

MONTHLY WEATHER REVIEW,

SEPTEMBER, 1878.

WAR DEPARTMENT,

Office of the Chief Signal Officer,

DIVISION OF

TELEGRAMS AND REPORTS FOR THE BENEFIT OF COMMERCE AND AGRICULTURE.

INTRODUCTION.

In compiling the present REVIEW the following data, received up to September 14th, have been made use of, viz: the regular tri-daily weather charts, containing the data of simultaneous observations taken at 118 Signal Service stations and 12 Canadian stations, as telegraphed to this office; monthly journals and means, 141 and 121 respectively, from the former, and monthly means from 14 of the latter; reports from 18 special Sunset stations; 222 monthly registers from Voluntary Observers; 32 monthly registers from United States Army Post Surgeons; Marine Records; International Simultaneous Observations; monthly reports of the Weather Services of the States of Iowa and Missouri; reliable newspaper extracts; special reports.

BAROMETRIC PRESSURE.

Upon chart No. II is shown by the isobaric lines the general distribution of the atmospheric pressure, reduced to sea-level, for the month. Compared with the means for September of previous years, the pressure for the present month is generally higher east of the Mississippi river, and especially so in the Middle and Eastern States. The pressure is about normal in the Northwest and on the Pacific coast.

The Local Barometric Ranges, for the month, as reduced to sea level, have been largest from Kansas and Nebraska to the Lake region, and along a narrow belt of country, extending from Lake Ontario to Florida, in the course of storm area No. IV; taken by districts they vary as follows:—New England, 0.69 at Wood's Hole to 0.99 at Burlington, on summit of Mount Washington, 0.71; Middle Atlantic States, 0.42 at Norfolk to 0.94 at Washington; South Atlantic States, 0.59 at Cape Lookout to 1.02 at Jacksonville; Gulf States, 0.32 at Galveston to 0.47 at Mobile; Ohio valley and Tennessee, 0.41 at Nashville to 1.03 at Morgantown; Lower Lake region, 0.87 at Cleveland to 1.19 at Rochester; Upper Lake region, 0.93 at Chicago to 1.26 at Alpena; Upper Mississippi valley, 0.59 at St. Louis to 1.17 at St. Paul; Red River of the North valley, 1.05 at Pembina to 1.23 at Breckenridge; Missouri valley, 0.95 at Bismarck to 1.33 at Yankton; Plains of Nebraska and Kansas, 1.28 at Dodge City and 1.51 at North Platte; Rocky Mountain stations, 0.52 at Santa Fe to 0.86 at Denver; Utah, 0.66 at Salt Lake City; Idaho, 0.71 at Boise City; Nevada, 0.54 at Winnemucca and 0.57 at Pioche; California, 0.22 at Los Angeles to 0.37 at Red Bluff.

Areas of Low Barometer.—Twelve are described, while only ten have their tracks charted. With the exception of No. IV, the charted tracks all lie to the north of latitude 41° N. The most memorable storm of the month, perhaps of the year, (No. IV,) presents all the characteristics of a tropical cyclone. Originating a short distance north of the equator, it pursued a path north of west until it reached, in Florida, latitude 30° N., when it began to curve to the north and east. Its charted track is a parabola, and in its southern branch it manifested the greatest energy and caused the most damage. Fortunately the diameter of the storm-area was quite limited, perhaps not much more than two hundred miles in extent, or greater disasters would have to be recorded. In the storm-centres moving over the northern portion of the chart, the most abundant rain fell, as a rule, after the passage of the centre of depression to the eastward.

No. IV.—This is the most interesting storm of the month, with respect to its origin, duration, length of path within the observation of this office, and destruction of life and property caused by it. On the midnight of the 1st and 2nd, it was central near the Island of Trinidad. As it passed this Island with considerable velocity for a tropical cyclone, it probably originated at a considerable distance to the eastward, perhaps south of the Cape Verde Islands and between 6° and 10° of N. latitude. At Trinidad the hurricane was the severest experienced for 40 years. The barometer 29.05, being the lowest reading recorded on the island. The hurricane began about 7 p. m., the 1st and continued to 4 p. m. of 2nd; it then abated for one hour, after which, the winds returned with greater violence for fifteen minutes. All vessels in harbor were badly wrecked, dwelling-houses, ware-houses, bridges etc., completely demolished, whole plantations swept away, and much damage done to cocoa cultivation. During its passage over Trinidad the winds veered from northwest to southwest. Seven inches of rain were measured by the gauge, and at various places in the island earthquake shocks were felt during the passage of the hurricane. 2nd, the Brig Typhoon from Port Spain, Trinidad to Boston was dismasted by this hurricane on the 2nd; position not given. The crew was rescued Sept. 7th, by the Steamship Hadji, which crossed the path of the hurricane as charted. The log of the Steamship Lotharingia from La Guayra, Venezuela to St. Thomas, shows it encountered the hurricane the night of the 2nd and 3rd, about latitude 15° N. and long 68½° W. 4th, the hurricane passed over Hayti and San Domingo, where it was very violent and destructive, doing most damage along the southern coast; at Port au Prince, buildings were entirely destroyed; at Jacmel a high sea did great damage to shipping and to wharves, entire coffee and cocoa crops destroyed; at Aux Cayes, in less than three hours 434 houses were destroyed by the violence of the wind, and a number of persons were killed and wounded; in the towns of Aquin and Cavaillon nearly every house destroyed and a large number of lives lost; at San Louis, La Grand Anse, Jeremie and Cavaill, the sea swept nearly everything away. The following shipping was wrecked: at Jacmel Frigate Ozama, Bark Helen, Ship Serpent and two others; at Cavaill, ship Wardwell; at Jeremie, several vessels. Entering Cuba, the midnight of the 4th and 5th, its track is thus traced over that Island by Padre Benito Vines, Director of the Meteorological Observatory of the Royal College of Bethlehem, at Havana. "The vortex of the hurricane entered the Island near Guantanamo, moving towards Puerto Principe, which was a short distance to the right of its path; thence it moved between Jucaro and Villa Clara. The latter place was so near the centre that it felt the calm of the vortex; finally it left the Island at a point east of Cardenas and a short distance from it." The following notes are extracted from the observations of the Signal Service Observer at Santiago de Cuba: 4th, 2 to 4.35 p. m. rain at intervals, wind generally N. and NNW. 11 p. m. clouds banked to E. and SE; very threatening, lightning, showers, barometer steady until 9.30, squally. 5th, hurricane commenced about midnight, (4th—5th) from NW. 1 a. m., blowing very hard from NW. 2 a. m., WNW. 3 a. m., SW. 4 a. m., S. Barometer 3 a. m., 29.49, (lowest); 3.20 a. m., 29.49; 3.40 a. m., 29.52; 5 a. m., 29.51; 7.35 a. m., 29.70. Winds, 7.35 a. m., SE, high, heavy squalls; 4.35 p. m., SE., 19; 11 p. m. SE., high and squally, wind all day from ESE., to SSE., fresh with squalls; torrents of rain, incessant after 9 a. m. Although the centre of the storm left Cuba the night of the 6th—7th, yet the barometer continued low, especially in the western portions of the island until the 11th. The storm was here remarkable for the amount of rain that accompanied it. The inundations are reported greater and more destructive to property than ever before known. On the morning of the 6th, while the Cyclone was yet central in Cuba, special warning was sent to all Atlantic ports of the situation of this storm, and from that time until it had passed beyond Canada notice was frequently given of its position. 7th, the centre of the storm entered Florida, east of Key West. 8th, 9th and 10th it moved in a northerly track, very slowly, over the middle portions of this State. During the 9th and 10th, it was nearly stationary in latitude 30° N., preparatory to curving in its path to the east of north. Cautionary Signals were displayed at Key West on the 6th, the gale beginning there the evening of that day, continued until the 11th. 7th, lowest barometer, 29.54, 3 p. m.; highest velocity 59 miles NW., 6.35 p. m. 8th, barometer steady from 29.61 to 29.64, highest wind, 47 miles W. 9th, highest wind, 48 miles SW., at 10.45 a. m.; and 4.32 p. m.; barometer at end of day remaining steady at 29.51, or 29.52. 10th, barometer 29.43, 3 a. m.; 29.48, 7 a. m.; 29.44, 4 p. m., then continued rising to end of the storm; highest wind 48 miles W., at 7.05 a. m., and SW., at 3 p. m. 11th, the gale ended in the morning. Total rain fall, 4.93 inches. The total movement of the air during the six days of the storm was over 4,000 miles. 7th, Signals were displayed in advance of this storm at St. Marks and Jacksonville, Fla., Tybee Island and Savannah, Ga., Charleston, S. C. Jacksonville, 7th, at night, wind fresh, NE., barometer steadily falling. 8th, wind brisk, NE., barometer falling. 10th, barometer continued falling; at midnight gale at its height, wind, NE., velocity 40 to 48 miles. 11th, gale ceased, lowest barometer 29.23, 4 p. m., five hours after gale had ended. Total rain fall 9.78 inches. The vortex of the hurricane probably moved over Tybee Island.

