TABLE 2.— *Temperature departures, 1923.*

Sections.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Average monthly departure.
New England	−2.1	−6.2	−3.7	−0.1	−0.9	+1.5	−2.2	−1.7	+1.1	+0.9	+1.9	+7.1	−0.4
Middle Atlantic States	+1.7	−3.4	+0.4	+0.1	−1.4	+2.7	−1.1	−0.9	+1.3	−0.9	+0.1	+8.0	+0.6
South Atlantic States	+4.0	−1.6	+2.1	−0.3	−2.2	+0.1	−1.1	+0.9	+1.7	−1.3	−2.0	+6.4	+0.6
Florida Peninsula	+1.8	+1.5	+2.8	+1.6	−1.5	−0.6	−0.7	−0.2	−0.4	−1.5	−3.2	+3.4	+0.2
East Gulf States	+6.7	−1.0	−0.5	+0.2	−2.0	−0.9	−1.9	−0.2	+2.0	−1.1	−1.7	+6.7	+0.5
West Gulf States	+10.2	−1.2	−3.3	+0.4	−0.2	+0.9	+0.3	+2.0	+0.9	−1.7	−0.6	+4.3	+1.0
Ohio Valley and Tennessee	+5.9	−3.6	−1.0	−1.0	−2.2	+0.5	−0.4	−0.3	+0.8	−1.7	+0.6	+9.0	+0.6
Lower Lake region	+0.8	−4.3	−2.2	−1.4	−3.7	+1.7	−0.8	−1.7	+0.4	−1.6	+1.2	+8.6	−0.2
Upper Lake region	+2.7	−4.9	−5.4	−1.5	−1.3	+3.1	+0.8	−2.2	+0.2	−0.6	+3.9	+8.8	+0.3
North Dakota	+5.9	−2.8	−4.3	−1.0	+1.0	+3.6	+3.6	−2.3	+2.7	+1.2	+10.6	+11.2	+2.4
Upper Mississippi Valley	+7.8	−3.5	−4.4	−1.0	−1.0	+1.9	+2.3	−0.8	−0.3	−2.9	+3.4	+9.9	+1.0
Missouri Valley	+11.1	−0.1	−2.3	+0.2	−1.3	+0.7	+2.2	−0.1	+1.5	−2.2	+5.5	+7.6	+1.9
Northern slope	+7.8	−3.1	−1.2	−0.9	0.0	0.0	+3.0	−0.9	+1.0	−2.5	+4.3	+1.3	+0.7
Middle slope	+10.9	−1.1	−3.4	−0.1	−2.1	+0.1	+1.5	+0.9	+0.3	−5.0	+2.9	+2.4	+0.6
Southern slope	+9.7	−0.8	−3.5	0.0	+0.4	+0.7	+0.7	+1.5	+1.4	−3.2	−0.4	−2.4	+0.3
Southern Plateau	+4.6	−1.4	−2.7	−1.0	+1.5	−2.8	−0.1	−1.0	−1.2	−2.4	+0.6	−1.1	−0.6
Middle Plateau	+4.8	−5.2	−3.4	−2.0	+1.2	−3.6	+2.0	−1.3	−0.1	−2.9	+1.4	−2.3	−1.0
Northern Plateau	+6.2	−5.2	−0.3	−0.2	−0.3	−3.2	+2.6	+1.0	+2.6	−0.2	+2.1	−0.2	+0.4
North Pacific coast region	+1.6	−2.6	−0.1	+1.7	+0.1	+0.8	+1.4	+2.8	+2.2	+2.8	+3.4	+0.3	+1.2
Middle Pacific coast region	−1.6	0.0	+1.3	−0.2	−0.4	−2.8	+0.7	+1.2	+2.5	+0.1	+4.2	−1.2	+0.3
South Pacific coast region	+2.2	+0.6	+2.4	−0.5	+1.4	−3.0	−0.6	−0.8	+2.2	+1.5	+4.9	+0.8	+0.9
United States as a whole													+0.5

The excess of temperature in the last quarter of the year seems to be rather definitely tied up with low pressure in the Arctic and, moreover, it also seems to be rather clearly indicated that when pressure in high latitudes in the North American Continent and Asia is low, the prevailing drift of the atmosphere over Canada and the United States is from west to east *with few and unimportant exchanges of polar and equatorial air and vice versa.*

TROPICAL DISTURBANCES DURING THE HURRICANE SEASON OF 1923.

