Symons's
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"BRITISH RAINFALL, 1911."

Our readers are of course aware that the Editor of this Magazine is also the Editor of *British Rainfall*, and in what follows they must remember that they are not perusing the comments of an impartial critic. No one knows how far *British Rainfall* falls short of our ideal except ourselves; but we are always striving after improvement, and in this article we endeavour to state facts and repress aspirations.

The fifty-first annual volume of *British Rainfall* is now in the hands of the book-binder, and should reach subscribers in about a week's time. The volume is of substantial size, containing 496 pages, as compared with 440 last year, but it has been completed ten days earlier than in 1911. The purpose of this volume is to present to all interested in the subject as full an account of the rainfall of the British Isles for the year in question as it is possible to produce with the data and the funds available. The data are very abundant, but the limited interest in the subject, as expressed in the small income of the British Rainfall Organization, makes it necessary to compress and restrict both the figures published and the discussion of their bearings. For 1911 some 5,300 rainfall returns were received, of which some were incomplete, and a few obviously erroneous; but 5,000 gave satisfactory figures of monthly rainfall, and 3,253 were complete for daily rainfall also. The daily rainfall at one station for a year requires an octavo page, and to print over 3,000 pages of figures without discussion is obviously impossible; but the monthly figures could easily be given in about 280 pages, while the annual totals alone, with the names and necessary particulars of the stations occupy in *British Rainfall*, 1911, just 152 pages. As soon as it is possible to secure an addition to income sufficient to cover the cost of printing and checking the monthly figures in detail, this will be done. Meanwhile, the full monthly figures are printed in a special table for 300 stations, so selected as to represent as nearly uniform a distribution over the country as it is possible to secure; and, merely as a specimen, the daily values of ten stations are printed in full. The greater part of the volume is occupied by the discussion of the data, and, in order to explain how this is done, we may describe in some detail the contents of the volume just ready.

The book begins with the Report of the Director to the Trustees of the British Rainfall Organization, which takes the place of the "Report" formerly addressed to the reader of *British Rainfall*, and describes the work done at the Office, 62, Camden Square, by the Director and five permanent assistants. It contains an abstract of the accounts, which shows that the Organization is now almost self-supporting. The Treasurer gives a separate account of the Endowment Fund, which now amounts to about £1,600. Following the Report there are three special articles illustrated by diagrams and maps. The first of these deals in great detail with the rainfall of May 31st, 1911, in the Thames Valley, the second, by Mr. J. Fairgrieve, describes the time relations of the rainfall on that day, with eleven maps showing the areas on which rain was falling at different periods during the afternoon. The third article is a completion of the "Arrangement of Rainfall Stations in *British Rainfall*," dealing with Scotland and Ireland, as the first part dealt last year with England and Wales. The area of every river-basin in the two countries has been measured and the areas of the portions lying in each county given, these being the river-divisions in which the stations are arranged.

Then follows a statement of evaporation observations at twelve stations, with a comparison of the evaporation at Camden Square, with other meteorological data; as was to be anticipated, the evaporation in London was greater in 1911 than for any previous year since the observations began.

Next comes the annual article on "The Staff of Observers," dealing with the rain records which have dropped out and the new records which have come in since the issue of the previous volume. Each county is treated separately, with remarks on the more interesting gains and losses. One record drops out because the observer had his pocket-book, containing the first five months' record, stolen during the Coronation festivities; another because the gauge was continually tampered with by trippers; one of the most interesting new records is that established at The Wakes, Selborne, the house of the famous Gilbert White, who kept a rain-record there from 1782 to his death in 1793. In the summary for each county the number of existing rain records per 100 square miles is quoted. Thus, in the County of London there are 75 records for every 100 square miles; in Co. Sligo only 1 record for 1000 square miles. Most of the English counties have 6 or more records per hundred square miles, the worst being the East Riding of Yorkshire with 2 and Lincoln and Northumberland with 3. In Scotland only 11 counties out of the 33 have more than 3 rain gauges per hundred square miles, Renfrew being the best with 14, and Sutherland the worst with less than 1. In Ireland, Dublin, with 9 rain gauges per 100 square miles, is the only county with more than 2, and of the 32 counties, 17 have less than one rain record for every 100 square miles of area.

Part I. concludes with an Obituary article giving the names of 75 observers whose death has been announced since the completion of *British Rainfall 1910*, and biographical particulars of sixteen, amongst them being the late Mr. W. B. Pugh, of Patrington, who died at the age of 92, after keeping a rainfall record for 65 years, and Mr. G. Nevile, of Stubton, whose record extended unbroken over 50 years; four others had records exceeding 45 years, and altogether 18 had been observing for 30 years or more.

Part II. commences with Observers' Notes on the days and on the year 1911, dealing chiefly with rainfall in its relation to other meteorological conditions and to agriculture. This is followed by a discussion of The Distribution of Rainfall in Time, dealing with (1) Rain Days, including a new average map of the number of rain days per annum in the British Isles, (2) Droughts, with a special study of the great July drought in England, (3) Rain Spells, or periods of consecutive days with rain, (4) Representative records of daily rainfall at 10 stations, (5) the Duration of Rainfall, as measured at 20 stations where self-recording instruments are in use, and (6) Heavy Rains in short periods, taking note amongst others of two very remarkable falls, one of 2·44 in. in 50 minutes at Epsom on May 31st, 1911, the other of 3·00 in 1 hour at Fareham on May 26th.

Much space is then occupied with the discussion of heavy rains on individual days, and detailed maps are given showing the distribution of rain on eleven occasions; this includes the calculation of the total volume of water which fell upon the land of the British Isles on several occasions, and some relationships with the meteorological conditions are pointed out. While one such map and description is little more than a statement of observed facts it is hoped that the number of cases now accumulated will provide material which may yield interesting theoretical results.

Monthly rainfall next claims attention. It is pointed out that the features of the year 1911 were the exceptional drought of July and the excessive rainfall of December in England and Wales. Both these are compared with previous extremes, and it is shown that July, 1911, was drier than July, 1868, and much drier than July, 1869, the two which most nearly approached it, while December, 1911, was not quite so wet as December, 1868 or 1876, though the range of rainfall between the three did not exceed one-third of an inch. A detailed rainfall map of the British Isles (necessarily on a small scale, but prepared from about 2,000 plotted rainfalls) and a more generalized map showing differences from the average are given for each month, together with elucidatory letterpress, and there is also a discussion, with maps, of the rainfall of the successive winter and summer half-years.

