

# MONTHLY WEATHER REVIEW.

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## INTRODUCTION.

This REVIEW is based on reports for August, 1892, from 2,834 regular and voluntary observers. These reports are classified as follows: 164 reports from Weather Bureau stations; 47 reports from United States Army post surgeons; 1,889 monthly reports from state weather service and voluntary observers; 221 reports through the Central Pacific Railway Company; 484 marine reports through the co-operation of the Hydrographic Office, Navy Department; 29 reports from Canadian stations; marine reports through the "New York Herald Weather Service;" monthly reports from local weather services established in all states and territories; and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

## CHARACTERISTICS OF THE WEATHER FOR AUGUST, 1892.

The warm wave of the first decade and the cool wave of the latter part of the month were prominent features of August, 1892. From the 3d to the 9th the crest of a warm wave of unusual persistence and intensity traversed the country from the northeast slope of the Rocky Mountains to the middle Atlantic and New England coasts. In central and eastern districts the heat of this period was less intense than that experienced during the third decade of August. Following closely the heated spell of the preceding month it was, however, severely felt in the northern and central states, and in localities where there was a marked deficiency in rainfall vegetation was scorched. The cool wave of the latter part of the month overspread the northern Rocky Mountain and plateau regions on the 27th and 28th, reached the Mississippi and Red River of the North valleys on the 30th, and occupied the Ohio Valley and Lake region at the close of the month. This cool wave was attended by minimum temperatures below 40° in Wyoming, eastern South Dakota, and the Red River of the North Valley, and frost from New Mexico and Colorado over Nebraska, the Dakotas, northern Iowa, Minnesota, and northwestern Wisconsin.

The month was exceptionally dry in the District of Columbia, and generally in Maryland and Virginia. In a number of the Western States drought was broken by general rains on the 9th.

### TEMPERATURE.

The month was warmer than usual save on the northeast slope of the Rocky Mountains, along the middle and south Pacific coasts, in the southwestern states, and along the Saint Lawrence River. The greatest excess in temperature was reported in Virginia and Upper Michigan, where it was 3° to 4°, and the most marked deficiency was noted in northern Louis-

iana and central Texas, where the mean temperature was 2° to 3° lower than the average for August.

### PRECIPITATION.

The monthly precipitation was generally deficient, except from the lower lakes over New York, New England, and the Canadian Maritime Provinces, in northern Georgia, the middle and west Gulf states, and in areas between the Mississippi River and the Rocky Mountains. The greatest excess in precipitation was noted in parts of the Canadian Maritime Provinces, New England, and New York, where it was 2.00 to 4.00 inches, and at points in Maine, northeastern New York, Alabama, Texas, Nebraska, and Idaho the amount was the greatest ever reported for August. The most marked deficiency in precipitation was shown in the Atlantic coast states south of Pennsylvania, where it was 2.00 to 4.00, and in the District of Columbia and at stations in South Carolina, Missouri, New Mexico, Utah, and Oregon the monthly precipitation was the least on record for August.

### STORMS.

The occurrence of local storms was noted most frequently in Kansas, Minnesota, Illinois, New York, Massachusetts, and Florida, where they were reported on five to six days during the month. Local storms were reported over the greatest extent of territory on the 8th, when they occurred in South Dakota, Minnesota, Iowa, Arkansas, Wisconsin, Lower Michigan, Ohio, and West Virginia. On the 7th storms were noted in New York and New England. On the 11th heavy thunder, rain, and hail storms occurred generally throughout New England, and in New Jersey and Tennessee. Heavy rains and high winds prevailed along the New England coast on the 26th and 27th. On the 30th destructive gales caused loss of life and considerable damage to shipping on the upper lakes.

## ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for August, 1892, as determined from observations taken daily at 8 a. m. and 8 p. m. (75th meridian time), is shown on Chart I by isobars.

The normal pressure for August is highest over districts

lying south of the Lake region and east of the Mississippi River, and along the Pacific coast between the 40th and 50th parallels, where it is above 30.00; it is lowest over the west part of the southern plateau region, where it is below 29.80.

