

WEATHER OF NORTH AMERICA AND ADJACENT OCEANS.

NORTH ATLANTIC OCEAN.

By F. A. YOUNG.

The average pressure for the month was somewhat above the normal at land stations on the Atlantic coasts of Canada and the United States, north of New York, as well as in the Bermudas and Azores. The pressure was near the normal in the Gulf of Mexico and West Indies, while it was much lower than usual on the coast of Northern Europe, although in that region there was a large difference between the means for the first and last halves of the month. At Lerwick, Shetland Islands, the mean for the first 16 days was about 29.9 inches, and for the last 15, 29.1 inches, while the normal is approximately 29.8 inches. The pressure at Horta, Azores, remained comparatively constant during the month, the mean for the first half being about 0.1 inch lower than that for the second half.

Fog was apparently rare over the steamer lanes, east of the 40th meridian, while the number of days in which it occurred on the Banks of Newfoundland and off the American coast was not far from the normal. It was reported, however, on four days in the Gulf of Mexico, which occurrence was most unusual.

The consensus of opinion in maritime circles seems to be that the weather over the North Atlantic during the month under discussion, was the most severe known in years, and according to press reports a number of the masters of trans-Atlantic liners stated that they had not experienced such a succession of days with heavy winds and tempestuous seas in 30 years or more. An examination of a large number of vessel reports confirms this contention, and the month was remarkable not alone for the severity of many of the gales, but also for the large number of disturbances of cyclonic origin that swept over the steamer lanes in quick succession. Several vessels in their voyage across the Atlantic encountered from four to five separate gales, with very short intervals of moderate weather in between. While a large number of casualties was reported, it seems remarkable that the loss of life and property was not greater.

The month opened auspiciously. While a few reports were received indicating gales over the western part of the steamer lanes from the 1st to the 4th, it was not until the 5th that the heavy weather really began. On that date there was a well-developed disturbance central about 5° east of St. Johns, Newfoundland, and there was also a second area of low pressure of moderate intensity off the coast of New Jersey. The first disturbance moved rapidly in a north-northeasterly direction and on the 6th was central near latitude 52° N. longitude 37° W. The second drifted eastward, increasing rapidly in intensity, and on the 6th the center was near latitude 42° N, longitude 57° W. Moderate to strong gales prevailed over the greater part of the ocean west of the 30th meridian the storm area extending as far south as the 35th parallel. By the 7th the first disturbance had apparently moved north so rapidly that it was outside the track of vessels, while the second was now near the position occupied by the first on the 6th. The storm area had contracted slightly, although the region between the 30th and 60th meridians was still swept by gales. On the 8th northerly to easterly winds of force 7 were reported from the region between the 10th and 20th parallels and 70th and 80th meridians. From the 8th to the 11th gales were reported from widely scattered portions of the ocean.

Storm logs covering the period from the 4th to the 12th follow.

British S. S. Indian:

Gale began on the 5th, wind WNW. Lowest barometer 30.12 inches at 6 p. m. on the 6th, wind W. 9, in latitude 37° 32' N., longitude 67° 45' W. End on the 7th, wind NNW. Highest force of wind 9; shifts NW.-WNW.-NW.

American S. S. Schroon:

Gale began on the 4th, wind ESE. Lowest barometer 28.40 inches at 7 p. m. on the 6th, wind S., 10, in latitude 44° 25' N., longitude 49° W. End on the 8th, wind WNW. Highest force of wind 11; shifts S.-SW.

American S. S. Schodack:

Gale began on the 4th, wind E, 8. Lowest barometer 29.16 inches at 3 a. m. on the 6th, wind W., 11, in latitude 42° N., longitude 61° W. End on the 7th, wind WNW. Highest force of wind 12; shifts SSE.-SW.-WNW.

American S. S. Mexican:

Gale began on the 6th, wind WNW. Lowest barometer 28.85 inches at midnight on the 6th, wind S., in latitude 45° 25' N., longitude 46° W. End on the 7th, wind W. Highest force of wind 12, S.; shifts W.-S.

British S. S. Winterton:

Gale began on the 4th, wind E. Lowest barometer 28.83 inches at 10 p. m. on the 6th, wind S., 12, in latitude 46° 30' N., longitude 42° W. End on the 7th, wind NNW. Highest force of wind 12, S.; shifts S.-W. back to SW.

Italian S. S. Maria:

Gale began on the 6th, wind WSW. Lowest barometer 29.84 inches at 3 a. m. on the 7th, wind WSW., 8, in latitude 34° 23' N., longitude 47° 48' W. End on the 9th, wind WSW. Highest force of wind 11, W.; shifts WSW.-W.-WNW.-W.-WSW.