Part II. terminates with an article on the total rainfall of the year in relation to the average, illustrated by a coloured map showing where an excess of rain prevailed and where there was a deficiency.

The most remarkable contrast was between the west of Scotland in Argyllshire, where there was a large area with an excess of more than 20 per cent., and the east of Scotland, round the Firth of Tay, where there was a deficiency at one point of 40 per cent. As the region of excess is normally the wettest and the region of deficiency is normally nearly the driest in Scotland, the actual fall of rain in the west was on this occasion more than six times as great as that in the east. The rainfall of the year is compared with the 35 years average for 215 stations, and the result shows that in 1911 Wales, Scotland and Ireland were within 1 per cent. of the average rainfall, while England had a deficiency of 6 per cent., which when spread over the British Isles meant a general deficiency of 2 per cent., the year being thus, on the whole, very nearly an average one.

The result of the effort which has been steadily made to elaborate the discussion of rainfall data may be judged of by a comparison of the space allocated to different parts of the volume twenty years ago and now, in actual number of pages and in percentages :—

Comparison of "British Rainfall," 1892 and 1911.

	1892.		1911.	
	pp.	Per cent. of Total.	pp.	Per cent. of Total.
PART I.—Report	3	1·1	12	2·4
Special Articles	12	4·6	56	11·3
Observers and Obituary	14	5·3	27	5·4
PART II.—Observers' Notes	98	37·1	73	14·7
Discussion of Daily Rainfall Data	29	11·0	101	20·4
Monthly and Annual Rainfall ...	17	6·4	62	12·5
PART III.—General Tables	71	27·0	152	30·7
Introductory and Miscellaneous	20	7·5	13	2·6
Size of Volume	264	100·0	496	100·0
No. of records dealt with	2850		5071	

This shows that while the proportion of letterpress to the General Tables remains not far from the same, the proportion devoted to Observers' Notes has had to be reduced to relatively less than one-half, while the proportion devoted to Special Articles and to the discussion of daily, monthly and annual rainfall has been practically doubled. The most remarkable difference, however, does not appear from this comparison : it consists in the geographical as distinguished from the merely statistical treatment of the whole subject, the weight laid on distribution, and the use of maps throughout to give in lines ten times as much exact information as is expressed in words.

We would like to think that the data sent in to the British Rainfall Organization are turned to as good account and at as small expense as any scientific material in any scientific institution in the world, and we believe that the quality of the work done by the Observers is second to none, and that the Organization is a triumph of voluntary co-operation.

THE WEATHER OF JULY.

By FRED. J. BRODIE.

THE earlier half of last month witnessed two periods of fine anticyclonic weather, separated by nearly a week of disturbed southerly conditions. The first seasonable spell was preceded by a few days of cool northerly breezes, but between the 4th and 6th of the month, when an anticyclone extended in from the Atlantic, the polar current died away, and the thermometer rose to a more seasonable level. In Ireland and Scotland the highest readings were recorded mostly on the 4th or 5th, but over England they occurred very generally on the 6th. In nearly all parts of the United Kingdom the thermometer on one or other of these dates rose above 70°; on the 6th it touched 77° at Camden Square, while on the 5th it is reported to have reached 78° at Balmoral. After the 6th the anticyclone passed away to the Continent, and for the next few days the weather was influenced by a large Atlantic depression, which occasioned frequent falls of rain in the west and north, and occasional showers in the east and south, with frequent thunderstorms in nearly all districts. With these conditions the thermometer was mostly below its average level, but after the 11th it rose decidedly over England, and a day or two later, when an anticyclone appeared over our northern districts, fine warm weather became general. The highest temperature of the period occurred either on the 12th or on the 14th or 15th. On the earlier occasion shade maxima of 85° and upwards were recorded in many parts of eastern, central and southern England, the thermometer reaching 90° at Greenwich and 91° at Tottenham and Camden Square. On the 14th and 15th the heat was more general, maxima of 85° and upwards being observed over a large portion of Great Britain. As far north as Balmoral the thermometer on the 15th reached 87°, while at Camden Square it rose on the same day to a maximum of 90°. After the 17th the weather entirely broke up, and for the remainder of the month it was in an extremely unsettled state, with cool breezes mainly from the north-easterly quadrant. During the 18th and 19th the fall in temperature was very brisk, and on the latter day the maximum readings in many parts of Great Britain were below 60° or nearly 30° lower than those of the preceding three or four days. A subsequent veering of the wind to east and south-east resulted in the temporary extension of a warmer air from the Continent, and between the 24th and 26th the thermometer rose above 75° in many districts, the readings of the 24th being as high as 81° at Camden Square and 82° at Greenwich. Later on, when deep depressions advanced over our islands from the Atlantic, the wind shifted to the south-westward and ultimately to the north-westward, and the weather became generally cool and thundery, with extremely heavy falls of rain in all the more western parts of the kingdom.

The counteracting influence of warm and cool spells resulted in a mean July temperature differing but little from the average, the

general tendency being for a slight excess over England, and a slight deficiency in Ireland and Scotland. The total duration of bright sunshine was, as a rule, considerably below the normal, a number of places in the west and south of Great Britain recording less than two-thirds of the average quantity. In London (at Westminster), the aggregate amount, 150 hours, was 31 less than the normal and was considerably less than half that recorded in the July of last year. In 1910 the July total was only 102 hours, but in every other year back to 1891 it was considerably larger than in 1912.

THAMES VALLEY RAINFALL, JULY, 1912.

THE July map of the Thames Valley rainfall indicates certain points of unusual interest. The effect of the height of the land on the total fall of rain is not so clearly shown as is frequently the case, especially in the winter months. Traces of this action appear in the heavy rainfall over the Cotteswolds, and to a slighter degree on the Chilterns. Within the watershed of the Thames, above Teddington, the average fall of 24 selected stations was 2·57 in., with an average of 16 rain days. On the crests of the Cotteswolds the total was as high as five inches, and at the other extreme it was less than 1·50 in. in the lower valley.

The most striking feature of the map is the peculiar tongue-like promontory of high rainfall which, commencing at the north of the map, stretches almost into London. During the month thunderstorms were frequent, and on the 23rd many districts were visited by torrential rain which produced the feature in question. The map of the rainfall on this day alone exhibits a striking similarity to that of the monthly map of the district under discussion.