In August there is usually an increase of pressure over the

United States, save over the Southern and Pacific coast states. The greatest increase of normal pressure occurs over New England, where it exceeds .05, and the most marked decrease is shown over the Florida Peninsula, where it averages about .05.

In August, 1892, the mean pressure was highest over the south Atlantic states and the Florida Peninsula, and along the Washington coast, where it was above 30.05. It was above 30.00 south of the 45th parallel and east of the 95th meridian, and along the Pacific coast north of the 40th parallel. The mean pressure was lowest in the lower Colorado valley, where it was below 29.80, and the mean values were below 29.90 over the west parts of the middle and southern plateau regions, in the central valleys of California, and from eastern Montana and western Dakota over the middle and eastern Saskatchewan valleys.

A comparison of the pressure chart for August, 1892, with that of the preceding month shows a general decrease of pressure, except over New England and the Rocky Mountain and eastern plateau regions. The most marked decrease is shown over the Florida Peninsula, where it is .10, and in districts south of the Lake region and east of the Mississippi River, and along the Pacific coast between the 35th and 45th parallels, the decrease is more than .05. The greatest increase of pressure is noted over New Brunswick and eastern Quebec, where it is .05 to .10, and the increase exceeds .05 in the middle Saskatchewan valley.

The mean pressure was generally above the normal, a slight departure below the normal being shown only over the middle Atlantic states, and in areas in the northern lake region, the lower Ohio, lower Mississippi, and middle and upper Missouri valleys, and over the east part of the southern plateau region. The greatest departure above the normal pressure was noted over New Brunswick, eastern Florida, and on the extreme north Pacific coast, where it exceeded .05.

#### HIGH AND LOW AREAS.

The paths of areas of high and low pressure over the United States and Canada during August, 1892, are shown on Charts IV and I, respectively, and some of the prominent characteristics of the areas are given in the table at the end of this chapter.

#### HIGH AREAS.

Seven high areas appeared, the average number traced for August during the last 17 years being 5.8. Of the high areas traced for the current month one occupied the middle Missouri and extreme upper Mississippi valleys at the opening of the month, 3 advanced from the British Northwest Territory, one developed in the middle Missouri valley, and 3 appeared on the north Pacific coast. The high areas from the British Northwest Territory and the north Pacific coast moved southeastward to the central valleys and the Lake region, 2 passing thence southeastward to the Atlantic coast, and one moving to Nova Scotia, one disappeared north of the Saint Lawrence Valley, and one occupied the Lake region at the close of the month. A notable feature was the persistence and slow rate of advance of the high areas over the Lake region. The following is a description of the high areas referred to:

I.—At the opening of the month this high area extended from eastern Nebraska to the Red River of the North Valley and Lake Superior, with pressure 30.16 at Omaha, Nebr., and Moorhead, Minn. By the evening of the 2d the area had moved eastward and southeastward and covered the upper Ohio valley and the Southern States, and during the 3d the center passed off the south Atlantic coast. The advance of this high area was unattended by marked temperature changes, save on the 1st, when there was a fall of 10° to 12°, attended by rain, from the upper Lake region to the Gulf States.

II.—Appeared over the Red River of the North Valley the morning of the 3d, and the morning of the 4th was central over the upper Mississippi valley, with pressure 30.10. Moving eastward over southern Lake Michigan the high area passed thence off the south Atlantic coast by the evening of

the 5th. The advance of this high area was attended by a fall in temperature of 5° to 10° and areas of rain from the Missouri Valley to the middle Atlantic and New England coasts.

