

## 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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## Cool and changeable; frequent thunderstorms; heavy and general fall of rain on 16th.

Some explanation of the causes which led to the extremely changeable weather of July is afforded by an examination of Map 2 in the Plate shown on page 75. It will be seen that in the course of the month the British Islands were visited by an unusually large number of cyclonic disturbances, the centres passing in most cases in a north-easterly course directly across the country. The depressions were as a rule too shallow to produce any serious increase in the strength of the wind, but in four instances a very considerable freshening occurred. On the 7th, when one of the baric minima travelled across England, the force in gusts exceeded 20 m/s in several localities, a velocity of 27 m/s being recorded from the South-Westward at Pendennis Castle (Falmouth), Plymouth and Shoeburyness, and a velocity of 26 m/s from the North-Westward at Scilly. Winds of almost equal strength were observed on the 16th and 17th during the passage across the country of a depression which proved the deepest of the whole month. On this occasion the maximum force appears to have occurred with the Northerly and North Westerly winds which blew in the rear of the disturbance, a gust of 23 m/s being recorded at Dover and Shoeburyness, 24 m/s at Brighton, and 26 m/s at Plymouth. A striking feature in connection with the progress of this depression was the excessively heavy fall of rain which occurred on the 16th over practically the whole of England and Wales. At a very large number of stations situated in nearly all districts the measurement amounted to more than 30 mm., and at many places in the west and south-west to between 40 and 50 mm. At Kingston-on-Soar as much as 72 mm. was registered, at Lichfield 73 mm., at Barrow-on-Soar 79 mm., and at Rugeley 80 mm. Thunderstorms were experienced on the same day at various places in the south and east of Ireland, and were accompanied by heavy rain in the Dublin district (26 mm. at Fitzwilliam Square and 29 mm. at Kingstown). Another decided increase of wind took place on the 20th. In this case the centre of the disturbance skirted the north of Scotland, and the wind blew in gusts from the South-Westward with a velocity of 21 m/s at Paisley and Holyhead, 23 m/s at Southport, and 24 m/s at Quilty, Co. Clare. Yet another freshening occurred on the 27th during the passage of a depression directly across our northern districts, gusts from the Westward or South-Westward reaching a velocity of 20 m/s at Pendennis, and 23 m/s at Plymouth.

**Barometer.**—The mean pressure ranged from 1,016 millibars in the Channel Isles and 1,014 millibars and upwards along the South coast of England, to about 1,008 millibars in Shetland and the Hebrides. The distribution over the country generally agreed very closely with the normal, but the actual values were in nearly all cases slightly below the average. The highest pressures were recorded over Great Britain on the 1st or 2nd, when the barometer rose to between 1,020 millibars and 1,025 millibars in all districts, and reached 1,027 millibars in England S.W. In Ireland the highest readings (about 1,025 millibars) were recorded on the 9th. The lowest readings occurred mostly during the passage of the deep depression of the 16th and 17th, the barometer falling to 990 millibars or less in several parts of England, and reaching 986 millibars in England N.E. Owing to the rarity of anticyclonic conditions and the consequent absence of any very high readings the extreme range of pressure for the month was somewhat small.

**Thunderstorms and Heavy Rains.**—Irrespective of the downpour which occurred on the 16th most of the heavy falls of rain observed during the month were associated with thunderstorms, often of considerable severity. In a few instances, however, the rain appears to have been unaccompanied by any electrical disturbance. Thus on the 2nd a fall of 22 mm. occurred at Dublin, 25 mm. in the neighbourhood of Limerick, and between 30 and 45 mm. in the Snowdon district. On the 6th the rains in Ireland and some neighbouring parts of England yielded 32 mm. at Egremont, 35 mm. at Ballinacurra, 40 mm. at St. Ives and 43 mm. at Dunmanway (Co. Cork); while on the 7th another heavy fall occurred around Snowdon, and also in the Aberdeen district. On the 22nd a considerable fall was recorded in the Channel Islands and the south of England, and, locally, in Ireland, 31 mm. at Isleworth and at Donaghadee, 32 mm. at Creech Grange, Dorset, and 40 mm. at Guernsey; and on the 31st Ireland was visited by a downpour yielding as much as 35 mm. at Shankhill (Co. Dublin), 40 mm. at Kingstown, and 48 mm. at Newcastle (Co. Wicklow). The heavy rains which occurred during the prevalence of thunderstorms were too numerous to admit of individual notice. The principal dates affected were:—(1) July 4th, over nearly the whole of England and Wales, the accompanying rainfall amounting to between 25 mm. and 35 mm. in many places, to 39 mm. at Claypole, 44 mm. at Hull, 48 mm. at Llangammarch Wells and 65 mm. at Skegness. At several stations in the west and south-west of England an exceedingly heavy and destructive hailstorm was experienced; at Shipham, in

