

ably in energy in their eastward movement as they approached the Great Lakes, and resulted in more than the usual amount of precipitation in the eastern and southern portions of the region. The relatively low temperature in the Lake region was, moreover, a result of this development, producing as it did, steep gradients and strong northwest winds in the rear of the disturbances.

However, there was really no storm of unusual intensity during the entire month. The disturbances were for the most part of moderate energy as they passed across the region. Warnings, either small craft or storm, were displayed on the Great Lakes on various occasions; and frost warnings were issued when conditions warranted over the eastern and southern portions of the Forecast District where vegetation required protection.

The special long-range forecast service for the protection of fruit from the Pacific Northwest in transit through the Dakotas and Minnesota was begun on October 21.—*H. J. Cox.*

NEW ORLEANS FORECAST DISTRICT

The month averaged warm and rainy for the season, although during the last two weeks a number of small, North Pacific highs, attended by cool periods, moved over the district.

The first frosts of the season occurred on the 21st and 24th in the extreme northwestern portion of the district and were in accordance with warnings issued the preceding mornings. The first general frost warning for the northern portion of the district was issued on the 24th. Frost occurred the following morning, not only in the northern portion, but also in interior sections of the extreme southeastern portion. No frosts of importance occurred during the remainder of the month except on the 31st, in the more northern sections of the district, and this was predicted.

No general windstorm occurred. The only storm warnings were issued for the Louisiana coast on the 23d, at 8.30 p. m., because of squally conditions on the Texas coast, which were expected to move eastward with a disturbance from south Texas. The disturbance advanced as expected, but did not cause verifying winds on the Louisiana coast and warnings were lowered the next morning. On the 28th, small craft warnings were displayed on the east and middle coasts of Texas for fresh to strong southerly winds.—*R. A. Dyke.*

DENVER FORECAST DISTRICT

With high barometric pressure predominating over the middle and southeastern portions of the district and the frequent passage of depressions eastward along the Canadian border, the month was unusually mild and precipitation was deficient everywhere except in the northwestern and extreme southeastern portions of Wyoming. There was an almost entire absence of severe weather conditions, so that no general warnings were necessary. Frost and freezing temperature advices, most of which were verified, were issued from time to time for portions of southern Wyoming, western Colorado, and eastern New Mexico.—*E. B. Gittings, jr.*

SAN FRANCISCO FORECAST DISTRICT

On October 4 the depression which had occupied the Gulf of Alaska for several days deepened rapidly and

showed signs of moving onto the coast of Washington and British Columbia. Advisory warnings of this probability were consequently sent out to display stations in Oregon and Washington. The disturbance, however, moved northward and diminished in intensity and warnings were not hoisted until the second day after, when they were displayed at all ports from Marshfield north. Southerly gales occurred that day along the coast. On the 8th a new disturbance developed in the Gulf of Alaska and southeast warnings were ordered from Eureka to Cape Flattery in the morning, and extended south to Point Reyes in the evening. Strong winds and gales followed during the night and day after. Timely warnings of rain were sent to all fruit-drying interests in northern California in connection with this disturbance, so that all were enabled to get their fruit under cover.

Conditions began to show a generally disturbed con-
 plection over the northeast Pacific on the 9th, and by the 12th a well developed Low was approaching the Oregon-Washington coast which seemed to require the display of warnings. These were consequently ordered from Cape Blanco north, but were not justified by wind conditions as registered at coast stations, and although gales presumably occurred at sea, the warnings were allowed to expire the day following. However, on the 14th they were displayed again, due to the inward passage of a portion of the ocean Low over British Columbia, and this time they were followed by strong gales on the coast. The pressure during this period was abnormally low over the greater part of the northeast Pacific, readings in the Gulf of Alaska being below 29.00 inches. Warnings were continued until noon of the 16th, attendant gales subsiding that night.

