

MONTHLY WEATHER REPORT OF THE METEOROLOGICAL OFFICE.

SUMMARY OF OBSERVATIONS COMPILED FROM RETURNS OF OFFICIAL STATIONS AND VOLUNTEER OBSERVERS.

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JUNE, 1931. Wet and dull.

The weather during June was distinguished by a pronounced excess of precipitation in all districts except in the south-east of England and by a general deficiency of sunshine. Unsettled, dull and wet weather with severe thunderstorms on the 5th, 14th and 19th prevailed during the first three weeks, followed by anti-cyclonic conditions and fine weather generally during the last week. Notable incidents in the month's weather were the tornado which visited Birmingham on the 14th and the widespread severe thunderstorms and floods on that day. In Scotland the month was, on the whole, cool, whilst in most other districts mean temperature were about or above the normal.

During the first half of the month pressure in the Greenland-Iceland area continued high, giving cool, easterly winds in northern districts. Secondary disturbances from the south-west were responsible for incursions of warm air over southern districts and as a result, there were rainy periods in most districts with heavy falls in the west and north (36 mm. at Blacksod and 34 mm. at Holyhead on the 2nd). The period 5th to 10th was very unsettled with generally moderate falls in England and frequent heavy falls in Scotland and Ireland (29 mm. at Holyhead on the 5th and 34 mm. at Eskdalemuir on the 10th). Following a fine warm day on the 4th, widespread thunderstorms occurred in southern districts on the 5th, severe floods being reported from Braunton (North Devon) and heavy falls occurring in the Midlands. There was a decided fall in temperature and in London (Kew) the maximum temperature on the 5th was 62° F. as compared with 72° F. on the previous day. Good sunshine records were obtained in the west on the 1st (12.5 hours at Pembroke and 12.0 hours at Chester), in many parts of England on the 4th, locally on the 8th, in Ireland and Scotland on the 11th and 12th and in the east of England on the 13th. Heavy rain fell in Ireland and Scotland during the night of the 13th to 14th and on the afternoon of the 14th, thunderstorms, accompanied locally by torrential rain, hail and floods, and in Birmingham by a tornado, occurred widely, spreading to eastern Scotland during the night of the 14th to 15th. In Birmingham the passage of a line squall on the 14th was accompanied by thunderstorms and a tornado. In most places the 14th was one of the warmest days of the month, maximum temperatures in London and the south-east exceeding 80° F. on that day. Heavy falls again occurred in Ireland and Scotland on the 15th or during the night of the 15th to 16th and in southern England on the 16th. The passage of a secondary depression across southern England on the 19th was accompanied by thunderstorms; in the Rickmansworth and Chorley Wood district of Hertfordshire the storm was accompanied by hail of unusual intensity.

Subsequently a belt of high pressure extended from the Azores to central Europe. Sunshine became more plentiful and temperatures rose to summer levels except for a temporary return of cool though mostly sunny weather on the 24th and 25th. The month closed with a spell of mainly fine rather warm weather in most districts. Sunshine totals reached 15 hours locally and maxima rose above 75° F. on the 27th and 28th.

Pressure and Winds.—Cyclonic conditions prevailed throughout the greater part of the first three weeks followed by anticyclonic conditions during the last week. Mean pressures at 0700h. G.M.T. were from 1 mb. to 2 mb. below the normal in the west and north and slightly above the normal in the south. Owing to the persistence of high pressure to the north and north-west of the British Isles during the first half of the month, northerly and easterly winds were notably prevalent in Scotland. In most other districts the prevailing winds were south-westerly and generally light or moderate in force. A notable phenomenon was the occurrence of a tornado in the Birmingham district associated with the passage of a line of occlusion of a depression on the 14th. The tornado, accompanied by a severe thunderstorm, made its appearance at 1440h. G.M.T. and travelled rapidly from the south to the north-east of Birmingham, causing a very great amount of material damage along a track varying in width from 800 to 200 yards. Altogether the length of the path was from 10 to 12 miles, passing through Greet, Small Heath and Bordesley in a north-easterly direction to the Erdington boundary of the city. Unfortunately no precise measurements of wind velocity are available in the actual tornado. The storm ceased about 1515h. G.M.T.

Temperature.—Associated with the prevalence of easterly winds and the general lack of sunshine, monthly mean temperatures in Scotland and the north of England were below the normal, the deficit exceeding 2° F. in several places. In most other districts, monthly mean temperatures exceeded the normal, locally in the east of England by more than 2° F. The highest temperatures in most places exceeding 70° F., were recorded generally on the 4th, 12th, 13th, 22nd, 23rd, and from the 26th to 28th. With very few exceptions the absolute maximum temperature was everywhere less than that normally recorded in June. Ground frost was rare, being reported mostly from elevated stations in Scotland.

The extreme temperatures for the month were:—(England and Wales) 83° F. at Bromley on the 14th, 32° F. at Bellingham on the 25th; (Scotland) 73° F. at Strathpeffer on the 25th and Arbroath and Montrose on the 27th, 33° F. at Balmoral, Logie Coldstone, Wolfelee and Eskdalemuir on the 25th; (Ireland) 71° F. at Kilkenny on the 27th.