The storm appears to have been centred at Hitchin, where the rainfall was as much as 3 inches for the day. The 1 inch isohyetal here enclosed a long almond shaped area within which there were two splashes of upwards of 2 inches near Hitchin and Shenley. One inch splashes are also shown at Warwick and at Olney. At Oxford the amount recorded for the 23rd is sufficient to account for the noticeable bend in the 3 inch isohyetal on the monthly map. Two large areas were without rain on this date, the first being all that land in the north-east corner of the map outside a curved line through Newmarket, Great Dunmow, and Southend; the second was a long ribbon-like strip running from Gloucester along the Thames watershed and then along the North Downs as far as Maidstone. It has not been possible, on this occasion, to prepare the map of the whole of the British Isles which we usually have before us in discussing the rainfall of the month. We should have been glad to have been able to trace out the effect of the numerous thunderstorms of the month over the whole country, but we have been

THAMES VALLEY RAINFALL —— JULY, 1912.

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Watershed of River Thames above Teddington, and River Lee above Feildes Weir.

Rainfall Stations reporting

Isohyetals.

obliged to lay that interesting task on one side until the more pressing one of seeing *British Rainfall 1911* through the press has been finished.

INTERNATIONAL BALLOON ASCENTS.

By W. H. Dines, F.R.S.

February 2nd, 1910.

Starting Point	Country.	A miles.	B ° F.	C miles.	D ° F.	E miles.	F
Manchester....	England	5·0	—60	7·6	—56	48	N.E. by N.
Petersfield	„	5·6	—64	10·5	—62	51	N.E.
Paris.....	France	5·6	—62	5·8	—62	43	N.E.
Brussels	Belgium	6·8	—69	8·8	—60	67	E. by N.
Strassburg	Germany....	6·4	—76	8·6	—69	26	W.N.W.
Munich.....	„	6·6	—80	9·2	?	47	N. by E.
Vienna.....	Austria	6·6	—81	10·9	—76	18	N.N.W.
Pavlovsk	Russia	6·8	—92	6·6	—87	37	S.E.
Nizhni Olchedaeff	„	6·9	—76	9·9	—76	35	N.E.

February 3rd, 1910.

Paris.....	France	5·1	—60	9·4	—71	67	E.N.E.
Brussels	Belgium	5·5	—62	9·9	—71	35	N.E. by N.
Hamburg.....	Germany....	5·9	—69	7·9	—60	43	N. by W.
Strassburg	„	5·9	—63	10·9	—71	39	N.N.E.
Zurich	Switzerland..	5·7	—62	12·0	—72	44	N.E. by E.
Vienna.....	Austria	6·2	—72	9·6	—69	11	N.N.E.
Pavlovsk	Russia	7·3	—89	7·5	—83	17	N.
Nizhni Olchedaeff	„	5·6	—65	10·5	—72	39	N.

February 4th, 1910.

Paris.....	France	4·9	—55	6·7	—54	47	S.E. by E.
Lindenberg....	Germany....	5·9	—60	9·9	—62	30	N.E.
Strassburg	„	5·2	—62	6·3	—54	6	N.E. by N.
Munich.....	„	5·7	—60	7·1	—50	39	N.
Pavlovsk	Russia	6·4	—74	6·9	—73	53	N.

A Height in miles of commencement of isothermal column.
B Temperature, F°., at bottom of column.
C Greatest height of reliable record in miles.
D Temperature, F°., at greatest height.
E Distance in miles of point where balloon fell.
F Bearing of falling point from starting point.

On February 2nd a deep depression, with the barometer under 28·60 in., lay over Iceland, and a trough of low pressure extended to a shaltow depression over the Adriatic. Over Russia and Spain lay anticyclones with pressures of 30·30 in. and 30·10 in. respectively. The low pressure moved slowly to the east, and on the 4th many partial depressions lay over mid-Europe and the weather was influenced by the high pressure over Spain.

The ascents in England seem to have been very unfortunate, owing, perhaps, to the strong W. wind. On the Continent too many balloons burst prematurely or the record failed.

The figures show the relation that usually holds between the barometric pressure and the height and temperature of the isothermal column, and also the tendency that prevails in winter of the temperature to fall again after the inversion point is reached over a low pressure area is well shown at several stations on February 3rd.

HISTORIC RAINS.

THE accompanying extracts may interest our readers. They have been sent to us by the Rev. James Cross, Wimborne House, Dorset, who has frequently communicated similar quaint news-notes from the past.

From "Home Counties Magazine," March, 1912, page 55, but extracted from "Gentleman's Magazine," June, 1803, page 587.

On the evening of Thursday, June 9th, 1803, at 5 o'clock, a most singular phenomenon took place in Panton Street, Haymarket. The inhabitants were alarmed by a violent and a tremendous hail and shower storm, which extended only to Oxendon Street, Whitcombe Street, Coventry Street and the Haymarket, that is to say, over a space not more than about 200 acres. The torrent was so great that it could only be likened to a wonderful cascade from the brow of the most tremendous precipice for seven minutes, so that the cellars of all the inhabitants in Panton Street and Oxendon Street were filled with water. And in the midst of this hurricane an electric cloud descended in the middle of the street, fell in the centre of the coach-way, and sunk to a great depth, without leaving a vestige of any particle of matter, but instead forming a complete pit. The smell of brimstone for some considerable seconds was so strong that the inhabitants expected every minute to be suffocated. A Mr. Madden, who kept a public-house near the spot, had water and beer butts thrown flat from the stillions, and no other damage done.

Miscellaneous extracts from Diaries of Rev. Wm. Stukeley, M.D. Surtees Society, 1887. *No.* 80, *p.* 461.

On June 30th [1736] it began to rain in an extraordinary manner, and continued with little intermission four days and nights, the wind being N. and N.E. The quantity would have covered the surface of the earth 7 in. ·77 supposing none had run off or sunk in. This produced a most extraordinary flood in our river, the Welland, in the Nyne, the Trent, and all the kingdom over as the newspapers inform us. It is remarkable that a fortnight before, Mr. Wyng told to Mr. Lawrence and W. Stukeley with the greatest confidence that there would be a deluge (as he expressed it) that week. N.B.—3 in. ·76 of rain fell on July 3rd in 24 hours. Mr. Lawrence observed the barometer fall gradually for 5 days together preceding the great rain, from 30 in. ·2 to 29 in. ·41 ; long experience shows that falling half-an-inch gradually in such a space of 5 days betokens much rain.—*Diary*, vol. ii. 15-18.

JUNE IN THE PYRENEES.

By the Rev. R. P. Dansey.

