

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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**Cold ; Dry North and West ; Rain and Snowstorms South and East ;
few but destructive gales.**

The period under review was characterised by conditions of a most remarkable type, the like of which has been but rarely witnessed at this season of the year. In the series of maps exhibiting the distribution of atmospheric pressure over the British Isles, published in the Monthly Weather Report from 1888 onward, the only March resembling that of 1916 was that of 1909. There were, however, very wide differences between some of the elements, such as sunshine and temperature, in the two months. March, 1916, has proved unusually dull over practically the whole country; cold everywhere; very wet over nearly the whole of England and eastern Scotland, and fairly dry elsewhere; there was a very striking absence of wind storms until nearly the close, though the general situation was continuously disturbed and threatening.

On the morning of February 20th a depression made its appearance beyond our south-western coasts, and thenceforward until March 24, a period of close upon five weeks, as will be seen from the maps showing the movement of depressions during February and March (pp. 15 and 27), low-pressure areas were in evidence daily in the region between the south of Ireland and Spain and eastward across southern England and France, while the barometer was relatively high over the north-eastern quarter of the Atlantic, and thence across to Scandinavia and Northern Russia. Within the limited space, having the English Channel for its centre, the disturbances during this long period wandered hither and thither on most irregular courses, which, as laid down on the maps, present a complicated tangle of lines. The general distribution of pressure under these circumstances was wholly in favour of winds from between North and East, and occasionally from the South-East quarter. Nevertheless throughout this period the whole country escaped anything in the nature of wind storms. Fresh to strong or high winds were common enough, but it is an interesting fact that from February 25 to March 24 the only instance of gale force (Beaufort scale 8) being attained at the Daily Weather Report Stations occurred at Eskdalemuir on the 8th and at Holyhead at 1 a.m. on March 13, when the anemometer registered a mean velocity of 18 m/s for one hour, with an extreme gust velocity of 23 m/s. This unusual immunity from gales is confirmed by anemometrical records elsewhere, in most cases the strongest gusts registered barely reaching the lowest limit of gale velocity. But while the North-East wind was thus unusually moderate, its qualities in other respects were also abnormal. Over nearly the whole of England and eastern Scotland there was an entire absence of the dry, rasping wind usually associated with the season, the entire period being marked by perpetual raw dampness, falls of chilly rain, hail, or snow were uncommonly frequent, and there was a very large deficiency of sunshine. However, though precipitation was so persistent, there was a surprising absence of heavy falls on individual days. Few stations registered 20 mm. of rain, melted snow or hail in 24 hours, and the only instances exceeding 25 mm. (1 in.) were, on March 7, Ramsgate and Warlingham 26 mm., Dover Waterworks 27 mm., and Princetown 29 mm.; on the 19th, Ynis-y-fro 29 mm.; and on the 21st, Wantage 27 mm. It was on account of the great frequency of rain that the aggregate totals for this period were from twice to three times the average over extensive regions. On the other hand, northern and western Scotland received only about one-third of the normal, and many parts of Ireland from one-half to two-thirds. At Carrigallen, Leitrim, no rain fell during the first thirteen days of March, and various other stations had only showers on one or two days. Thunderstorms occurred in Dorset on March 1, in Cornwall and Devon on the 9th, in the Channel Islands on the 12th and 14th, and in south-eastern England on the 13th and 14th.

A great change in pressure distribution occurred on the morning of the 25th. A deep depression (N. on the map) approached the Hebrides, and following an east and north-east course reached northern Norway on the 28th. It was the deepest disturbance of the month, the barometer descending to 965 millibars at Stornoway on the evening of the 25th. The wind shifted Southerly and rose to a gale on several coasts, a strong gale (force 9) from West at Holyhead and Donaghadee, South-West at Castlebay and Nottingham, and a whole gale (force 10) from South-East at Lerwick, gusts of 26 m/s being registered at Rosyth, 27 m/s at Paisley and QUILTY, and 28 m/s at Eskdalemuir and Southport. The wind veered into the North-West quarter on the 26th, a strong gale being felt at Holyhead and Malin Head, the heaviest squalls being 30 m/s at Paisley and Rosyth, and 31 m/s at Southport. There were a few sporadic thunderstorms on the 25th and 26th.

As this system neared the Norwegian coast on the morning of the 27th, another (track P) was indicated approaching Scilly. The depression was small and deep (969 millibars at Portland Bill), and developed great violence as it crossed southern England, accompanied by heavy rain and severe snowstorms. On the evening of the 27th the centre was over Penzance and a severe gale was raging over a wide area, a mean hourly velocity of 24 m/s and gusts of 33 m/s being registered at Scilly.