Tybee Island, gale lasted from 7th to 12th. Highest wind 52 E. on 11th. Lowest barometer 29.33 7.45 a. m. on 12th. Total movement of air from 8th to 12th inclusive, 3,474 miles. Total rainfall 5.61 inches. During the afternoon of September 10th, the mate and four sailors of the German bark Tuiske

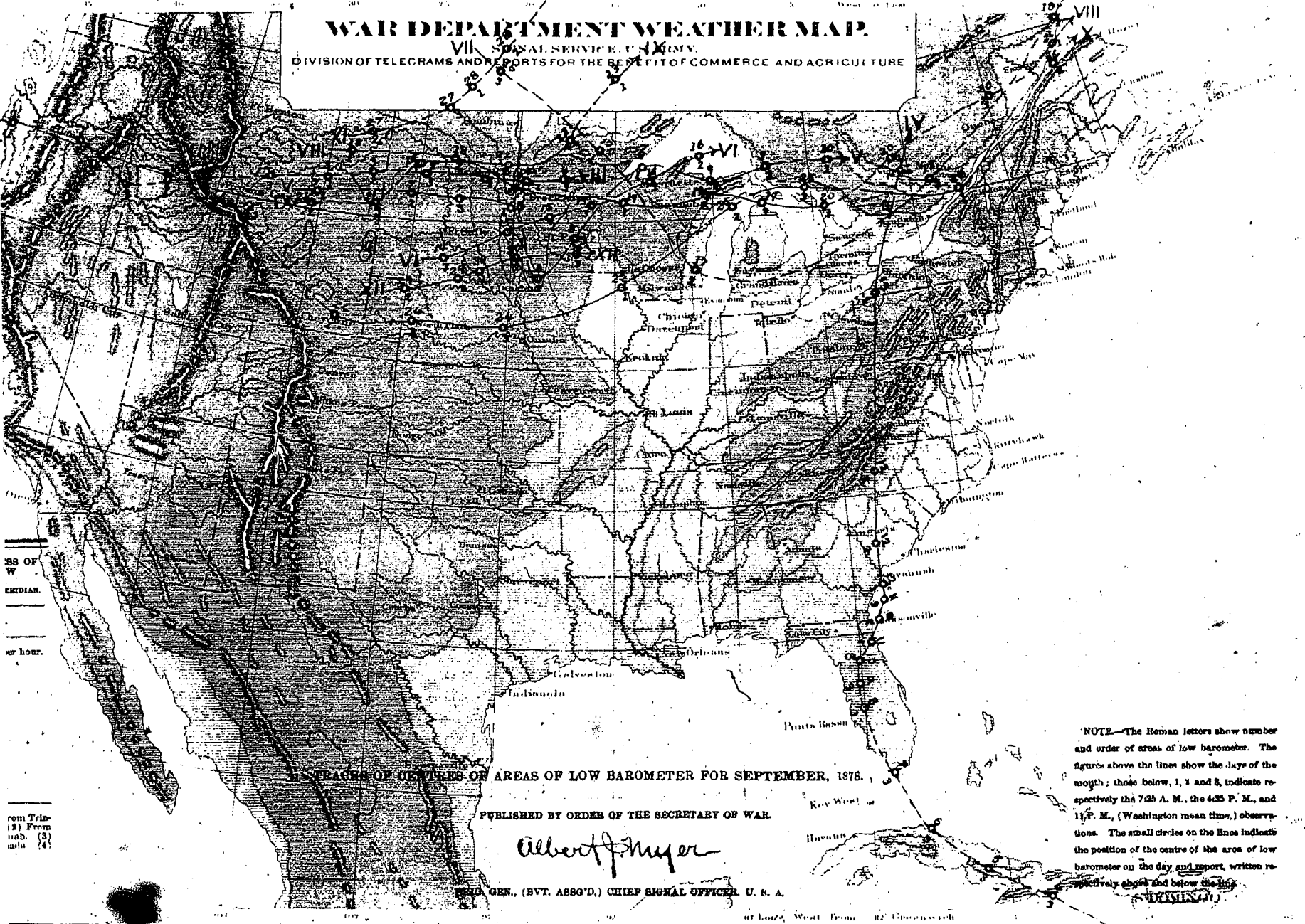
were drowned in attempting to leave the island in a ship's "long" boat. Savannah.—The gale lasted from the 8th to the 12th. Lowest barometer, 29.35 on the 12th. Highest wind, 42 miles E. on the 11th. Total rainfall, 4.64 inches. Near Savannah, great damage by floods and high tides was reported. The damage to rice crop in that vicinity is estimated from \$300,000 to \$400,000. The loss to the planters would have been much greater but for the attention paid to the Cautionary Signal displayed in that city. The following notes give data and casualties accompanying the southern branch of the storm: Bark Rebecca Caruana, from Mantanzas, Cuba, reports Sep. 9th, lat. 25° N., in Straits of Florida; took hurricane from SW. to S. and E., lasting three days, up to lat. 32° 30' N.; had to keep heavy press of canvas to keep vessel from going ashore; decks completely flooded all the time. Bark L. T. Stocker arrived at Key West p. m. of the 6th; took pilot, but was compelled to anchor outside of bar on account of storm, and was blown to sea morning of the 7th; lost anchors, &c., and put into Savannah Sep. 14th. Bark Nueva Aurelia, from New Orleans to Kouen, put into Havana Sep. 8th, on account of heavy weather, with damage to mainmast. Brig Sabre, from Tampico to Havre, was driven ashore 60 miles S. of Cape Carnaveral in hurricane, total loss, one life lost. Schooner Jessie B. Smith, from Old Harbor, Ja., August 24th, for New York, was driven to Jacksonville bar September 10th, after 5 days continued gales; let go both anchors but was driven ashore 5 miles S of St. John's bar at day break of 11th, in hurricane so fierce that it blew the light house down. Schooner Chas. W. Lord, from Havana September 7th, to New Orleans put back to Havana September 10th, on account of heavy sea and head winds. Schooner Eulalia, (fallen in with September 4th, by ship Annie Goddley, from Cork to New Orleans September 23rd,) reported having been dismasted in hurricane September 3rd; September 4th, heavy gale. Schooner Hattie Ross, driven ashore 12 miles S of Cape Carnaveral. Brig Sallie Brown abandoned September 11th, 29.40 N., 80.40 W., dismasted and water logged; crew landed at New York September 23rd. Steamer City of New York, at Havana September 13th, from New York reports hurricane lasting 40 hours between Cape Hatteras and Charleston. Steamer Santiago de Cuba, at Havana September 14th, from New York, reports tremendous hurricane off Florida coast, lay to for four days off Cape Carnaveral. Schooner Ocean Pearl from San Blas, Baltimore, was totally wrecked 30 miles north of Cape Carnaveral in hurricane. 12th, in the afternoon the centre of the storm was in South Carolina. It should be stated here that a moderate northeast gale had set in on the 11th in the Lower Lake region after the passage of low barometer No. V, and which was probably due to the rising and high pressure north of the St. Lawrence valley. At 4:35 p. m. of the 12th the pressure in Nova Scotia was over 0.3 above the normal, and in the Lake Superior country about .25 above the normal with a region of lower pressure between. 12th, 11 p. m., a belt of low pressure extended to Lake Erie from the Carolina coast. 13th, 7:35 a. m., the lowest pressure was near Buffalo, and on this day the centre of the storm moved beyond the limits of the map; in addition to those already mentioned Cautionary Signals were ordered in advance of this cyclone, 11th, on the Atlantic coast, from Wilmington to Cape Henry; 12th, from Norfolk to Eastport. The following maximum velocities are reported: Charleston, (Signal ordered on the 7th,) 44 miles E. on the 11th and SE. on the 12th. The total movement of the air for the twenty-four hours ending noon, September 12th, was 650 miles, the highest ever registered in that city. 12th, Smithville, 48 miles, SE. Wilmington, 30 miles, SE. Sloop Point, 65 miles, (estimated.) Cape Lookout, 75 miles, SE. Cape Hatteras, 50 miles, NE. 13th, Kittyhawk, 57 miles, NW. Cape Henry, 33 miles, NE. Cape May, 46, SE. Barnegat, 44, SE. Sandy Hook and New York, 40 miles, SE. Mt. Washington, 100 miles, S., and on the 14th, 100 miles, NW. Cautionary Signals were generally justified on the New England coast on the 13th. Cautionary Signals were ordered in advance of this storm in the Lake region from Oswego to Toledo on the 11th, and from Detroit to Alpena on the 12th. The following unusually high velocities are reported: 12th, Sandusky, 48 miles, NE.; 13th, Cleveland, 48 miles, W.; Erie, 35 miles, W.; Buffalo, 45 miles, SW.; Rochester, 30 miles, W. This storm is reported as being the severest known in the Lower Lake region for ten years; some say since 1844. Great disasters are reported from floods and the violence of the wind over the track of this storm from the South Atlantic coast to Lake Erie. These will be noted under the heading of floods and local storms.

