

feature of this disturbance was the fact that a number of vessels near the center encountered moderate winds, while the British S. S. *Vasconia*, near by, reported a strong southerly gale, as shown by the following storm log:

Gale began on the 17th, wind N. Lowest barometer 29.64 inches at 8 p. m. on the 17th, wind NNW., at latitude 46° 49' N., longitude 40° 48' W. End of gale on the 18th, wind N. Highest force of wind 11; shifts NNW.-N.

On the 17th westerly gales were reported by land stations on the British Isles, the storm area apparently extending as far west as the 25th meridian. Storm log follows:

**Danish S. S. *United States*:**

Gale began on the 16th, wind SW. Lowest barometer 29.78 inches at noon on the 16th. Wind SW., 8, latitude 53° 03' N., longitude 33° 09'. End on the 17th, wind WNW. Highest force of wind 9, W.; shifts SW.-W.

From the 19th to the 23d heavy weather was the rule in the vicinity of the British Isles. On the 20th gales swept over the steamer lanes from Newfoundland to the coast of Europe. On the 21st the storm area covered a narrow strip between the 10th and 35th meridians and by the 22d it had contracted still farther, as on that date only a few vessels near the fiftieth parallel, between England and the twentieth meridian reported westerly gales. Storm logs follow:

**British S. S. *Celtic*:**

Gale began on the 19th, wind SSW. Lowest barometer 29.54 inches at 10 a. m. on the 19th, wind SSW., at latitude 51° 14' N., longitude 15° 36' W. End at midnight on the 19th, wind WNW.

**French S. S. *La Lorraine*:**

Gale began on the 19th, wind SW. Lowest barometer 29.65 inches at noon on the 21st, wind NW., 8, at latitude 49° 30' N., longitude 30° 44' W. End on the 21st, wind NW. Highest force of wind 12, shifts not given.

On the 22d Newfoundland was again the center of a severe disturbance, with strong northwesterly gales in the southerly quadrants. The low apparently moved rapidly northeastward during the next 24 hours, although it was impossible to plot its position accurately on the 23d, on account of the lack of observations. Storm logs follow:

**British S. S. *Vasconia*:**

Gale began on the 21st, wind S. Lowest barometer 29.20 inches at 4 a. m. on the 22d, wind WSW., at latitude 42° 24' N., longitude 61° 40' W. End on the 22d, wind NNW. Highest force of wind 11; shifts W.-WNW.-NW.

**British S. S. *Burgondier*:**

Gale began on the 22d, wind W. Lowest barometer 29.58 inches at 9 a. m. on the 22d, wind W., 10, at latitude 43° N., longitude 56° 15' W. End at midnight on the 22d. Highest force of wind 11; shifts W.-NW.

**Dutch S. S. *Newyork*:**

Gale began on the 23d, wind SSW. Lowest barometer 29.70 inches at 2 p. m. on the 23d, wind W. 8, at latitude 54° 28' N., longitude 30° 40' W. End on the 24th, wind W. Highest force of wind 10; shifts SSW.-SW.-W.

From the 24th to the 27th the conditions were comparatively featureless, although a few reports were received from vessels in widely scattered localities that encountered gales during this period.

From the 28th to the 31st a low remained in the vicinity of Nova Scotia, the storm area varying considerably from day to day, as on the 29th it extended to mid-ocean, while on the other dates it was restricted more to the western portion of the steamer lanes. Storm logs follow:

**British S. S. *Osconian*:**

Gale began on the 28th, wind SSE. Lowest barometer 29.33 inches at noon on the 28th, wind SSE., 7, at latitude 43° N., longitude 54° 47' W. End on the 29th. Highest force of wind 10; shifts SSE.-WNW.

**British S. S. *Huronian*:**

Gale began on the 28th, SSW. Lowest barometer 29.48 inches at 4 p. m. on the 29th, wind WSW., 8, at latitude 50° 06' N., longitude 33° 26' W. End on the 29th, wind WNW. Highest force of wind 10; shifts SSW.-WSW.

**Italian S. S. *Milazzo*:**

Gale began on the 29th, wind NW. Lowest barometer 29.54 inches on the 29th, wind NW., 10, at latitude 34° 19' N., longitude 67° W. End on the 30th, wind NW. Highest force of wind 10, NW., steady from NW.

**British S. S. *Gloria de Larrinaga*:**

Gale began on the 30th, wind S. Lowest barometer 29.29 inches at 4 p. m. on the 30th, wind S., 8, at latitude 37° 20' N., longitude 52° 45' W. End on the 31st, wind NW. Highest force of wind 8; shifts not given.

