

is observed to blow at the rate of 72 miles per hour, there will be moments during the passage of the mile in question in which the velocity will probably be as high as 96 miles per hour and at other moments as low as 48 miles per hour. (See Professor Marvin's Bulletin on Anemometry, Circular D, Instrument Division).

15. The highest velocity ever recorded at Block Island is 84 miles per hour. At Hatteras, in 1899, 105 miles, and at Galveston, in 1900, 84 miles per hour were recorded before the instruments were blown down, but it is estimated that at Galveston the wind attained a velocity of at least 120 miles per hour.

The highest velocity actually recorded on self-registers in the United States, except at Mount Washington and Pikes Peak, is 138 miles per hour at Cape Lookout, N. C., August 18, 1879, just before the anemometer was blown away. The estimated velocity after the anemometer was blown down was 165 miles per hour. At Mount Washington 186 miles was observed with a heavier anemometer than we now use, and needing a large correction.

Our anemometers do not generally withstand the terrific force of West Indian hurricanes or of the true tornadoes, but this is not wholly due to the great horizontal speed of the wind; it is largely owing to such other matters as the following: (1) The rapid rotation sets up strains within the anemometer that tear it to pieces; (2) the horizontal wind alternates with violent up or down gusts that cause the revolving arms to lift the spindle up out of its socket; (3) the inertia and pressure of the wind against the hemispheres is often doubled by the impact of the raindrops carried along with the wind; (4) the cup and arms become clogged with snow or frost formations, and thus offer a much greater resistance than the instrument was intended to bear; (5) the debris of buildings and trees carried along by hurricane winds tear the anemometer from its supports.

16. Observations do not generally show that thunderstorms follow valleys. We would hardly expect them to do so when we remember that the base of a thunderstorm cloud is about half a mile above the surface and its summit from 2 to 6 miles above. The thunderstorm cloud may start in a valley, but soon outgrows the influence of small local features. The study of thunderstorms requires a thick network of stations and large topographic maps. It would be well if such study could be carried out in greater detail for specific small areas of 10 or 20 miles in diameter.

17. Grafton, N. H., has an elevation of over 300 feet, which is considerably above the valleys of the Merrimac and the Connecticut rivers, between which it lies. Its altitude is, therefore, conducive to frosts, since the rate of radiation of heat from the earth at night increases with the elevation. Hills and mountains are not so liable to frosts as lowlands at their immediate foot, since the cold air gravitates down the sides of the former to the valleys below, thus causing early frosts in the valleys. Does not the Grafton station receive such cold air drainage from neighboring higher land? There must be many similar frosty spots in New Hampshire

and Vermont, not provided with voluntary observers, therefore we doubt whether Grafton really is a "great frost center."

19. The average rainfall diminishes rapidly as we go west from the Mississippi, but so-called cloudbursts occur in all sections alike, the most intense being among the mountains of the far west. The Gulf coast is liable to excessive rainfalls, and so are all the States east of the Rocks Mountains, but principally during thunderstorms or hurricanes. For a full discussion of this subject, see Weather Bureau Bulletin D, p. 52.

For a more complete discussion of these various subjects, the reader is referred to the special publications of the Weather Bureau, a list of which is given in the MONTHLY WEATHER REVIEW for May, 1901, p. 216.—H. H. K.

WEATHER BUREAU MEN AS INSTRUCTORS.

Mr. H. W. Richardson, Local Forecast Official, Duluth, Minn., has arranged to deliver a course of lectures before the West Superior (Wisconsin) Normal School during the present school year.

The first of the series was given in the Weather Bureau office at Duluth before the class in physiography, and such subjects as instruments and observations, the weather elements, the general movements of highs and lows, and weather maps and weather forecasting were very briefly considered.

On September 24 the second lecture of the series was delivered at the Assembly Hall of the school before the faculty and students to the number of about 300, the subject being the United States Weather Bureau.

Mr. J. Warren Smith, Section Director, Columbus, Ohio, lectured upon "Weather" before the seventh grade teachers' association of that city on September 28. This lecture was to be followed by two others, on October 1 and 3, respectively, before this same association of teachers, who now have meteorology included among the subjects they are to teach.—H. H. K.

CORRIGENDA.

MONTHLY WEATHER REVIEW for July, 1901, p. 299, line 10, for "Amerschweid" read "Amerschweier." In the table on same page, line 1, under barometer (corrected) for "756.5" read "759.0." In the same column, opposite 9.05 a. m., insert "746.5."

Under "Remarks," opposite 11.23½ a. m., insert "We approach the cumulus turrets that rise from the cloud sea much higher than the balloon."

MONTHLY WEATHER REVIEW for July, 1901, p. 317, column 1, line 12, dele "Wis." Back cover, table of contents, column 2, line 11, dele "Wis."

MONTHLY WEATHER REVIEW for August, 1901, page 354, column 1, line 18, for "mentioning" read "maintaining."

THE WEATHER OF THE MONTH.

By ALFRED J. HENBY, Professor of Meteorology.

CHARACTERISTICS OF THE WEATHER FOR SEPTEMBER.

The rainfall of September was heavier than it has been in any September during the last ten years. In other respects the weather was not greatly different from the normal for the season. There were no destructive storms of a general nature and few severe local storms.

In the South Atlantic States, away from the coast, the rains were unusually heavy as in the preceding month, and in the middle Missouri and middle Mississippi there was a second area of heavy rains, culminating in eastern South Dakota with a fall of about four inches above the seasonal average. The rain on the middle and south Pacific coasts was also in excess of the seasonal average.