September.—1st, 49° 20' N., 39° 14' W., wind S. SE., NE., N. stormy, rough sea from N.; 53° 50' N., 26° 08' W. strong SW. and SSW. gale and dirty weather. 2nd, 40° 01' N., 46° 17' W. heavy sea; 50° 0' N., 33° 09' W., W'ly. moderate gale and heavy sea; 52° 35' N., 31° 49' W. strong W'ly gale and high sea; 49° 29' N., 26° 53' W., WSW. squally, SW. sea; 50° 24' N., 19° 13' W., W. rainy, high W'ly sea; 55° 12' N., 17° 25' W., WNW. to NW. strong gale and heavy sea; 50° 20' N., 16° 29' W. heavy sea; 51° 30' N., 16° 4' W. high sea and rain. 3rd, 50° 24' N., 25° 13' W., WSW. squally, rain, very high sea; 50° 07' N., 24° 01' W., W., SW. strong wind high sea; 51° 10' N., 23° 14' W., high sea. 5th, 45° 13' N., 51° 39' W., heavy sea swell; 48° 50' N., 37° 38' W. very high westerly swell. Steamer "Powhattan," Gibraltar August 31st to New York September 14th, reported September 5th, heavy NW. gale lasting 3 days. 6th, 21° 33' N., 51° 41' W., hurricane; 48° 26' N., 44° 12' W., WNW. strong winds to moderate gale, high to strong seas; 47° 18' N., 41° 58' W., high, rough sea; 50° 23' N., 41° 43' W., brisk WNW. and WSW. gale, squally, heavy sea; 51° 05' N., 22° 55' W., SW. to NW., squally. 7th, 30° 53' N., 62° 52' W., SSW. squally, barometer 30.10; Spanish frigate "Pizarro" left Bermuda September 7th, and encountered strong SE. wind with heavy sea, increasing to hurricane, which lasted until 10th, vessel abandoned at 4 a. m., of the 11th, in 35° 30' N., 57° 7' W.; 45° 19' N., 47° 21' W., rain and fog, high westerly swell; 50° 50' N., 32° 02' W., a. m., high sea—p. m., WSW., stormy; 54° 43' N., 16° 13' W., heavy SW. swell; 49° 50' N., 12° 27' W., fresh NW. wind, heavy W'ly sea; bark

"Lotus," from Hyeres, France, at Boston September 26th, reported severe hurricane from E. to NNW. during September 7th, 8th and 9th. 8th, 30° 23' N., 61° 51' W., S. and SSE., squally and rain, barometer 30.10; 41° 57' N., 59° 37' W., heavy E'ly sea; 39° 30' N., 52° W., very high sea; 49° 13' N., 37° 10' W., SSW. to NNE. moderate gale, strong NW. sea; 51° 10' N., 24° 06' W., WSW. strong gale; 53° 53' N., 22° 54' W., strong SW. to NW. wind, very heavy sea; 50° 07' N., 18° 55' W., fresh SW. wind and heavy W. sea; 50° 44' N., 14° 26' W., fresh W. wind, high NW., sea, ship pitched heavily; steamer "Alexandria," from Gibraltar August 30th to Sandy Hook September 14th, reported, September 8th to 12th, strong gales and heavy seas. 9th, 29° 27' N., 62° 24' W., SE. to SSE., heavy rains, barometer 30.10; 34° 59' N., 48° W., NE. gale, high seas, heavy rains; 52° 19' N., 29° 33' W., strong W. and WSW. winds, heavy W. sea; 50° 07' N., 25° 02' W., a. m., heavy sea; 51° 10' N., 20° 41' W., NW.-NE., cloudy, much rain; 49° 09' N., 17° 52' W., WNW., squally. Bark "Onward," from Barcelona July 20th, for Miramichi, N. B., experienced severe gale from NE. on September 9th; gale continued until daybreak of September 11th, when ship was abandoned in sinking condition; crew taken off by bark "Luchino," from Bristol, and landed at Philadelphia Sept. 26th. 10th., 29° 15' N., 62° 13' W., S. and SSW., squally and rain, barometer, 30.10; 49° 39' N., 33° 33' W., noon, wind SW—7 p. m., shifted to N'd, with heavy squall; 49° 45' N., 32° 15' W., N. fresh, heavy rain; 48° 48' N., 25° 49' W., SSW. fresh, rainy, rough sea. 11th., 28° 34' N., 62° 05' W., ESE. to SE. squally and showers, barometer, 30.10; 50° 38' N., 36° 30' W., NE., high swell; 49° 38' N., 33° 33' W., NE. moderate gale, clear weather, high, confused sea; 49° 03' N., 30° 04' W., SW. to NNE. fresh gale, confused sea. 12th., 27° 20' N., 62° 15' W., E. to SE., cloudy, barometer, 30.10; 49° 15' N., 43° 37' W., high sea; 47° 18' N., 38° 01' W., NE. moderate gale. 13th., 24° 58' N., 62° 09' W., ENE. and NE., heavy squalls, barometer, 30.00. 14th., 42° 06' N., 65° 02' W., p. m., strong SW. wind and heavy W. sea; 22° 01' N., 62° 28' W., NE. and NNE. gale and high sea, barometer 29.90; 50° 08' N., 10° 46' W., p. m., heavy sea swell. 15th., 41° 26' N., 63° 30' W., NW. rain-squalls; 19° 43' N. 63° 09' W., NE. to NW. fresh gale, barometer 29.87; 18° 57' N., 58° 56' W., brig "Adelaide" lost sails, &c., in hurricane; 19° N., 56° 20' W., SE. gale; 51° 09' N., 22° 17' W., westerly fresh gale; 50° 18' N., 16° 05' W., a. m., fresh NW. gale, squally—p. m., gale moderating, heavy seas; 55° 23' N., 9° 23' W., SSW. to NNW. severe gale, very high sea, barometer 28.98; 49° 44' N., 7° 41' W., rough sea. 16th., 35° 50' N., 64° 50' W., strong NE. gale, high seas, hard rain-squalls; 18° 23' N., 64° 36' W., N. and NW. strong breeze, barometer 30.00; 50° 14' N., 30° 15' W., westerly moderate gale; 50° 16' N., 19° 38' W., a. m., NW. squally—p. m., heavy sea; 49° 38' N. 12° 01' W., SW-NW strong gale, rains, rough sea; 55° 15' N., 11° 45' W., WNW. and SW. hard squalls; steamers "Canadian" and "Devonia," from Montreal and New York, at Glasgow, September 17th and 18th, respectively, reported fierce gales and heavy seas off Irish coast. 17th, brig "Bergliot," (from Caen, France, for Wilmington, N. C.) encountered hurricane September 17th, and was abandoned September 20th, in 26° 18' N., 58° 27' W.; 50° 08' N., 24° 53' W., a. m., WNW. squally p. m., heavy sea; 49° 25' N., 18° 30' W., W. SW. wind decreasing, rainy, heavy sea; 55° 03' N., 15° 40' W., WSW. to NW., hard squalls. 18th, 54° 28' N., 19° 46' W., NW. fierce squalls, with hail and rain; 50° 26' N., 2° 22' W., WSW. NNW. strong gale, high sea, squalls. 19th, 51° 20' N., 13° 45' W. NNW. strong wind and high sea; 49° 44' N., 9° 02' W., NW. WNW. strong gale, high sea. 20th, 49° 26' N., 15° 54' W., a. m., wind NNE. very high sea, moderating towards noon—p. m., wind E., S., SW. strong gale and high sea; 51° 26' N., 13° 22' W., heavy W'ly sea. 21st, 51° 33' N., 39° 05' W., fresh W. gales and high seas; 52° 17' N., 20° 20' W., high cross seas. 22nd, bark "Emma" wrecked during strong NE. breeze off east bar of Sable Island; 48° 21' N., 30° 09' W., fresh NW. gale, very high sea; 50° 54' N., 26° 03' W., heavy W. sea; 51° 11' N., 23° 16' W., fresh N. gale and heavy squalls; 54° 01' N., 22° 10' W., strong NW. breeze and heavy squalls. 23rd, 41° 58' N., 56° 40' W., NE., N., W., increasing to gale, wild sea; 47° 18' N., 51° 35' W., SSW. to NNE. strong gales and rain; 50° 11' N., 31° 26' W., high W'ly sea. 24th, 41° 25' N., 62° 29' W., NNW. decreasing wind and sea; 44° 23' N., 57° 23' W., N. and NW. strong gales, with hard squalls; 45° 06' N., 53° 03' W., moderate W'ly gale, squally, high west sea; 45° 20' N., 42° 54' W., W. heavy gale, high sea; 49° 09' N., 38° 24' W., fresh SW. gale, high westerly sea; 49° 59' N., 37° 57' W., SSW.—W. hard gale, heavy W. sea. 25th, 43° 42' N., 47° 58' W., heavy WNW. gale and high sea; 47° 39' N., 44° 34' W., fresh WNW. to WSW. gale, high W. sea; 48° 31' N., 42° 20' W., fresh gale, heavy W. sea; 49° 19' N., 41° 31' W., strong W. breeze, with heavy rain-squalls; Jacmel, Hayti, "hurricane, two vessels and all lighters in harbor lost, many houses destroyed." 26th, 45° 47' N., 51° 14' W., fresh NW'ly gale.

