

produced daily rains over the North Pacific States and a substantial rainfall in nearly all parts of California. The last of this series of Lows passed inland on the 9th, attended by general rains over the entire State of California, and this was quickly followed by rising pressure over the ocean and falling pressure over the Aleutian Islands and the Gulf of Alaska. The storms of the first 10 days of the month made necessary the frequent display of storm warnings on the coasts of the north Pacific States and also on the north California coast. These warnings were in practically every instance verified. During the period from the 10th to the 14th the pressure rose decidedly over the region west of the Rocky Mountains and the weather became unduly cool for the season, with frequent frosts in California and freezing temperatures in other interior parts of this forecast district, but there was no appreciable damage done thereby.

From the 11th on to the 21st the pressure remained abnormally low over the Aleutian Islands and the north part of the Gulf of Alaska, and it was observed during this period that while rains were frequent in Washington and Oregon and extreme northwestern California, no rain fell elsewhere in California. While the center of this main depression was over the Alaskan region referred to, one secondary depression after another passed from it eastward, requiring frequent displays of storm warnings north of Cape Blanco. These displays were practically without exception followed by winds of gale force, with thick, rainy weather, along that part of the coast where the warnings were ordered. At the same time there was a tendency for high barometric pressure to persist over the plateau region. The most significant of these areas of maximum pressure appeared over the northwestern States on the 22d and, moving slowly east-southeastward, dominated the meteorological conditions west of the Rocky Mountains until the end of the month. It is worthy of note that this high pressure made its appearance over the Northwestern States following the eastward movement of an area of high barometer of equal magnitude which first made its appearance north of Midway Island on the 17th and 18th. In other words, the apparent period of time required for this HIGH to cross the eastern Pacific from the longitude of Midway Island was approximately between four and five days, or at the rate of 10°, in longitude, per day.

Following the 21st another deep depression moved eastward over the Aleutian Islands to the Gulf of Alaska and the pressure remained low over this area until the close of the month, during which time the pressure continued abnormally high over the region west of the Rocky Mountains, attended by generally fair weather with temperature near or somewhat below the normal in nearly all sections except southern California, where temperatures were unseasonably high.—*E. H. Bowie.*

RIVERS AND FLOODS

By H. C. FRANKENFIELD

There were no floods during the month of November except in the Willamette River of Oregon and a few of its tributary streams.

After a season that was the driest of record heavy rains set in about October 25 west of the Cascade Mountains, and during the nine-day period from October 25 to November 2, inclusive, the precipitation ranged from about 3.5 to more than 20 inches. The heaviest rains

fell on the southern coast, but over portions of the Willamette Valley the fall exceeded 14 inches. As the soil was extremely dry, the floods were not severe, and flood stages were not general except in the upper tributaries. There was a second rise later in the month from some moderately heavy rains falling upon the saturated soil, and the main stream rose to higher stages than were reached during the first rise.

Warnings were issued at the proper time and no serious preventable damage occurred. The total losses reported amounted to \$66,700, almost entirely to railroad property, highways and bridges.

Beginning with December 1, 1924, all published stages of water at locks and dams on the Ohio River will be referred to the zero of the *low-water* gage at each dam. Changes, where made, were for the purpose of securing uniformity and will prove of material assistance in the efficient operation of the numerous locks and dams.

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC DRAINAGE					
Santee: Rimini, S. C.-----	Feet 12	24	24	Feet 12.0	24
PACIFIC DRAINAGE					
Willamette:					
Eugene, Oreg.-----	10	1	3	14.0	1
Oregon City, Oreg.-----	12	22	22	12.3	23
Willamette (Coast Fork) Saginaw, Oreg.-----	9	(1) 2	3	12.4	Oct. 31
Santiam: Jefferson, Oreg.-----	10	22	22	11.0	2
				13.8	23

¹ Continued from last month.