The rain and snow yielded 25 mm. and upwards of water at very numerous stations, 40 mm. at Newquay, 41 mm. at Scilly and Ashburton, 45 mm. at Falmouth, 47 mm. at Newchurch, and 49 mm. at Penzance. There was extensive damage to trees, telegraph poles, and wires, roads and railways being blocked. In Guernsey nearly 100 greenhouses were wrecked. The gale subsided on the morning of the 28th, but towards evening, when the centre was crossing the Thames Valley, a violent Northerly storm burst over southern England, accompanied by a blizzard of snow. Several stations reported a strong gale, Nottingham and Lerwick a whole gale. In squalls the velocity attained 31 m/s at Aberdeen, Benson, and Spurn Head, 32 m/s at Kew Observatory, the highest gust since records started in 1895, 34 m/s at Gorleston, and 38 m/s at Dover. Vast numbers of trees were uprooted, 95 in Kensington Gardens alone. There was further extensive destruction of telegraph poles and wires, and railway traffic was completely disorganised for some days. Generally, the snowfall was not heavy, but in the east Midlands and eastern counties there were some large falls, yielding 47 mm. of water at Oundle, and 49 mm. at Mareham-le-Fen. With the passing of this storm the conditions became much quieter.

Air Pressure.—The mean pressure for the month, map 1, shows a complete reversal of the normal conditions, the lowest values being on the English Channel, and the highest off the north of Scotland, thus indicating the overwhelming prevalence of North-Easterly winds. The extreme range was 61 millibars at Stornoway, and 63 millibars at Portland Bill.

Temperature.—A persistently cold month in all districts. Though maxima as high as 288°·5 A. (60° F.) and 289° A. (61° F.) occurred at a few stations between the 16th and the 20th, and on the 31st, readings above 283° A. (50° F.) were rarely recorded, while values below 277°·5 A. (40° F.) were exceptionally numerous, on as many as 21 days, even at Scilly. The nights were less cold relatively, minima below 269° A. (25° F.) being uncommon, though on the 24th Scaleby dropped to 262°·5 A. (13° F.), and Newton Rigg to 259°·5 A. (8° F.). For the month the deficiency ranged from 1°·3 A. (2°·3 F.) in England, East and South-East, to 2°·4 A. (4°·3 F.) in Scotland, East.

Sea Surface Temperature and Coastal Fog.—The sea was everywhere warmer than the air on shore, the excess being as 3° to 4° A. (5° to 7° F.) in the south-west. Fog, in several localities dense, was unusually prevalent between the 13th and 21st on the English Channel and the east coasts of England and Ireland. At Belper the temperature of the River Derwent was 278°·4 A. (41°·8 F.), and of the air 275°·7 A. (36°·8 F.).

Rainfall.—Precipitation was more than double the average over England South-East, East, and Midlands, several stations exceeding 300 per cent., Oxford 336 per cent. At Greenwich the total fall, 104 mm., was the largest for March from 1841, the nearest approach being 103 mm. in March, 1851. Scotland North and Ireland North had only 61 per cent., and Scotland West 43 per cent., individual stations ranging down to 32 per cent. at Fort William and Colmonell. The records at 28 stations show no appreciable difference in the mean hourly rate by day and night of fall of rain. At Kew the underground water level varied from 351 cm. above M.S.L. on the 1st to 469 cm. on the 23rd. Considerable flooding of the Old Deer Park on the north-west and east sides of the Observatory occurred on the 21st to 23rd March.

Snowstorms.—Much of the snow was so wet, and dissolved so rapidly, that most of the depths registered gave no clue to the quantity that fell. Amounts exceeding 10 cm. (4 in.) on any day were exceptional in consequence. On the 9th, Sheepstor had 31 cm.; 13th, Marchmont 28 cm.; 27th, Edgbaston 27 cm.; and 29th, Ardross 38 cm. (accumulation). In places the drifts were 1½ to 3 and even 6 metres deep. The Sheepstor observer, writing on April 6th, stated: "From February 21st to March 27th, inclusive, Dartmoor has been visited by the most tremendous snowstorms since March, 1891. The moormen say that more snow has fallen than at any time since January, 1881, but it has taken a month to come down. In 1891 it all came down in about three days. Drifts of 8 feet this March were very common, some places 15 feet to 20 feet. Snow lay on the ground six weeks, and there are still patches." Owing to the sodden state of the soil in the wet regions, many observers noted the complete suspension of agricultural work.

Bright Sunshine.—An exceptionally dull month all round, the deficiency of insolation from normal amounting to more than two hours per day in various parts of England. Whitworth Park, Manchester, averaged only 0·8 hour per day, and many places returned less than 2 hours, while Castlebay and Scilly had 4 hours per day.

Aurora.—Aurora was seen in several parts of Scotland on the 3rd, 5th and 6th, at Donaghadee, Kirkcaldy, Paisley, and Eskdalemuir on the 24th, at Holyhead and Seskin on the 25th, at South Kensington on the 28th, and at Benson on the 29th.