

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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Quiet; Mostly Fine and Dry; Very Cold.

From the barren appearance of map 2, on page 123, showing the progression of areas of low barometric pressure across or in the immediate neighbourhood of the United Kingdom, it will be gathered that the month now under review was of an unusually quiet character for the time of year, November being, on the average, one of the three most stormy months. The dates attached to the few paths indicate that such unsettled conditions as were experienced were confined almost entirely to the first half of the month. There were, however, four main types of pressure distribution into which the month was divided. During the first eight days a Northerly type was in the ascendant, at first connected with an anticyclone situated for the most part over the north-eastern quarter of the Atlantic, and later with another anticyclone lying to the southward, over France and westward across the Bay of Biscay. On the break-up of these systems a cyclonic type was established, and it was maintained for a week, which embraced the most disturbed days of the month. There succeeded close upon a fortnight of anticyclonic conditions, an area of high pressure, the highest of the month, moving in slowly from the Atlantic and passing on to Denmark between the 16th and 22nd, and another, of somewhat less intensity, following nearly the same path between the 23rd and the 27th. As the latter reached the Continent the situation over the north-eastern quarter of the Atlantic became disturbed, and during the last three days influenced to some extent the weather over this country.

The depression marked A on the map is the one which in the closing days of October followed a due easterly path from the Atlantic into the English Channel. It continued on its eastward course and disappeared across North Germany on the 3rd, filling up as it proceeded, the barometer having been down to 980 millibars over the mouth of the Channel. Over England generally the wind was between East and North, and in several localities the force of a strong or high wind was felt, but gale force was not attained. Though rain was experienced over a wide area, the amounts registered were unimportant. Thunderstorms occurred locally in Ireland. An Arctic disturbance moving from Greenland to Norway between the 6th and 8th brought the wind into the North-West quarter over our northern districts, but its principal effect was seen in some heavy rainfalls on the 8th, several stations exceeding 25 mm., Gordon Castle 47 mm., Balmoral 55 mm., and on the slopes of Snowdon from 59 to 74 mm. On the morning of the 9th a depression from the Atlantic, marked B, appeared rather suddenly over Scotland, deepened as it reached the east coast, where the barometer descended to 972 millibars, and on the 12th dispersed over Norway. When the centre of this system was nearing the south coast of Norway, on the morning of the 11th, another and much deeper one, marked C, began to affect our south-western coasts. Next morning its centre traversed Kerry, then bore down to the south-east, passed between Scilly and Falmouth into the English Channel, when the barometer sank to 958 millibars, the lowest level during the month. At a greatly accelerated pace, and again altering its course to the north-eastward, it crossed the Thames Estuary and the North Sea, and finally disappeared beyond Lapland. With these two disturbances was associated what may be regarded as the only approach to stormy conditions which the country experienced. From the 9th to the 13th the wind blew from every quarter of the compass, and according to personal estimations it attained the force of a gale or a strong gale in many parts of the Kingdom, inland and on the coasts, a whole gale at Portland Bill, Donaghadee, Blacksod Point and Nairn. At the anemograph stations, however, sustained velocities amounting to 20 m/s over an hour were not numerous, and the only ones exceeding 25 m/s. occurred in the night of the 12th-13th, when Pendennis registered 27 m/s., and Scilly 29 m/s., both stations experiencing gusts at the rate of 39 m/s. As the centre passed Land's End the wind, blowing at its maximum force, veered from South through West to North at Scilly, and backed from South through East to North at Falmouth. The passage of the depression B, while marked by unsettled weather all round, was not productive of much rain or snow, there being singularly few instances of as much as 25 mm. On the other hand the depression C occasioned very heavy and persistent rain, with local hail and snow, over the greater part of England and Ireland on the 11th and 12th. On the former date 51 mm. fell at Sheepstor, and 52 at Valencia; on the latter 51 mm. at Bethesda and Dublin, 52 at Chatsworth, 53 at Ruthin, 54 at Newcastle-on-Tyne, 70 at Pen-y-gwryd, and 80 at Little Massingham. In several localities the fall was continuous for 30 to 40 hours. Thunderstorms occurred in various parts of Southern England and at Markree Castle. The remainder of the month was abnormally quiet. A shallow depression, marked D, passing from the Bay of Biscay to Belgium on the 15th and 16th, caused snow and hail in many