III.—Was central over western Lake Superior the morning of the 11th, and extended thence over the upper lake region during the 12th, with pressure above 30.20. The center shifted position to northern Lower Michigan by the morning of the 13th, and during the succeeding 24 hours apparently moved westward over the extreme upper Mississippi valley. During the 15th the high area drifted eastward and formed a ridge of high pressure which extended from the upper lake region to the Carolina coast. Passing southeastward the center moved off the Virginia coast. On the 11th the temperature fell 5° to 10° in the Ohio Valley and Tennessee and the lower lake region, and on the 12th a temperature fall of 5° to 11° occurred in the Atlantic coast states, the cooler weather being attended by rain in the districts referred to. The lowest temperature of the month was noted in Virginia on the 13th, in Tennessee, North Carolina, and West Virginia on the 14th, in the District of Columbia on the 15th, and in northern Georgia on the 17th.

IV.—Occupied the north Pacific coast the morning of the 17th, with pressure above 30.30, passed thence to Nebraska by the evening of the 18th, and thence to eastern Upper Michigan by the evening of the 19th, after which it disappeared north of the region of observation. On the 16th the temperature fell 10° to 14° on the northeast slope of the Rocky Mountains, and the lowest temperature of the month, 48°, was noted at Tatoosh Island, Wash. On the 17th a temperature fall of 10° to 22° occurred over Montana and the Dakotas, and the lowest temperature of the month was reported at Roseburg and Baker City, Oregon. The cooler weather extended over the Lake region during the 18th and 19th, and over New England by the 20th, the temperature fall being attended by rain. On the 20th the first light frost of the season was noted at Sault Ste. Marie, Mich.

V.—Was central over the Saskatchewan Valley the morning of the 20th, with pressure above 30.20. By the evening of the 20th the center had moved over eastern Montana, and during the 21st it passed to Minnesota. The evening of the 21st this high area occupied New England, the middle Atlantic states, and the eastern lake region, and the morning of the 23d was central over New England, with pressure above 30.30, from which position it moved eastward over Nova Scotia. On the 20th the temperature fell 10° to 12° on the eastern slope of the Rocky Mountains. On the 21st a fall of 5° to 10° was noted in the Southwest. A similar fall was reported in the south Atlantic states on the 22d, and cooler weather, attended by rain areas, reached the middle Atlantic coast on the 23d.

VI.—Apparently developed over the middle Missouri valley the night of the 24–25th, and during the 26th and 27th advanced eastward over the upper lake region. During the 28th the high area remained nearly stationary over the lower lake region, with pressure rising above 30.20, and during the 29th passed southeastward off the New England coast. Attending this high area the temperature fell 5° to 16° in the middle Mississippi valley on the 24th, 5° to 10° from the lower lakes to Texas on the 25th, 5° to 10° in the middle and south Atlantic states on the 26th, and 5° to 10° in New England on the 27th. On the 28th and 29th the lowest temperature of the month was noted at points in the lower lake region and the Atlantic coast states north of Virginia. The temperature fall caused by this high area was attended by rain.

VII.—Occupied the north Pacific coast the morning of the 27th, with pressure above 30.20, passed thence southeastward to Indian and Oklahoma territories by the 30th, with pressure 30.28 over Colorado on the 29th, and at the close of the month was central over Illinois. This high area was attended by the most important cool wave of the month. On the 26th the temperature fell more than 20° in the Saskatchewan Valley. On the 27th the temperature fall exceeded 20° on the northeast slope of the Rocky Mountains, and from the 27th to 29th

the lowest temperature of the month was noted in the northern Rocky Mountain and plateau regions. On the 28th the temperature fell  $20^{\circ}$  to  $30^{\circ}$  on the middle-eastern slope of the Rocky Mountains and in the middle Missouri valley. On the 29th the temperature fall was  $10^{\circ}$  to  $20^{\circ}$  from western Lake Superior to Texas, and the first light frost of the season, with minimum temperature  $33^{\circ}$ , was noted at Lander, Wyo. Light frost was also reported in parts of Nebraska and Colorado. On the 30th the temperature fell  $10^{\circ}$  to  $20^{\circ}$  in the western lake region and the Mississippi Valley, the lowest temperature of the month occurred at points in the Red River of the North and middle Missouri valleys, and light frost was noted in parts of North and South Dakota and northwest Iowa. On the 31st the temperature fell  $5^{\circ}$  to  $16^{\circ}$  from North Carolina over the eastern lake region and New England, the lowest temperature of the month was noted over the western and southern lake regions, and light frost was reported in northern Iowa and at Florence, Wis. The temperature fall attending this high area was attended by rain in the northern districts from the Pacific to the Atlantic coasts.

