Captain McKinnon has furnished the following detailed report:

[Position of vessel at beginning of gale, 15° 45′ N., 93° 45′ W., at end, 15° 15′ N., 95° 30′ W.]

Date.	Greenwich mean time.	Wind direction.	Wind force, Beaufort.	Barometer.	Thermometer.
	H. m.				°
Feb. 7	0 35	Northerly	4	30.03	83
	2 35	do	6	30.05	82
	4 35	do	8	30.14	80
	6 35	Westerly	8	30.15	81
	7 35	West-northwest	8	30.12	.....
	8 35	Northwest by west	10	30.09	75
	9 35	Northwest	10	30.09	.....
	10 35	Northerly	10	30.09	70
	12 35	do	10	30.09	72
	14 35	do	10	30.09	72
	16 35	North-northwest	10	30.11	76
	17 35	Northerly	8	30.11	.....
	18 35	Northeast	6	30.11	74

From 12 noon to 6 p. m., ship's time (6.35 to 12.35 G. M. T.), the *Newport* was about 2 miles from shore and at times the vessel was covered with fine sand. About 9 p. m. a heavy easterly swell commenced. Spoon drift was caused both to lee and windward. The sea throughout the gale was short and choppy.

According to press reports the American S. S. *Fairfield City* arrived at San Pedro from Panama on February 18 with three members of her crew injured and two lifeboats and the bridge wrecked as the result of an encounter with a hurricane while coming up the coast. The *Fairfield City* was reported at Panama about the 6th. No other circumstances are known.

Very heavy weather developed in connection with the depression referred to as being in the Gulf of Alaska on the 5th and appears to have continued into the period from the 7th to the 10th when low pressure prevailed off the American coast. The British S. S. *Bessie Dollar*, from Victoria (January 30) for Yokohama, had her bridge wrecked and sustained other damages during this period and was obliged to return to port.

On the 11th an anticyclone which had advanced from the mid Pacific was encroaching upon the California coast. This change to high pressure over the eastern portion of the ocean was but temporary, however. On the morning of the 12th a fresh depression was forming to the east of the Hawaiian Islands, with a northward movement. On the 14th it merged with another depression which had formed over the Gulf of Alaska and moved southward, the center of the combined depression being on the morning of the 14th near latitude 30° N., longitude 143° W. During the next several days it moved slowly northward, then eastward, dissipating off the British Columbia coast on the 18th. Strong gales were experienced by vessels to the southward and westward of the center. At 6 a. m. on the 16th the barometer on the S. S. *Viniti*, previously referred to, fell to 28.92 inches. This was in 48° 08′ N., 134° 18′ W. The wind at the time was south, later veering to southwest. Highest force, 10.

Following this depression, the North Pacific anticyclone became established between the Hawaiian Islands and the American mainland, while low pressure appeared over the Aleutians. With some unimportant modifications this general and normal distribution continued until the 27th when an extensive and vigorous depression advanced eastward and on the 28th covered the Gulf of Alaska and the ocean area to the southward. On the morning of the 28th the barometer at Kodiak registered 28.64 inches.

The following note regarding conditions in the Japan area from the 12th to the 18th is taken from the Weekly Weather Report for that period issued by the Imperial Marine Observatory at Kobe:

On the 12th several cyclone centers were lying on our east coast, causing a heavy rain storm in eastern Japan. The weather was mostly fine in western Japan, owing to the approach of an anticyclone from the continent. On the 13th a high area occupied Manchuria. The weather was mostly fine in the Far East.

On the 14th the high area was moving eastward while a depression was developing near Formosa, followed by another one from Luzon. On the 15th the high area occupied the Okhotsk Sea. Both depressions were approaching our south coast. Cloudy weather was prevailing in this country. Rain set in in southern Kinsin. On the 16th both depressions grew deeper and approached the Tokaido coast. A heavy rainstorm was prevailing there.