American S. S. Tripp:

Gale began on the 7th, wind SSE. 7. Lowest barometer 29.25 inches at 8 a. m. on the 8th, wind SSW., 9, in latitude 43° 13' N., longitude 33° 30' W. End on the 9th. Highest force of wind 10, SW.; shifts SSE.-S.-SSW.

British S. S. Alpine Range:

Gale began on the 8th, wind SW. Lowest barometer 29.40 inches at midnight on the 8th, wind SE., 10, in latitude 53° 20' N., longitude 32° 54' W. End on the 9th, wind W. Highest force of wind 11; shifts SE.-S.-SW.-W.

From the 10th to the 13th a series of NW. and N. gales blowing with hurricane force at times, each gale lasting about 3 hours. Average low barometer reading 29.66 inches. Position, from latitude 52° 12' N., longitude 36° 52' W., to 47° 56' N., 37° 10' W. Shifts of wind NW.-N. and back to NW.

American S. S. Rochester:

Gale began on the 10th. Lowest barometer 30.14 inches at 10 a. m. on the 10th, wind ENE., 8, in latitude 31° N., longitude 78° 05' W. End on the 11th. Highest force of wind 9; shifts NE.-ENE. and back to NE.

Belgian S. S. Keltier:

Gale began on the 11th, wind S. Lowest barometer 29.95 inches at 2 p. m. on the 12th, wind SSW., 11, in latitude 38° 27' N., longitude 70° 05' W. End on the 12th, wind W. Highest force of wind 11; shifts 6 points.

On the 13th there was an area of low pressure in the vicinity of Newfoundland, while the Icelandic low was also well developed. Gales prevailed over different sections of the steamer lanes interspersed with areas of moderate winds. On the 14th and 15th the storm area was restricted to a comparative limited region in mid-ocean, while on the 15th a second disturbance was central near latitude 40° N., longitude 55° W.

At the Greenwich mean noon observations on the 16th moderate weather was the rule over practically the entire ocean, although a disturbance appeared later in the day over the eastern section, where unusually low pressure with cyclonic disturbances in quick succession, prevailed until the end of the month. However, the extent and intensity of the storm areas varied somewhat from day to day.

Storm logs from vessels in the eastern sections of the ocean during the period from the 13th to 31st are as follows:

British S. S. *Lord Antrim*:

Gale began on the 16th, wind SW. Lowest barometer 29.01 inches at 10 a. m. on the 17th, wind WSW., in latitude 51° 05' N., longitude 19° 15' W. End on the 18th, wind W. Highest force of wind 11; shifts SW.-WSW.-W.

Danish S. S. *United States*:

Gale began on the 17th, wind ENE. Lowest barometer 28.62 inches at 8 a. m. on the 17th, wind ENE., in latitude 55° 20' N., longitude 24° 12' W. End on the 17th. Highest force of wind 10; steady from ENE.

French S. S. *La Savoi*:

Gale began on the 17th, wind SW., 7. Lowest barometer 28.75 inches at 4 p. m. on the 20th, wind SW., 12, in latitude 49° 06' N., longitude 28° 11' W. End on the 23d. Highest force of wind 12, SW.; shifts SSW.-WNW.

British S. S. *Chickahominy*:

Gale began on the 17th, wind W. Lowest barometer 28.95 inches at 8 a. m. on the 18th, wind W., 10, in latitude 51° 08' N., longitude 19° W. End on the 19th, wind W. Highest force of wind 11; steady from W.

Danish M. S. *Peru*:

Gale began on the 21st, wind SW. Lowest barometer 29.00 inches at 8 a. m. on the 23d, wind W., 11, in latitude 42° 13' N., longitude 21° 40' W. End on the 23d, wind N. Highest force of wind 11, NNW.

American S. S. *Westland*:

Gale began on the 22d, wind W. Lowest barometer 29.61 inches at noon on the 22d, wind WNW., in latitude 44° 30' N., longitude 16° 10' W. End on the 24th, wind N. Highest force of wind 11, W.; shifts W.-WNW.-NW.

French S. S. *Canada*:

Gale began on the 23d, wind WSW. Lowest barometer 29.70 inches at 3 a. m. on the 24th, wind W., 10, in latitude 36° 35' N., longitude 11° 30' W. End on the 25th, wind NE. Highest force of wind 10; shifts WSW.-W.-NW.

Danish S. S. *Arkansas*:

Gale began on the 23d, wind SW. Lowest barometer 28.90 inches at 8 p. m. on the 24th, wind SW., 8, in latitude 54° 30' N., longitude 30° W. End on the 26th, wind NW. Highest force of wind 11; shifts SW.-WSW.-W.-NW.