#### LOW AREAS.

The low areas of August advance eastward over the United States at an average velocity of 26 statute miles per hour. They generally develop on the eastern slope of the Rocky Mountains, and the tracks of the low areas which pass east of the Mississippi River are usually somewhat farther south than in June and July. Low areas from the interior of the country generally advance over the Lake region and Saint Lawrence Valley, and seldom pass south of the Ohio River. August marks the height of the West India cyclone season, and in August of preceding years some of the more destructive storms of this class have recurred over the southeastern part of the United States.

The tracks of 8 areas of low pressure are plotted on Chart I, the average number traced for August during the last 19 years being 9.8. Of the low areas traced for the current month 6 appeared over the western Saskatchewan valley, and 2 developed in the lower Missouri valley. Two of the low areas from the Saskatchewan Valley advanced eastward to the Gulf of Saint Lawrence region, one passed southward to the middle-eastern slope of the Rocky Mountains, and 3 moved southeastward over the Missouri Valley, and thence over the upper lakes. The low areas from the Missouri Valley moved over the Lake region, and thence off the southern New England coast. A West India cyclone of marked strength advanced from the Windward Islands to Nova Scotia from the 16th to 22d. This storm recurved between Bermuda and the Carolina coast. It is given a description under "North Atlantic storms." The following is a description of the low areas traced:

I.—Occupied the western Saskatchewan valley at the opening of the month, with pressure below 29.80, and moved slowly eastward with increasing energy by the evening report. The pressure gradient to the eastward of the center became marked, high westerly winds prevailed over Montana, and the highest temperature of the month was noted over the west part of the middle plateau region. During the 2d the center of disturbance advanced north of Lake Superior, with an appreciable loss of strength, and a secondary disturbance developed over the middle Missouri valley, rain fell during the early morning in the Red River of the North Valley, the highest temperature of the month was noted in parts of the northern and southern plateau regions, high southerly to westerly wind squalls occurred from the middle Missouri valley to Manitoba, and thunderstorms were reported in the northern Lake Superior region. During the 3d the center passed to the region north of Lake Ontario, with thunderstorms in the Lake region, and rain on the New England coast. By the evening of the 4th the storm-center had advanced north of the Gulf of Saint Lawrence, thunderstorms were reported in Vermont and western Massachusetts, and rain fell in the lower lake region and the Saint Lawrence Valley.

II.—Appeared north of Montana on the 3d, with pressure

below 29.60 at the evening report. On this date the highest temperature of the month was noted at Pueblo, Colo., and rain fell in western Montana and the middle Missouri valley. Moving slowly south of east the center of disturbance reached northern North Dakota the night of the 4th, the highest temperature of the month was noted in North Dakota, scattered showers occurred from Lake Superior to Montana, and thunder and hail storms were reported in Minnesota. Passing almost due eastward this storm disappeared north of the Gulf of Saint Lawrence the night of the 6th. On the 5th a subsidiary development appeared over the lower Missouri valley, rain fell generally from the upper Mississippi valley and the Great Lakes to the middle Atlantic and New England coasts, thunderstorms were reported from Minnesota to Maine, and the highest temperature of the month was noted in northwestern Texas. On the 6th rain fell in the lower lake region and northern New England, and heavy hailstorms were reported in New Hampshire.

III.—Was central north of Montana the evening of the 5th, with pressure below 29.70, and moved thence slowly to northwestern North Dakota by the evening of the 6th, with areas of light rain in the middle and upper Missouri valleys. On the 5th the maximum temperature at Dodge City, Kans.,  $103^{\circ}$ , was the highest ever noted at that station in August, and on the 6th the highest temperature of the current month occurred from the west Gulf states to the lower Missouri valley. During the 7th this low area increased in strength, and at the evening report was central over South Dakota, with pressure below 29.60. On this date destructive local storms were reported in southern Minnesota and South Dakota, rain fell in the north-central districts, and the highest temperature of the month was noted in the lower Mississippi valley.