The following account of an expedition to the Pyrenees, under the leadership of Mr. V. H. Gatty, who had kindly invited me to accompany him on his second visit to the range, may not be without interest to readers of this Magazine. First it may be noted that these mountains are quicker of access than many parts of Switzerland, and Pau—whence on a clear day there is a magnificent panorama of the range—can be reached in 23 hours from London. Leaving England on the 5th of June last we reached Gabas *via* Laruns (the terminus of the line from Pau) the following afternoon in a thunderstorm. Gabas lies toward the western end of the range, near the Pic du Midi D'Ossau, a rocky pinnacle of some 9400 feet. Bad weather made this ascent out of the question. On the night of our arrival a second thunderstorm came on followed by a deluge of rain throughout the night, of possibly three or four inches. Indeed this western part of the range seems to be especially favoured by Jupiter Pluvius; the vegetation is luxuriant, consisting chiefly of fir, beech, yew and box scrub. At the ends of the branches of many of the trees are clumps of moss, quite disconnected with any growth on the stem, evidently testifying to the excessive moisture. From Gabas a good road, but seemingly little used, crosses the frontier (5890 feet) in ten miles, into Spain. We frequently found it finer and drier on the south side of the watershed, notably on two occasions, one in the western the other in the eastern Pyrenees, when on the north side showers, mist, or both had prevailed all day. On the latter of these two occasions we were driving from Ax over the watershed; the day was dull and the clouds down on the slopes on each side of the valley; above Hospitalet they enveloped us, making everything as wet as rain. On reaching the col (6290 ft.) we suddenly emerged from them, and soon reached sunshine. All the afternoon we could see from Porté—on the south side of the watershed—dense volumes of white cloud rushing vehemently through the low part of the watershed surrounding the col through which we had come, and speedily fining down to a tail and disappearing in the drier and warmer air on the south side of the range, and by moonlight the process was still being continued, though next morning the sky was cloudless.

Tourists are not catered for in these parts before July; the law is rigidly adhered to at Gabas, where we could obtain neither milk nor butter. A portly landlord and a man-of-all-work were the sole occupants of the Hotel des Pyrenees; the former did indeed catch trout for our dinner, while the latter waited on us as he smoked with nonchalance his ever-present cigarette.

Leaving Gabas on the 9th, we made our way to Gavarnie, about 4500 ft., near the centre of the range. The meteorological conditions still continued bad with heavy rain—chiefly at night—and fresh snow on the mountains, which on the 11th lay down to at

least 6500 ft. On the 12th, a fine morning, the summit of the Pimené, 9200 ft., was reached, but the clouds quickly descended, and with a temperature of 28°, accompanied with a cutting wind, a long stay was not desirable, and rain set in before we reached the valley. This was, however, the last of the bad weather, and from the 13th to the end of our stay, nearly two weeks later, brilliant hot days were our lot, and the peaks usually cloudless, with the exception of a short thunderstorm on the evening of the 19th, which did not unsettle the spell in the least. Shade temperatures of 62°—64° were experienced at 7500 ft, and 116° in the sun, while the highest noted at Gavarnie was 77°, though this was not on the same day, as I had no registering instrument to leave below in my absence. On the 17th, one of the most brilliant days, an early start was made, via the Cirque of Gavarnie, for the Brêche de Roland, about 9200 ft., a cleft in a huge

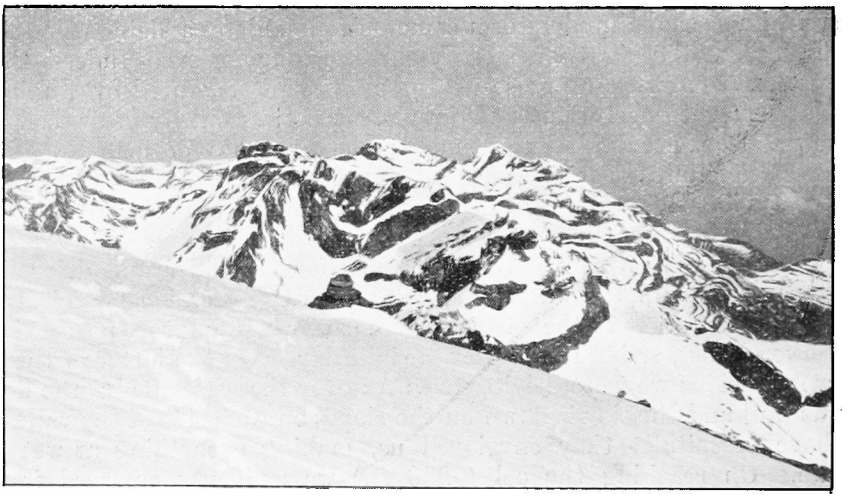

Fig. 1.

wall of rock on the watershed and frontier line. This wonderful ridge of naked rock is wider at the top than the bottom, with the result that the water which runs off from the melting snow falls clear from the top to the snow below, between 200 and 300 ft.; as the sun was almost vertical, on looking up it appeared to be pouring forth showers of golden rain. An hour's further toil brought us to the summit of The Taillon, 10,300 ft., about 3 p.m., this being our highest point. There was no shade, and the heat and glare were terrific. The top sloped up from the south to a cornice overhanging the northern precipices, and the actual cairn showing through the snow was several feet below the then highest point. By vigorously swinging the thermometer it descended to about 45°, but it *felt* 90. An interesting point occurs to me here. Does the temperature on Mont Blanc ever exceed the freezing point? I should be inclined to say "Yes" in settled anticyclonic weather, but only comparatively

rarely. Also, does rain ever fall on the summit? Surely not, for in anything but sunny settled weather the temperature there must always be too low. Is M. Vallot's observatory still existent there? I have never seen any published figures emanating from it, but there are perhaps those who could answer these queries—let us hope they will see them.

To return to the summit of The Taillon: northwards over France appeared a sea of cumuli, whilst southwards over Spain the sky was cloudless; this feature was also in evidence a week or so later, and may have marked the dividing line between our anticyclonic conditions and the low pressure systems so continuously prevalent over these islands throughout June. Four or five miles away to the east, were the highest of the Gavarnie peaks, Marboré, The Cylindre and Perdu, the latter 10,995 ft.

Fig. 2.

Owing to the amount of fresh soft snow and the extreme heat the going was decidedly trying. The Val d'Arazas, in Spain, was reached about sunset, the descent below the snows being by an extremely precipitous path; this valley much resembles a Colorado canyon, and looking at it from above or below it appears impossible of ingress or exit; layers of precipices line the sides interspersed with belts of fir trees which seem to have little else but rock for sustenance. Gavarnie was regained next day, via Bouchario and over the Porte d'Espagne—the regular mule track, 7,485 ft.

