

FOR OFFICIAL USE.
MONTHLY WEATHER REPORT OF THE METEOROLOGICAL OFFICE.
(Supplement to the Weekly Weather Report.)

SUMMARY OF OBSERVATIONS COMPILED FROM RETURNS OF OFFICIAL STATIONS AND VOLUNTEER OBSERVERS IN THE UNITED KINGDOM, WITH
A CHART OF RAINFALL CONTRIBUTED BY THE BRITISH RAINFALL ORGANISATION.
ISSUED BY THE AUTHORITY OF THE METEOROLOGICAL COMMITTEE.
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SUMMARY OF OBSERVATIONS.

Pressure, Winds and Weather.—The severe drought experienced over the British Isles during April, and the marked deficiency in the rainfall of May have been succeeded by an unusually changeable and unsettled type of atmospheric conditions throughout the month of June. From the beginning to the end no areas of high pressure visited this country, the centres of maximum pressures which came within the limits of observation being found about the Azores, Iceland, and occasionally over various parts of the European Continent. Between those situated near the Azores and Iceland there was a belt of low pressure, and this formed a path along which there was an uninterrupted procession of disturbances, moving eastward from the neighbourhood of Newfoundland towards our own coasts, and in a few instances towards the Bay of Biscay, as illustrated in Map 2 on page LXV. On arriving in the vicinity of our coasts the lines of progression became very irregular. A feature of these cyclonic systems as they moved across this country was their shallowness, the barometer rarely passing below 29·5 in. The deepest depression arrived off the Irish coast on the 3rd, and on that and on the following day the mercury dropped below 29·4 in. over Ireland and England, to 29·32 in. at Portland Bill, and 29·33 in. at Newquay, the system afterwards filling up slowly. During the passage of a small depression across Shetland on the 20th, the barometer went down to 29·46 in. at Lerwick, and on the approach of a disturbance towards the Hebrides on the 25th, a reading of 29·44 in. was recorded at Castlebay. In the other depressions the readings were above 29·5 in., in some instances well above this point. As there was a complete absence of anticyclones over the country barometric values above 30 in. were uncommonly rare, this level not being attained at a number of stations in Scotland and Ireland. Only in the extreme south of England did the mercury rise above 30·1 in., on the 20th and 26th or 27th. Jersey reported 30·22 in. on the 20th and 26th, no other station mounting as high as 30·2 in.

From these particulars it will be gathered that the extreme range of pressure was exceptionally small, only 0·9 in. for the entire Kingdom. At individual stations in the south of England the range was a little over $\frac{1}{2}$ in., but in the north of Scotland it was rather less than $\frac{1}{2}$ in. Although the disturbances were not deep, there were so many of them that in the absence of high pressure areas the mean barometric values for the month were everywhere well below the normal, the smallest deficiency being 0·12 in. at Jersey, and 0·13 in. at Lerwick, while Blacksod Point and Malin Head were 0·24 in., and Birr Castle 0·25 in. lower than usual. The distribution of the mean values shows an area of minimum pressure, below 29·75 in., over northern Ireland, the southern Hebrides and out over the Atlantic, a belt of values below 29·8 in. extending eastward to southern Sweden. Northward pressure increased to nearly 30 in. along the north coast of Iceland, and south-westward to nearly 30·4 in. at the Azores. Over the southern half of the British Isles therefore the gradient was in favour of a prevalence of Southerly to Westerly breezes, and in the north from between East and North. It will be inferred from the very small range of pressure during the period that the gradient was never steep, and this is confirmed by the fact that the wind seldom exceeded the force of a strong breeze. At the telegraphic reporting stations the only instances of a gale (force 8) were on the 15th, from North-West at Spurn Head, and West at Jersey, and on the 25th, from South at Roche's Point and Portland Bill. The anemometrical registers disclose few gusts in which the velocity exceeded a rate of more than 40 miles per hour, the strongest gusts occurring at Pendennis Castle, 59 miles an hour on the 3rd, and 58 miles on the 25th.

But while the month was thus so very free from high winds and gales the weather itself was of the most disturbed character. There was not a day without the weather being under the influence of one or more of the numerous cyclonic systems, which were right over the country or in the immediate neighbourhood. Rain and thunderstorms were in consequence abnormally frequent in nearly every locality, there being only one day, the 15th, on which there was no record of a thunderstorm at any station, and only one day, the 20th, on which there was not a record of as much as $\frac{1}{4}$ in. of rain. The unusual frequency of thunderstorms is well illustrated by the fact that they occurred on 10 days at Nottingham, Darwen, Ruthwell, and Markree Castle, on 11 days at Mayfield, on 12 days at Raunds and Worksop, on 13 days at Belvoir Castle, and on 14 days at Stonyhurst.