On the 8th the center advanced to eastern Lake Superior, rain fell from Colorado over the upper lake region, thunderstorms were reported in the Ohio and upper Mississippi valleys and the upper lake region, and the highest temperature of the month was noted in the Ohio and upper Mississippi valleys. By the night of the 9th the storm-center had moved eastward over northern New England and New Brunswick, rain fell in areas from the middle and upper Mississippi valleys to the Atlantic coast, thunderstorms were reported in the lower lake region, northern New York, and western New England, and the highest temperature of the month was noted in the eastern lake region.

IV.—Originated over the middle Missouri valley on the 9th, with rain from the middle and upper Mississippi valleys to the Rocky Mountains, and thunderstorms in Iowa, Missouri, and eastern Kansas. During the 10th the center moved north of the lower lake region, rain fell generally over the eastern half of the country, thunderstorms occurred in western New England, eastern New York, and northwestern and eastern Pennsylvania, and the highest temperature of the month was noted in the middle Atlantic and New England states. During the 11th the center of disturbance moved slowly southeastward over northern New York, with rain from New England to the southwestern states, thunderstorms in New England and New Jersey, and the highest temperature of the month in the south Atlantic states. On the 12th the center passed southeastward off the New England coast, the rain area contracted eastward over New England, New York, and Pennsylvania, thunderstorms occurred in New Hampshire and Massachusetts, and the highest temperature of the month was noted in eastern Florida.

V.—The evening report of the 11th showed this low area central over Alberta, with pressure below 29.40, and rain and high winds on the northeast slope of the Rocky Mountains. The center of disturbance moved slowly eastward during the 12th, with rain in areas from Montana over the middle Missouri and Red River of the North valleys, and thunderstorms in Minnesota, Iowa, and Kansas. During the 13th the low area moved southward over the Dakotas and apparently disappeared by an increase of pressure on the middle-eastern

slope of the Rocky Mountains. On this date rain fell in areas from southern Minnesota to northwestern Texas, high north-west winds prevailed in South Dakota, heavy wind, rain, and thunderstorms occurred in eastern Kansas, and thunderstorms were reported in northwestern Texas.

VI.—Developed in the Saskatchewan Valley on the 14th, and at the evening report was central north of eastern Montana, with pressure below 29.70. On this date high wind and thunderstorms were reported in South Dakota. On the 15th the center advanced to western South Dakota, without evidence of marked strength, and remained nearly stationary over South Dakota during the 16th and 17th, with rain in the Dakotas, and the highest temperature of the month over the middle plateau region and on the northeast slope of the Rocky Mountains. During the 18th the storm-center moved north of Lake Superior, with a slight increase in energy, and from the 16th to the 18th the highest temperature of the month was recorded in the upper lake region. By the evening of the 19th the center had advanced to the region north of the lower Saint Lawrence valley, with showers from the Ohio Valley over the lower lakes and western New England, and thunderstorms in the Ohio Valley, and thence over western New York and northwestern Pennsylvania.

VII.—Apparently developed over the lower Missouri valley on the 23d. On this date rain fell between the Mississippi River and the Rocky Mountains, in the upper lake region, and the Southern States. On the 24th this low area moved to the western lower lake region, rain fell generally from the Mississippi River over the Lake region and the middle and south Atlantic states, and thunderstorms were reported in the southern lake region. By the evening of the 25th the center had

advanced to eastern New York, with rain from the Lake region to the middle Atlantic and New England coasts, the rainfall being unusually heavy in northern and western New York. The morning report of the 26th showed the low area central off the New Jersey coast, the abnormal southerly movement being due to high pressure to the eastward, and by the evening of that date the center had apparently been forced southward off the Virginia coast. Rain fell from the lower lakes to the middle Atlantic and New England coasts, and brisk to high northeasterly winds prevailed along the New England coast during that and the succeeding date.