WAR DEPARTMENT WEATHER MAP.

VII SIGNAL SERVICE, U. S. ARMY.
DIVISION OF TELEGRAMS AND REPORTS FOR THE BENEFIT OF COMMERCE AND AGRICULTURE



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TRACES OF CENTRES OF AREAS OF LOW BAROMETER FOR SEPTEMBER, 1878.

PUBLISHED BY ORDER OF THE SECRETARY OF WAR.

Albert J. Meyer

MAJ. GEN. (BVT. ASSO'D.) CHIEF SIGNAL OFFICER, U. S. A.

NOTE.—The Roman letters show number and order of areas of low barometer. The figures above the lines show the days of the month; those below, 1, 3 and 5, indicate respectively the 7:35 A. M., the 4:35 P. M., and 11 P. M., (Washington mean time,) observations. The small circles on the lines indicate the position of the centre of the area of low barometer on the day and report, written respectively above and below the line.

at Long. West. From 12° Greenwich

MONTHLY WEATHER REVIEW,

OCTOBER, 1878.

WAR DEPARTMENT,

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INTRODUCTION.

In compiling the present REVIEW the following data, received up to November 14th, have been made use of, viz: the regular tri-daily weather charts, containing the data of simultaneous observations taken at 119 Signal Service stations and 11 Canadian stations, as telegraphed to this office; monthly journals and means, 127 and 143 respectively, from the former, and monthly means from 14 of the latter; reports from 20 special Sunset stations; 231 monthly registers from Voluntary Observers; 34 monthly registers from United States Army Post Surgeons; Marine Records; International Simultaneous Observations; monthly reports of the Weather Services of the States of Iowa and Missouri; reliable newspaper extracts; special reports.

BAROMETRIC PRESSURE.

Upon chart No. II is shown by the isobaric lines the general distribution of the atmospheric pressure, reduced to sea-level, for the month. Compared with the means for October of previous years, the pressure for the present month is slightly below the normal in all the districts, except Oregon, where it is about one-tenth of an inch above. The deficiency is greatest in Minnesota and the Upper Lake region.

The Local Barometric Ranges for the month, as reduced to sea-level, have been largest in Oregon, from Indian Territory to Minnesota and Wisconsin, and along the path of low pressure area No. XI. Taken by districts, they vary as follows: New England, 0.89 in. on summit of Mount Washington and 0.90 at Wood's Holl, to 0.98 at Springfield; Middle States, 1.00 at Kittyhawk to 1.64 at Fort Whipple; South Atlantic States, 0.64 at Jacksonville to 1.32 at Cape Lookout; East Gulf States, 0.54 at Mobile to 0.66 at Atlanta; West Gulf States, 0.56 at New Orleans to 0.81 at Corsicana; Ohio valley and Tennessee, 0.62 at Knoxville to 0.90 at Morgantown; Lower Lakes, 0.63 at Cleveland to 1.14 at Oswego; Upper Lakes, 0.87 at Grand Haven to 1.28 at Duluth; Upper Mississippi valley and Minnesota, 0.94 at St. Louis to 1.64 at Breckenridge; Missouri valley, 1.19 at Bismarek to 1.76 at Yankton; Western Plains, Fort Sill, 1.21, Dodge City, 1.88, and North Platte, 1.75; Rocky Mountain stations, 0.56 at Santa Fe to 0.90 at Denver; Nevada and Idaho, 0.76 at Pioche to 1.03 at Boise; California, 0.22 at San Diego to 0.70 at Red Bluff; Oregon, 1.39 at Roseburg.

Areas of Low Barometer.—Fourteen areas of low barometer have appeared within the limits of observation during the month, and the tracks of eleven of them are shown on chart No. I; the other three only appeared for a short time over the Northwest. Three of them, Nos. II, IX and XI, originated in southern latitudes, and, as they progressed northward, developed into the severest storms of the season.

No. I.—This was a continuation of depression No. XII, partly described in the September REVIEW. On the morning of the 1st it was central in Minnesota, and moved during the day over Lake Superior into Canada; brisk southerly winds, veering to westerly, and light rains prevailed in the Upper Mississippi valley and Upper Lake region, but were followed by clearing weather at night. Cautionary Signals were ordered for the Lake region, and were justified in the Upper Lake region by the following wind-velocities, in miles per hour: Escanaba, 33; Milwaukee, 48; Chicago, 28; Grand Haven, 36.

No. II.—This was a West Indian cyclone, and probably the same storm that passed over Hayti on the 25th and 26th of September. By a study of the reports relating to International Meteorology, its track has been traced from this date to the 9th or 10th of October, and is found to have followed the general course of the Gulf stream. Heavy gales were reported in the straits of Florida from the 2nd to the 5th, but our stations were only affected along the coast of North Carolina, during the 3rd and 4th, where northeast gales and a heavy northeast sea-swell were reported. Cautionary Signals were ordered up on the morning of the 4th, although somewhat late, and were justified by the following velocities: Cape Lookout, 48; Cape Hatteras, 40; Kittyhawk, 44. Special despatches giving information of its progress were sent on the 27th and subsequently to the South Atlantic ports.