Another low pressure system of similar character filled the northeast Pacific Ocean during the ensuing week, and on the approach of this disturbance to the Oregon-Washington coast southeast warnings were again displayed, which were verified by the occurrence of strong gales during the day. There was no occasion for warnings during the remainder of the month and no further displays were ordered.—*T. R. Reed.*

627.41 (73) RIVERS AND FLOODS

By H. C. FRANKENFIELD

Report has already been made in the MONTHLY WEATHER REVIEW for September, 1926, of the destructive floods that occurred during that month in the rivers of Indiana, Illinois, Iowa, Missouri (except in the Missouri and Grand Rivers), eastern Kansas and eastern Oklahoma. In general the rains that caused these floods began during the second week of August and continued through the early days of October, although they were neither so widespread nor heavy during the second half of September. Over the Great Central Valleys the rainfalls for that month occurred generally in five principal periods (the last of which continued into October) as follows: September 1-6, 9, 12-16, 20, and 22-October 5. These rains were so phenomenal for the season that a table was prepared showing the general rain conditions for September over the flooded areas. The column showing the excess of rain above the normal amounts is especially significant.

Station	Drainage area	September rainfall		
		Number of days with 0.01 or more	Total amount	Excess over normal
Burlington, Kans	Neosho	9	12.30	7.96
Le Roy, Kans	do	12	20.10	15.85
Iola, Kans	do	13	14.28	10.42
Oswego, Kans	do	9	8.49	4.88
Wyandotte, Okla	do	9	12.48	-----
Fort Gibson, Okla	do	10	9.27	-----
Marion, Kans	Cottonwood	6	4.85	2.33
Emporia, Kans	do	11	11.82	8.29
Independence, Kans	Vardigris	13	9.07	5.30
Okay, Okla	do	10	10.02	-----
Calico Rock, Ark	White	11	4.70	1.13
Great Bend, Kans	Arkansas	9	6.58	-----
Wichita, Kans	do	10	..01	1.88
Arkansas City, Kans	do	11	8.51	-----
Ralston, Okla	do	10	12.16	-----
Fort Smith, Ark	do	9	6.83	3.66
Manhattan, Kans	Kansas	10	7.55	4.19
Topeka, Kans	do	14	6.38	2.82
Sioux Center, Iowa	Floyd	9	16.12	13.17
Le Mars, Iowa	do	8	6.79	3.36
Sioux City, Iowa	do	14	7.18	4.36
Inwood, Iowa	Big Sioux	8	6.46	3.67
Rock Rapids, Iowa	do	10	6.13	3.54
Boone, Iowa	Des Moines	14	11.77	7.72
Des Moines, Iowa	do	17	10.24	6.71
Ottumwa, Iowa	do	15	12.75	8.90
Van Meter, Iowa	Raccoon	16	9.97	-----
Gallatin, Mo	Grand	10	12.39	8.35
Chillicothe, Mo	do	14	11.33	5.59
Brunswick, Mo	do	15	11.17	6.78
Kidder, Mo	do	16	13.89	9.65
Trenton, Mo	Grand (Thompsons Fork)	18	11.86	7.60
La Claire, Iowa	Mississippi	20	10.77	7.36
Davenport, Iowa	do	18	8.56	5.11
Muscataine, Iowa	do	17	8.85	5.25
Keokuk, Iowa	do	16	12.62	8.76
Warsaw, Ill	do	17	12.18	-----
Quincy, Ill	do	19	11.64	6.96
Hannibal, Mo	do	18	13.73	10.17
Louisiana, Mo	do	21	14.36	10.41
Grafton, Ill	do	16	7.35	3.63
St. Louis, Mo	do	15	5.58	2.67
Chester, Ill	do	13	4.31	59
Gape Girardeau, Mo	do	12	2.79	47
Cairo, Ill	do	11	4.47	2.00
South Bend, Ind	Illinois-Kankakee	18	4.97	1.78
Hamlet, Ind	do	16	5.83	-----
Wheatfield, Ind	do	17	7.56	4.62
Thayer, Ind	do	18	6.38	-----
Kankakee, Ill	do	18	10.35	7.28
Chicago, Ill	Lake Michigan	17	5.03	2.01
Aurora, Ill ¹	Illinois	15	7.94	3.97
Pontiac, Ill ¹	do	15	10.85	7.70
Morris, Ill	do	18	9.58	6.99
Peru, Ill	do	21	12.03	-----
Henry, Ill ¹	do	18	10.84	7.26
Peoria, Ill	do	17	12.76	9.64
Havana, Ill	do	19	8.94	4.90
Beardstown, Ill	do	17	10.49	-----
Pearl, Ill	do	17	15.94	-----
Berne, Ind ¹	Maumee	16	10.63	7.19
Fort Wayne, Ind	do	17	6.76	3.71
Defiance, Ohio ¹	do	16	8.38	5.63
Napoleon, Ohio	do	15	9.28	6.43
Toledo, Ohio	do	14	8.07	5.71
Bluffton, Ind	Wabash	17	8.62	5.59
Huntington, Ind ¹	do	19	9.45	6.51
Wabash, Ind	do	17	7.86	4.82
Logansport, Ind	do	14	7.76	4.38
La Fayette, Ind	do	20	11.79	8.70
Terre Haute, Ind	do	17	11.08	7.66
Vincennes, Ind	do	13	6.30	2.63
Mount Carmel, Ill	do	10	5.54	2.29
Anderson, Ind ¹	Wabash-White, West Fork	15	11.77	8.40
Noblesville, Ind	do	16	14.58	10.91
Indianapolis, Ind	do	16	9.31	6.26
Elliston, Ind	do	11	6.15	2.94
Seymour, Ind ¹	Wabash-White, East Fork	16	7.29	4.05
Williams, Ind	do	15	8.04	-----
Shoals, Ind	do	16	6.59	3.15
Sidney, Ohio ¹	Miami	17	13.86	10.83
Dayton, Ohio	do	15	6.26	3.76
Franklin, Ohio	do	17	5.59	-----
Hamilton, Ohio	do	14	4.67	1.65
Larue, Ohio	Scioto	16	8.76	6.48
Bellpoint, Ohio	do	11	8.51	6.45
Columbus, Ohio	do	14	5.78	3.25
Circleville, Ohio	do	12	5.76	3.21
Dover, Ohio	Tuscarawas	18	10.87	8.32
Gnadenhuttan, Ohio	do	11	9.93	-----
Coshocton, Ohio	do	16	10.80	7.28
Walhonding, Ohio	Walhonding	12	11.36	8.90

