

MONTHLY WEATHER REPORT OF THE METEOROLOGICAL OFFICE.

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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Exceedingly Cold, with frequent Snow and Hail.

Except for some mild days between the 17th and 20th and between the 23rd and 25th, the month's temperature was persistently below the normal, its general character being exceedingly cold but, for the most part, dry. Snow, sleet, hail, and rain showers were very frequent, but only occasionally was the precipitation large. Fogs were remarkably rare for November, though there were many, sunless days, no sunshine being recorded at some of the eastern stations from the 3rd to 10th. High winds and gales also were rare, the only gale of a general character being that of the 23rd. Ground frosts, accompanied on many occasions by copious deposits of hoar frost, were numerous, and on several nights round about the 13th were very severe. From the 11th to 16th the weather was unprecedentedly cold for the time of year, and a frost which occurred during this period was experienced all over the British Isles, many of the temperatures reported being lower than any recorded during November during at least fifty years. Snow fell frequently during these six days, and in some parts of the country interfered greatly with traffic by road and rail.

In Scotland the month was decidedly colder than an average January, and, judged by its mean temperature, it was the coldest November on record, being approached only by 1910 and 1915. After moderate snowfalls in various localities from the 8th to 11th, a severe snowstorm became general on the 12th, the snow lying to a depth of 17 in. at Balmoral and from 6 to 8 in. at Edinburgh, snow at the former station lying on the ground continuously from the 8th to 30th. Between the 14th and 16th a dense fog occurred in the Clyde area and elsewhere.

The following notes supplied by observers illustrate the general character of the month:—*Copdock, Ipswich*.—The mean temperature of the month was the lowest for November at this station, but the average minimum temperature was lower in 1910. The first ten days were gloomy and sunless, this being the longest period in November without sunshine hitherto recorded. Light winds again prevailed throughout the month, and there was not much fog until the last few days. *Belper, Derby*.—The total rainfall for the month (55 mm.) was 18 mm. below the normal, being the eighth month in succession with a deficiency of precipitation. The mean temperature, 275.7a, was the lowest in November during 43 years. *Ross, Hereford*.—A dull, cold month, with slight but frequent rainfall. Structural damage was caused by a violent gale during the night of the 23rd-24th. The river Wye continued at a very low level until the closing days of the month, and the town water supply was restricted. On the morning of the 20th, following on the freezing of a melted snowfall, there was a fine example of glazed frost. *Totland Bay, Isle of Wight*.—The mean maximum temperature for the month was 280.3a, the lowest for November during thirty-four years. There has not been any snow here this autumn. Out of thirty apple trees in my garden, seven were in bloom on the 30th. Fuchsia bushes in the open were covered with bloom until the 20th, and sweet-peas until the 12th. For the three months, September to October, the total rainfall was 114 mm., and only once have I recorded as little for this period, namely, 112 mm. in 1897. *Southport, Lancs*.—During the month there was a greater frequency of winds from the North-East than in any previous November during forty-eight years. *Sheepstor, Devon*.—On the 14th the minimum temperature was 263a, and 259a on the snow, and only once have I had lower readings than these, namely, 261a in the screen and 256a. on the snow in 1912, on February 3rd. A great quantity of snow fell during the morning of the 16th (30 mm.), and was at least a foot deep on the higher parts of Dartmoor. *Dublin, Fitzwilliam Square*.—A cold, cloudy, unsettled month. The mean temperature was 3.1a below the normal, and only 0.1a above the very cold November in 1915, and only 1.0a in excess of the record lowest November temperature in 1878. The precipitation was mainly in the form of hail and snow.