On the 17th one of the depressions traversed southeastern Japan and entered into the Pacific from the neighborhood of Cape Kinkasan, while the other one passed along our southeast coast. A heavy rainstorm prevailed in eastern Japan generally.

NOTES ON WEATHER IN OTHER PARTS OF THE WORLD.

Newfoundland.—ST. JOHN'S, February 1.—Strong easterly gales that have been raging for several days have blockaded St. John's Harbor with ice and no shipping can enter or leave the port until there is a change of wind.—*Washington Times, February 1, 1922.*

ST. JOHN'S, February 9.—Newfoundland is besieged again by snow and ice. A blizzard swept over the colony last night and to-day and blocked all traffic. * * *

The gale swept the ice fields back into St. John's Harbor and no ships could leave or enter.—*Worcester (Mass.), Telegram, February 10, 1922.*

North Atlantic.—BOSTON, February 2.—Warning of North Atlantic ice fields 7 miles wide and 135 miles long moving south, 215 miles east of Cape Race, was sent out to-day by the Hydrographic Office.—*Washington Times, February 2, 1922.*

Sweden and the Baltic.—STOCKHOLM, February 5.—Exceptional cold is being experienced in Sweden, especially in the northern part. Ports and harbors gradually are becoming blockaded with ice, the ferries from Trelleborg to Sassnitz, Prussia, have ceased, and connection with Denmark is maintained only with great difficulty.—*New York Tribune, February 6, 1922.*

REVAL, February 18.—The provisioning of starving Russia has become a task of battling with ice in the Baltic.—*Chicago Post, March 11, 1922.*

GOTHENBURG, February 26.—Further breaking up of the ice blockade at this port permitted the entrance of 14 more ice-bound ships Saturday. There is now open water between Copenhagen and Malmo.—*Washington Evening Star, February 27, 1922.*

Russia.—REVAL, February 18.—Petrograd has been icebound for several weeks, and a number of ships, mostly German freighters, have been caught by ice in the Finnish Gulf.—*Chicago Post, March 11, 1922.*

Germany.—BERLIN, February 5.—In a raging blizzard the inhabitants of the capital of Germany stood in the streets to-day pumping old wells and trying the frozen hydrants. Berlin is to-day without water, gas, electricity, street cars, or railroads, in the midst of one of the worst winters on record.—*Chicago Tribune, February 6, 1922.*

Hungary.—BUDAPEST, February 17.—Hungary is having the hardest winter within a generation which daily claims new victims. The Danube River, which is running high and is full of ice, reaped a heavy toll among

those along its banks and on the islands in the stream. Even crows, unable to survive the cold, can be seen everywhere clinging frozen to the bare trees.—*Brooklyn Daily Eagle, February 17, 1922.*

Italy.—ROME, February 9.—The cold wave which is the severest in years, accompanied by a considerable fall of snow, has forced a modification of the coronation ceremonies for Pope Pius XI, Sunday.—*New York Evening Mail, February 9, 1922.*

Samoa.—APIA, February 3.—The steamer *Suva* arrived at Suva after encountering a cyclonic storm early on Saturday.—*Samoa Times.*

DETAILS OF THE WEATHER IN THE UNITED STATES.

GENERAL CONDITIONS.

By A. J. HENRY.

Among the larger features of the month was the pronounced increase in the number and intensity of cyclonic storms which passed inland from the Pacific south of the mouth of the Columbia River. This movement in latitude was directly responsible for the increase in precipitation in California and perhaps in the Gulf and South Atlantic States. The mean temperature in Montana, the Dakotas, Wyoming, and Idaho was much below the seasonal normal, especially in Montana. East of the Mississippi, however, except for Wisconsin and a part of Minnesota, mean temperature was uniformly in excess of normal. The single event which stands out prominently in the month's weather was the fall of snow in the Plains States and the intense glaze storm in Wisconsin and Michigan during the last week of February.

CYCLONES AND ANTICYCLONES.

By W. P. DAY, Observer.