**British S. S. *Osconian*:**

Gale began on the 30th, wind SSE. Lowest barometer 29.14 inches at 10 a. m. on the 30th, wind NNW., 9, at latitude 41° 22' N., longitude 63° 06' W. End on the 31st, wind N. Highest force of wind 11; shifts SSE.-WNW.-N.

**American S. S. *Vacuum*:**

Gale began on the 29th, wind NNW. Lowest barometer 29.88 inches at 2:30 p. m. on the 29th, wind NNW., 5, at latitude 35° 50' N., longitude 75° 12' W. End on the 30th, wind W. Highest force of wind 9, NNW.; steady from NNW.

From the 28th to the 30th there was a disturbance near the British Isles, with westerly gales over a limited area. Storm log from British S. S. *Turcoman* follows:

Gale began on the 29th, wind S. Lowest barometer 30.04 inches at 2 a. m. on the 30th, wind SW., 10, at latitude 51° 12' N., longitude 19° 40' W. End on the 30th, wind WNW. Highest force of wind 11, SW.; shifts SSW.-SW.-WSW.

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**NORTH PACIFIC OCEAN.**

By F. G. TINGLEY.

Pressure was considerably below normal in the Aleutian region until the 14th, and a series of depressions moved eastward or southeastward across Bering Sea and the Gulf of Alaska, causing almost constant gales over the eastern portion of the trans-Pacific steamer lanes. On the 2d the barometer at Kodiak fell to 28.30, and on the 7th a reading of 28.80 was reported from Dutch Harbor.

Commencing about the 14th pressure rose rapidly over the Aleutian area and Alaska. At Dutch Harbor the barometer on the 16th was 30.56 inches, about 1 inch above normal, and at Tanana, in interior Alaska, 31.18 inches. In connection with this general pressure change depressions developed in both the eastern and western portions of the ocean.

As early as the 13th there were evidences of a depression between the Hawaiian Islands and the California coast. During the several days succeeding that date there was very little change observed in its position. On the 17th and 18th, however, it moved to the coast, where it remained until the 22d, then passing inland but leaving a fresh depression forming to the westward.

In the western portion of the Pacific three depressions moved eastward from Asiatic coastal regions during the early days of the month, the most important being one that was central near Nemuro on the 2d (Eastern time) with a central isobar of 29.29 inches.

On the 4th a typhoon appeared to the south of Guam, moving northwestward. According to the *Weekly*

*Weather Report* of the Imperial Marine Observatory at Kobe, the westward advance of this typhoon was checked by a strong anticyclone over Mongolia and its course was changed to the northeastward. The center passed to the southeast of the Bonin Islands on the 9th.

From the 15th to the 24th pressure was low at Honolulu, and during this period a poorly defined depression moved eastward in the latitude of the Hawaiian Islands. By the morning of the 25th it had developed into an energetic storm and was encroaching upon the California coast, where phenomenally heavy precipitation occurred during the last week of the month. At the same time fresh depressions were moving eastward across Bering Sea and gales were being experienced by vessels in mid-ocean.

As a result of the long stormy period that prevailed over the northeastern portion of the Pacific during the last part of November and the first part of December an unusual and altogether unpleasant experience fell to the lot of the American S. S. *Eldridge*. This vessel under command of Capt. F. W. Brooks, Observer E. J. Stull, sailed from Seattle on November 19, just in time to become involved in the severe storm that prevailed on the Oregon and British Columbian coasts on the 21st. From that time on until December 19, when her report ends, the

*Eldridge* experienced no less than nine distinct gales. Winds as high as force 11 were recorded on four occasions. The lowest barometer was 28.67 inches. This was recorded at 7:45 p. m. on December 6, in 42° 18' N., 165° 35' W. Fifteen minutes later the vessel was in the "eye" of the storm. Mr. Stull states that there was a huge sea, the waves being estimated to have a height of 35 to 45 feet and a length of 550 feet.

Gales were of frequent occurrence throughout the month along the principal steamer routes. Generally they were from a westerly or southerly direction, the centers of the depressions which gave rise to them keeping well to the northward. Second Officer G. Clarke of the British S. S. *Empress of Japan*, which made the voyage from Yokohama to Vancouver between the 2d and 12th, stated in his report that average weather for the season prevailed between those dates. The *Empress of Japan* experienced fresh gales from the northwest and north, with high seas. The weather was mostly clear, with occasional light snow squalls. On the 7th, when in 46° 57' N., 169° 30' E., the barometer fell to 28.55 inches.

