

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.

Vol. XXXIII. (New Series)

No. X.

OCTOBER, 1916.

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

Stormy ; Wet ; Very mild at first, then cool.

After a succession of several months characterised by weather of a generally quiet type, the period now under review witnessed a change of great magnitude in the meteorological conditions over and in the neighbourhood of the British Isles. On this occasion the autumnal equinox has formed an unusually abrupt line of demarcation in the transition from the summer to the winter half of the year. On map 2, p. 111, more paths of disturbances are shown than the aggregate for the preceding three months, but apart from the greatly increased frequency the depressions of October were much more active in their behaviour, deeper and productive of numerous and severe gales.

From the first the distribution of atmospheric pressure was of a type favourable to unsettled weather, and this was maintained without any notable break until the end of the month and well on into November. Few anticyclones appeared in our vicinity and in no case did the central space reach this country. At the commencement an extensive cyclonic system occupied the Atlantic, from our western and south-western coasts to and beyond the Azores, making very slow progress along a north-easterly path. On the 4th it passed round the north of Scotland, and thence on to the Baltic. It produced very little wind on our coasts, but on each day there were heavy rainstorms in many parts of the country, ranging up to 46 mm. at Ballinacurra on the 1st ; 49 mm. at Lampeter and 50 mm. on the slopes of Snowdon, on the 2nd ; 34 mm. at Princetown and 36 mm. at Pen-y-Gwryd, on the 3rd ; 32 mm. near Haltwhistle and 36 mm. at Cahir, on the 4th. A new depression (track B) which appeared off the west of Ireland on the 5th, started a much more windy period, being followed, with scarcely a break, by depressions C, D, E and F, which served to maintain the disturbed type into the middle of the month. From the positions of the track lines, nearly all outside our north-western and northern coasts, it will be gathered that during the first fortnight the wind over practically the whole country was drawn from off the lower Atlantic region. Its influence in producing abnormal mildness was very striking (see *Temperature*). At one or more stations gales were of everyday occurrence, a strong gale (Beaufort force 9) being felt at Dover on the 6th ; at Southport on the 7th ; at Lerwick on the 10th ; at Castlebay and Malin Head on the 12th, and a whole gale (force 10) at Wick on the 10th. This boisterous spell reached its culminating point on the 14th, when one of the deepest cyclonic systems of the month passed beyond the north of Scotland, the barometer sinking to 968 millibars at Stornoway. The accompanying gale was experienced very generally, the force of a strong gale being felt in several localities, a whole gale at Wick and Lerwick, and a storm (force 11) at Blacksod. As the centre of the depression passed on to the Norwegian coast in the night the wind veered into more Northerly directions, still blowing with gale force on the 15th, but the polar current bringing with it a great reduction of temperature. The gales of this period were of a very squally character, the anemometrical records disclosing numerous gusts exceeding 25 m/s., those exceeding 30 m/s. occurring on the 14th, when Paisley and Weaver Point registered 31 m/s., Southport 32 m/s., Eskdalemuir 34 m/s., and Edinburgh 36 m/s. Great rainstorms occurred on various days. On the 5th Killarney measured 42 mm., Giggleswick 48 mm., and Snowdonia, 100 to 142 mm. Scotland had the heaviest on the 11th, Glencarron 111 mm. and Fort William 114 mm. Lancashire had the worst of it on the 13th, Hutton 42 mm., Southport and Stonyhurst 43 mm., Darwen 45 mm., and Leyland 46 mm. On the 14th Scotland was again the most flooded region, with amounts up to 56 mm. at Glencarron, 59 mm. at Fort Augustus, and 94 mm. at Fort William. There were very few thunderstorms reported during the first three weeks.

With the lulling of the gale on the 15th, a week of quieter conditions set in. Though there were depressions in our vicinity daily, mainly near the western coasts, they were of feeble types, maintaining unsettled, damp weather, but occasioning only a few local gales of no importance. One caused a good deal of rain over south-eastern and southern England on the 17th, when from 25 to 32 mm. fell at a number of stations. Another brought very heavy rains to the west and south of Ireland on the 21st, when Blacksod registered 47 mm., Valencia 51 mm., and Killarney 136 mm. Snow showers fell at Lerwick on the 16th, the sole reference to snow during the month.

