

MONTHLY WEATHER REPORT OF THE METEOROLOGICAL OFFICE.

(Supplement to the Weekly Weather Report.)

SUMMARY OF OBSERVATIONS COMPILED FROM THE RETURNS OF OFFICIAL STATIONS AND VOLUNTEER OBSERVERS IN THE UNITED KINGDOM, WITH A CHART OF RAINFALL CONTRIBUTED BY THE BRITISH RAINFALL ORGANISATION.

ISSUED BY THE AUTHORITY OF THE METEOROLOGICAL COMMITTEE,

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SUMMARY OF OBSERVATIONS.

Pressure, Winds and Weather.—The closing month of the year witnessed a continuation of the very disturbed atmospheric conditions which had been experienced during November. In one respect, however, the characters of the two months were entirely different—the abnormal coldness of November was followed by an equally abnormal mildness which lasted practically all through December. High pressure systems were rare visitors, and only affected parts of the British Isles. During the first three days the north of Scotland and the Shetlands were within the central region of an anticyclone, the barometer rising to 30·46 in. at Sumburgh Head. An anticyclone moving across the Bay of Biscay to the Continent embraced southern England on the 22nd, pressure increasing to 30·47 in. at Jersey, and 30·40 in. at Scilly. Another Atlantic high pressure following a more northerly line of advance covered the southern districts from the 28th, the maximum pressure being attained on the 31st, 30·51 in. at Jersey, and 30·52 in. at Oxford. With these exceptions the country may be said to have been wholly under the influence of cyclonic disturbances, advancing towards us from the middle Atlantic region, or passing north-eastward or eastward in the far north, between Scotland and the Arctic Circle, many of them of great depth. The mean pressure for the entire month was consequently everywhere below the normal, the smallest deficiency being in the north, 0·16 in. at Stornoway and Sumburgh Head, and 0·17 in. at Wick, against 0·29 in. at Roche's Point and Valencia, and 0·31 in. at Pembroke. The results indicated a low pressure area between Ireland and Iceland, with the mean pressure below 29·5 in. Thence the values across these islands increased to 29·75 in. at Dover and Jersey, and to 29·85 in. at Paris. Owing to the disturbed conditions out on the Atlantic the mean pressure at the Azores was as low as 30·05 in. The range of pressure was 1·4 in. at Dover and Yarmouth, and nearly 2 in. at Valencia. The distribution of mean pressure did not differ much from the normal, pointing to the general prevalence of winds from between South and West. Through the first eleven days, however, Southerly to Easterly or North-Easterly winds prevailed. Wind forces exceeding a strong breeze were reported on twenty-nine days, gales being numerous, and at times severe.

When, in the opening days of the month, Scotland was under an anticyclonic type of conditions, the southern half of the Kingdom was under the influence of a depression which at the close of November had crossed the Bay of Biscay to Western France. By the morning of the 1st its centre was nearing the Channel Islands. North-Easterly high winds and gales were felt in many parts of England, a strong gale at Dover, accompanied by a very heavy rainstorm, which in several neighbourhoods was incessant throughout the day. Falls of an inch and upwards were numerous, 1·5 in. at Belvoir Castle and Fulbeck, 1·6 in. at Ridlington, 1·9 in. at Oundle, and 2·4 in. at Ruthin. Added to the frequent and heavy falls of November this storm resulted in extensive floods in many of the inland counties. On the 2nd the disturbance moved westward out to sea, the weather continuing very unsettled and wet in the south, another inch of rain falling at Oundle, and also at Plymouth.

With the transfer of the northern anticyclone to Scandinavia and Russia extremely unsettled conditions became general, under the influence of a very deep cyclonic area which according to wireless reports from steamships covered a large part of the Atlantic, the barometer remaining below 29 in. for days. On the morning of the 13th the White Star liner "Baltic" reported a reading as low as 27·84 in. in latitude 51° N., longitude 24° W. The main disturbance appears to have been stationary, or nearly so, but a succession of very deep secondary systems, arrived on our western coasts. Their centres failed, however, to come as far as the meridian of 5° W., most of them dispersing over or near Ireland. One of these appeared to the westward of the Bay of Biscay on the morning of the 4th, and next morning it was entering St. George's Channel, with the barometer below 28·7 in. Following a due northerly course it filled up over the Farøe on the morning of the 6th. A deeper one reached the Kerry coast on the morning of the 8th, barometer 28·52 in. at Valencia, but it filled up over Galway next day. Another arrived in the same neighbourhood on the 10th, pressure sinking to 28·51 in. at Valencia. It filled up over Donegal on the evening of the 11th. Yet another appeared off the Shannon on the morning of the 13th, the barometer touching its lowest level for the month, 28·49 in. at Valencia. By evening, however, the system dispersed over Central Ireland. The last of this group of short-lived depressions entered Galway Bay on the evening of the 16th, somewhat less deep than its predecessors, and on the morning of the 15th it disappeared off the west of Scotland. Already, however, wireless reports disclosed the existence of a disturbance in about 51° N., 42° W., some little distance to the north-eastward of the Newfoundland Bank, on the evening of the 14th. Advancing eastward at a brisk rate the centre arrived over Kerry on the morning of the 16th, and

striking off on a north-easterly course it passed across Ireland, the north of England and southern Sweden, finally disappearing beyond Moscow on the 20th.