Somerset, some of the stones were as much as 5½ ins. in circumference, and at Winscombe and Axbridge they are reported to have been as large as hen's eggs. (2) July 6th and 7th, mainly over the southern half of England; the rainfall on the former day amounting to 27 mm. at Kew and 35 mm. at Isleworth. (3) Between the 23rd and 29th, when storms occurred daily over a portion of the country. On the 23rd as much as 47 mm. of rain fell at Middlesbrough between 2.45 p.m. and 4 p.m.; on the 25th 26 mm. was measured at Kings town, and on the 27th 26 mm. was recorded at Manchester (Whitworth Park), 27 mm. at Morpeth (Cockle Park), and 35 mm. at Hovingham, Yorks. Observations made during the 25 years ended 1905 show that the average number of thunderstorms in July, although larger than in any other month, amounts to less than 2 in nearly all the Scotch and Irish districts, and exceeds 4 only at a few scattered places in the eastern and midland counties of England. During the month under review a large number of stations both in England and Scotland experienced at least 5 or 6 storms, Rounton, Norwich, Spurn Head and Rugby as many as 9, Skegness 10 and Geldeston 11. Owing mainly to the heavy accompanying rainfall the total precipitation for the month was largely in excess of the average in many parts of England and Ireland. In what are regarded as normally the driest portions of the country the aggregate fall was in many instances above 100 mm. and in a few scattered localities it exceeded 125 mm. Several stations in the midland and northern counties of England recorded more than twice as much as the average quantity, the percentage being as high as 232 at Hull, 242 at Birmingham, and 248 at Coventry. In the wetter portions of the country total amounts exceeding 150 mm. were common, the highest values shown in the accompanying tables being 276 mm. at Pen-y-Gwryd, 212 mm. at Llangammarch Wells, 196 mm. at Leadhills (Lanarkshire), 193 mm. at Kingstown, 189 mm. at Egremont, 177 mm. at Buxton, and 175 mm. at Rugeley and Kingston-on-Soar. On the Kentish coast and at a few of the Scotch stations the total rainfall was slightly below the average.

The level of the underground water at Kew varied between 221 cm. above M.S.L. on the 1st and 209 cm. on the 25th.

**Temperature.**—In the opening week the thermometer was mostly above its average level, the highest readings occurring on the 3rd or 4th, when maxima of 80° and upwards were observed in many parts of our eastern, midland and southern counties. In the Stevenson's screen the highest values reported were 84° at Kew and South Kensington, and 83° at several stations in Kent, Surrey, and Essex. In a Glaisher screen the thermometer rose to 86° at Camden Square and to 87° at Greenwich. During the remainder of the month the thermometer seldom rose to 75° in any district and on or about the 8th, 11th, and 16th there were many places, even in the warmer parts of the country, in which it did not reach 65°. The lowest readings were observed at various times, mostly between the 12th and 14th, or at some time during the closing week. At many inland stations the sheltered thermometer fell below 40°, the lowest readings reported being 34° at Braemar, West Linton, Garforth, and Markree Castle, 35° at Lednathie and Eskdalemuir, and 36° at Kingussie, Glen, Peebleshire, and Wolfelee. At nearly all stations the mean temperature of the month was below the average.

The mean temperature of the water of the river Derwent at Belper was 59°·2, and the mean temperature of the air 57°·6. The air was warmer than in June, but the water was much cooler, and the difference between the two readings was in consequence only half as great.

**Coastal Fogs** were rather general on our western coasts on the 2nd and 3rd, and again on the 22nd.

**Bright Sunshine.**—At a large majority of the stations the duration was below the average. The deficit varied greatly in extent, however, in different localities. At some places in the eastern, midland and north-western counties of England the deficit amounted to at least one hour per day, and at Cirencester to nearly an hour and three-quarters. The mean daily duration ranged from about 9 hours in the Channel Islands, and 7 hours and upwards along the south coast of England generally to 4 hours and less in the north of Scotland and in inland parts of northern Ireland. The highest individual records were 8·7 to 9 hours per day (56 to 58% of the possible amount) at Jersey and Guernsey, 8 hours (51%) at Eastbourne, and 7·8 at Sandown and Selsey Bill; the lowest were 2·5 hours per day (only 15% of the possible) at Inverness, 3·1 hours at Fort Augustus and Crathes, and 3·2 hours at Fulbeck.