¹ Observations taken in evening.

Illinois River Flood.—The flood in the Illinois River was the most disastrous and prolonged one of the entire group. The river was already quite high from the

August rains, and the heavy rains of August 31 and the early days of September were followed immediately by a rapid rise in the river to flood conditions, and it was not until November 29 that the entire river was below the flood stage. At the various gaging stations the river was above the flood stage as follows: Morris, Ill., 22 days; Peru, Ill., 81 days; Henry, Ill., 69 days; Peoria, Ill. 58 days; Havana, Ill. 84 days; Beardstown, Ill., 85 days; Pearl, Ill., 85 days. From Havana to Beardstown the stages were the highest of record, not even excepting the great flood of June, 1844.

There were two distinct floods in the Illinois River, the first from about September 4 until September 19, and the second, and greater, from about October 5 until the end of November. During this second flood the highest stages of record occurred from 10 miles above Havana to a short distance above Valley City, Ill., a reach of 68 miles. Valley City is 62 miles above the mouth of the river. The magnitude of the flood was much increased by the especially excessive rains over the tributary streams between Havana and Beardstown.

Above Peoria the damage was not very great. Below Peoria it was of the usual character, highways, bridges, railroads, light and power plants, wire communications, crops, livestock, etc., and in the first flood was greater along the tributaries than in the main stream. The damage from the second flood was more general, largely through the breaking of levees. Below Ottawa, Ill., there are about 475,000 acres of land below extreme high water level. Of these about 350,000 acres have been reclaimed by levees. During October there were flooded 24 levees and drainage districts, containing about 100,000 acres situated in 10 different counties, all below Peoria, and probably about 20,000 acres of unleveed cultivated lands were also flooded. The crops, mostly corn and small grains, were either mature, or harvested and left standing, and the losses at \$25 an acre on leveed, and \$10 an acre on unleveed lands, amounted to \$2,700,000. Other losses amounted to about \$1,000,000. These figures do not include loss and damage in regions above the high-water marks, nor in the city of Beardstown which was almost entirely inundated, boats being the sole means of intercourse. No estimate can be made of the damage done to this city. It covered every activity, and must have amounted to millions.

Warnings and advices were issued daily. Persistent efforts to obtain only approximations of the value of these warnings and advices failed. Replies stated, "A very large amount," "impossible to estimate"; "amount large; the information gave us something definite to look for and was of inestimable value aside from the actual saving of property. It was official information."

