

MISCELLANEOUS PHENOMENA.

The prevailing winds were from the southwest in every State in the district. The wind movement was small, the average hourly velocity exceeding 10 miles only at Cape Henry, Hatteras, and Pensacola. The highest velocities registered were: Cape Henry, 44 miles from the west, on the 19th; Richmond, 40 miles from the south, on the 13th; and Hatteras, 42 miles from the southwest, on the 23d. The average number of clear days for the district was 13, ranging from 11 for Georgia and Alabama to 16 for the Carolinas; average number of partly cloudy days, 12; cloudy days, 6; days with appreciable rainfall, 10. Several deaths by lightning were reported and some damage by local storms occurred.

Earthquake shocks were distinctly felt in Arvonnia, Bremono, and New Canton, Va., and the surrounding country, at 8 o'clock sharp on the evening of August 7, 1912, lasting about 30 or 40 seconds.

South Carolina.—The town of Clover, close to the northern border of the State was visited by a destructive wind-storm on August 3. One life was lost, several persons were injured, and considerable damage to property resulted. The main loss was the complete destruction of the mills of the Clover Manufacturing Co., and there was also much damage to crops.

Georgia.—Macon: On August 18, while crossing a street, Mrs. N. A. Cranford and her 5-year-old granddaughter were killed by lightning and N. A. Cranford fatally injured. Savannah: On August 1 a man named Taylor Winters was killed by lightning while at work at the city phosphate works. On the 27th an electrical storm of marked severity occurred, during which the power house was struck by lightning and street-car traffic suspended for more than an hour.

RIVER CONDITIONS.

All the rivers of Virginia and North Carolina, and most of those in South Carolina, remained low during August, the range in flow from the beginning to the end of the month hardly exceeding 3 feet, while the mean stages ranged from 2 to 7 feet below the normal for August. The Tar River in eastern North Carolina fell to 2.6 feet at Greenville on the 14th, which is 0.2 feet below the previous lowest record. The Neuse River, at Kinston, was remarkably low, the river consisting of a series of pools. Small craft were high and dry near the banks and steam navigation was entirely suspended. The Waccamaw River at Conway, S. C., gave the lowest mean stage for

August on record, with the exception of August, 1911, when the stage was the same. River conditions in the Gulf States were more nearly normal, and the water was sufficient to permit navigation of the lower course of the rivers during the greater part of the month.

MAMMATO-CUMULUS CLOUDS.

By JAMES H. KIMBALL, Observer.

Mammato-cumulus clouds, as nearly perfect in form as those illustrated in the June number of the Monthly Weather Review, were seen at Richmond, Va., during the afternoon of August 27, 1912. When first observed, at 3.15 p. m., the characteristic formations were not readily separated by the eye from the rounded balls which then constituted most of the strato-cumulus bank, all portions being of a grayish tint and without strongly marked shadows. A moderate thunderstorm had prevailed a short time before and the peculiar cloud formation appeared near its retreating edge. The storm, as observed here, was unusual only in the direction it pursued, coming as it did from the northwest and passing north of the station on its way down the James River Valley. It was preceded by violent gusts of wind from the north and caused a light sprinkle of rain, an insignificant electrical display, a sharp fall in temperature, and a well-marked rise in pressure. After crossing the meridian of the station the disturbance abated, little movement of the clouds being distinguishable and under these conditions the first view of the mammato-cumulus was obtained. They remained in the northeastern sky for fully half an hour, extending their area gradually and at the same time becoming more symmetrical and beautiful in form. As the development proceeded the protruding portions became more distinct by increase in size and density, giving deeper shadows which brought into bold relief those farthest east, and giving to some an outline that readily suggested an incipient tornado cloud.

This account is offered in corroboration of the statement made by Mr. Twyford in the above-mentioned number of the Review, where he says that great damage was done by a cyclone 20 miles away and in the direction from which the cloud came. In Virginia a similar phenomena occurred that agrees fairly well in both distance and direction from the cloud. From accounts received at this office it is learned that a terrific wind and hail storm occurred on the afternoon of the 27th at Vinita, on the James River, 15 miles west and a little north of Richmond, near which place the storm wrought havoc to crops.