No. VI—probably developed over the Gulf of Mexico during the 9th, and passed eastward over northern Florida on the 10th, accompanied by heavy rains. 11th, moved northeastward off the South Atlantic coast, along which it produced severe northeast gales and heavy rains. Cautionary Signals were ordered up from Smithville to Cape Henry on the afternoon of the 10th, and were justified as follows: Smithville, NE. 25; Cape Lookout, NE. 72; Cape Hatteras and Kittyhawk, NE. 52, and Cape Henry, NE. 46. At midnight of the 12th, the storm was central off Cape Hatteras, where it was encountered by the following vessels.—Brig Florence May, October 11th, strong ENE. breeze, increasing to gale, with heavy rain,—at midnight the wind hauled to NW. by N., and blew a hurricane; schooner Sea Nymph encountered hurricane October 11th, and was abandoned October 13th, in latitude $34^{\circ} 15' N.$, $76^{\circ} 50' W.$; schooner Yellow Pine, in $34^{\circ} 50' N.$, $74^{\circ} 40' W.$, terrific hurricane from ENE., suddenly shifting to NW., lasting 12 hours; schooner Victor, 80 miles southeast of Hatteras, gale from NW., lasting 12 hours, then calm for 20 minutes, after which it blew furiously for 12 hours. 12th, continued to move northeastward off the coast, and by midnight was probably central between Cape Cod and Nova Scotia. Cautionary Signals, ordered up on the morning of the 11th, from Lewes to Sandy Hook, and at midnight of same day from New York to Boston, were justified during the 12th, as follows:—Lewes, 40; Cape May, 48; Atlantic City, NE., 38; Barnegat, severe NE. gale, followed by high NW. winds, high tides and heavy sea; Sandy Hook, E. on the 11th, and N. on the 12th, 40; New York, NW., 32; New Haven, NE., 28; New London, 26; Newport, 48; Wood's Holl, 32, and Boston, 36. During the day the disasters to shipping, along the southern coast of New England, were very numerous, as will be seen by the following summary: Whaling Bark Sarah left New Bedford at 7 a. m., while signal was flying, capsized at 5:30 p. m., and 22 of crew perished; schooner Moss Glen was wrecked 45 miles southeast of Cape Cod, 3 lives lost; schooner R. H. Shannon wrecked at Vineyard Haven, 1 life lost; schooner Etta A. Stimpson capsized near Norton Shoal, Martha's Vineyard, only one of the crew saved; at Vineyard Haven, Nantucket, and along the Cape Cod peninsula, over fifty vessels were driven ashore, and nearly all others were more or less damaged; six vessels were also sunk in deep water. These disasters indicate the storm to have been much more severe than it would seem to be from the registered velocities, and it is probable that the storm-centre passed somewhat nearer the land than shown on Chart No. I. The lowest barometer, at Wood's Holl, was 29.48 at 11 p. m. The extent of the storm seawards is indicated by the following shipping notes: Latitude $40^{\circ} 39' N.$, $69^{\circ} 21' W.$, SSE. to NW., heavy gale; and high cross seas; $40^{\circ} 20' N.$, $69^{\circ} 30' W.$, at midnight, wind SE., moderate, shifting suddenly to N. and NNW., barometer falling from 30.00 to 29.00, wind increasing to hurricane, with terrific

sea, and continuing until 3 p. m. of the 13th; $32^{\circ} 30' N.$, $72^{\circ} 40' W.$, hurricane from NE. round to NW., lasting 24 hours; $38^{\circ} 45' N.$, $71^{\circ} 30' W.$, severe hurricane, lasting 12 hours; Bermuda, wind S., barometer 29.87; and in the evening a severe thunder-storm occurred, lasting 2 hours, during which 2.62 inches of rain fell. 13th. Storm passed rapidly eastward during early part of day, followed by decreasing northerly winds on the coast of New England. Heavy northerly gales and terrific seas were reported off the Nova Scotia coast, and by a study of the shipping notes, its track may be followed still further eastward. Cautionary Signals, ordered up at Portland and Eastport on the morning of the 12th, were justified on the 13th at Portland, 9:45 a. m., N., 36., and Eastport, 6:00 a. m., N., 48.

No. XI—This storm probably originated in the tropics, and but little is yet known of its early history. Dispatches from Havana reported a hurricane there on the night of the 21st, with heavy rains, during which much damage was done to buildings, and three schooners sunk. The 4.35 p. m. reports of the 19th gave a rainfall of 1.40 in. at Kingston, Jamaica, and northeast winds, cloud and rain at Havana and Key West. On the 20th, at 4.35 p. m., the barometer was falling at Havana, but the midnight report and the morning report of the 21st were missing; a heavy rainfall occurred at Key West. 21st, Havana, 4.35 p. m. barometer 29.67, NW. 24, light rain. At Key West the wind backed from NE. 46, at 7.35 a. m., to 41, at 2 p. m., and NW. 27 at 10.41 p. m., with heavy rains during first part; lowest barometer at 2 and 4.16 p. m., 29.53; highest wind, 54 miles, during the morning; high northeast to north winds at Punta Rasa. Steamer Nueva Barcelona reported lost rudder in gale eight miles south of St. Augustine lighthouse, and a severe gale from ENE. was also reported off St. John's bar, backing to N. during the 21st and 22d, although at Jacksonville the wind did not exceed 17 miles. Steamer Juniata, at Wilmington on the 22d, reported terrific NE. gale and chopping sea between Charleston and Tybee during night of the 21st. 22d, on this day the following general conditions existed, viz: the pressure was generally above the normal west of the Mississippi, being highest in the Southwest, while a second area of high barometer extended from the Canadian Maritime Provinces southward over the Atlantic ocean, the pressure at Bermuda being 30.19, and falling, with easterly winds, veering to southeast on the 23rd, with rain. Between these high areas an extensive barometric depression existed, in which were situated two centres, namely, the one over the Lake region being the southern extremity of area No. X, just considered, and the other the present storm, which moved, with such fearful destruction, from North Carolina to New York during the following day. During the 22nd, the vortex of present storm probably moved northward, as shown on chart No. 1, from east of Florida to the coast of North Carolina, being, at 11 p. m., situated between Wilmington and Cape Lookout. The storm commenced at Wilmington at 3 p. m., wind E.; at 10.20 p. m., wind suddenly shifted from NE. to NW.; at 10.40 p. m., max. vel., NW. 36, occurred, and at 11.56 p. m., the lowest pressure, viz., 29.12; rain-fall during storm, 2.92 in. Cape Lookout, 11.02 p. m., bar., 29.05; SE. 68; max. vel., since 4.37 p. m., 100 miles; rain-fall during storm, 4.06 in. Portsmouth, N. C., 11.04 p. m., SE. 82; rain-fall, 3.48 in. During the day Smithville reported E. 32 and Charleston, 12.10 to 12.30 p. m., NE. 30 miles. The following shipping disasters occurred, in this section: Cape Lookout, 1.30 a. m., 23rd, steamer Florence Witherbee went ashore. South of Cape Henry, ship A. S. Davis was driven ashore; gale began at 8 p. m. 22nd, and ship went ashore at 2 a. m. 23rd; a total wreck; 19 lives lost and 1 saved; "the life-saving crew did their whole duty, but the tempest was so violent that human effort could avail nothing." One mile south of Cape Hatteras schooner Altoona driven ashore at 11.45 p. m. 22nd; total loss. Schooner Magnolia wrecked in Albemarle Sound October 22nd. Schooner Mary A. Hood, spoken a. m. 24th off Hatteras, leaking badly; lost sails; first officer washed overboard; 3 men disabled. Schooner Wm. Collyer went ashore 6 miles south of Barnegat at 2.40 a. m. 23rd. Schooner Wyoming, for Port-au-Prince, lost both masts, &c., and had captain and one passenger washed overboard in trying to enter Beaufort, (no date;) was towed into Beaufort 28th. Steamer Gen. Barnes foundered on the morning of the 23rd off Cape Hatteras; total loss. Steamer City of Houston encountered the gale on the night of 22nd; was abandoned and went ashore on Frying-pan Shoals, N. C., morning of the 23rd. 23rd, storm began at Kittyhawk at 6.30 p. m. of the 22nd, and reached its maximum registered velocity at 2.00 a. m., SE., 88, when the anemometer was carried away; lowest barometer, 29.06, wind shifting suddenly to SW. At Cape Henry and Norfolk the winds shifted from SE. to SW during the night, with maximum velocities of 84 and 44, respectively; lowest barometer at Norfolk, 7.00 a. m., 29.36; at Lynchburg the wind backed from NE. to NW., with heavy rain. On Chesapeake Bay, the storm was terrific, and appears to have been felt the worst in the narrow portion between the mouth of the Patuxent and Barren Island. Steamer Express foundered off Barren Island with the loss of several lives; four or five other steamers and a large number of schooners and smaller craft were driven ashore, or otherwise damaged. The barometric vortex passed almost directly over Washington, probably a little to the east; at 4.40 a. m. the anemoscope was swung suddenly from E. to S., and then back again, twice round the compass to W., settling down to NE., where it remained, with little or no wind, until 7.00 a. m., when it backed to NW., with the abrupt beginning of the NW. wind; the lowest barometer, 28.80, occurred about 7.15 a. m. At Annapolis, 7.30 a. m., the barometer was 28.82; at 5.45 a. m., the wind shifted from NE. to SE., and blew with great violence; 7.30 a. m. SW., moderating, heavy sea in harbor. Baltimore, maximum velocity at 5.00 a. m., SE. 45; lowest barometer, 7.37 a. m., 28.83. On Delaware Bay the storm was one of the worst ever experienced; a large number of vessels of all kinds were driven ashore, and at least eight lives lost. At Cape May the wind veered from E. to SE. and SW.; max. vel. occurred at 5.45 a. m., E. 84 miles. At Philadelphia half-hourly observations were taken from 5 a. m. to noon, which show the lowest barometer, 29.18, to have occurred at 7.30 a. m.; the wind attained its highest velocity at 7.40 a. m., SE. 72 miles, as it veered from NNE. to SW.; great damage occurred in this city, entailing a loss variously estimated at between one and three million dollars; over seven hundred substantially built buildings were either totally destroyed or seriously damaged, eight vessels were sunk and twenty-two badly damaged, all bridges damaged, seven lives lost, and several persons injured; League Island, at the junction of the Schuylkill and Delaware rivers, was almost submerged—the highest water occurring about 10 a. m., while storm was abating. As the storm passed over eastern Pennsylvania much damage to property occurred in the Schuylkill, Lehigh, Lackawanna, Lebanon and Wyoming valleys; at Wilkesbarre one life was lost and several persons injured, and at Reading two lives were lost. Along the New Jersey coast very high tides occurred; Cobb's and Smith's Islands were entirely submerged, the water being higher than for twenty years past, all live