A singular feature connected with the approach of this system was the change of pressure on the south-east side of the Irish Sea early in the morning of the 16th. Under the influence of the disturbance pressure commenced to give way soon after midnight, but at 5 a.m. the barometer at Bidston Observatory, near Birkenhead, began to drop at an unprecedented rate, which amounted to 0·22 in. in half an hour, then rose very rapidly, 0·05 in. in 1 minute, and 0·03 in. in another 17 minutes. At Stonyhurst Observatory the fall set in about 6 a.m., 0·07 in. in 20 minutes, and 0·07 in. in the next 10 minutes. The phenomenon does not appear to have crossed the Pennine Range. (The previous greatest fall in this country occurred at Falmouth Observatory on December 12, 1893, when it amounted to 0·33 in. in an hour.)

After the 16th the conditions over the British Isles were influenced by disturbances situated beyond the north-western coasts, or travelling eastward in the vicinity of the Arctic Circle from Greenland and Iceland to northern Europe. Without an important interruption, therefore, the month's weather was almost continuously unsettled. One or more of the telegraphic reporting stations experienced a gale (force 8) on as many as twenty-five days, a strong gale (force 9) on seventeen days. A whole gale (force 10) from the South-East was felt on the 7th at Roche's Point and Scilly; on the 8th at Malin Head and Roche's Point; and on the 9th at Scilly. During the rest of the month the direction was South to South-West, a whole gale on the 13th at Portland Bill, on the 15th at Scilly and Dungeness; on the 16th at Pembroke, Scilly and Oxford; on the 17th at Dungeness; and on the 24th at Malin Head; while a storm (force 11) occurred on the 12th off Pembroke, on the 16th at Portland Bill; and on the 17th at Dover. The anemometrical records show that the highest velocities were reached at Pendennis, 55 miles in an hour on the 7th, 56 miles in the night of the 9th, and 63 miles on the 16th. Some very high velocities were reached in gusts. On the 13th 73 miles per hour at Scilly, 75 at Pendennis, and 76 at Plymouth; and on the 16th 74 at Scilly, and 85 at Pendennis.

Sharp frost was registered on two days, 20° in the shade at Kilmarnock on the 1st, and 19° at Eskdalemuir and Llangammarch Wells on the 28th being the lowest minima. At other times there was no cold worthy of mention, high day and night temperatures ruling, an afternoon maximum of 60° occurring at Colwyn Bay on the 23rd, and at Rhyl next day, while there were many night minima of 48° and upwards, 51° at Colwyn Bay during the night of the 23rd. For the month temperature was above the average, by more than 4° in numbers of places, over 6° at Balmoral.

Aurora was reported at Deerness on the 1st, Dublin on the 24th, and Eskdalemuir and Inch (Aberdeenshire) on the 28th.

Fog was uncommon inland and on the south coast, prevalent on the Irish coast from the 18th to the 23rd, and was reported nearly every day on the east coast of Britain.

The temperature of the sea water round our shores was generally colder than in November, by as much as 5° at the Newarp light vessel, but as a rule it was warmer than the air on shore, by 5° on the coast of Down and off Waterford.

Rainfall.—Precipitation was nearly entirely in the form of rain, less than the average over Scotland and Ireland; in excess over England. Fort William had a deficiency, and Salisbury an excess of 4·3 in. Aggregate falls of 7 in. and upwards were numerous, ranging up to 14·2 in. at Sheepstor, 14·6 in. at Laragh, 14·7 in. at Treherbert, and 15·1 in. at Seathwaite. Totals less than 2 in. were few, but Leith had just under an inch. Rain was abnormally frequent, falling in some localities on as many as 20 or more successive days, 30 at Gruline (Mull), Epsom and Penzance, and 31 at Lickeen (Kerry), but after the 1st, falls of more than an inch in a day were not numerous, very few instances of as much as 1½ inch. At Eastbourne, Whitby and Fortrose (Ross-shire) there were only 14 days. As a consequence of the almost daily rains many rivers overflowed their banks. At Belvoir Castle it was the rainiest December since 1876, at Great Billing since 1872, and at Southport since 1870. There were a few sporadic thunderstorms in various parts of England and southern Ireland on the 12th, 13th, 20th and 28th.

Bright Sunshine.—As a rule the duration of bright sunshine differed little from the normal, generally less than the average. At Hillington, however, the deficiency was 24 hours, and at Phoenix Park 32 hours. Felixstowe had a total of 62 hours (26 per cent. of the possible), while several stations returned less than 20 hours, Manchester City 8 hours (4 per cent.), and Bunhill Row, London, only 3 hours (1 per cent.).