Mr. Gatty suggested a look at the Eastern Pyrenees for the last part of our programme, so we repaired, on the 22nd, to Axles-Thermes. The heat this day was unforgettable, 89° in the railway carriage before reaching Lourdes at 11 a.m., and on leaving Lourdes at 1 p.m. the thermometer stood at 94° till 4 p.m., and on holding it out of the window while the train was in full motion, it

indicated 95°, so that, in all probability, an instrument in a sun-baked screen would have shown quite 100°. From what I could gather it was an exceptionally hot day even for that district. This reminds me of the fact that in the grounds of one of the Hotels at Gavarnie, there reposes a meteorological stand, not a screen, presented by the Touring Club of France, but not a single instrument hangs thereon; perhaps meteorology is another item only catered for after July 1st, if then.

Ax-les-Thermes is about 2,350 ft. above sea, and appears to be built above a natural cavity of hot sulphur water. Our shaving water was brought from a spring in the road opposite the hotel, and was quite hot enough and pleasantly sulphurous; the hottest sulphur spring has a temperature of 172°, and is led into an open fountain in the town "place," where the poorer class come and wash their clothes.

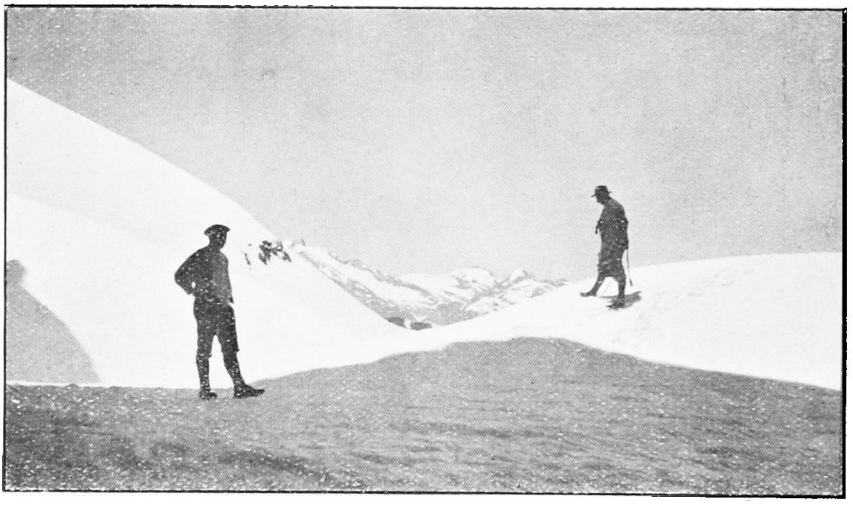

Fig. 3.

Our objective from Ax was the Pic de Carlitte, 9500 ft., the best starting point for the ascent being the village of Porté, 21½ miles distant, on the south side of the range. Porté was reached by driving over the watershed past Hospitalet, the highest village on the north side. From the latter place a tunnel is being pierced to Porté for the Trans-Pyrenean Railway, which will be continued up this valley from Ax, the present terminus, and thence on to Barcelona. The col is 6290 ft.; usually it is blocked by snow for 4 or 5 months during the year, but so mild was last winter (1911-12) that the road had never been closed. After sleeping at the little inn at Porté, where the fowls and pigeons disputed with us their right to the stairs, we were off about 5 a.m., on the 25th for Carlitte, accompanied by a wily chasseur of the district, who hunts the izard—in season and out. On the way we were fortunate enough to see one of these

animals, the chamois of the Pyrenees, quite unconscious of our presence, the chasseur, meanwhile, announcing his intention to come stalking this way on the morrow, regardless of the fact that the opening of the season was more than a month ahead. Carlitte's top was reached by a rocky scree slope, and it was only necessary to cross two or three patches of snow, indeed it would have been possible to have reached the summit of 9500 feet without touching snow at all, though there were deep beds in the hollow which Carlitte forms with a ridge on the west. At this height we basked in glorious sun from 10 to 12.30 p.m., with temperature well above 50°. A glorious view ; a cloud-sea over the French plain to the north, Canigou looking quite near in the south-east, the Pic de Nethou, 11,165 feet, the highest point of the range, about 65 miles away, in the west.

The rainfall is evidently much less in the Eastern Pyrenees than in the centre or further west, where snow patches began at 6,000 ft. and were in masses at 7,000 ft. Round Gavarnie the peaks above 9,500 ft. usually have small glaciers ; some of these form in the ledges of the Cirque and show no signs of advance or fracture over the precipices below. The flora between 6,500 ft. and 7,500 ft., when the snow has just melted, is wonderful, the grass in places blue with gentians and pink primulas in profusion among the rocks even at 8,000 ft., while multi-coloured gorgeous butterflies hold high revel in the sunshine. We were very lucky in the weather, especially for the higher ascents of The Taillon and Pic de Carlitte ; previous to the fine spell which set in on the 13th, we were told that there had not been a fine day since the beginning of May.

Correspondence.

To the Editor of Symons's Meteorological Magazine.

THE THUNDERSTORM OF MAY 30th AT MANSFIELD.

I ENCLOSE a cutting from our local newspaper *re* the heavy thunderstorm we had last Thursday afternoon, May 30th. The rain commenced about 3 o'clock, and at 3.40 p.m., when the rain slightly abated, I measured 1·26 inches. At 9 o'clock on the following morning the total for the preceding 24 hours was 1·54 inches, practically all of which fell between 3 and 4 o'clock. The thunder was nearly continuous for about half-an-hour, but only one flash of lightning was close to and struck a house in the town, not doing much damage.

WM. PICKARD.

West Bank, Mansfield, June 14th, 1912.

" The surface drainage system was utterly unable to cope with the waters, and even the sewers were choked with the rushing, seething flood.

From the higher parts of the town converging on St. John-street and Wood-street, the waters flooded down the roadways into the old Market-place and West-gate, Stockwell-gate, and eventually down Church-street into the natural water-courses there.

But the centre of the town for several hours was chaos personified, the water in places rising to several feet in depth, and executing incalculable damage in the emporiums of the principal tradesmen of the town."

TORRENTIAL RAIN ON JULY 23rd.

THE rainfall here this afternoon may interest you. Steady and heavy rain began about 2.50 p.m., and ceased about 4 p.m. The fall for this period was 1·10 inches.