By W. P. DAY.

The word "hurricane" comes from a Carib word meaning "a high wind." But meteorologically it is now associated with the small, intense cyclones which occur in this region and are responsible for the really destructive winds. Fortunately, a great many tropical disturbances do not develop these characteristics; but it is often difficult to decide from available reports whether any particular disturbance originating over warm waters carries with it the central core of low barometer, which writes a typical hurricane trace on the barograph.

The first disturbance showing characteristics of a hurricane was noted on the morning of September 5 near latitude 36° N. and longitude 61° W., the S. S. *Evergreen City* reporting a pressure of 29.32 inches with force 10 (Beaufort wind scale) from the northeast. The storm appeared to be of small diameter, forming a small part of a larger depression or trough of low pressure extending northeast from Bermuda. Previously a rather ill-defined depression had been traced as it recurved around Bermuda; but it was not until the 5th that either low barometer or high wind was detected. Meanwhile, a high-pressure area had obtruded itself into the path of the storm and its direction of motion was changed from northeast to north-northwest and greatly retarded. The center of the storm was again noted on the morning of the 9th as it crossed the steamer lanes near latitude 41° N and longitude 58° 30′ W, the S. S. *Emergency Aid* recording a pressure of 29.20 inches at 3 p. m. with a wind force of 10 from the south. The storm was now under the influence of a LOW moving along the northern border and, being caught in its attendant upper currents, was carried rapidly north-northeast, but with diminishing intensity over, the colder waters of the Labrador Current.

The next disturbance also developed north of the Tropics but well within the Gulf Stream, and was first noted to be of hurricane intensity when the S. S. *Emergency Aid,* which had encountered the previous storm farther northeast, recorded a pressure of 29.42 inches and winds as high as force 11, on the morning of September 12, near latitude 36° N. and longitude 64° 30′ W. This storm was carried northeast much more rapidly than the preceding one and by 4 p. m. was near latitude 42° N. and longitude 60° W., the S. S. *City of St. Joseph* recording a pressure of 29.11 inches and wind force 12 from the northwest. Like its predecessor, it showed a marked loss of intensity upon striking colder water and there was but little indication of it on the following morning.

During September 23 unsettled conditions were noted to the southeast of Turks Island, the barometer falling slowly and wind shifts indicating the presence of a disturbance, which was more definitely located on the morning of the 25th, when the S. S. *Tulsa* reported a wind force of 10 from the northeast, pressure 29.86 inches, in latitude 23° 40′ N and longitude 74° W. The storm was moving northwest at this time and passed just east of Nassau, Bahamas, on the 26th, the morning barometer reading 29.54 inches and wind 40 m. p. h. from the northwest. However, a large high-pressure area was now blocking its forward motion and the storm, though not diverted from its recurve to the northeast, showed very little movement during the next two or three days, but gradually increased its area of influence and its intensity with winds of gale force over a large area and wind force as high as 11 reported by vessels which approached its center. It was not until the morning of the 29th that the eastward movement of

the HIGH allowed a strengthening of the southwest drift aloft and a corresponding acceleration in the northeastward movement of the storm. The hurricane was now near latitude 31° 30′ N. and longitude 73° with lowest pressure somewhat below 29 inches. The following morning the S. S. *Collegian* recorded the passage of the center of the storm in latitude 33° 20′ N and longitude 69° W. with lowest barometer reading, 28.62 inches. The S. S. *Maraval* near by recorded a pressure of 28.98 inches with a shift of wind from east-southeast through north to northwest and a wind force of 12. At 2 a. m. the following morning (October 1) the S. S. *West Cobalt* reported passing through the storm near latitude 41° 30′ N and longitude 59° W with lowest barometer 28.50 inches and wind force of 12. A little farther north the *Saxoleine* recorded a pressure of 28.59 inches at 10 a. m., the wind backing from south to east to north around to west-southwest. Turning northward to western Newfoundland, the hurricane lost intensity over colder water.