VIII.—Was central over the eastern Saskatchewan valley the morning of the 26th, with pressure below 29.70, and rain in northeastern Montana. During the 27th the center advanced to South Dakota, with pressure falling to 29.60, and rain in the extreme northwest. By the evening of the 28th the center of disturbance had passed to southwestern Kansas. On this date rain fell over a large part of the region between the Mississippi River and the Rocky Mountains, and thunderstorms were reported in the west Gulf states and Kansas. During the 29th the low area moved northeastward to the upper Mississippi valley, rain fell in areas in the central valleys, and thunderstorms were reported in the lower Missouri and upper Mississippi valleys. During the 30th the storm-center passed over the upper lake region, rain fell between the Mississippi River and the Alleghany Mountains, and destructive gales prevailed over the upper lakes. By the evening of the 31st the center of disturbance had reached the lower Saint Lawrence valley, the rain area had passed east of the Alleghany Mountains, and thunderstorms were reported in New Jersey and North Carolina.

Tabulated statement showing principal characteristics of areas of high and low pressure.

| Barometer.         | First observed. |         |          | Last observed. |          |       | Duration. | Velocity per hour.          | Maximum pressure change in 12 hours, maximum abnormal temperature change in 12 hours, and maximum wind velocity. |          |                         |       |          |                            |       |          |            |                 |       |  |
|--------------------|-----------------|---------|----------|----------------|----------|-------|-----------|-----------------------------|--|----------|-------------------------|-------|----------|----------------------------|-------|----------|------------|-----------------|-------|--|
|                    | Date.           | Lat. N. | Long. W. | Lat. N.        | Long. W. | Days. |           |                             | Miles.   | Station. | Rise.                   | Date. | Station. | Fall.                      | Date. | Station. | Direction. | Miles per hour. | Date. |  |
| <b>High areas.</b> |                 | o       | o        | o              | o        |       |           |                             |  |          |                         |       |          |                            |       |          |            |                 |       |  |
| I.....             | 1               | 43      | 95       | 37             | 83       | 2.0   | 21        | White River, Ont.....       | -20  | 1        | Columbus, Ohio.....     | 13    | 1        | Vicksburg, Miss.....       | ne.   | 26       | 1          |                 |       |  |
| II.....            | 3               | 43      | 97       | 39             | 82       | 2.0   | 24        | Winnipeg, Man.....          | -26  | 2        | North Platte, Nebr..... | 17    | 3        | Kittyhawk, N. C.....       | w.    | 14       | 5          |                 |       |  |
| III.....           | 11              | 48      | 93       | 38             | 79       | 6.0   | 19        | White River, Ont.....       | -20  | 12       | Atlanta, Ga.....        | 11    | 16       | Sioux City, Iowa.....      | n.    | 38       | 14         |                 |       |  |
| IV.....            | 17              | 49      | 125      | 47             | 86       | 3.0   | 35        | do.....                     | -46  | 19       | Miles City, Mont.....   | 24    | 17       | Chicago, Ill.....          | ne.   | 35       | 19         |                 |       |  |
| V.....             | 20              | 52      | 112      | 45             | 71       | 3.0   | 31        | Sydney, C. B. I.....        | -34  | 22       | Rapid City, S. Dak..... | 18    | 20       | Kittyhawk, N. C.....       | se.   | 35       | 25         |                 |       |  |
| VI.....            | 25              | 42      | 95       | 41             | 66       | 5.0   | 17        | Father Point, Quebec.....   | -30  | 25       | Rochester, N. Y.....    | 13    | 25       | Charleston, S. C.....      | nw.   | 20       | 25         |                 |       |  |
| VII.....           | 27              | 48      | 124      | 41             | 89       | 4.5   | 22        | Helena, Mont.....           | -34  | 27       | do.....                 | 13    | 25       | do.....                    |       |          |            |                 |       |  |
|                    |                 |         |          |                |          |       |           | Sault Ste. Marie, Mich..... | -34  | 31       | Denver, Colo.....       | 23    | 28       | Pensacola, Fla.....        | ne.   | 36       | 31         |                 |       |  |