It began to rain steadily again about 5 p.m., and ceased at 7.15 p.m. The fall during this period was 1·93 in., or 3·03 inches for the afternoon. Showers are still passing. The rain was accompanied by some thunder and lightning, but not of violent or alarming character.

The Maples, Hitchin, 23rd July, 1912. WILLIAM HILL.

THE WETTEST FIRST QUARTER ON RECORD.

MAY BE the above title is a little too strong; but the three months ending March 31st have certainly proved to be the wettest quarter in 18 years' observations. The total fall is 14·62 in. compared with only 4·74 in. in 1911. Viewed in another way the contrast with last year appears still more startling, for the amount of rain which has fallen this year from January 1st to March 31st had not fallen last year till September 29th. The previous wettest first quarter comes far behind these figures, viz.: 1903 with 10.89 in. Three years in the last eighteen have had less rain than has fallen in the four months, December—March.

	Fall.	Excess (on 6 year's average).
January	5·45	..... 3·20
February..... ..	2·85	..... ·72
March	6·32	..... 3·34
Total.....	14·62	7·26

Kentchurch Rectory, Hereford. R. P. DANSEY.

THE THUNDERSTORM OF MAY 31st.

WE are indebted to Mr. J. Shipley Ellis for some interesting details of a storm which circled round the west and north of Peterborough at about five miles distance on the evening of May 31st. The storm appears to have extended from Alwalton and Castor, round through Stibbington, and across by Barnack to Tallington, Bourne and Peakirk. In Peterborough there were thunder showers, but only

·11 in. of rain was measured, whereas at Bourne the fall amounted to 2·12 in. It is a regrettable fact that no records are available for Castor and Stibbington, where the storm seems to have been even more severə, but we have heard that at Waternewton the Rector recorded 3·00 in.

Some interesting details of the storm and the havoc wrought by it are given in *The Citizen* and in the *Lincolnshire, Boston and Spalding Free Press.* An extraordinary darkness settled over the country, and a traveller in the 6 o'clock train from Peterborough to Oundle declared that near Elton the darkness was so intense that people sitting in the same railway compartment could only be seen very indistinctly. Candles were lighted in the cottages and houses. The lightning and thunder were very severe, but the hail and rain which accompanied the storm descended with a roar that deadened the thunder, and clattered on the top of the trains with such a noise that if the travellers had shouted they would probably not have been heard. After the storm an extraordinary scene presented itself. The country was inundated; not merely roads, but hundreds of acres of arable and grass land being under water. Two hours afterwards the hail lay thick on the banks and sheltered places as though a snow-storm had passed, and it was still in such quantities near Alwalton the next morning that it could have been shovelled away. Extensive lakes were formed on the fields on the Castor side of the railway and great damage was done to growing crops. About seven tons of granite were swept down Castor Hill, and almost all the shops and cottages in the neighbourhood were flooded.

At Bourne several cottages were struck by lightning, a house in Manning Road being considerably damaged. At about 8 p.m. the lightning struck the chimney, and there was a big fall of bricks which crashed through the roof. A considerable number of the tiles were displaced and the roof of an outhouse was also damaged. Some horses and cattle were killed in villages north-west of the town and trees were also destroyed. At Market Deeping the storm was most violent and lasted about an hour and a half. Houses were flooded and the streets in some places were eighteen inches deep in water. The driver of the 7 p.m. train from Essendene stopped his engine outside Braceborough Station owing to the blinding nature of the lightning which was so vivid that at times it was impossible to see anything. Telegraphic and telephonic communication was temporarily suspended and some of the wires were broken down. The roads in the hilly districts have been much damaged by the torrential rainfall.

In Mr. Dansey's paper the titles of the illustrations on pp. 142—144 were accidentally omitted. They are :—

Fig. 1.—Brêche de Roland. Fig. 2.—Summit of the Taillon, looking east.
Fig. 3.—At the Brêche de Roland, 9,200 feet.

RAINFALL TABLE FOR JULY, 1912.

