

MONTHLY WEATHER REPORT OF THE METEOROLOGICAL OFFICE.

(Supplement to Weekly Weather Report.)

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

ISSUED BY THE AUTHORITY OF THE METEOROLOGICAL COMMITTEE.

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FORTY-FIRST YEAR.

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Remarkably Quiet; Cold; Variable Precipitation.

December is normally one of the most stormy of the months, but the one now under review has proved of exceptional interest by reason of the almost entire absence of boisterous, rough conditions. As will be gathered from an inspection of map 2, p. 135, there was no lack of cyclonic systems moving hither and thither over and in the neighbourhood of the British Isles, but though well up to the average in number they did not produce a single gale affecting any extensive tract of country. Apart from the winds, however, the weather conditions were of the character appropriate to the month of the winter solstice—cold and inclement, with frequent and severe frosts and a good deal of snow.

During the first eight days the distribution of atmospheric pressure showed erratic changes, the highest readings of barometer being sometimes near the Baltic, sometimes on the Atlantic. From the 5th to the 7th a narrow belt of relatively high readings extended from the Atlantic to Northern Russia. The depression marked B, which moved down the North Sea between the 3rd and the 5th, caused the North wind at Spurn Head to increase to a gale (Beaufort force 8) for a brief interval about midday on the 4th, but as a general rule this spell was marked by winds shifting about through all quarters of the compass, and rarely exceeding the strength of a moderate breeze (force 4). Though the aggregate precipitation for these eight days was above the normal in some northern districts, no large amounts were measured on any one day.

With the sudden appearance of depression C over the north of Ireland soon after midnight of the 8th, somewhat less settled conditions set in, which lasted practically throughout the rest of the month, the only short break occurring on the 27th, when an anticyclone of moderate intensity moved across the country from west to east. As the disturbance C traversed northern Ireland a heavy snowstorm broke over County Sligo, and on the morning of the 9th the snow lay a foot deep at Markree Castle. The depression deepened as it advanced southward, pressure sinking to 979 millibars at Pembroke in the night of the 10th. Notwithstanding this considerable depth, the instances of gales at the telegraphic reporting stations were few. Heavy precipitation was limited to a few widely scattered localities. The heaviest falls for the 24 hours ending at 9 h. on the 10th were 25 mm. at Lisburn, 26 mm. at Haverfordwest, 28 mm. at Dyce, 20 mm. at Alnwick, and 32 mm. at Falmouth. Thunderstorms were experienced at Donaghadee and Redruth on the 9th, and at Falmouth, Bournemouth, and Dorchester on the 10th.

On arriving off the mouth of the English Channel during the night of the 10th, the character of the depression was modified. Without changing its depth to any appreciable extent, the barometer at its centre remaining below 980 millibars for some days, the system flattened out on all sides, so that there was a marked uniformity of pressure. Although the depression and some minor satellites remained in our immediate vicinity until the 19th, the whole country experienced nine days of abnormally quiet winds, calms and light breezes forming nearly 90 per cent. of the records. Associated with the general stillness of the air there was a good deal of fog over a great extent of country; about the 16th it was especially dense and widespread. Thunderstorms were reported, however, at Scilly, Woolacombe, and in Eastern Ireland on the 12th, at Jersey on the 13th, and in Devonshire and the Hebrides on the 14th. During the 12th Kingstown registered 31 mm. of rain, and Newcastle (Wicklow) 34 mm. of rain and snow; and on the 18th there was 25 mm. at Glasgow and rather more at Egremont and Lampeter. On the morning of the 18th snow lay 10 cm. deep at Bargrennan and Meltham, and 30 cm. at Darleith, and next morning it was 10 cm. deep at Mayfield, 11 cm. at Bellingham, 12 cm. at Eskdalemuir, 14 cm. at Penygwryd, 16 cm. at Dumfries, and 18 cm. at Glasgow.

An Atlantic depression which arrived on the coast of Kerry early on the morning of the 20th, and a small secondary on its southern side which reached the western end of the English Channel twenty-four hours later, produced the most disturbed conditions of the month. The primary system travelled up the western coasts and as it passed the Hebrides the barometer at Stornoway sank to 970 millibars, the lowest pressure record of the month for the British Isles. The secondary swung round across Southern England and in the course of the same day dispersed off the east coast. On the 23rd when the primary had reached the Faroe region another secondary developed over the South of England. This secondary became very deep as it crossed Denmark and the barometer fell below 970 millibars at Copenhagen. On the 25th yet another secondary formed over Kent and dispersed over Heligoland Bight. On the 20th the wind reached gale force from South at Holyhead and from South-East at Durness. Next day there was a strong Southerly gale at Lerwick, Dungeness, and Yarmouth, and South-Westerly whole gale at Dover (force 10). On the 22nd Blacksod felt a Southerly gale; and on the 23rd there was a southerly gale at Dover, a North-west gale at Spurn Head, and a Southerly whole gale at Dungeness. The last mentioned station reported another Southerly gale on the 25th. The stronger gusts during this period were 26 m/s. on the 20th at Plymouth; 27 m/s. at Shoeburyness and 28 m/s.