Wabash System of Indiana—Neither White River nor its Forks, with the exception of the lower West Fork, were unusually high, and the East Fork did not reach flood stage except at Seymour, Ind., during the three days, September 11-13. At Elliston, Ind., on the West Fork, the crest stage of 28.8 feet on September 14 was 9.8 feet above the flood stage, while at Edwardsport, 21 miles below, the crest of 19.95 feet on September 15 was 4.95 feet above flood stage. At Decker, Ind., on White River, the crest stage of 21.2 feet on September 19 was 3.2 feet above flood stage. The second and smaller flood in the West Fork crested between October 5 and 7 over the lower river, but at Noblesville, Ind., on the upper river, there was a crest slightly above flood stage on September 26.

There was not much damage over the upper reaches, but over the middle and lower sections the damage to

standing crops that could not be removed was about \$1,300,000.

Advices were issued in advance of the floods in ample time to enable those interested to take such precautionary measures as were possible.

In the Wabash River flood conditions prevailed from the vicinity of Lafayette, Ind., southward to the Ohio River. The soil was saturated, and the rains were heavy, 5.16 inches having fallen at Terre Haute, Ind., within a period of 8 hours and 52 minutes during the evening of Sept. 8 and early morning of Sept. 9. Crest stages may be found in the table at the end of this report. The second flood was much like the first, though somewhat greater in the vicinity of Lafayette.

Warnings and frequent advices were issued for both floods, with the exception of the sharp rise at Terre Haute on September 8-9, due to the torrential rains mentioned above. No warnings for this flood could have been issued as the rainfall was much too heavy within a very short period of time.

As expected, the major portion of the loss and damage fell upon agricultural sections. Very incomplete reports showed losses from unharvested crops of \$1,620,750 and from unhoused crops of \$22,000. The flood waters covered 107,650 acres of corn and 1,000 acres of truck crops. Other losses were of the usual character and relatively not very heavy, only about \$141,000 having been reported.

In the State of Ohio the floods were very moderate and the losses were not serious as a whole. Corn in the lowlands of the Scioto River was damaged. The rise in the Ohio River, while marked, was not in any way dangerous. The maximum stage at Cairo, Ill., was 40.8 feet on October 12, but much of this rise came from the Mississippi River which was somewhat above flood stage below the mouth of the Des Moines River except in the immediate vicinity of St. Louis, Mo.

Mississippi River.—The Mississippi River was above flood stage at the beginning of the month from Quincy, Ill., almost to the mouth of the Ohio. However, the records indicate that, except in the Hannibal, Mo., district, the floods were very moderate and caused no damage of consequence. In the Hannibal district the leveed areas suffered greatly. All the lower portions thereof were under water from the heavy rains, and the rising Mississippi both prevented gravity drainage and brought down a supply of water far exceeding the capacity of the pumping plants. The water remained high until late in October, preventing drainage, as well as the seeding of winter wheat, except on the highest ground. The losses in crops amounted to about \$500,000, and it was stated that the corn crop was damaged about as much per acre within the levee districts as on the unprotected bottom lands. The total reported losses in the district during September and October amounted to \$953,000, and the total acreage overflowed was about 75,000.

The warnings for these floods were timely and very accurate, and losses other than crops were reduced to a minimum.

From the mouth of the Illinois River to a short distance below the mouth of the Missouri River the crest stages again were higher than ever before during an autumn month, and at Grafton, Ill., at the mouth of the Illinois, the river was above the flood stage of 18 feet for 26 days. A large amount of bottom-land corn was lost. The rise of the river was not rapid, and under ordinary conditions the warnings would have saved all of the corn. As it

happened the heavy rains had made the ground so soft that the corn could not be hauled from the bottoms. From the mouth of the Missouri to the mouth of the Ohio the losses were confined to corn and some little cotton on very low unprotected lands. About 2,200 acres were overflowed below Cape Girardeau, Mo., with resulting loss of about \$42,000. Other losses were negligible.

Missouri River.—Nearly bankful stages prevailed in the Missouri River from September 5 to October 20, but there were no actual flood stages except a crest of 26 feet (flood stage 25 feet) at St. Charles, Mo., on September 12. A little corn was lost in low bottoms below Waverly, Mo.

Grand River of Missouri.—There were two severe floods in the Grand River, one in September and the other in October (see flood table). Much corn was lost, and transportation of all kinds interrupted. There was no loss of life, and nearly all livestock was removed from bottoms well in advance of the high water, ample warning of which had been given.