MEAN LAKE LEVELS DURING NOVEMBER, 1924

By UNITED STATES LAKE SURVEY

[Detroit, Mich., December 3, 1924]

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 November, 1924:				
Above mean sea level at New York.....	Feet 601.72	Feet 578.76	Feet 571.08	Feet 244.95
Above or below—				
Mean stage of October, 1924.....	-.17	-.42	-.62	-.50
Mean stage of November, 1923.....	-.17	-.30	+.12	.61
Average stage for November, last 10 years.....	-.76	-1.36	-.72	-.47
Highest recorded November stage.....	-1.79	-4.16	-2.59	-2.87
Lowest recorded November stage.....	+.22	-.30	+.38	+1.54
Average relation of the November level to—				
October level.....		-.2	-.2	-.2
December level.....		+.2	+.1	+.2

¹ Lake St. Clair's level: In November, 1924, 573.74 feet.

EFFECT OF WEATHER ON CROPS AND FARMING OPERATIONS, NOVEMBER, 1924

By J. B. KINCER

General conditions.—The first half of November was characterized by mild temperatures and very little rainfall in practically all sections east of the Rocky Mountains, and droughty conditions had become rather severe quite generally in that area. The principal effects of the deficient moisture in the interior and South were the dry-

ing out of meadows and pastures, and poor germination and growth of late-planted winter grains; while in much of the South it was too dry for seeding and for growth of late gardens and fall and winter truck. About the middle of the month, however, moderate to generous rainfall occurred in much of the Ohio Valley, western Tennessee, Arkansas, the lower Great Plains, and in the lower Missouri and middle Mississippi Valleys, largely relieving the droughty conditions in those sections. A little later in the month generous rains effectively broke the drought in the more eastern States, but no relief was reported in the central Gulf districts, where the persistent deficiency in moisture had materially reduced fall crops and delayed seeding.

Under the influence of continued mild, sunny weather seasonal farm work made exceptionally good progress except for interruption to fall plowing by lack of soil moisture in many districts. There was no material frost damage in the Southern States, as killing frost in general was later this year than the average in that area; in the southern Plains many stations reported the latest dates of record for the first killing frost in fall.

Small grains.—Winter wheat generally needed moisture during the first half of the month, especially in the wheat States east of the Mississippi River. The early-seeded wheat continued to make satisfactory progress in most sections and furnished good pasturage in the lower Missouri Valley and Kansas, but it was too dry in most sections for the late-seeded. The crop was benefited, however, in much of the principal producing area, by increased moisture about the middle of the month, while the outlook was materially improved over the middle Atlantic area during the latter part. At the close of the month the crop was in generally good condition in Illinois and most of Missouri. More moisture was needed in Iowa, Nebraska, and northern Kansas, but wheat was reported excellent in the southern half of Kansas, and conditions were generally favorable from the Rocky Mountains westward, especially in the far Northwest,

where the crop was reported as doing well. In most of the Southern States it was much too dry for small grain crops, and there was considerable delay in seeding.

Corn and cotton.—The weather was generally favorable for husking and cribbing corn in the principal producing States, and this work made rapid progress during the month. In the upper Ohio Valley sections the damp weather after the middle of the month was especially helpful in shredding and husking, but a considerable quantity of corn was too soft and damp to crib. At the close of the month cribbing was well along.

November was generally warm and dry throughout the Cotton Belt, which made unusually favorable conditions for picking and ginning, and resulted in a material increase in output by enabling very close picking to be made without loss through unfavorable rain. At the close of the month harvest had been practically completed generally, except in the more northwestern and northeastern portions of the belt.

Ranges, pastures, and stock.—Meadows and pastures continued poor in central and west Gulf areas, with serious water shortage. In the central valley States meadows were unfavorably affected by lack of moisture during the first half of the month, but the latter half was more favorable. Livestock in general were favorably affected by the mild, open weather, especially in the great western grazing districts, though continued drought in the Southwest was decidedly detrimental to ranges.

Miscellaneous crops.—Winter truck crops did well in the Pacific Coast States, and the weather was favorable for irrigated truck in the west Gulf area. Elsewhere in the South gardens and late truck were seriously affected by the continued lack of moisture, although they did fairly well in most of the south Atlantic districts. In Louisiana sugar cane continued in poor condition, and the short crop resulted in some factories being idle. The harvest of sugar beets made satisfactory progress quite generally, while for potato digging in the Northeast the first part of the month had excellent weather.