| <b>Mean.....</b>   |                 |         |          |                |          |       | 3.6       |                             |  | -30      |                         |       | 17       |                            |       |          | 29         |                 |       |  |
| <b>Low areas.</b>  |                 |         |          |                |          |       |           |                             |  |          |                         |       |          |                            |       |          |            |                 |       |  |
| I.....             | 1               | 54      | 113      | 51             | 65       | 3.5   | 26        | Minnedosa, Man.....         | -42  | 1        | Rapid City, S. Dak..... | 20    | 1        | Prince Albert, N. W. T.... | w.    | 35       | 1          |                 |       |  |
| II.....            | 3               | 53      | 113      | 50             | 64       | 3.0   | 33        | Calgary, N. W. T.....       | -35  | 3        | Calgary, N. W. T.....   | 21    | 2        | Chicago, Ill.....          | s.    | 40       | 800        |                 |       |  |
| III.....           | 9               | 51      | 113      | 47             | 67       | 4.0   | 25        | do.....                     | -46  | 5        | Havre, Mont.....        | 22    | 5        | do.....                    | s.    | 40       |            |                 |       |  |
| IV.....            | 9               | 46      | 96       | 42             | 69       | 2.5   | 19        | Nantucket, Mass.....        | -22  | 12       | Columbus, Ohio.....     | 7     | 9        | Dubuque, Iowa.....         | w.    | 44       | 9          |                 |       |  |
| V.....             | 11              | 51      | 114      | 46             | 102      | 1.5   | 28        | Fort Buford, N. Dak.....    | -24  | 11       | Havre, Mont.....        | 24    | 10       | Oklahoma, Okla.....        | ne.   | 54       | 13         |                 |       |  |
| VI.....            | 14              | 52      | 107      | 51             | 69       | 5.0   | 19        | Medicine Hat, N. W. T....   | -32  | 13       | do.....                 | 24    | 15       | Havre, Mont.....           | ne.   | 48       | 14         |                 |       |  |
| VII.....           | 23              | 40      | 93       | 36             | 72       | 3.0   | 21        | Oswego, N. Y.....           | -24  | 25       | Boston, Mass.....       | 7     | 24       | Block Island, R. I.....    | ne.   | 52       | 26         |                 |       |  |
| VIII.....          | 26              | 53      | 105      | 50             | 82       | 5.5   | 26        | Marquette, Mich.....        | -28  | 30       | Miles City, Mont.....   | 12    | 26       | Amarillo, Tex.....         | n.    | 42       | 29         |                 |       |  |
| <b>Mean.....</b>   |                 |         |          |                |          |       | 3.5       |                             |  | -32      |                         |       | 17       |                            |       |          | 44         |                 |       |  |

**NORTH ATLANTIC STORMS FOR AUGUST, 1892 (pressure in inches and millimeters; wind-force by Beaufort scale).**

The paths of storms that appeared over the west part of the north Atlantic Ocean during August, 1892, are shown on Chart I. These paths have been determined from reports of observations by shipmasters received through the co-operation of the Hydrographic Office, Navy Department, and the "New York Herald Weather Service."

The north Atlantic normal pressure for August is highest in an area extending from the Azores south of west to the 48th meridian, where it is above 30.20 (767); it is lowest in an area extending from Iceland northeastward over Jan Mayen, where it is below 29.70 (754). There is usually a decrease of pres-

sure over the north Atlantic in August, a slight increase being shown only from the Banks of Newfoundland to the New England and middle Atlantic coasts and over Greenland. The most marked decrease in normal pressure occurs over eastern mid-ocean from the 10th to the 60th parallels, where it is more than .05 inch, and the increase exceeds .10 inch over northern Greenland.

The storms of August usually pass eastward over the ocean in high latitudes, and are seldom severely felt along the trans-Atlantic steamship routes. The storms of this month have an average velocity of 19 statute miles per hour, and an average