WEATHER IN THE UNITED STATES

THE WEATHER ELEMENTS

By P. C. DAY

GENERAL CONDITIONS

Viewing the country as a whole, August weather was not greatly at variance with normal conditions, though locally wide departures therefrom are found; these, however, were confined mainly to moisture conditions, as temperatures were chiefly moderate.

Over extensive areas near the south and middle Atlantic coasts precipitation was unusually heavy on several occasions, exceeding all previous records in some cases, and similar conditions existed over considerable areas in the upper Mississippi Valley and near-by sections, though here the precipitation was more frequent and not so heavy in individual storms.

PRESSURE AND WINDS

The average atmospheric pressure was generally higher than normal in all parts of the country and materially higher than in July preceding.

The month opened with low pressure existing in the upper Missouri Valley and during the following few days rainy conditions overspread most Northern States to the eastward with heavy falls locally over much of the upper Lake region and nearby areas of the upper Mississippi and lower Missouri Valleys. At the same time, considerable rain occurred in the form of local showers in parts of the Southeast.

By the morning of the 7th a tropical storm, moving from the West Indies, approached the east coast of Florida and during the following two or three days crossed the State in a northwest direction, attended by torrential rains and high winds, reaching the northern limits by the morning of the 10th, where it recurved sharply and moved thence northeastward over the South Atlantic States during the 11th, passing into the Atlantic near the mouth of Chesapeake Bay during the following day. The storm was attended by high winds and heavy rains not only in Florida but in its passage over the central and southern parts of Georgia and South Carolina, the winds deminishing somewhat with the advance of the storm, but heavy rains continued throughout its entire course, reaching high intensities in portions of Virginia and Maryland, particularly in the vicinity of the District of Columbia, where the 24-hour fall on the 11th and 12th was the greatest of record. Much damage to crops, roads, and bridges occurred throughout the course of this storm—in Florida by injury to the citrus and other crops, in the eastern cotton States by damage to open cotton, and in all sections by flattening corn, tobacco, and other crops, blowing fruit from trees, flooding and washing of farm land, roads, etc., and otherwise.

Immediately following this a second tropical storm appeared over the west Florida coast on the morning of the 13th, and by the following morning it was central near Apalachicola, Fla., moving northward and attended by high winds and heavy rains. This storm moved in a track slightly west of that of the preceding few days and was attended by heavy rains over much of the territory affected by the earlier storm, though the winds were generally not so high. By the morning of the 16th the storm center had reached the southern Appalachian region, attended by further heavy rains, whence it moved northeasterly during the following day, heavy rains still continuing, and merged into a general low-pressure area passing along the northern border. Further details of these storms, with estimates of damage, etc., will be found in other sections of this issue.

During the occurrence of the storm last referred to in the more eastern districts fair weather was the rule to the westward, though low-pressure condition set in over the central valleys about the 18th and overspread the Southeastern States during the 19th and 20th, attended by local rains.

On the 20th cyclonic conditions appeared over the middle Missouri Valley and by the following morning had moved to the northward of the Great Lakes and heavy rain had fallen over much of the intervening territory, the precipitation area extending southward into the lower Ohio Valley.

On the morning of the 23d general low barometric pressure covered the territory from northern Texas to Lake Superior and precipitation had occurred during the previous night from eastern Kansas and western Missouri northward to Minnesota and Wisconsin, the falls being heavy in portions of Iowa and Wisconsin. During the following 24 hours the storm moved to the northward of the Great Lakes and the precipitation area extended from the southern mountain and Great Plains area northeastward to the lower Ohio Valley and Great Lakes. The rain area extended slowly eastward during the following two or three days. Immediately following this storm area low pressure again developed over the Northwest and by the 27th scattered rains had fallen in the northern Rocky Mountain area and to the eastward as fas ar the upper Mississippi Valley. This cyclone moved rapidly to the northward of Lake Superior within the following 24 hours, but precipitation became much lighter than during the preceding day.

The last few days of the month brought extensive precipitation over the more northern districts from the upper Missouri Valley eastward, the area of rainfall extending southward into the Ohio Valley and southwestward to Texas and thence eastward over most districts to the Atlantic coast as the month closed.

No important cyclone entered the Pacific Coast States during the month, though several appear to have had their origin in the northern plateau.

The anticyclones were mainly feeble and exerted no important control of the weather save on the 23d and 24th, when high pressure favored sharp falls in temperature over the northern Rocky Mountains and eastward to the Mississippi Valley.

Save for the two tropical disturbances that brought high winds and severe local storms of tornadic character over the southeastern districts no widely extended storms occurred, though local disturbances were reported in many sections from the Rocky Mountains eastward, some assuming tornado forms and causing loss of life and extensive damage to buildings and crops. A list of the more important of these with the usual descriptive items appears at the end of this section.