Low-pressure areas were mostly of Pacific origin and their tracks covered a wide range in latitude. The high-pressure areas, however, which were mostly of the Alberta type, came in rapid succession and generally confined themselves to a well-marked path. The number of HIGHS plotted was considerably above the normal.

Tables showing the number of HIGHS and LOWS by types follow:

Lows.	Alberta.	North Pacific.	South Pacific.	Northern Rocky Mountain.	Colorado.	Texas.	East Gulf.	South Atlantic.	Central.	Total.
February, 1922...	2.0	6.0	2.0	.....	1.0	3.0	.....	2.0	.....	16.0
Average number 1892–1912, inclusive.....	3.1	2.3	1.0	0.2	1.5	1.5	0.5	0.2	0.7	11.0

Highs.	North Pacific.	South Pacific.	Alberta.	Plateau and Rocky Mountain region.	Hudson Bay.	Total.
February, 1922.....	1.0	2.0	9.0	1.0	1.0	14.0
Average number, 1892–1912, inclusive.....	0.8	0.5	4.7	1.2	0.6	7.8

FREE-AIR CONDITIONS.

By W. R. GREGG, Meteorologist.

For the month as a whole free-air temperatures were below normal in the Northern States and above normal in the Southern States, thus conforming quite closely to mean values at the surface. The largest negative departures occurred at Ellendale, being most pronounced in the lower levels and becoming rather steady at about −2.5° C. above 1,500 meters. A similar though smaller decrease in departures in the upper levels was observed also at Drexel and Royal Center. The same tendency is apparent in the values at Broken Arrow and Groesbeck, where temperatures were above normal at all levels, but increasingly so as greater altitudes were reached. In other words, owing to some widespread influence, the temperature decrease with altitude in all parts of the country was considerably less than normal, and hence the upper levels were warm as compared with those near the surface. Indeed, at Ellendale, where there is normally in February a practically isothermal condition from the surface to 2,000 meters above sea level, there was during the present month a large inversion, the recovery of temperature not taking place until an altitude of 3,000 meters was reached. At all stations conditions were more nearly like those usually found in December and January than those found in February. The cause is not far to seek. A glance at Chart IV will show that there was a larger latitudinal temperature gradient than normally occurs—a condition that would produce relatively low free-air pressures in the North and relatively high in the South, with a resulting larger south component or (what amounts to the same thing) a smaller north component in the winds. That this is what actually occurred is indicated by the values given in Table 2. The departures from normal were small, but in nearly all cases they were in the same direction, sufficiently so to cause the temperature anomalies referred to.

In general the changes in free-air temperature from day to day were in the same sense as were those at the surface. There were some exceptions, however, mostly associated with anticyclones in the northwest. These areas of high pressure are usually accompanied by clear weather, and radiation is very active. Not infrequently, as the center passes a given point and the wind shifts from northerly to southerly, the surface temperature remains low or even continues to fall. This tendency exists only in the lowest layers, usually within 200 to 500 meters of the surface. At higher levels the response of temperature to the wind shift is immediate and decided. A case in point occurred on February 19 to 20, during which period a moderate anticyclone moved almost due east from eastern Montana to Minnesota. Generally clear weather prevailed. At both Ellendale and Drexel the wind at all levels was NW. and fairly strong, and temperatures were low as the anticyclone approached. When the crest of the latter passed these stations the wind became SE. to SW. and of moderate strength, and the temperature in the free air therefore increased, but that at the surface continued to fall. The rise in temperature at the upper levels was not large, the wind changing only from NW. and WNW. to WSW. When the wind shifts through a larger angle the changes in temperature likewise become greater. For example, from February 6 to 7 the free-air wind backed from N. and NNW. to SW., the temperature meanwhile increasing about 15° C. This is the type of change that occurs above the surface, even though the reverse change occurs for a time at the latter, owing to radiation or to peculiar local effects of topography, etc. In this connection it is of interest to recall that the temperature distribution in winter cyclones in the extreme Northwest—near the Pacific—is usually quite the reverse