches, of which all but 0.45 inch fell in five days which, however, were not consecutive. At Red Bluff, 73 miles below Kennett, the rainfall during the same period was 4.44 inches, and somewhat less farther south. There were also heavy rains over the tributary mountain drainage to the eastward.

By February 18 it was apparent that a flood was imminent, and warnings were issued for the Sacramento and for the mountain tributaries. Late afternoon reports on February 20 indicated that heavy rains were falling upon the snows over the high altitudes to the north and on the soft snow in the Sacramento Canyon, and additional warnings were issued at once. The heavy rains continued to fall, and on the morning of February 21 general warnings were issued for the Sacramento River as far south as the mouth of the American River. Thirty gates of the Sacramento Weir were opened during the day, permitting a vast quantity of water to flow into Yolo Basin, and at the same time Fremont Weir, near the mouth of Feather River, was discharging into the basin large volumes of excess water from the Feather-Yuba and Bear Rivers. Then began a spectacular fight by the farmers below to save their lands. Their efforts were only partially successful, and within two days, more than 15,000 acres of land had been flooded. One large tract of 6,000 acres was protected by sandbags on top of a 4-mile levee, and the water crested within four inches of the top of the double line of bags. A break in the levee two miles above Colusa on the Sacramento River was the only break reported, and several thousand acres of orchards were overflowed.

Warnings were frequently issued and they covered all sections affected. At Sacramento the situation was much relieved by the opening of the gates of the weir. Reports of losses were very incomplete, but those reported aggregated $275,000, of which $80,000 was in crops. The value of property saved through the warnings was given as $155,000. Many expressions of commendation for the service rendered by the Weather Bureau were received, and among them letters from the managers of the reclamation and levee districts, who were enabled to combat successfully with the flood waters.

Willamette system.—There were two floods in the system. The first, during the early days of the month, was unimportant, but the second was more pronounced and caused much damage.

The second flood was caused by the same series of general and heavy rains that caused floods in California. In Oregon the season had been unusually wet, and when the rains began on February 15 they fell upon soil well saturated, with deep snow in the mountains and some snow in the foothills. The heaviest rains fell on Feb-
ruary 19 and 20, and on the morning of the latter date the first warnings were issued for the Santiam River and a few hours later for the Willamette and tributaries as far down as Eugene, Oreg. On February 21 warnings covered the lower river, with 18 feet, or 3 feet above flood stage, forecast for Portland. The actual crest was 18.1 feet on February 24. The breaking of a dyke in the Santiam River, I mile above Jefferson, Oreg., probably lowered the crest at Jefferson about 1 foot. There were also floods at the same time in the Rogue and Umpqua Rivers of southern Oregon, as well as in smaller streams. No service is maintained on these rivers.

Losses of $300,000 were reported, not including losses due to suspension of business. The reported value of property saved by the warnings was $161,000. Information as to the latter item was, as usual, very incomplete. Expressions of appreciation for the service rendered were numerous.

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**River and station**

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<thead>
<tr>
<th>River and station</th>
<th>Above flood stages (dates)</th>
<th>Crest</th>
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**ATLANTIC DRAINAGE**

- James, Va.: Columbia, Va.
- Richmond, Va.: 10
- Bogue: Warm Springs, Va.: 30
- Weldon, N. C.: 30
- Pecos: 37
- Darlington, S. C.: 12
- Ferguson, S. C.: 12
- Black Bluffs, S. C.: 12
- Palmetto, S. C.: 14
- Chappells, S. C.: 14

**EAST GULF DRAINAGE**

- Alabama, Selma, Ala.: 35
- Escambia, Pensacola, Fla.: 33
- Apalachicola, Miss.: 26
- Chickasawhia, Miss.: 22
- Enterprise, Fla.: 22
- Biloxi, Miss.: 15
- Leaf, Hattiesburg, Miss.: 15
- Pearl: 19
- St. Joseph, Montpelier, Ohio: 10