places, but on neither date was the snowfall heavy, 10 cm. at Chelmsford on the 15th, and at Caraforth and Ardross next day. A period of drought now set in, a large number of stations measuring no precipitation during the 13 days, 16th to 23th. Leith experienced rain for 15 days, Roden, Wokingham, Shaftesbury, Carrigallen and Kingstown 16 days, and Allens Green 18 days (12th to 29th). The low pressure area outside our north-western coasts at the end of the month brought rain to the country generally on the last two days, 32 mm. at Crieff on the 29th, and at Stornoway on the 30th, the only falls exceeding 25 mm. A strong Southerly gale was felt at Blacksod Point, and Easterly at Lerwick—the anemometers at Pendennis and Plymouth just reaching gale force—18 m/s. Locally in the South of England thunderstorms were experienced.

Barometric Pressure.—The distribution of mean pressure was unlike that of any previous November as far back as 1888. The barometric values form a small anticyclonic area over the inland parts of Ireland, and a shallow depression over Scandinavia. The difference of pressure between the two centres was only 8 millibars, and between the South of Ireland and Shetland it was less than 4 millibars. The nearest approach to the distribution occurred in 1893, the anticyclone on that occasion being indicated on the Atlantic, to the westward of Ireland, but between Kerry and Shetland the difference was 10 millibars, an indication of the very stormy character of the month, whereas in the present instance the period was almost wholly free from gales. Over Southern England the mean pressure was about the average, elsewhere it was in excess, by as much as 6 millibars at Stornoway. The barometer was at its lowest on the evening of the 12th at Scilly, 958 millibars, and highest on the 20th and 21st, when it exceeded 1,040 millibars in most districts, 1,044 millibars in the Midlands and Eastern England. Though the distribution was of a Northerly type the gradient was so slight that the wind varied considerably in direction.

Rainfall.—By far the greater part of the month's rain was precipitated within the five days 9th to 13th, and it was owing to the continuous downpours of the 11th and 12th that some restricted areas had more than the month's average. The percentage of the average for England East was as high as 125, but all other districts returned a deficiency, several receiving less than 75 per cent., Scotland North 64, England North-West 60, and Scotland West 51. At Little Massingham the total fall was double the average, while at Colmonell it was 38 per cent., and at Fort William 31 per cent.

At 17 stations registering rainfall for the nine hours ending 6 p.m., and the 15 hours to 9 a.m., and nine other stations in equal periods of 12 hours ending 9 p.m. and 9 a.m., the mean hourly rate of fall was the same for each group.

The level of the underground water at Kew varied from 191 cm. above Mean Sea Level on the 1st to 244 cm. on the 25th. At Kings Somborne the water in the well commenced to rise very slowly at the beginning, and continued uninterruptedly at an accelerating rate. Total rise to the 29th 69 cm.

Temperature.—Over the country generally the month was amongst the coldest Novembers on record, in many places the coldest. In the western portions of England and Scotland the mean temperature was more than 6° lower than the average. All parts of the month were cold, the third week severely cold, with the mean temperature in some districts from 10° to 12° under the average. The thermometer in the shade reached its highest level on the 7th, 8th and 12th, when half-a-dozen stations registered 59°. At the other extreme there were numerous very low minima, one or more stations in all the mainland districts sinking below 20°. Thus 13° was registered at Gwernyfed Park on the 28th, 12° at Eskdalemuir and Morecambe on the 17th, 10° at West Linton on the 18th, and 9° at Balmoral on the 30th. On various days in the second half of the month there were many afternoon maxima at or below 32°, at Leamington the maximum was as low as 28° on the 27th.

Sea Surface Water Temperature.—All round our coasts the sea was about 6° warmer than the air on shore. Coast fog was rarely experienced until after the middle of the month, when it became fairly frequent. On land fogs were less frequent than usual for the season. At Belper the mean temperature of the water of the Derwent was 42°, that of the air 37.5°.

Bright Sunshine was in excess in all districts, the percentages of the average ranging from 113 in England East to 179 in England North-West, the latter representing an excess of more than 1½ hour per day.

Aurora was witnessed at various stations on the 1st, 5th, 6th, 7th, 11th, 15th, 16th, 18th and 19th, the display of the 5th and 6th being observed over wide areas.