stock was swept away; schooner *H. I. Patter* was totally wrecked at Five-mile Beach, and two of crew drowned; schooner *Sarah Clark* totally wrecked near Peck's Beach, four of crew lost; numerous other vessels also went ashore; *Barnegat* SE. 72 and *Atlantic City* E. 56 were the maximum velocities registered. The storm-centre passed into the State of New York about noon, and thence over New England during latter part of day and morning of 24th. Its severity somewhat modified as it moved eastward, but the following maximum velocities, occurring on the 23rd, will be found interesting: New York, 7 a. m., 50, continuing for several hours; considerable damage in vicinity. New Haven, 11 a. m., E. 40; storm very severe; schooner *Mary Tyce* wrecked; 2 lives lost. New London, E. 60; severest storm in 40 years. Newport, SE. 36. Boston, SE., 40. Portland, 9 p. m., anemometer cups blown away; estimated velocity afterwards 70 miles. Oswego, 29. Rochester, 2:30 p. m., N. 28. Erie, 32; schooner totally wrecked. Cleveland, NW. 35. Very high tides occurred along the New England coast, and much damage resulted thereby to wharves and shipping. On the summit of Mt. Washington, at 4:57 p. m. of 23rd, the wind reached a velocity of 120 miles from SE. Cautionary Signals were ordered up at midnight of the 20th at Key West; at noon of the 21st from Jacksonville to Charleston; during the afternoon and at midnight of the 21st from Smithville to Kittyhawk; during the 22d from Cape Henry to Boston, and on the morning of the 23d at Portland and Eastport; as the storm-vortex moved northward these signals were changed to Cautionary Off-shore Signals northward to New York, and both sets of signals were fully justified. Cautionary Signals were also ordered up on the Lakes, from Alpena to Sandusky, at midnight of the 21st, and thence to Oswego during the 22nd, and were justified along the Lower Lakes, as already seen.

No XII—possibly developed during the afternoon of the 23rd in Wyoming and Colorado—barometers at Cheyenne and Denver 29.78 and 29.80, respectively, or 0.30 below normal—and moved southward, in advance of high pressure area No. VII, to Indian Territory, where it was apparently central, with rising pressure, during the 24th. 25th, it moved northeastward to the Lower Lakes, but with pressure above the normal, and it would be more correct to consider it as merely a depression existing between the high areas Nos. VII and VIII than as a low pressure area; northerly winds, cloudy weather and light rains prevailed from Missouri to Michigan. 26th, the lowest pressure, still, however, above the normal, continued in the Ohio valley and Lower Lake region, accompanied by cloudy and rainy, cool weather. 27th, it moved northeastward down the St. Lawrence valley, with pressure slightly below the normal and cloudy and rainy, cool weather from Lake Ontario to the Middle and East Atlantic coast and Lower Canada.

No. XIII—appeared in the Northwest on the 27th, accompanied by snow and sleet in Montana and Dakota. 28th, was central over the Northwest, preceded over the Lake region by cool southerly winds, cloudy weather and light snow or sleet. 29th, remained central in the Northwest, but was preceded by falling barometer, southerly or easterly winds, cloudy and rainy, cool weather thence to the Lake region, Middle and South Atlantic and Gulf States. 30th, it moved eastward over the Lake region, and cool, cloudy and rainy weather prevailed east of the Mississippi, generally clearing away south of the Ohio valley by midnight; cool northwest winds and snow prevailed, during latter part of day, over the Upper Lakes. 31st, it moved eastward to the Gulf of St. Lawrence; cloudy and rainy weather prevailed in the northern portion of the Middle States and in New England, and cold north to west winds, with snow, in Lake region and Ohio valley, clearing away over western portions by night.

No. XIV—appeared in Manitoba on the 31st, but its subsequent history belongs to the November REVIEW.

INTERNATIONAL METEOROLOGY.

The following miscellaneous notes relative to storms at sea do not include the numerous reports that have been made use of in locating the path of storm on chart No. I:

May 25th, 8° 49' S., 30° 47' W., heavy S. gale.

July 2d, off Algea Bay, heavy NW. gale, lasting until the 17th. 18th, 19th and 20th, 35° 40' S., 165° 10' W., heavy cyclone. 24th, 35° S., 24° 30' E., heavy NW. gale, lasting twenty-four hours.

August 12th, off Cape of Good Hope, strong W'y gales; 18th, same position, heavy gales. 20th, 14° 14' S., 74° 23' E., very heavy weather from SE. 26th, 28° N., 72° W., severe hurricane from SW. to NW. 27th, 30° 30' N., 69° W., hurricane increasing to cyclone and continuing to 4 a. m. of 28th; 30° 09' N., 70° 30' W., hurricane. 28th, 33° N., 65° W., hurricane from SE, veered round to NW.; 33° 40' N., 64° W., hurricane; Brig "Echo," spoken Aug. 31st in 32° N. 61' W., from Baltimore, reported hurricane August 28th. 29th, 32° 57' N., 60° 37' N., severe hurricane.

September 4th, 40 miles south of Guantanamo, Cuba, hurricane. 7th, off Guantanamo, Cuba, terrific gale and heavy sea, lasting 24 hours. 8th, Off Riding Rocks, Bahama Banks, hurricane; 43° N. 46° W. a. m., heavy cross-seas,—3 p. m., E. to NNW., perfect hurricane,—midnight, almost calm, sea mountains high,—9th, 1 a. m., wind from N. with redoubled force. 11th, noon, 40° N. 40° W., weather moderate, vessel abandoned; 53° 54' N. 31° 46' W., sails carried away, fresh breeze. 11th, 29° 40' N., 80° 40' W., at 4 a. m., brig *Sally Brown* passed, dismasted and waterlogged, sea making a clean breast over her; 120 miles S. of Cape Hatteras, hurricane. 12th, 14° 43' N. 58° 55' W., heavy hurricane from NNW. veering round to SW. 13th, 19° 20' N. 54° 40' W., heavy gale; *Santa Anna*, Mexico, gale, in which two barks and two schooners were driven ashore and became total wrecks. Brig *Mary Knowlton*, from Pernambuco, August 24, to New York, October 7, reported September 13th heavy SE. gale, lasting until the 16th, when took hurricane from NNW. with heavy seas, lasting until 18th. 15th, 60° 10' N. 10° W., cyclone lasting 9 hours,