on the 21st at Dover; 26 m/s. at Pendennis, 28 m/s. at Holyhead, and 30 m/s. at Scilly on the 23rd. Over the counties south of the Thames there was a heavy rainstorm on the 20th. Numerous stations registered more than 25 mm., the largest falls being 42 mm. at Rousdon and Lyme Regis, 44 mm. at Wilton (Salisbury), 46 mm. at Dorchester, and 49 mm. at Weymouth. Elsewhere the only falls of note were 25 mm. at Castlebay, and 31 mm. at Glenarm. With the exception of 30 mm. at Weston Turville on the 22nd, the precipitation on the other days was much more moderate. On the morning of the 20th snow lay 13 cm. deep at Carnforth, 17 cm. at Penygwryd, 18 cm. at Cardiff, and 23 cm. at Glasgow. Thunderstorms occurred in a few places.

The passage of the anticyclone of the 27th was marked by a dense fog over a wide area, the London district in particular suffering greatly.

From the 28th to the 31st a depression moving eastward in the far north produced weather of a well-defined Southerly to Westerly type over the whole kingdom, but the only gales reported were at Blacksod on the 28th and 30th, and at Falmouth and Dover on the 29th. Gusts of 30 m/s. were recorded at Edinburgh on the 28th; 28 m/s. at Pendennis, and 29 m/s. at Scilly on the 29th. The principal rainfalls were 36 mm. at Mealsgate and 46 mm. at Kirkby Lonsdale on the 28th, and 36 mm. at Princetown on the 29th.

Air Pressure.—The mean pressure for the whole month was everywhere considerably below the normal, the deficiency ranging from 6 millibars in the north to 10 millibars at Jersey. The trend of the isobars on the map of mean pressure is East and West, but the gradient is little more than half the normal. The lowest pressure 997.5 millibars is shown between Scotland and the Faroe.

Temperature.—For nearly four weeks there was a great preponderance of low temperatures, the maxima frequently being below 277a. About the 6th, 16th and 27th, the temperature remained below 273a throughout the day at many stations. Night frost was general, usually moderate but occasionally severe, a large number of screen minima being under 267a; 261a was touched at Garforth and West Linton on the 20th. With the South-Westerly type at the close of the month came a notable rise of temperature. From the 28th to the 31st there were many maxima from 286a to 288a, and minima from 281a to 283½a. This sudden incursion of warmth, following a severe frost, produced an exceptionally copious "sweating" of indoor objects, so that, as noted by the Reading observer, "everything was extraordinarily clammy and wet." The mean temperatures for the month were everywhere "deficient," from ¼a in Scotland North, to 2¼a in Ireland South.

At Belper the mean temperature of the water of the Derwent was 277.7a, that of the air 274.3a.

The temperature of the inshore sea surface water along the coasts was slightly warmer than that of the air off the west of Ireland, elsewhere it was decidedly warmer, as much as 3a to 4a in many localities. Fog was frequent on all coasts.

Rainfall.—Though the frequency of precipitation was greater in the west than in the east, the aggregate falls in the east were considerably in excess of the normal, while those in the west were deficient, the percentage values ranging from 77 in Ireland South, and 86 in Scotland North, to 141 in England North-East, and 148 in England East and South-East. The records at 29 stations mostly on the south coast, show that the hourly rate of precipitation was about 75 per cent. greater at night than during the day. From the 20th to 29th rain fell nearly every night at these stations, while the days were mostly dry.

At Kew Observatory the level of the underground water sank from 304 cm. above mean sea level on the 1st to 263 cm. on the 22nd, and rose again to 349 cm. on the 31st. 350

Bright Sunshine.—There was a deficiency of insolation in all the Eastern and Northern Districts, an excess elsewhere. The greatest deficiency was ½-hour per day in England East, and the greatest excess ¾-hour per day in England South-West. Scotland North registered less than ½ hour daily, against nearly 2½ hours in England South-West and the English Channel.

Auroral displays were witnessed at Donaghadee on the 25th, and at Aberdeen on the 26th and 28th; **Parhelia** at South Farnborough on the 5th, and Benson on the 10th; **Sun Pillar** at Benson and Oxford on the 10th and South Farnborough on the 21st. **Glazed** roads were reported in several places; the streets of Dublin were exceptionally dangerous on the 17th, when some 300 cases of accident were treated in the hospitals.