Osage River of Missouri.—Only moderate floods occurred in the Osage River, and the only losses were a little corn in low bottoms.

Arkansas River Basin.—During the closing days of September rains to an average amount of more than 5 inches fell upon the wet soil of the lower Arkansas and lower Neosho Valleys, and on September 29 flood warnings were issued for the Arkansas River below the mouth of the Neosho. Moderate floods occurred as forecast. Similar conditions prevailed at the same time over the Arkansas and White River drainage areas in Arkansas, and warnings were issued in ample time. More general and heavy rains during the first three days of October resulted in another flood in the main river and tributaries that was further augmented by additional heavy rains on October 10. Over some of the lower portion of the Wichita, Kans., district the rainfall approximated 10 inches, and in a short time the Arkansas River was in flood from the vicinity of Wichita to the mouth. Warnings were issued promptly throughout the district, and for a time Fort Smith, Ark., and the section below were confronted with the unpleasant prospect of a really great flood. It happened, however, that levees gave way in several places between Fort Smith and Little Rock, Ark., greatly relieving the situation. As soon as this occurred, advices were issued accordingly. All tributaries in the State of Kansas, including the Cottonwood, Neosho, Ninescah, Walnut, and Little Arkansas Rivers, were also in flood. These sections were also covered by warnings. Additional advices were issued daily until the waters subsided.

Six lives were lost during these floods, all in the State of Oklahoma, and it was stated that four persons were drowned in vain attempts to ford swollen streams. The losses as reported aggregated \$3,920,400, of which \$2,597,000 was in crops, \$911,000 in other property, and \$412,400 due to enforced suspension of business. Of the total losses the Fort Smith district contributed about five-eighths, with about 100,000 acres of land overflowed, of which 50,000 acres were in the valleys of the Verdigris and Caney Rivers.

Rivers of Texas.—An unimportant flood that was well forecast occurred in the vicinity of Trinidad, Tex., between October 9 and 15. No losses were reported. There was also a moderate flood on October 18 and 19 in the lower Rio Grande in the vicinity of San Benito for which, apparently, warnings were not necessary.

Floods in small streams.—No specific mention has been made of the many floods that occurred in very small streams. These were usually due to torrential rains within short periods of time, frequently at night, and beyond possibility of effective warnings. The losses caused by these floods probably amounted to an additional \$1,000,000 or more, and in many instances they were proportionately greater than those caused by the larger streams.