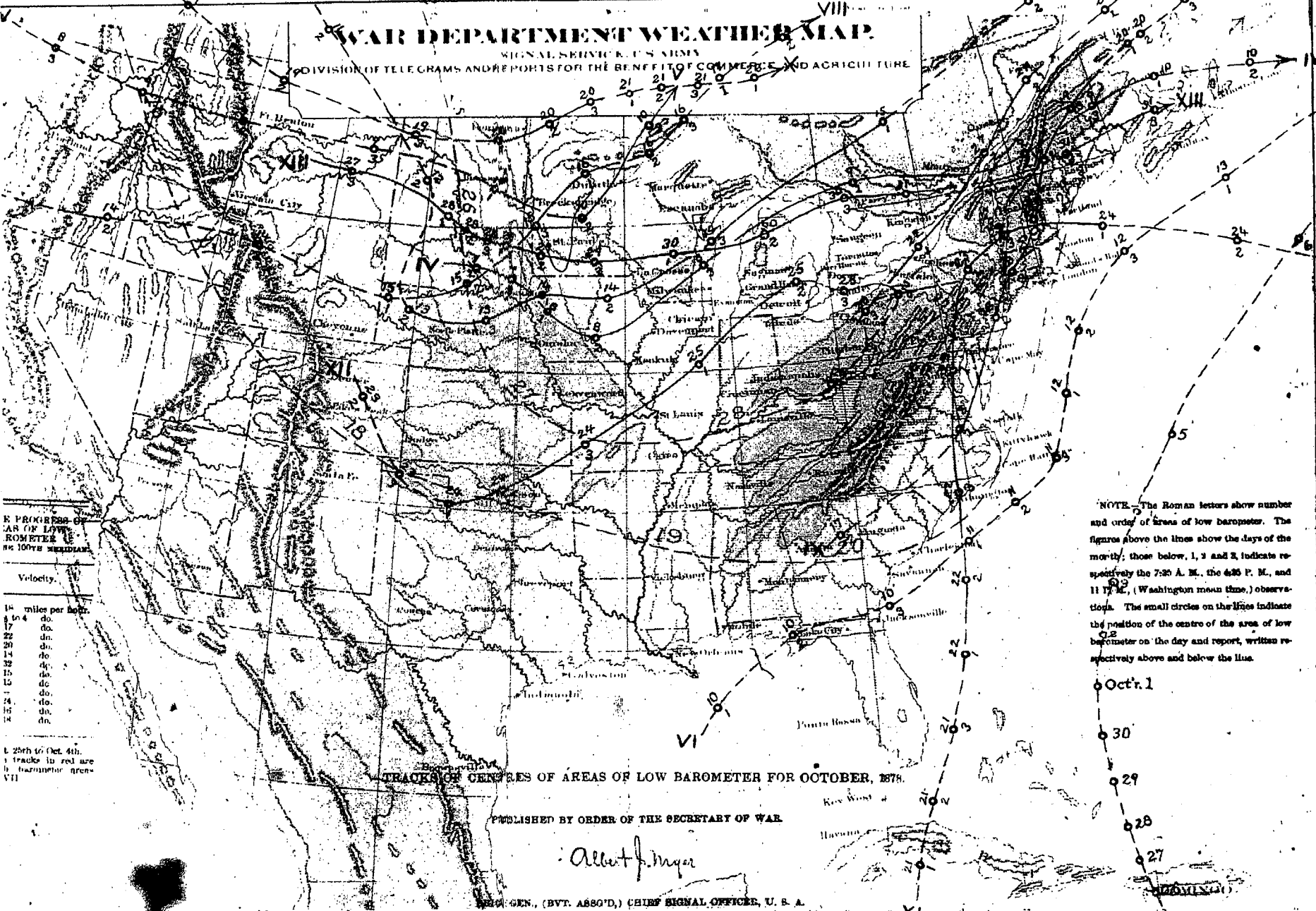
barometer 27.70. 16th, 21° 19' N. 58° 30' W., severe hurricane lasting through 17th. 17th, 13° 32' N. 111° 20' W., hurricane from W. to SE., lasting 16 hours; 26° 18' N. 58° 40' W., hurricane from SW., lasting 9 hours; brig Bogota reported September 16th to 18th from 21° 17' N. to 23° 38' N. and 57° 14' W. to 59° 05' W., heavy gales; schooner Marion Gage, spoken September 22 in 26° 20' N. 60° 10' W., from Philadelphia, reported hurricane September 17th; on the banks of Newfoundland, hurricane from NE., lasting 24 hours. 21st, 49° 57' N. 11° 23' W., strong variable winds, rain, high westerly sea. 22d, off Sable Island, heavy NE. gale, lasting 48 hours; 50° 12' N. 17. 36' W., strong variable winds and squalls, high westerly seas; 49° 47' N. 6° 23' W., stiff SW. breeze, high westerly sea. 23d, 50° 04' N. 23° 25' W., fresh NW. breeze and rain; 51° 26' N. 13° 53' W., moderate northerly gale; 51° 36' N. 13° 04' W., fresh NW. gale, cloudy, heavy W. sea; 49° 47' N. 12° 33' W., stiff NW. breeze, high W. sea. 24th, 49° 27' N., 19° 34' W., stiff NNW. breeze, high W. sea; 51° 28' N., 19° 21' W., strong NW. gale, cloudy, high W. sea. 25th, 49° 39' N., 29° 37' W., high sea; 48° 57' N., 26° 21' W., stiff NNW. breeze, high W. sea; 51° 25' N., 25° 32' W., strong NW. gale, clear weather, very high W. sea. 26th, 48° 16' N., 83° 32' W., decreasing WSW. wind and sea; 49° 57' N., 14° 03' W., high W'ly swell. 27th, 49° 57' N., 22° 02' W., high NW. swell; 49° 37' N., 39° 25' W., heavy W. sea; 47° 19' N., 40° 12' W., high W'ly sea: off Grand Bank, N'd, heavy N. gale. 28th, 10° N., 116° W., hurricane from WNW., veering to ENE., lasting 36 hours; 44° 58' N., 51° 53' W., strong NW. winds and hard squalls; 48° 08' N., 46° 37' W., moderate W. to SW., winds, squally, heavy NE. swell; 49° 54' N., 29° 54' W., fresh WSW. to WNW. breezes, squally, rough sea. 29th, 49° 34' N., 16° 09' W., WNW., squally; 49° 59' N., 20° 30' W., strong SW. breeze, high W. sea; 50° 55' N., 29° 56' W., strong WSW. breeze, heavy W. sea; 49° 22' N., 37° 16' W., strong NW. to SW. gale, w'ly sea; 43° 22' N., 51° 31' W., moderate NW'ly. gale; 46° 20' N., 52° 16' W., strong NW. gale, squally, high W. sea; 44° 46' N., 53° 20' W., NNW., stormy, high sea; 42° 18' N., 56° 15' W., moderate NW. gale, hard squalls; 33° 44' N., 50° 55' W., gale; steamer Lepanto, at Hull, October 13th, from New York, reported, September 29th, heavy gale from NW., with tremendous N'ly sea,—October 1st, longitude 53° 30' W., high seas,—2nd, took NW. gale, which continued until vessel arrived at Southampton. 30th, 49° 18' N., 16° 22' W., W. squally; 46° 09' N., 21° 30' W., SW. squally; 49° 50' N., 26° 41' W., strong SW. breeze, high W. sea; 49° 36' N., 36° 51' W., strong WSW. breeze, heavy W. sea; 48° 19' N., 43° 15' W., heavy WNW. gale, squally, increasing sea; 42° 52' N., 55° 52' W., moderate NW'ly gale; 44° 10' N., 56° 20' W., heavy NNW. gale, fierce squalls, very high W. sea.