The next disturbance of this nature apparently originated in low latitudes off the Pacific coast of Guatemala and was central on the morning of the 13th of October southeast of the Mexican Pacific port of Salina Cruz on the Gulf of Tehuantepec. It moved rapidly northward across the Isthmus of Tehuantepec and the western Gulf of Mexico and was encountered by the steamships *Corning* and *El Siglo* during the evening of the 15th near latitude 27° 30′ N. and longitude 92° W. By the following morning it had crossed the Louisiana coast and was central near Vicksburg, Miss., with a pressure of 29.26 inches; and during the night of the 16th dissipated over Arkansas and southern Missouri. The contour of the isobars was considerably distorted from the ideal by a strong pressure gradient from northeast to southwest over the United States, which tended to squeeze the isobars together on the northeast quarter of the storm and throw them wide apart to the southwest. The closing up of the isobars was especially effective in the vicinity of Pensacola, Fla., which was about 250 miles from the path of the center but recorded the highest wind velocity (64 miles from the southeast) of any land station. The storm in general lacked the intensity near the center that we normally expect of a true hurricane.

Meanwhile, a disturbance became apparent just north of the Leeward Islands and began to move north-northeastward; but with the strengthening of a large high-pressure area to the north and northeast, the storm was slowed up and deflected to the northwest. It passed just northeast of Bermuda on the 17th and crossed the Atlantic coast near Nantucket, Mass., on the night of October 18th and was still in evidence near Boston the following morning. This storm lacked the intensity necessary to be classed as a hurricane, but the shape and distribution of the isobars showed a close resemblance to this type.

The severe storm of the 22d–25th of October, which developed north of the Bahamas and moved northward to Hatteras and thence north-northwestward to extreme northwest Pennsylvania, was formed and maintained by the usual processes attending extra-tropical storms and bore no resemblance to a hurricane. (See Chart XIII.)

NOTES, ABSTRACTS, AND REVIEWS.

THE PAN-PACIFIC CONGRESS, AUSTRALIA, 1923.

[Reprinted from *Nature*, Jan. 5, 1924.]

Among the many problems discussed by the congress the two following are of special interest to meteorologists, geographers and oceanographers, and are reproduced in full.

* * * *Pacific radiotelegraphy.*—The congress emphasized the importance of the speedy erection of wireless stations in all countries bordering the Pacific capable of communicating directly with each other. It recommended that arrangements be made for all wireless stations in Pacific regions to keep daily records on an approved basis with regard to atmospherics, their effect on wireless communication, and their relation to meteorological conditions. It was suggested that Governments of the different countries concerned should establish a daily mean time signal.

Geography and oceanography.—On the motion of Dr. N. Yamasaki, of the Imperial Observatory, Tokyo, it was agreed to urge the increasing importance of accurate coastal surveys being carried out in accordance with the recommendations of the International Hydrographic Bureau, and that special attention should be given to the scientific and economic interest of the construction of detailed charts of the Great Barrier Reef of Australia. The congress also invited attention to the need for an adequate wireless meteorological service in the more remote parts of the Pacific Ocean, and urged that the international exchange of meteorological information for the purpose of forecasting be extended to those regions.

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COLD WEATHER IN EUROPE.

It is quite evident that the weather this winter in Europe has been characterized by severe storms and intense cold. Whether the winter as a whole will be classed among the severe ones can not of course be determined from press reports that reach this country from time to time. In the nature of the case the press dispatch is generally made up from a limited amount of reliable meteorological information and while the accuracy of the information presented therein is not questioned, its general character leaves much to be gleaned from the official meteorological reports of the several European countries.

An Associated Press dispatch from London summarizes the situation as follows:

JANUARY 10, 1924.

Unusually severe storms, accompanied by intense cold and heavy snow, are sweeping Europe this winter. Off the coasts of Spain and France the disturbances have proved a serious menace to shipping, while in the North Sea and in Scandinavian waters the ice floes are so heavy that navigation in many places is difficult.

Not in many years have there been so many casualties from avalanches in the Swiss-French Alps. Heavy rains in the lower passes and foothills of the latter mountains have contributed largely to the Marne and Seine floods in France.

England also is suffering, although in a lesser degree. The cold in this country is severe and there is much snow, especially in the midlands and in the north.

Wind, snow, and rain over all of western Europe have seriously delayed telegraphic communication. Until 6 o'clock this morning no press dispatches had reached England from Spain in more than 24 hours.

—*A. J. H.*