STATION.	COUNTY.	Lat. N.	Long. W. [*E.]	Height above Sea.	RAINFALL OF MONTH.	
					Aver. 1875—1909.	1912.
		° ′	° ′	ft.	in.	in.
Camden Square	*London*	51 32	0 8	111	2·57	1·44
Tenterden	*Kent*	51 4	*0 41	190	2·21	1·02
Arundel (Patching)	*Sussex*	50 51	0 27	130	2·46	2·09
Fawley (Cadland)	*Hampshire*	50 50	1 22	52	2·42	2·88
Oxford (Magdalen College).	*Oxfordshire*	51 45	1 15	186	2·43	2·95
Wellingborough (Croyland Abbey).	*Northampton*	52 18	0 41	174	2·54	4·20
Shoeburyness	*Essex*	51 31	*0 48	13	1·73	1·35
Bury St. Edmunds (Westley)	*Suffolk*	52 15	*0 40	226	2·68	2·82
Geldeston [Beccles]	*Norfolk*	52 27	*1 31	38	2·37	3·30
Polapit Tamar [Launceston]	*Devon*	50 40	4 22	315	2·74	2·65
Rousdon [Lyme Regis]	,,	50 41	3 0	516	2·68	2·24
Stroud (Upfield)	*Gloucestershire*	51 44	2 13	226	2·75	5·90
Church Stretton (Wolstaston)	*Shropshire*	52 35	2 48	800	2·58	2·66
Coventry (Kingswood)	*Warwickshire*	52 24	1 30	340	2·60	3·44
Boston	*Lincolnshire*	52 58	0 1	25	2·35	4·16
Worksop (Hodsock Priory)	*Nottinghamshire*	53 22	1 5	56	2·35	4·82
Macclesfield	*Cheshire*	53 15	2 7	501	3·41	3·58
Southport (Hesketh Park)	*Lancashire*	53 38	2 59	38	2·92	4·23
Arncliffe Vicarage	*Yorkshire, W.R.*	54 8	2 6	732	4·75	5·74
Wetherby (Ribston Hall)	,, ,,	53 59	1 24	130	2·56	4·11
Hull (Pearson Park)	,, *E.R.*	53 45	0 20	6	2·39	3·39
Newcastle (Town Moor)	*Northumberland*	54 59	1 38	201	2·90	...
Borrowdale (Seathwaite)	*Cumberland*	54 30	3 10	423	8·91	10·26
Cardiff (Ely)	*Glamorgan*	51 29	3 13	53	3·26	3·48
Haverfordwest	*Pembroke*	51 48	4 58	95	3·39	4·37
Aberystwyth (Gogerddan)	*Cardigan*	52 26	4 1	83	4·03	4·62
Llandudno	*Carnarvon*	53 20	3 50	72	2·52	4·17
Cargen [Dumfries]	*Kirkcudbright*	55 2	3 37	80	3·20	4·68
Marchmont House	*Berwick*	55 44	2 24	498	3·30	1·62
Girvan (Pinmore)	*Ayr*	55 10	4 49	207	3·73	1·86
Glasgow (Queen's Park)	*Renfrew*	55 53	4 18	144	2·91	2·13
Inveraray (Newtown)	*Argyll*	56 14	5 4	17	4·72	3·38
Mull (Quinish)	,,	56 34	6 13	35	4·12	4·56
Dundee (Eastern Necropolis)	*Forfar*	56 28	2 57	199	2·84	2·45
Braemar	*Aberdeen*	57 0	3 24	1114	2·65	2·46
Aberdeen (Cranford)	,,	57 8	2 7	120	3·00	1·98
Cawdor	*Nairn*	57 31	3 57	250	3·14	1·66
Fort Augustus (S. Benedict's)	*E. Inverness*	57 9	4 41	68	2·98	2·45
Loch Torridon (Bendamph)	*W. Ross*	57 32	5 32	20	5·35	3·62
Dunrobin Castle	*Sutherland*	57 59	3 56	14	2·91	2·25
Wick	*Caithness*	58 26	3 6	77	2·67	2·19
Killarney (District Asylum)	*Kerry*	52 4	9 31	178	3·53	3·38
Waterford (Brook Lodge)	*Waterford*	52 15	7 7	104	3·13	5·98
Nenagh (Castle Lough)	*Tipperary*	52 54	8 24	120	3·02	4·08
Miltown Malbay	*Clare*	52 52	9 26	400	3·59	4·10
Gorey (Courtown House)	*Wexford*	52 40	6 13	80	2·90	5·60
Abbey Leix (Blandsfort)	*Queen's County*	52 56	7 17	532	2·99	5·06
Dublin (Fitz William Square)	*Dublin*	53 21	6 14	54	2·60	3·06
Mullingar (Belvedere)	*Westmeath*	53 29	7 22	367	3·16	4·37
Cong (The Glebe)	*Mayo*	53 33	9 16	112	3·72	3·82
Crossmolina (Enniscoe)	*Mayo*	54 4	9 16	74	3·26	2·36
Collooney (Markree Obsy.)	*Sligo*	54 11	8 27	127	3·36	3·79
Seaforde	*Down*	54 19	5 50	180	3·32	4·25
Bushmills (Dundarave)	*Antrim*	55 12	6 30	162	3·28	2·71
Omagh (Edenfel)	*Tyrone*	54 36	7 18	280	3·34	4·49

RAINFALL TABLE FOR JULY, 1912—*continued.*

RAINFALL OF MONTH (*con.*)					RAINFALL FROM JAN. 1.					
Diff. from Av. in.	% of Av.	Max. in 24 hours. in.	Max. in 24 hours. Date.	No. of Days	Aver. 1875—1909. in.	1912. in.	Diff. from Aver. in.	% of Av.	Mean Annual 1875-1909. in.	STATION.
—1·13	56	·26	2	12	13·53	14·42	+ ·89	107	25·11	Camden Square
—1·19	46	·22	1	13	13·65	14·01	+ ·36	103	27·64	Tenterden
— ·37	85	·61	13	12	14·92	18·11	+3·19	122	30·48	Patching
+ ·46	119	·58	30	15	15·73	18·74	+3·01	119	31·87	Cadland
+ ·52	121	·79	23	17	13·03	17·44	+4·41	134	24·58	Oxford
+1·66	165	·69	27	18	13·68	16·18	+2·50	118	25·17	Croyland Abbey
— ·38	78	·30	1	11	9·73	9·63	— ·10	99	19·28	Shoeburyness
+ ·14	105	1·19	6	13	13·44	13·47	+ ·03	100	25·40	Westley
+ ·93	139	·76	19	17	11·98	12·72	+ ·74	106	23·73	Geldeston
— ·09	97	·49	28	20	18·62	24·69	+6·07	133	38·27	Polapit Tamar
— ·44	84	·70	27	18	17·01	21·72	+4·71	128	33·54	Rousdon
+3·15	214	·96	27	21	15·83	25·83	+10·00	163	29·81	Stroud
+ ·08	103	·40	27	20	16·88	20·76	+3·88	123	32·41	Wolstaston
+ ·84	132	·78	31	16	15·35	22·16	+6·81	144	28·98	Coventry
+1·81	177	·89	20	16	12·21	15·77	+3·56	129	23·35	Boston
+2·47	205	·91	27	18	13·15	20·17	+7·02	154	24·46	Hodsock Priory
+ ·17	105	·50	27	16	18·17	18·56	+ ·39	102	34·73	Macclesfield
+1·31	145	1·79	31	16	15·88	21·50	+5·62	135	32·70	Southport
+ ·99	121	1·03	31	16	31·97	41·16	+9·19	129	61·49	Arncliffe
+1·55	161	1·37	12	13	14·19	22·26	+8·07	157	26·87	Ribston Hall
+1·00	142	·49	19	20	13·47	18·39	+4·92	136	26·42	Hull
...	...	...	...	...	14·45	...	..	..	27·94	Newcastle
+1·35	115	1·93	28	18	65·29	70·30	+5·01	108	129·48	Seathwaite
+ ·22	107	·88	27	19	20·48	28·91	+8·43	141	42·28	Cardiff
+ ·98	129	·88	31	17	22·84	30·50	+7·66	134	46·81	Haverfordwest
+ ·59	115	1·51	28	16	22·15	26·99	+4·84	122	45·46	Gogerddan
+1·65	166	1·58	31	18	14·89	16·97	+2·08	114	30·36	Llandudno
+1·48	146	·85	28	15	22·26	29·20	+6·94	131	43·47	Cargen
—1·68	49	·30	27	13	17·68	16·30	—1·38	92	33·76	Marchmont
—1·87	50	·45	12	12	24·83	28·08	+3·25	113	49·77	Girvan
— ·78	73	·54	28	12	18·42	18·23	— ·19	99	35·97	Glasgow
—1·34	72	·97	28	13	34·04	35·52	+1·48	104	68·67	Inveraray
+ ·44	111	1·14	28	14	27·67	28·03	+ ·36	101	56·57	Quinish
— ·39	86	·64	25	13	14·86	14·31	— ·55	96	28·64	Dundee
— ·19	93	1·05	25	9	17·80	18·51	+ ·71	104	34·93	Braemar
—1·02	66	·53	25	12	17·02	15·93	—1·09	94	32·73	Aberdeen
—1·48	53	·27	25	10	15·65	12·86	—2·79	82	29·33	Cawdor
— ·53	82	·51	26	16	23·20	21·38	—1·82	92	44·53	Fort Augustus
—1·73	68	·73	10	12	42·90	38·49	—4·41	90	83·93	Bendamph
— ·66	77	·63	31	10	17·19	15·94	—1·25	93	31·90	Dunrobin Castle
— ·48	82	·61	31	15	15·38	15·81	+ ·43	103	29·88	Wick
— ·15	96	·77	26	16	28·40	32·21	+3·81	113	54·81	Killarney
+2·85	191	1·57	11	16	20·53	28·15	+7·62	137	39·57	Waterford
+1·06	135	·81	24	18	20·53	24·28	+3·75	118	39·43	Castle Lough
+ ·51	114	·82	21	14	22·30	28·12	+5·82	126	45·11	Miltown Malbay
+2·70	193	1·47	11	16	18·32	28·49	+10·17	155	34·99	Courtown Ho.
+2·07	169	·86	24	18	18·83	23·53	+4·70	125	35·92	Abbey Leix
+ ·46	118	·56	31	17	14·75	16·82	+2·07	114	27·68	Dublin
+1·21	138	1·45	27	17	19·17	24·79	+5·62	129	36·15	Mullingar
+ ·10	103	·90	24	19	25·13	26·43	+1·30	105	48·90	Cong
— ·90	72	·42	12	18	26·64	25·58	—1·06	96	52·87	Enniscoe
+ ·43	113	·50	11	18	22·19	25·85	+3·66	116	42·71	Markree
+ ·93	128	1·31	26	15	20·74	28·49	+7·75	137	38·91	Seaforde
— ·57	83	·70	12	11	18·77	20·51	+1·74	109	37·56	Dundarave
+1·15	134	·80	27	16	20·44	25·52	+5·08	125	39·38	Omagh