Precipitation.—For the third consecutive month the general rainfall of each country exceeded the normal. The general precipitation of the British Isles, expressed as a percentage of the normal for the period 1881-1915,

was 165: the corresponding values for the constituent countries were:—England and Wales 148, Scotland 193, Ireland 174. In Scotland where the general precipitation has exceeded the normal in each June from 1926 onwards, the month was wetter than June, 1928, and the wettest June generally since 1907. The wettest area in which rainfall totals exceeded twice the normal embraced northern Ireland, southern Scotland, northern and north-western England, and part of Wales.

Although precipitation greatly exceeded the normal over the greater part of England and Wales, monthly totals were below the normal east of a line running roughly from the Isle of Wight to the Wash, the most pronounced deficiency occurring around the mouth of the Thames estuary and locally in Kent and Essex; Margate recorded only 27 per cent. of the normal June rainfall, Dungeness 37 per cent., Shoeburyness 56 per cent. At Southport on the other hand, where the month was with one exception, June, 1907, the wettest June in records covering 61 years, the month's total was 272 per cent. of the normal. In Scotland with the exception of perhaps small areas in Aberdeenshire the rainfall in June was everywhere well above the normal, the wettest areas were the southern, midland and south-eastern counties, rainfall totals frequently reaching from 2 to 3 times the average June figure. At Eskdale the month was the wettest June since observations were begun there in 1910. On the 14th and 15th rainfall totals were very large over practically the whole of Scotland south of the Central Highlands, falls of over 25 mm., locally over 50 mm., being recorded on one or other of these days; these falls resulted in much flooding and structural damage.

In the extreme south-east of Ireland, rainfall totals did not differ much from the normal, elsewhere there was a pronounced excess, especially in the north where totals exceeded twice the normal in several places. Locally in the north (e.g., at Londonderry and Louth) severe floods followed heavy rain on the 13th and 14th.

Thunderstorms occurred in most districts, on an average on three or four days and in a few places, mostly in the midlands and east of England, on as many as six or seven days. A severe thunderstorm which broke over Braunton (North Devon) on the morning of the 5th was followed by floods reported to have been of unprecedented severity in that district because of the havoc caused. Most of the rainfall, 59 mm. measured at 9h. G.M.T. on the morning of the 5th fell between 7h. and 9h. G.M.T. on that day. Along the high land of Oxford Cross, Pickwell Down and Roadaway the rainfall was probably much heavier. Springs which are usually dry from March till December rose during the following day and continued in force for three weeks. Line squall phenomena accompanied by severe thunderstorms and torrential rain and hail locally were associated with the passage of a line of occlusion across the country on the 14th. At Birmingham where violent tornado phenomena already referred to were experienced, the storm broke suddenly shortly after 1430h. G.M.T. with torrential rain and almost continuous thunder, lightning and hail, 20 mm. fell between 1435h. and 1515h. G.M.T. At Attenborough during a thunderstorm large hailstones averaging an inch in diameter (one is reported to have measured fully two inches in diameter) fell about 15h. An observer at Larkhill, Salisbury Plain, reported the occurrence of two thunderstorms which passed almost directly overhead, the second storm being accompanied by torrential rain and some hail, the hailstones being about 1½ inches in circumference. Another report from Eskdalemuir Observatory describes the rainfall in the Valley of the Esk and its neighbourhood which accompanied the thunderstorm on the 14th as of an intensity unparalleled within living memory. Severe floods followed the torrential rain involving the death of a farmer by drowning and the loss of numerous sheep and cattle. At Eskdalemuir Observatory 64 mm. rain were measured at 9h. on the 15th of which 31 mm. or almost half, fell during the hour 18 to 19h. on the 14th. The rain at Ross-on-Wye is described as being the worst since July 13th, 1923; nearly 13 mm. fell between 1348h. and 1400h. G.M.T. Some flooding occurred on low ground to the south-west of the observatory. At Horfield, Bristol, 21 mm. fell during the hour commencing 1300h. G.M.T.

Fresh falls of snow were noted locally on the higher Grampian Hills on the 2nd, 6th, 7th and 20th.

Sunshine.—As in the two previous months, sunshine aggregates in June were again below the normal with only a few exceptions along the east coast of England and in Orkney and the Shetlands where aggregates were about or slightly above the normal. In the west of Scotland and the north of England the deficiency was very pronounced, the average daily deficiency relative to the normal amounting to 2.3 hours at Dumfries and Douglas and 2.4 at Eskdale and Harrogate. During the first two weeks there was a notable lack of sunshine. The general dullness of the month was relieved to some extent by the brilliant weather of the last six days. The month was the most sunless June at Dumfries, Marchmont and Paisley since 1912, at Edinburgh since 1916, at Holyhead since the commencement of records in 1914, and at Inchkeith and Renfrew since 1923. Amongst outstanding daily records were 16.6 hours at Deerness, 16.4 hours at Kirkwall, 16.3 hours at Aberdeen and 16 hours at Gordon Castle and Lerwick on the 25th.

Fog.—Fog was prevalent during the first half of the month and in the south-west of England on the 22nd-23rd.

Miscellaneous Phenomena.—No unusual phenomena were reported.