TEMPERATURE

No severe heat or cold marked the temperature during the month and the daily changes and departures of

monthly means from normal were not pronounced to any extent, though at a few points in southern New England and adjacent portions of New York the monthly means were the highest of record for any August.

The average temperatures for the month were moderately above normal from the middle Plains eastward to the Atlantic coast and over portions of the plateau region, elsewhere they were slightly less than normal. The warmest sections for the month as a whole as compared with the normal embraced the area from the Lake region eastward to the Atlantic coast, but even here the positive departures were only slightly above 2°, the greatest, +4.7°, occurring at New Haven, Conn. The negative departures were mainly less than 2°.

Considering the temperature by weekly periods, the first week was mainly warmer than normal over the eastern half of the country, and cooler than normal in the west, being from 4° to 7° in the plateau. The second week was likewise warmer than normal over most States, particularly in Montana, the Dakotas, and other near-by areas, where the positive departures ranged from 6° to 9° per day. This week had average temperatures slightly less than normal in the southern Rocky Mountain areas, over Florida and near-by portions of Georgia and South Carolina and from central Virginia to western New York. The week ended August 21 continued moderately warm over the greater part of the country, though the first part was cool over the far Northwest, where the week as a whole was cooler than normal, and the latter part was moderately cool in most northern districts.

The last 10 days had cool weather for the season over most sections from western Texas northeastward to the lower Lakes and thence westward to the Pacific, save for a few small areas, the period as a whole being from 3° to 6° cooler than normal from the upper Mississippi Valley westward to Idaho. Over districts from central Texas northeastward to New England this period was moderately warmer than normal and this condition to a less extent existed over most other eastern States.

The warmest period over most districts was about the 9th to 11th, when temperatures rose to 100° or slightly above at one or more points in nearly all the States. The warmest day of the month, however, was the 1st, with a maximum temperature of 121° at a point in the desert region of southern California.

Minimum temperatures for the month occurred on various dates, but mainly during the last decade, when temperatures went below 32° at exposed points in all northern districts from Michigan westward and they were below 32° at exposed points in all western mountain districts. The lowest recorded, 15°, occurred in the mountains of Wyoming on the 17th, while 22° was recorded in the mountains of California as early as the 4th.

Light to killing frosts occurred only at a few exposed points in the principal agricultural districts and no important damage resulted.

PRECIPITATION

As stated elsewhere, the rainfall was abnormally heavy over portions of the Eastern and Southeastern States, due to the occurrence of two tropical storms which, as usual, brought excessive rains. These storms, occurring only a few days apart and covering much of the same region, caused unusually high waters in some of the streams of the States affected, full accounts of which appear elsewhere.

Generally speaking, precipitation was well distributed during the month over the eastern half of the country, with large excesses in most of the Atlantic Coast States and in portions of the upper Mississippi Valley and near-by areas. The greatest amount reported was 22.19 inches at a point in Florida, but amounts above 20 inches were reported at several other points in the Southeast, notably in Georgia and the Carolinas. At Macon, Ga., the monthly amount, 20.52, was more than 16 inches above normal. At points in northern Iowa and over near-by areas in Minnesota and Wisconsin the monthly falls exceeded 12 inches, being in some cases the greatest ever recorded in August.

There were well-marked deficiencies, however, in a number of areas, notably in the immediate coast districts from Georgia to southern New England where deficiencies ranged up to nearly 5 inches, in contrast with excesses immediately back from the coast ranging up to 16 inches.

Rather droughty conditions existed over portions of southern Illinois and other parts of the Ohio Valley, in portions of eastern Texas and northern Louisiana, and the month was notably dry over the far Northwest, where unirrigated crops, as well as in other parts of the West, suffered from lack of rain. The distribution of precipitation over the various parts of the country and the departures from normal conditions are graphically shown on Chart V and inset thereto.

SNOWFALL

Snow was reported from a few points in the high mountains of the West, 3 inches being reported from Colorado, 2 inches from northwestern Montana, and traces at a few other points.

RELATIVE HUMIDITY

The percentages of relative humidity were moderately above normal over nearly the entire eastern half and below over the western half, distinctly so in portions of the Rocky Mountain and plateau regions.

SUNSHINE

The sunshine percentages were moderately high over nearly all districts save in the Atlantic Coast and in the southern portions of the East Gulf States, where locally they were less than 40 per cent of the possible and in a few instances less than 30 per cent. In the Great Valley of California they ranged up to nearly 100 per cent of the possible.