A depression which arrived over Kerry on the evening of the 21st (track J) was the signal for the renewal of stormy conditions, which became worse as the month advanced to its close, two of the depressions being very deep, the barometer descending to 962 millibars at Blacksod on the 25th, and to 965 millibars at Roche's Point on the 27th. Gales from between West and South, and occasionally South-East, were again of daily occurrence. Excepting on the 29th the force of a strong gale was felt from the 22nd to the 31st, a whole gale at Scilly on the 26th, at Dover on the 27th, at Southport, Holyhead, Pembroke, Dover and Nottingham on the 30th, and at Dungeness and Dover on the 31st. Furious gusts were widely prevalent, the most violent being 36 m/s. at Pendennis on the 24th ; 35 m/s. at Quilty on the 25th ; 34 m/s. at Scilly on the 26th ; 31 m/s. at Scilly, 32 m/s. at

Lyme Regis and Plymouth, and 41 m/s. (92 miles an hour) at Pendennis, on the 27th ; and 32 m/s. at Quilty, 33 m/s. at Pendennis, 34 m/s. at Weaver Point and 36 m/s. at Southport and Holyhead on the 30th. Considerable structural damage was caused by these gales in many places. Thunderstorms increased in frequency, and on the 27th, 30th and 31st affected the greater part of England, accompanied by falls of hail at numerous stations. Heavy rains also were experienced, excepting on the 25th, the largest of the lower level falls being 50 mm. at Lampeter on the 27th.

Air Pressure.—The mean distribution of pressure for the whole month was influenced to a very large extent by the frequency with which the depressions, moving on some north-easterly course, skirted or crossed our western and northern districts, so that the final results show the central space of a cyclonic system over the upper Atlantic, westward of the Hebrides and southward of Iceland. Instead, therefore, of the normal West to East distribution, map 1, p. 111, discloses a well-defined South-West to North-East type of isobars across this country, confirmed by the great predominance of winds from between South and West in the wind-frequency diagrams. The mean barometric values were about 10 millibars too low on the north-west coasts, the deficiency diminishing south-eastward and disappearing on the English Channel. October 1909 and 1916 presented many features in common, the pressure distribution in particular being very similar.

Temperature.—Through the first fortnight unusual and sustained warmth was experienced over a wide region. Nearly the whole of this period had day maxima above 28.9a, and from the 3rd to the 6th 29.4a was exceeded at some stations. Relatively, however, the nights were milder than the days, a very large proportion of the minima exceeding 28.6a, even 28.8a to 28.9a being uncommonly numerous. For the first fourteen nights the average minimum at many stations was as high as 28.6a to 28.7½a, or higher than for the normally mildest summer nights. Even on Dartmoor, Sheepstor, at 730 ft., averaged 28.5½a, and Princetown, at 1360 ft., 28.4½a. The mean of the day and night records for the fortnight was 4a in excess of the normal over the midland and southern counties of England and the southern half of Ireland. With the shift of wind into the Northward on the 15th the mildness collapsed suddenly, and during the remainder of the month temperatures somewhat below the normal prevailed. But instances of sharp day or night cold were very few and scattered. On the 16th and 17th, and 21st and 22nd maxima as low as 27.8a to 28.0a occurred here and there, and minima between 26.7a and 27.0a were rather more widely distributed on the same dates. This cold period reduced the mean temperature for the whole month to the normal over the east of Scotland, but elsewhere the excess ranged from ½a in Scotland North to 2a in Ireland South.

At Belper the mean temperature of the water of the Derwent was 28.3-7a, that of the air 28.3-0a.

On the west coast of Cornwall the temperature of the sea surface water was the same as that of the air ; elsewhere the water was the warmer, by as much as 2a off the Donegal coast, and 3a off the Norfolk coast. Fog was rather prevalent on the western coasts during the first six days, and from the 12th to the 14th. There was very little on other coasts.

Rainfall.—Over the north-east and east of England there was a deficiency of precipitation, the percentage of the normal in the former district being 85, and in the latter 93 ; all other regions had a substantial excess, the percentages ranging from 119 for the Channel, and 129 for the Midlands to 181 for Scotland North, and 205 for Ireland South. At individual stations the percentages ranged from 60 at Bawtry, and 65 at Hodsock and Lincoln to 247 at Phoenix Park, and 258 at Killarney.*

Records at 32 stations show that the rainfall during the night hours was heavier than that during the day, in the proportion of 5 to 4.

At Kew Observatory the level of the underground water varied from 212 cm. above mean sea level on the 3rd to 200 cm. on the 26th and 27th.

Bright Sunshine was everywhere less than the normal, the daily loss being ¼ hour in the east of Scotland and the English Midlands, and 1½ hour in the south of Ireland.

An **Aurora** was observed at Liverpool on the 6th, at Lerwick on the 13th, at Donaghadee on the 24th, and at Seskin on the 29th. An **Earthquake** shock was felt at the Penrhyn Quarry at 7.15 a.m. on the 22nd. Loch Awe water was higher on the 13th-15th than at any previous time since records were commenced.

* A note on the remarkable fall of 136 mm. at Killarney on the 21st appears in the M.O. Circular.