

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.

AND PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE. To be purchased, either directly or through any Bookseller, from WYMAN AND SONS, LTD., FETTER LANE, E.C.; or H.M. STATIONERY OFFICE (SCOTTISH BRANCH), 23, FORTH STREET, EDINBURGH; or E. PONSONBY, LTD., 116, GRAFTON STREET, DUBLIN; or from the Agencies in the British Colonies and Dependencies, the United States of America and other Foreign Countries of T. FISHER UNWIN, LTD., LONDON, W.C.

FORTIETH YEAR.

Vol. XXXII. (New Series)

} No. XII.

DECEMBER, 1915.

[Price 6d., Post free, 7d.]

A Stormy, Wet Month.

The maps on pp. 123 and 135, which give the paths followed by depressions, exhibit in a very striking manner what may be regarded as a measure of the totally different types of atmospheric conditions which were in the ascendant over the British Isles during the two months November and December, the former dry, cold and with an almost entire absence of unsettled weather, the latter very wet and disturbed to an abnormal degree. It will be recalled that December, 1914, was exceedingly disturbed owing to the arrival of numerous depressions from the Atlantic, but the paths laid down for December, 1915, are nearly 50 per cent. more numerous.

At the close of November the situation off our western coasts began to assume an unsettled appearance, and on the morning of December 1st a depression of moderate intensity, marked A on the map, was moving in across Ireland on an almost due easterly path, traversing England and the North Sea, and reaching Denmark within 24 hours. Thenceforward, through the month, there was an all but unbroken series of disturbances crossing these islands or skirting our coasts, the only brief interval of rest being on the 19th, when an area of high pressure from the Greenland-Iceland region drifted southward and passed on to the Bay of Biscay and the Spanish Peninsula. On this occasion the barometer mounted to 1030 millibars and upwards in all parts of the country, to 1034 millibars in the south-west of England. A slightly higher value, 1035 millibars, was reached on the 13th in the south of Ireland, on the north-eastern border of an anticyclone lying out on the ocean.

With so many depressions, several of them very deep, and most of them of a distinctly windy character, the month was characterised by extremely unstable weather, the wind increasing to the strength of a gale (force 8 and above) on one or more sections of our coasts on at least twenty days, while rain was of daily occurrence and frequently heavy in many localities. The depressions of the first three days produced nothing more than fresh to strong or high winds, but on the 4th a South-Westerly gale was felt on the English Channel, a strong gale (force 9) at Dover, with gusts up to 29 m/s between Scilly and Yarmouth. Heavy rain fell over a great part of England and Wales, 25 mm. and upwards at many stations, 35 mm. at Belper, and 39 to 52 mm. on the slopes of Snowdon. Next day there were further large amounts over about the same region, up to 39 mm. at Darwen and 43 mm. at Bethesda and Abersychan. From the 6th to the 15th was a rough, boisterous period, gales raging every day. On the 6th a whole gale (force 10) from East was experienced in Shetland, and a strong to whole gale from between South and West on the southern and western coasts: gusts exceeding 25 m/s were registered in several localities, up to 29 m/s at Plymouth, and 34 at Pendennis. For a week after this the stormy area was not quite so extensive, but one or more stations had the force of a strong gale each day, from the South-Eastward on the 9th, South-Westward on the 10th, and from between West and North on the 11th and 12th, Blacksod reporting a whole gale from Northward on the 12th. In gusts the wind reached 26 m/s at Quilty on the 9th; 27 m/s at Weaver Point on the 10th; 30 m/s at Southport on the 11th; and 28 m/s at Quilty on the 12th. Though rain was general and in considerable quantities during this period, large amounts were by no means numerous, but on the 9th Princetown measured 45 mm., and Snowdonia 53 to 63 mm.; next day Castlebay 36 mm., and Gruline (Mull) 57 mm. Between the 9th and the 13th, with the wind veering to the northward of West, snow fell in various districts, but the greatest depths noted were 10 cm. at Meltham on the 9th, at Harrogate on the 10th, and at Carnforth on the 11th. The more moderate local gale between the 13th and 15th brought some very heavy rainfalls to southern England, 48 mm. at Falmouth, Redruth, and Dorchester, 50 mm. at Tavistock, 79 mm. at Sheepstor, and 100 mm. at Princetown.

A few days of much quieter and drier conditions followed until after the passing of the anticyclone of the 19th, when there came a renewal of the unsettled type, which lasted through the remainder of the month and into the New Year. From the 20th onward heavy rains and from the 22nd gales were experienced every day. The rainstorms of the 20th and 21st were heaviest about Snowdon, between 28 and 49 mm. each day. With the appearance of a depression off Ireland on the 22nd stormy conditions were resumed, a strong South-Westerly gale being felt in Kerry on that date, gusts of 31 m/s at Plymouth, 32 at Quilty, 34 at Pendennis, and 36 m/s at Weaver Point. On the next day the north-east of Scotland experienced a strong South-Easterly gale, which lasted 31 hours at Wick, and a whole gale at Lerwick, lasting 51 hours, until the morning of the 25th; while a gale of less strength was recorded on various coasts into the following day. The heavy rainstorms of this period were found for the most part in the highest elevations of Wales and Devon, but on the 23rd and 26th there were falls of 25 to 30 mm. along the south coast of England.