The shallow disturbance lying over the country on the 1st was attended by thunderstorms at numerous stations in England, and at several places in the southern districts of Scotland and Ireland, but though rain was general, accompanied by hail locally, nowhere did the fall exceed an inch. During the next six days the storms were of a more sporadic character, and for the most part affected England. There were, however, heavy rains daily, as a

rule not associated with the electrical storms. On the 2nd the falls ranged up to 1·3 in. at Salcombe, Princetown and Ardnadam, and 1·4 in. at Woolacombe and Port Talbot. Amounts just over an inch were measured on the 3rd and 4th. On the latter day snow fell in the upper levels of Snowdon. Next day Harrogate had 1·4 in., and on the 6th Port Talbot had another 1·2 in. The 7th was a very wet day over Southern England, although there was scarcely any change in the distribution of pressure. Records of $\frac{3}{4}$ in. of rain and upwards were widely distributed. This day witnessed the commencement of a thundery period in Ireland, at a few southern places at first, but on the 8th the storms were spreading northward and becoming very violent and destructive. The storm area extended eastward also to Wales and western England. At Kilkenny where damage was caused by lightning, the rainfall was 1·5 in., and at Newtownforbes, out of $\frac{3}{4}$ in. of rain and hail, $\frac{1}{2}$ in. fell within a quarter of an hour. There were snow showers at Penygwryd (Snowdonia) on this and the two following days.

More thunderstorms were reported on the 9th than on any other day, all parts of England being affected, and many districts in Ireland. Hail fell at a considerable number of places, and at Collooney, near Markree Castle, the hail was 3 in. deep, a portion of the village being swept by rectangular pieces of clear ice, which caused great havoc in the gardens. Not much less extensive was the region covered by the storms of the following day, hail again causing a good deal of damage, and the torrential rain in the North of Ireland laid wide areas of growing crops under water in a short time. The observer at Roden, Shropshire, noted on this day "Very heavy snow and hail storm about 3 miles east, doing immense damage to crops." At Macclesfield a hailstorm caused a drop of 9° in the temperature in half-an-hour. The rainfall records generally were not large, but Rounton measured 1·3 in. Scotland was as much affected as England and Ireland on the 11th to the 13th, the largest rainfall for these days being 1·5 in. at Eskdalemuir on the 12th, when Kirkby Lonsdale had 0·38 in. in 20 minutes. Though the 15th was free from thunderstorms, heavy rain was again general over southern England, up to 1·5 in. at Princetown and 1·6 in. at Arlington. There were many thunder and hail storms on the 16th, but not much rain, whereas the 17th had very few thunderstorms, but the greatest rainstorms of the month, the area embracing England and Ireland. The measurements ranged up to 2 in. at Caragh Lake, 2·2 in. at Penygwryd, 2·3 in. at Bethesda, 2·4 in. at Mount Callan, 2·5 in. at Machynlleth, 3·2 in. and more in Snowdonia, the largest 5·3 in. at Copper Mill. On the 19th, during the most violent thunderstorm known for years at Lincoln, 0·9 in. of rain fell in 20 minutes, and at Claypole, in the same county, 0·71 in. fell in 17 minutes. With the exception of the 27th, the thunderstorms of the remainder of the month were widely distributed, the principal rainfalls being 1·5 in. at Copper Mill on the 24th, 1·5 in. at Sheepstor on the 26th, 1·6 in. at Princetown and 2 in. to 3 in. in Snowdonia on the 27th, and 1·8 in. at Copper Mill on the 28th.

With such a persistency of rainy weather temperature was nearly everywhere below the normal, but with one or two exceptions the daily extremes were very uniform. Maxima above 70° were by no means numerous, but on the 19th and 22nd there were sudden ascents to 80° and upwards in some parts of England, to 84° at Greenwich, and 85° at Isleworth. Values below 40° occurred about the mornings of the 3rd and 17th, Balmoral and Killarney nearing 32° on the morning of the 4th.

Fog was frequent and often dense on the east coast of Britain, mainly between the 17th and 29th on the western coasts, uncommon on the south coast.

The coastal sea water was warmer than during May, by 4° or 5° in several localities, but excepting off the west of Ireland, Orkney, and the Kentish coast, it was colder than the air on shore, by 3° to 5° in places.

Rainfall.—A small patch in the north-east of Scotland had a marked deficiency of precipitation, Wick returning only 50 per cent., and Deerness 68 per cent. The kingdom generally had a large excess, more than double the average in numerous instances, 310 per cent. at Rounton, 312 per cent. at Belfast, 320 per cent. at Woolacombe, 325 per cent. at Arlington, and 373 per cent. at Foynes. As a rule the frequency was very large, ranging up to 29 days at Bellingham, Seathwaite and Belfast, and 30 days at Roche's Point. At the other extreme Dungeness had only 10 days, and Dunrossness 7 days.

Bright Sunshine.—At nearly every station there was a deficiency of insolation, the records generally being very small for the Midsummer month. Strathpeffer had only 38 per cent. of the normal, Marchmont 41 per cent., Stonyhurst 43 per cent., and Aberdeen 44 per cent. Of the few returning an excess Margate had 113 per cent., Westminster 117 per cent., and Greenwich 123 per cent.