

DETAILS OF THE WEATHER IN THE UNITED STATES.

GENERAL CONDITIONS.

ALFRED J. HENRY.

The most striking feature of the weather of the current month was the failure of the rains generally east of the Mississippi. The drought was exceptionally severe in Pennsylvania, the western portion of which had not received substantial rains since March of the present year. November precipitation is known to be light, especially in the interior. The rather anomalous condition of the current month—drought east of the Mississippi and normal rains in the Plains States and elsewhere to the westward—was doubtless due to the movement, or rather lack of movement, of cyclones which entered the field of observations from the west and northwest. As will be noted from Chart I, anticyclones had a pronounced tendency to originate and also to stagnate over the northern Rocky Mountain and Plateau regions; outbursts of cold air proceeded thence southeastward and in the majority of cases separated the southern portion of the warm-air sector of cyclonic systems from the northern portion and thus we believe, cyclones, which normally would have moved to the northeast over Tennessee and the Ohio Valley, were deflected to the west and north and eventually passed eastward north of the Lake region—too far north to give rainfall to the States east of the Mississippi. Prevailing high pressure over southeastern States may also have been influential in causing the movement above mentioned.

CYCLONES AND ANTICYCLONES.

By W. P. DAY.

As would be expected, the pressure changes were more active during November than the preceding month. Several typical winter types of pressure distribution made their appearance. The Plateau HIGH was well developed during two periods and several important Alberta HIGHS were plotted. Among the low-pressure areas, important southwest lows and South Atlantic LOWS were charted. No tropical storms were noted. The number of cyclones (LOWS) and anticyclones (HIGHS) by types is shown in the table below.

Cyclones.	Al-ber-ta.	North Pa-cific.	South Pa-cific.	North-ern Rocky Moun-tain.	Colo-rado.	Texas.	East Gulf.	South At-lantic.	Cent-ral.	Total.
November, 1922..	6.0	.....	1.0	.....	4.0	1.0	.....	2.0	.....	14.0
Average num-ber, 1892-1912, inclusive.....	4.0	2.3	0.6	0.4	1.1	1.0	0.4	0.8	1.0	11.6

Anticyclones.	North Pacific.	South Pacific.	Alber-ta.	Plateau and Rocky Moun-tain region.	Hudson Bay.	Total.
November, 1922.....	4.0	.....	6.0	2.0	1.0	13.0
Average number, 1892-1912, inclusive.....	2.0	0.9	4.0	1.1	0.2	8.2

FREE-AIR CONDITIONS.

By L. T. SAMUELS.

Free-air observations for the month presented no striking features of more than local importance, but rather they showed a nearly normal state of affairs, especially as regards free-air winds. Free-air temperatures (see Table 1) showed a general excess as compared with the normal for practically all stations and levels explored by the kites, with the largest departures occurring at Ellendale. At this station, however, a large proportion of the flights was made at a later hour in the day than usual, and therefore at times when the temperature was ordinarily higher.

Relative humidities showed small departures in nearly all cases, and vapor pressure departures conformed generally with those for temperature.

In Table 2 are given the resultant winds and their normal values. The close agreement, in most cases, between the former and the latter is striking, the one exception being Groesbeck, where considerable deviation is found at a number of levels.

The following stations reported velocities of 40 m. p. s. or more:

Station.	November.	Velocity.	Direction.	Altitude.
Aberdeen, Md.....	24	m. p. s. 50	WNW	m. 4,100
Broken Arrow, Okla.....	16	40	WSW	8,000
Do.....	22	44	WSW	10,300
Dahlgren, Va.....	24	47	WNW	3,900
Due West, S. C.....	16	59	WNW	10,000
Lansing, Mich.....	9	41	NW	8,500
Mitchel Field, N. Y.....	24	50	WNW	2,700

Easterly winds at heights above 5,000 meters were observed as follows:

Station.	November.	Station.	November.
Bolling Field, D. C.....	1	Key West, Fla.....	1, 2, 7, 16, 19
Denver, Colo.....	24	San Francisco, Calif.....	13, 28
Edgewood, Md.....	1	San Juan, P. R.....	4, 19
Groesbeck, Tex.....	22		

Numerous occurrences in pilot-balloon observations have been noted when the velocity curve takes on an extremely zigzag form, i. e., indicating alternately high and low velocities superimposed, but with no appreciable change in direction. An inspection of the weather charts on a number of days when such conditions were pronounced gave surprisingly consistent testimony to the fact that these cases are characteristic of the region on the dividing lines between a low-pressure area passing off and a high-pressure area moving in. Some instances of the kind occurring this month were the following:

Station.	November.
Drexel, Nebr.....	5 (a. m.), 7 (a. m. and p. m.).
Dahlgren, Va.....	20 (p. m.).
Mitchel Field, N. Y.....	23 (a. m.), and 29 (p. m.).

It seems highly probable that this condition is an accompaniment of the temperature distribution of this particular arrangement of pressure and a more detailed