October 1st, Buenos Ayres, four vessels driven ashore and some thirty lives lost during violent storm; 48° 42' N., 23° 49' W., strong W'ly breeze and heavy sea; 48° 40' N., 27° 34' W., SW., squally; 49° 09' N., 33° 12' W., strong WNW. breeze with heavy squalls; 48° 12' N., 42° 45' W., fresh W'ly gale, heavy W. sea; 46° 30' N., 49° 31' W., NW. stormy, heavy rain showers. Another cyclone visited the south coast of Hayti, during which an American brigantine was wrecked at Tiburon and all hands lost. 2nd, 48° 18' N., 81° 26' W., strong SSW. breeze and heavy sea; 47° 59' N., 33° 19' W., strong W., unsteady wind, with squalls; 50° 32' N., 36° 44' W., strong S. breeze, squally, heavy cross sea; 48° 12' N., 39° 20' W., strong WNW. breeze, with heavy squalls; 47° 46' N., 46° 25' W., NW. gale in morning, with passing showers; 46° 20' N., 48° 57' W., strong N'ly breeze and squally. 3d, 51° 29' N., 14° 35' W., S. by W., squally; 47° 10' N., 38° 25' W., stormy weather from WNW.; 46° 46' N., 38° 25' W., W. to NW. by N., strong wind, heavy squalls, increasing to strong gale, squalls and high sea; 47° 10' N., 44° 52' W., strong WNW. breeze with heavy squalls; 48° 52' N., 45° 26' W., long, heavy swell from NE.; 42° 30' N., 48° W., N'ly gale and tremendous sea, lasting until the 4th. 4th, 51° 12' N., 22° 16' W. SW., squally with rain; 45° 52' N., 42° 16' W., strong NW. to N. gale and high sea; 45° 03' N., 44° 26' W., NW. continued storm, squally; 45° 52' N., 47° 26' W., strong NW. gale and confused sea; about 45° N., 50° W., heavy NE. gale and sea lasting 24 hours; 45° 52' N., 52° 30' W., strong WNW. breeze with heavy squalls. 5th, 51° 26' N., 15° 05' W., S'ly squalls; 50° 24' N., 30° 23' W., S. and NE. fresh breezes, squally and rain. 6th, 49° 47' N., 6° 23' W., WSW. squalls; 50° 19' N., 29° 47' W., moderate NNW. gale; 49° 0' N., 37° 30' W., fresh N'ly breeze, squally; 59° N., 50° 50' W., hurricane from E. to N., lasting 8 hours; 7th, 49° 58' N., 13° 30' W., strong SW. breeze, high westerly sea; 51° 25' N., 14° 53' W., SW., squally; 51° 13' N., 15° 39' W., NW. to SW. gale, heavy seas, rain; 50° 03' N., 21° 31' W., moderate N. gale; about 47° 36' N., 30° 14' W., heavy gale and seas; 38° 02' N., 35° W., terrific cyclone from SE. by W. to N., barometer 28.02,—8th 4 a. m. sea terribly confused,—6 a. m., terrific hurricane, ocean one sheet of foam,—10 a. m., moderating,—4 p. m., heavy gale; 48° 54' N., 36° 07' W., strong gale and high sea; 48° 00' N., 36° 10' W., SE. hurricane, very high sea, lasting 8 hours; 47° N., 36° W., heavy SW. gale; 49° 57' N., 33° 41' W., noon, barometer 29.80, SE., force 3,—4 p. m., barometer 29.54, SE., 4,—8 p. m., 29.01, ESE., 6,—10 p. m., 28.65, E., 10, fierce gale, terrific squalls,—midnight, 28.72, ENE., 11, very heavy gale, hurricane squalls,—8th, 4 a. m., 29.25, NE., 10, heavy gale, fierce squalls,—noon, 48° 16' N., 42.27, W., 29.85, N., 8, fresh gale, hard squalls; heavy NE. sea; 44° N., 40° W., hurricane from SSE. to SW. lasting six hours; 44° N., 42° W., heavy SW. gale, barometer, 28.82; 44° 21' N., 42° 13' W., hurricane; 44° 21' N., 42° 13' W., hurricane; 44° N., 44° W., cyclone and heavy gale from SW. to NW., lasting twelve hours; 47° 24' N., 44° 04' W., strong ESE. gale, rain and high sea; 44° N., 46° W., cyclone from SE. to NW., lasting nine hours, — barometer at noon 28.70; 44° 20' N., 48° W., very heavy gale, barometer, 28.20; 45° 30' N., 49° 52' W., heavy gale; 40° 30' N., 50° 40' W., hurricane from ESE. to SSE., lasting five hours; 40° 31' N., 50° 40' W., hurricane from ESE. to WNW., with terrific sea; 41° 30' N., 56° W. hurricane from ESE. to NNW., lasting sixteen hours; steamer "Somerset," Bristol, October 2d to New York 15th, reported, October 7th, heavy gale from SE., with heavy cross-sea, increasing to hurricane, lasting eight hours and suddenly shifting to NW. and N., — October 13th,

was between Sable Island and George's Shoals; ship "Lennie," Belfast, September 30th, to New York, October 30th, reported; October 7th, heavy SE. gale, veering to NW. and increasing to perfect hurricane, barometer, 28.30. 8th, 49° 22' N. 18° 55' W., strong NW. wind and high sea; 50° 21' N., 20° 40' W., moderate NW. to SW. gale, heavy westerly sea; 50° 51' N., 20° 40' W., NW.; strong gale, high sea; 51° 13' N., 22° 17' W., strong to hard N. and NW. gale, very heavy seas; 54° 07' N., 22° 26' W., N. squally, heavy sea; 49° 42' N., 26° 30' W., heavy SW. to NW. gale and dangerous sea; 47° N., 40° W., hurricane from SE., barometer, 28.35; 46° 10' N., 23° W., hurricane from ESE., lasting 12 hours; then heavy gale from ENE, lasting eighteen hours, very high sea; 45° 30' N., 39° W., NE. hurricane lasting twelve hours, very high sea; 49° 16' N., 41° 08' W., strong NE. gale, veering to NNW; 47° 19' N., 41° 18' W., strong northerly gale, high sea; 48° 16' N., 42° 27' W., fierce NE. to SE. gale and high sea; 45° 19' N., 50° 49' W., NE. whole gale, high sea; 44° 37' N., 54° 32' W., SE. and NE., stormy, heavy rains; British Isles, severe storm, 7th to 9th, lowest barometer 28.75 to north of Ireland on the 8th. 9th, 49° 41' N., 5° 22' W., WSW. gales, very rough sea, heavy rains; 49° 22' N., 23° 06' W., strong SW. to NW. gale, with hurricane-like squalls; 50° 10' N., 24° 57' W., strong SW. gales and high seas; 49° 03' N., 25° 20' W., heavy SW. to N. gale, high sea; 51° 26' N., 28° 22' W., increasing NW. gale, terrible sea; 52° 50' N., 29° 10' W., fresh NE. to NW. gale, very high sea; 49° 16' N., 28° 03' W., a. m., heavy NNW. gale and dangerous sea; 49° N., 39° W., gale with terrific sea; 45° 56' N., 47° 38' W., rain; 44° 30' N. 54° W., midnight 8th to 9th, thunderstorm; 46° 23' N., 51° 02' W., fresh gale and high sea; 50° N., 51° W., hurricane, lasting twelve hours; bark "Consul Platen" was dismasted and water-logged October 9th and abandoned October 13th in 49° 04' N., 18° 07' W. 10th, 49° 45' N., 10° 28' W., westerly gales, heavy thunder-storms with "immense" rains; 51° 15' N., 11° 51' W., fresh NW. gale and high sea; 48° 36' N., 27° 53' W., NW. and SW., wild breaking sea; 49° 16' N., 30° 46' W., strong SW. gale and high sea; 48° 18' N., 31° 55' W., moderate SW. gale; 48° 22' N., 32° 37' W., heavy seas, SE. wind and rain; 48° N., 32° W., severe gale; 51° N., 36° 12' W., fresh S. and SW. gales; 44° 47' N., 52° 50' W., strong N'ly gale; 42° 19' N., 62° 49' W., fresh W'ly gale, heavy sea; 41° 06' N., 66° 58' W., SW and NW., stormy, heavy W. sea; 200 miles E. of Sandy Hook, hurricane from NE., lasting twenty-four hours; off George's Shoals, hurricane from NNE. to NW., lasting twenty-four hours.

WAR DEPARTMENT WEATHER MAP.

SIGNAL SERVICE, U. S. ARMY
DIVISION OF TELEGRAMS AND REPORTS FOR THE BENEFIT OF COMMERCE AND AGRICULTURE



TRAJECTORIES OF CENTERS OF AREAS OF LOW BAROMETER FOR OCTOBER, 1878.

Velocity.	Symbol
16	miles per hour.
17	do.
22	do.
20	do.
14	do.
32	do.
15	do.
13	do.
—	do.
34	do.
15	do.
14	do.

1 25th to Oct. 4th.
3 tracks in red are
b. barometer pressure
VII

NOTE.—The Roman letters show number and order of areas of low barometer. The figures above the lines show the days of the month; those below, 1, 2 and 3, indicate respectively the 7:30 A. M., the 4:30 P. M., and 11 P. M., (Washington mean time,) observations. The small circles on the lines indicate the position of the centre of the area of low barometer on the day and report, written respectively above and below the line.

Oct. 1

30

29

28

27

TRAJECTORIES OF CENTERS OF AREAS OF LOW BAROMETER FOR OCTOBER, 1878.

PUBLISHED BY ORDER OF THE SECRETARY OF WAR.

Albert J. Meyer

GEN. (BVT. ASSO'D.) CHIEF SIGNAL OFFICER, U. S. A.

Sept 25