River	Station	Flood stage	Above flood stages—dates		Crest	
			From—	To—	Stage	Date
MISSISSIPPI DRAINAGE						
		<i>Feet</i>			<i>Feet</i>	
Shenango	Sharon, Pa.	9	25	26	9.7	25
Tuscarawas	Gnadenhutten, Ohio	9	26	27	10.6	26
Walhonding	Walhonding, Ohio	8	31	31	8.6	31
Scioto	Larue, Ohio	11	5	7	12.7	6
	Prospect, Ohio	10	7	8	10.8	7
	Circleville, Ohio	10	7	8	11.4	7
Wabash	Lafayette, Ind.	11	(1)	12	18.5	5
	Terre Haute, Ind.	16	(1)	15	20.7	6-7
	Vincennes, Ind.	14	3	15	19.0	11
	Mt. Carmel, Ill.	16	4	17	21.1	11
Tippecanoe	Norway, Ind.	6	(1)	11	6.5	2, 3, 6, 7
			15	15	6.0	15
			20	20	6.0	20
			25	25	6.2	25
White, West Fork	Edwardsport, Ind.	15	1	10	17.85	7
Mississippi	Quincy, Ill.	14	(1)	9	16.0	3 & 6
	Hannibal, Mo.	13	(1)	12	16.7	3, 4, & 6
	Louisiana, Mo.	12	(1)	13	16.8	4
	Grafton, Ill.	18	(1)	17	23.7	6
	Alton, Ill.	21	(1)	17	26.2	8
	Chester, Ill.	27	6	15	28.8	9
	Cape Girardeau, Mo.	30	5	17	32.9	10
Illinois	Morris, Ill.	13	(1)	10	16.5	5
	Peru, Ill.	14	(1)	(3)	23.4	7
	Henry, Ill.	10	(1)	(3)	18.2	8 & 9
	Peoria, Ill.	18	(1)	29	25.02	9
	Havana, Ill.	14	(1)	(3)	23.47	12
	Beardstown, Ill.	14	(1)	(3)	26.25	12
	Pearl, Ill.	12	(1)	(3)	22.0	6 & 7
Missouri	St. Charles, Mo.	25	7	13	26.0	12
Grand	Gallatin, Mo.	20	2	7	33.5	6
			10	11	25.7	10
	Chillicothe, Mo.	18	2	12	28.8	7
	Brunswick, Mo.	12	6	12	13.6	9 & 10
Osage	Osceola, Mo.	20	7	7	20.0	7
			10	12	22.5	11
	Warsaw, Mo.	22	4	7	23.8	5
	Tuscumbia, Mo.	25	6	7	25.8	6 & 7
Arkansas	Arkansas City, Kans.	19	3	5	21.0	4
	Fort Smith, Ark.	22	1	1	22.0	1
			4	16	29.1	11
	Dardanelle, Ark.	20	6	17	25.7	12
	Pine Bluff, Ark.	25	12	18	25.8	15
	Yancopin, Ark.	29	7	29	35.5	19 & 20
Little Arkansas	Sedgewick, Kans.	18	3	4	20.4	3
			13	13	18.0	13
Neosho	Neosho Rapids, Kans.	22	5	7	23.9	6
	Le Roy, Kans.	24	3	8	26.1	4
	Iola, Kans.	15	3	8	19.0	5 & 6
	Oswego, Kans.	17	3	12	23.3	10
Cottonwood	Elmdale, Kans.	32	4	4	32.04	4
	Emporia, Kans.	20	4	7	24.1	5
White	Calico Rock, Ark.	18	1	1	18.1	1
			30	30	19.3	30
Sulphur	Batesville, Ark.	23	1	2	25.5	1
	Ringo Crossing, Tex.	20	11	17	22.8	13
WEST GULF DRAINAGE						
Trinity	Trinidad, Tex.	28	9	15	29.7	14
Rio Grande	San Benito, Tex.	21	18	19	21.5	18

¹ Continued from last month.
² Also Sept. 26 and 30.

³ Continued at end of month.
⁴ Estimated.

MEAN LAKE LEVELS DURING OCTOBER, 1926

By UNITED STATES LAKE SURVEY

[Detroit, Mich., November 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 October, 1926:				
Above mean sea level at New York.....	<i>Feet</i> 601.68	<i>Feet</i> 578.32	<i>Feet</i> 574.10	<i>Feet</i> 244.93
Above or below—				
Mean stage of September, 1926....	+0.38	-0.19	+0.26	+0.07
Mean stage of October, 1925.....	+0.29	+0.41	+1.09	+0.61
Average stage for October, last 10 years.....	-0.70	-1.47	-0.18	-0.62
Highest recorded October stage.....	-2.96	-4.72	-2.01	-2.88
Lowest recorded October stage.....	+0.29	+0.41	+1.09	+1.26
Average departure (since 1860) of the October level from the September level.....	-0.05	-0.23	-0.32	-0.35

¹ Lake St. Clair's level: In October, 1926, 574.10 feet.

EFFECT OF WEATHER ON CROPS AND FARMING OPERATIONS, OCTOBER, 1926

By J. B. KINCER

General summary.—Rains in September were persistent in most of the interior valley States, and they continued during the first week in October, with resulting weather conditions decidedly unfavorable for maturing crops and for fall operations. Very little field work was possible in the Central and Northern States from the Mississippi Valley eastward, and the saving of frosted corn in the northwestern portion of the Corn Belt, where the crop was damaged the latter part of September, was retarded.

After the first week of the month, however, the weather in the interior of the country was much more favorable for agricultural interests, as the sunshiny, generally dry, and moderately warm conditions favored both outside operations and the drying out of crops. The dry weather was especially favorable in the central portions of the Corn and Winter Wheat Belts, but at the same time the lack of sufficient sunshine and rather frequent showers delayed the usual fall operations in much of the Northeast.

The first general frost of the season overspread the lower Missouri and Ohio Valley States on the 24-27th, with a light deposit extending as far south as the northern portion of the east Gulf area, but damage was not material, as staple crops had practically all matured. The frost over this large and important agricultural section came later than in an average year, and the southern progress of the first freeze of the season was still somewhat behind an average year in most sections, especially east of the Mississippi River, at the close of the month.