In the report for November delete reference to Balmoral temperature on November 30th;—paragraph referring to temperature.

A deep system which had occasioned rough weather at the Azores arrived on the Irish coast on the morning of the 27th, and advancing at about 30 miles an hour crossed Denmark next morning. Its progress across this country was marked by the most destructive gale of the month, a strong to whole South-Westerly gale raging over England generally, and locally in Ireland, with very violent squalls, which attained a velocity of 29 m/s at Gorleston, 30 at Shoeburyness and Warringham, 39 at Plymouth, and 40 m/s at Scilly and Pendennis. The heaviest rain was in North Wales, 51 mm. at Bethesda, and up to 75 mm. at Snowdon stations. There was widespread structural damage, trees uprooted, 1,000 blown down about Lampeter, and telegraphic and telephonic communication interrupted. On the 29th a strong gale from between South and East visited Ireland and the south-west quarter of England. The closing day witnessed the commencement of another general gale, which reached its greatest strength on the opening day of the New Year. There were heavy rains in the west on the 31st, up to 45 mm. at Killarney, and 66 mm. on Snowdon. On at least 10 days in the month the disturbed weather was marked by thunderstorms in various districts, most widespread on the 1st and 31st.

Barometric Pressure.—The mean pressure for the month was everywhere considerably below the normal, by more than 10 millibars in most places, 13 millibars at Birr Castle and Valencia, ranging to 2 millibars in Shetland. The distribution therefore, differed from the usual Westerly to South-Westerly type, the results in the north favouring a South-East to East gradient. The nearest resemblance to the present distribution occurred in December, 1896 and 1907. There was a total range of pressure of 68 millibars, from 1035 millibars on the 13th to 967 millibars on the 24th, both in the South of Ireland. Between these limits the oscillations were not only frequent but sometimes very large. At midnight on the 11th there was an extraordinary, almost instantaneous rise of 7 millibars at Blacksod, and on the 22nd a rise of 6 millibars in an hour at Valencia.

Rainfall.—The frequency of precipitation was very high, from 25 to 27 days in nearly all districts. In the north of Scotland the total fall was 95 per cent. of the average, but elsewhere there was a large excess, from 125 per cent. in Scotland West, and 137 in Ireland South to 232 in England North-East, and 269 per cent. in the South-East. At individual stations the amounts ranged from 62 per cent. at Fort William to more than 300 per cent. on the Eastern half of the South Coast, 346 at Totland Bay, and 351 per cent. at Worthing. At Princetown the total was 541 mm. and at Pen-y-gwryd 689 mm. At Southport, with 164 mm., it was the wettest December in 45 years.

A comparison of the day and night rainfalls shows no material difference in the mean hourly rate, the 9 hours and 12 hours day yielding respectively 6.3 and 6.6 mm., and the 15 hours and 12 hours night respectively 6.6 and 6.9 mm.

The variation in the level of the underground water at Kew varied from 232 cm. above Mean Sea Level on the 2nd to 436 cm. on the 9th. The accuracy of the latter value and its significance were affected by the extension of flood water associated with an exceptionally high tide in the river.

Temperature.—The mean temperature showed considerable variation, from a deficiency of 2° F. in Scotland North to an excess of nearly 3° F. in England East and South-East. High day readings were registered frequently, 55° to 58° on several occasions, but there were a few odd days on which the maxima in some localities were near the freezing point, as low as 28° at Nairn on the 4th. The disturbed weather did not favour spells of cold so that the frosts registered were of a fleeting character, the lowest shade values being in Scotland on the 4th and 5th, 8° at Balmoral, 9° at Kingussie, and 10° at Braemar.

Sea Surface Water Temperature.—The sea water on all our coasts was warmer than the air over the adjacent land, by about 1° along the south and east of England, 3° in the Irish Sea, and 5° off Orkney. Coast fog was rather frequent in the west, and affected many localities on the 2nd, 5th, 9th, 10th, 27th and 29th. At Belper the mean temperature of the water of the Derwent was 42°·3, that of the air 40°·3.

Bright Sunshine equalled the average in Scotland West, but was deficient elsewhere, only 61 per cent. of the normal in Scotland East.

Aurora.—There was a very extensive display of aurora on the 6th, extending down to the south of England and of Ireland. At Dyce it was "magnificent," and at Gruline "wonderful." A local display was seen at Belyoir Castle on the 14th, Seskin on the 16th, Stornoway on the 28th, and Gordon Castle on the 31st. At Eskdalemuir, on the 30th, there was a brilliant flash of light which suddenly lit up the whole country for three or four seconds, as if by a searchlight.