American S. S. *Chickasaw City*:

Gale began on the 25th, wind SW. Lowest barometer 28.40 inches at 4 p. m. on the 29th, wind WSW., 8, in latitude 51° 05' N., longitude 21° 10' W. End on the 30th, wind NW. Highest force of wind 10, N.; shifts S.-WSW.-N.-NE.

Belgian S. S. *Sunoco*:

Gale began on the 29th, wind W. Lowest barometer 28.73 inches at 1:30 a. m. on the 30th, wind SW., 10, in latitude 48° 34' N., longitude 16° 53' W. End on January 2, wind NW. Highest force of wind 11; shifts SW.-NNW.

British S. S. *Cornishman*:

Gale began on the 28th, wind NW. Lowest barometer 29.23 inches at noon on the 29th, wind NW., 10, in latitude 48° 16' N., longitude 28° 01' W. End on the 30th, wind NW. Highest force of wind 10, NW., steady from NW.

Dutch S. S. *Orestes*:

Gale began on the 27th, wind WNW., 7. Lowest barometer 28.92 inches at 2 p. m. on the 30th, wind SW., 10, in latitude 45° 17' N., longitude 7° 18' W. End on the 31st, wind NW., 6. Highest force of wind 11; shifts SW.-W.-WNW.-NW.

On the 21st and 22d there was a disturbance in the region between Bermuda and Hatteras that on the latter date began to move rapidly northeastward, as on the 23d the center was about 200 miles east of Nova Scotia. Storm logs follow.

American S. S. *Saugus*:

Gale began on the 21st, wind NE. Lowest barometer 29.53 inches at 9 a. m. on the 21st, wind NE., 9, in latitude 38° 03' N., longitude 70° 11' W. End on the 21st, wind NE. Highest force of wind 11; steady from NE.

American S. S. *Minnequa*:

Gale began on the 22d, wind SW. Lowest barometer 29.45 inches at noon on the 22d, wind WSW., in latitude 35° 10' N., longitude 70° 10' W. End on the 23d, wind NW. Highest force of wind 10; shifts WSW.-WNW.

Danish S. S. *United States*:

Gale began on the 23d, wind SW. Lowest barometer 28.60 inches at 7 a. m. on the 23d, wind SW., 9, in latitude 42° 30' N., longitude 59° 40' W. End on the 23d, wind WSW. Highest force of wind 11; shifts SW.-WSW.

Charts VIII to XI show the conditions from the 27th to 30th, inclusive. On the 27th there was an area of low pressure central near latitude 45° N., longitude 45° W.; this moved slowly eastward and later reinforced the eastern disturbance. Storm logs follow.

American S. S. *Minnequa*:

Gale began on the 26th, wind SE. Lowest barometer 29.65 inches at 6 p. m. on the 26th, wind S., in latitude 39° 18' N., longitude 51° W. End on the 27th. Highest force of wind 10, S.; shifts SSE.-SSW.

American S. S. *Anaconda*:

Gale began on the 26th, wind S., 6. Lowest barometer 29.50 inches at 7 a. m. on the 27th, wind SW., 7, in latitude 43° 24' N., longitude 45° 25' W. End on the 30th, wind NW., 5. Highest force of wind 10, NW.; shifts S.-SW.-W.

NORTH PACIFIC OCEAN.

By WILLIS E. HURD.

Although stormy conditions, with snow and rain squalls, frequented the northern half of the ocean during December, there was much pleasant weather in middle and lower latitudes. At Honolulu the weather was more than usually delightful. The average hourly wind velocity at this station, 6.7 miles, was the lowest for the month during 19 years of record. Sunshine was considerably in excess of the normal, and the rainfall was the least, with the exception of that of December, 1913, in the record of the month for 36 years.

Up to the 23d of December, as indicated by the Japanese Weather Reports received at this writing, five cyclones from Asia entered the ocean after crossing the northern portion of Japan. In addition, as learned from ships' reports, storm conditions lay to the eastward of Japan as far as the 165th parallel of east longitude, for much of the remainder of the month, though they appear to have caused only moderate to strong gales. The first of the disturbances mentioned occasioned a heavy snowstorm with strong gales over the Archipelago and a great increase in the force of the northeast monsoon along the China coast on the 5th and 6th (Eastern time); and the fourth, that of December 15-16, with even more damaging gales and snowfall, more or less suspended railway traffic over the northern portion of Japan until the 18th. The other storms were of less importance.

During the same period three depressions, or minor cyclonic disturbances, appeared over more southern waters of the Far East. One, which originated to the eastward of Luzon on the 8th, moved northeastward