**MISSISSIPPI DRAINAGE**

- Louisvile, Ky.: 28
- Danville, Ky.: 51
- Danville, Ky.: 46
- Danville, Ky.: 35
- Covington, Ind.: 25
- Mantucky, Ind.: 25
- Shawneetown, Ill.: 25
- Paducah, Ky.: 13
- Cairo, Ill.: 9
- Governors: 9
- Linc. Ohio: 9
- Lock No. 4, Woodbury, Ky.: 33
- Lock No. 2, Rumsey, Ky.: 34
- Woodford, Ky.: 18
- Lafayette, Ind.: 11
- Covington, Ind.: 11
- Tepe Haute, Ind.: 16
- Vincennes, Ind.: 16
- Mt. Carmel, Ill.: 16
- Tippacanoe, Ind.: 6
- White, Ind.: 18
- White, Ind.: 18
- White, Ind.: 18
- White, Ind.: 18
- Edwardport, Ind.: 16

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**Rivers and station**

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<tr>
<th>River and station</th>
<th>Flood stage</th>
<th>Above flood stages (dates)</th>
<th>Crest</th>
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**MINNESOTA DRAINAGE—continued**

- Minnesota: 20
- Rockwood, Tenn.: 20
- French Broad: 12
- Big South Fork: 12
- Holston: 14
- North Fork: 14
- Clinch: 14
- Cumberland: 14
- Mississippi: 14
- New Madrid, Mo.: 14
- Memphis, Tenn.: 14
- Helena, Ark.: 14
- Arkansas City, Ark.: 14
- Greenville, Miss.: 14
- Vicksburg, Miss.: 14
- Natchez, Miss.: 14
- Angola, La.: 14
- Baton Rouge, La.: 14
- Donaldsonville, La.: 14
- New Orleans, La.: 14

**ILLINOIS**

- Morris, Ill.: 13
- Peru, Ill.: 13
- Hennion, Ill.: 10
- Peoria, Ill.: 15
- Havana, Ill.: 15
- Beardstown, Ill.: 15
- Pekin, Ill.: 15
- St. Francis: 17
- Arkansas: 25
- White: 30
- Newport, Ark.: 30
- Newport, Ark.: 30
- Varena, Ark.: 30
- Varena, Ark.: 30
- Black: 11
- Corning, Ark.: 11
- Jones: 27
- Cache: 9
- Cache: 9
- Tallula: 25
- Tallula: 25
- Selma: 14
- Selma: 14
- Atchafalaya: 27
- Atchafalaya: 27
- Little: 30
- Little: 30
- Gulf: 5
- Kelton, Ark.: 5
- Salt: 5
- Salt: 5
- Sacramento: 23
- Sacramento: 23
- Yuba: 14
- Yuba: 14
- Willamette: 12
- Eugene, Oreg.: 12
- Albany, Oreg.: 12
- Salem, Oreg.: 12
- Oregon City, Oreg.: 12
- Portland, Oreg.: 12
- Willamette: 30
- Willamette: 30
- Willamette: 30
- Santiam: 30
- Santiam: 30
- North Santiam: 15

**PACIFIC DRAINAGE**

- Gila: 8
- Kelton, Ark.: 8
- Salt: 8
- Salt: 8
- Sacramento: 21
- Sacramento: 21
- Yuba: 14
- Yuba: 14
- Willamette: 12
- Eugene, Oreg.: 12
- Albany, Oreg.: 12
- Salem, Oreg.: 12
- Oregon City, Oreg.: 12
- Portland, Oreg.: 12
- Willamette: 30
- Willamette: 30
- Willamette: 30
- Santiam: 30
- Santiam: 30
- North Santiam: 15

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**MEAN LAKE LEVELS DURING FEBRUARY, 1927**

<table>
<thead>
<tr>
<th>By United States Lake Survey</th>
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<tr>
<td>Detroit, Mich., March 4, 1927</td>
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The following data are reported in the Notice to Mariners of the above date:

**Lakes**

<table>
<thead>
<tr>
<th>Data</th>
<th>Superior</th>
<th>Michigan</th>
<th>Huron</th>
<th>Erie</th>
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**Mean level during February, 1927:**

**Above or below:**

Mean level of February, 1927:

- Superior: 601.32
- Michigan: 578.25
- Huron: 570.97
- Erie: 245.31
- Ontario: 245.31

**Highest recorded February stage:**

- Superior: 601.32
- Michigan: 578.25
- Huron: 570.97
- Erie: 245.31
- Ontario: 245.31

**Average departure from 1900 datum:**

- Superior: +0.05
- Michigan: +0.03
- Huron: +0.07
- Erie: +1.48
- Ontario: +1.48

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1 Lake St. Clair’s level: In February, 1927, 572.40 feet.