The Swedish sailing yacht *Fidra*, Capt. Tamm, bound from Suva, Fiji Islands, to Yokohama, was involved in a gale on the 29th and 30th (Eastern time) in 32° 35' N., 141° 30' E. According to Observer N. van Ryswijk, the gale began at SW. and by 8 a. m. of the 29th had reached force 9, SW. It continued to increase in strength until 5 a. m. of the 30th, when it was blowing with force 12, WNW. By 8 a. m. of the same day it had decreased to force 7, WNW. The lowest barometer recorded was 29.68 inches, at noon of the 29th.

For the month as a whole pressure was above normal by approximately 0.06 inch at Dutch Harbor and 0.02 inch at Midway Island. At Honolulu it was practically normal.

#### TROPICAL HURRICANE OF SEPTEMBER 5-15, 1921.

In the September issue of the REVIEW there were several references to a hurricane that appeared to the

southeast of Bermuda on September 12. This hurricane traveled northeastward across the North Atlantic and was last observed on the morning of the 15th in 53° N., 35° W.

It was thought at first that this tropical cyclone formed in the region immediately to the eastward of the Bahamas about September 10 but from later advices it appears that it was in existence as early as the 5th and on that date was probably near 22° N., 54° W.

The earliest information regarding it is contained in a report by Second Officer A. C. Bos, of the Dutch S. S. *Neptunus*, as follows:

Monday, the 5th of September coming from Amsterdam and bound for St. Thomas, we had different apparitions that showed the approach of a hurricane.

Being on 25° 11' N. and 55° 50' W., we had a gentle southeasterly breeze, increasing that afternoon to a strong breeze from the NE. About 10 o'clock p. m. (G. M. T.) the sky was overcast, the sea rough with easterly swell and it lightened in a southerly direction. Our barometer, indicating 764.1 mm. (30.08 inches) at 8 o'clock, continued falling. The course was S. 48 W. (true).

At 11 o'clock, the wind was 7-8 then, we heaved and went slowly to the NE. (barometer 763.7 mm., 30.07 inches). After that the wind became ESE. and abated a little; at midnight (about 4 o'clock G. M. T.), we had a strong breeze, still ESE., the sky was rather clear and we continued our voyage.

Toward daybreak the wind increased and the sky became overcast again; at 12 o'clock, the wind was then ESE., the sea high with a heavy southerly swell and the barometer did not rise, we went full speed NE. Again the wind abated by little and little, the sea became better and as the barometer got its regular process, we steered at 6 o'clock p. m. once more S. 48 W. and reached St. Thomas the 9th of September where they expected a storm.

The 7th and 8th of September we had a fresh or moderate breeze (SE. to SSE.) and observed nothing particular.

The Dutch S. S. *Noorderdijk*, Capt. A. B. Jochems, Rotterdam for Colon, was under the influence of the hurricane on the 7th and 8th, the center evidently passing across her bow on a west by north course at a distance of perhaps 150 miles. At 8 a. m. of the 7th, when in 25° 56' N., 60° 16' W., the wind was ESE., force 6, cloudy sky, rough sea, moderate ESE., swell, barometer 29.98. At 4 a. m. of the 8th the wind had increased to a fresh ESE. gale. By 8 a. m. it had shifted to SW. and moderated to a strong breeze. The sky was cloudy. There was a high SE. swell, shifting and decreasing to a light SW. swell. Much rain fell during the day. At 7:46 a. m. of the 8th, the *Noorderdijk* was in 23° 14' N., 63° 28' W. At that hour the wind was SW., 7, barometer 29.83 inches.

The next vessel to become involved was the British S. S. *Camito*, Capt. J. H. Scudamore, Avonmouth for Kingston, calling at Grand Turk, Bahamas. It was thought at first that the *Camito* had been in the center of the hurricane but Capt. Scudamore states that this information was incorrect. His report is as follows:

On Friday, September 9, the barometer commenced to fall at 6 a. m.; there was a light ESE. wind, weather fine and clear, barometer 30.13. Between 8:30 and 10:30 a. m. very heavy rains squalls, wind variable and light, hauling to south, barometer 30.11. Noon. Position 25° 30' N., 63° 23' W. Overcast, clouds breaking to southwest, very green shadows close to horizon. 3 p. m., wind S. by E., force 6, barometer 30.00, sea rough and increasing, continual heavy rain squalls. 8 p. m. strong S. by E. breeze, rough sea, barometer steady though pumping. Midnight, wind S., barometer 29.98, continuous heavy rain.

September 10, 4 a. m., wind S., force 8, occasional rain squalls, barometer 29.96. 5 a. m., wind shifted to SW., clearing at times, squally, rough sea. 8 a. m., light SW. breeze, slight swell, cloudy and clear, barometer 30.05.

A revised track of this hurricane is shown in figure 1, p. 658, this REVIEW.—F. G. T.