Air Pressure.—As shown by the map on p. 123, the mean monthly trend of the isobars was considerably from the North of West instead of from the South of West, as in a normal November. The monthly means of pressure were lower than usual, but the gradient was about normal. From the 1st to 7th the air pressure was highest over the regions to the North of the British Isles and lowest over those to the South. During this period low-pressure systems formed from time to time, one of which, during the night of the 1st-2nd, caused a gale of exceptional violence in the Straits of Dover, and three vessels were lost on the Goodwin Sands. Hail, snow, and sleet fell at times, but the precipitation was not large. On the 8th, at 7h., a complicated area of low pressure lay over the British Isles, and a depression which at the same time formed over the North Sea (track D) caused much rain and sleet in Scotland and a gale in the Shetlands. This depression

moved first in a westerly and then in a south-westerly direction, until on the morning of the 9th it was centred over the North-West of Ireland, its movements being associated with gales and snow in the North of Scotland. On the 11th a secondary passed across Scotland (track E), and was accompanied by snow and hail showers and by thunderstorms in the North-East of England. During the next few days the weather of the British Isles was mainly dominated by a large depression which travelled North-Eastwards from the Azores (track F), an unusually low temperature and snow showers being very general at British stations on its northern edge. Commonly the lowest temperatures of the month occurred during this period. At 7h. on the 17th a deep depression was centred over Iceland (track G), and secondaries to this system passing across the British Isles brought much rain and a brisk rise in the temperature, these milder and rainy conditions being maintained until the 20th. Thereafter the weather again became cold, and so continued with showers of snow, sleet, and hail in most localities until the 23rd. During this day, under the influence of a brisk increase in pressure at the rear of a depression moving North-Eastwards over Scandinavia, the winds over the British Isles freshened from between South and West, and milder weather, with temperatures much above the normal, became general, the 23rd very commonly being the warmest day of the month. At 7h. on the 24th a large and deep depression moving Eastwards from Iceland (track H) was shown on the weather map, and a secondary to this system moving very rapidly Eastwards across the British Isles increased the wind in many places to gale force, with line squalls at some of the northern stations. During the 26th to 28th a belt of low pressure covered the British Isles, and showers of sleet or hail, and thunderstorms locally, were common. On the 29th a low-pressure centre developed to the South of Ireland, which moving Eastwards to Southern England increased in intensity and caused snow in the Midlands and a South-West gale in the English Channel. Under the influence of a depression moving Eastwards from the Atlantic, the last day of the month, following a very cold night, was rainy and mild.

Temperature.—The mean monthly temperature was below the normal in all Districts, the deficiency ranging from 3.6a in Scotland E. to 2.5a in the English Channel. This deficiency was largely due to the very low temperature recorded during the week ended on the 15th, when the following large deviations from the normal occurred:—Balmoral -10.3a, Fort Augustus -8.3a, Strathpeffer and West Linton -7.7a, Birr Castle -7.4a, Killarney -7.3a, Valencia Observatory -6.7a, Aspatria -7.1a, and Ventnor -6.3a. In Scotland some remarkably low minimum readings occurred during the night of the 13th-14th, when Braemar registered 250a, Perth 251a, Balmoral and West Linton 252a, and Kettins 254a. At Valencia Observatory a minimum of 269a was recorded on the 12th, the lowest ever recorded at this station in November. The highest of the daily maxima were 290a at Killarney on the 23rd, and 289a at several stations on the 22nd and 23rd.

Precipitation.—The month's precipitation was largely made up of snow, sleet, and hail, the monthly aggregates being due more to the frequency of the rain-days than to either individual wetness. At Baltasound and Deerness there were 28 days, and at numerous stations in the North-East of England there were 27. Falls of more than 25 mm. in a day were not numerous, the heaviest being 44 mm. at Kirkcaldy on the 23rd and 37 mm. at Keswick on the 17th. The month's total was 48 mm. more than the normal in Scotland E.; in Scotland N., and England N.E., and also in the English Channel the amount was in excess, but in all other Districts there was a deficiency, in Ireland S. as much as 44 mm.

Sunshine.—The mean daily amount of sunshine was slightly more than the normal in Scotland and Ireland, and rather less over England and the Channel. Ireland S. was easily the sunniest District with 2.75 hr. per day, and the Midland Counties, 1.25 hr., the dullest.

Optical Phenomena.—Solar halos were observed in various parts of Great Britain on different days—at Oxford on as many as seven occasions, while during the first week lunar halos were frequent. At Oxford on the 19th, 20th, and 22nd the zodiacal light was seen.

Aurora.—There were displays of aurora in the Orkneys on the 16th, 17th, 20th, and 21st; on the 16th it was also seen at Aberdeen.