SUPPLEMENTARY RAINFALL, JULY, 1912.

Div.	STATION.	Rain inches	Div.	STATION.	Rain inches.
II.	Warlingham, Redvers Road .	1·80	XI.	Lligwy	5·47
,,	Ramsgate	1·82	,,	Douglas	...
,,	Hailsham	1·22	XII.	Stoneykirk, Ardwell House...	1·76
,,	Totland Bay, Aston House...	1·85	,,	Dalry, The Old Garroch.....	3·63
,,	Stockbridge, Ashley..	1·95	,,	Langholm, Drove Road	4·10
,,	Grayshott	2·77	,,	Beattock, Kinnelhead	4·04
,,	Caversham, Rectory Road ...	1·49	XIII.	St. Mary's Loch, Cramilt Ldge	3·68
III.	Harrow Weald, Hill House...	1·49	,,	North Berwick Reservoir.....	1·28
,,	Pitsford, Sedgebrook....	3·77	,,	Edinburgh, Royal Observaty.	2·01
,,	Woburn, Milton Bryant.....	2·48	XIV.	Maybole, Knockdon Farm ...	1·68
,,	Chatteris, The Priory.....	3·88	XV.	Campbeltown, Witchburn ..	3·55
IV.	Colchester, Lexden	1·00	,,	Holy Loch, Ardnadam.....	4·38
,,	Newport.....	1·54	,,	Ballachulish House	3·29
,,	Ipswich, Copdock	2·40	,,	Islay, Eallabus	3·60
,,	Blakeney.....	4·34	,,	Tirie, Cornaigmore	3·22
,,	Swaffham	3·52	XVI.	Dollar Academy	1·91
V.	Bishops Cannings	2·13	,,	Balquhidder, Stronvar.....	2·98
,,	Winterbourne Steepleton.....	2·26	,,	Coupar Angus	2·58
,,	Ashburton, Druid House.....	3·33	,,	Glenlyon, Meggernie Castle..	2·67
,,	Cullompton	3·03	,,	Blair Athol	1·61
,,	Lynmouth, Rock House	3·04	,,	Montrose, Sunnyside Asylum.	1·82
,,	Okehampton, Oaklands.....	2·30	XVII.	Alford, Lynturk Manse	1·26
,,	Hartland Abbey.....	2·53	,,	Fyvie Castle	1·58
,,	Probus, Lamellyn.....	4·36	,,	Keith Station	2·66
,,	North Cadbury Rectory.....	3·01	XVIII.	Skye, Dunvegan	4·27
VI.	Clifton, Pembroke Road.....	4·89	,,	N. Uist, Lochmaddy	2·65
,,	Ross, The Graig	3·88	,,	Glenquoich, Loan.....	6·90
,,	Shifnal, Hatton Grange.....	2·50	,,	Alvey Manse.....	1·84
,,	Droitwich.....	2·83	,,	Loch Ness, Drumnadrochit...	2·18
,,	Blockley, Upton Wold.....	5·37	,,	Glencarron Lodge	4·24
VII.	Market Overton.....	5·29	XIX.	Invershin	1·39
,,	Market Rasen.....	3·92	,,	Loch Stack, Ardchullin	3·45
,,	Bawtry, Hesley Hall	3·63	,,	Melvich	2·00
,,	Derby, Midland Railway.....	3·50	XX.	Skibbereen Rectory	2·79
,,	Buxton	6·03	,,	Dunmanway, The Rectory ..	5·03
VIII.	Nantwich, Dorfold Hall	3·32	,,	Glanmire, Lota Lodge.....	5·73
,,	Chatburn, Middlewood	4·29	,,	Mitchelstown Castle.....	7·73
,,	Cartmel, Flookburgh	6·70	,,	Darrynane Abbey.....	2·86
IX.	Langsett Moor, Up. Midhope	6·23	,,	Clonmel, Bruce Villa	6·01
,,	Scarborough, Scalby	4·89	,,	Newmarket-on-Fergus, Fenloe	4·28
,,	Ingleby Greenhow	6·58	XXI.	Laragh, Glendalough	6·61
,,	Mickleton	4·35	,,	Ballycumber, Moorock Lodge	4·52
X	Bellingham, High Green Manor	1·77	,,	Balbriggan, Ardgillan	3·27
,,	Ilderton, Lilburn Cottage ...	2·81	XXII.	Woodlawn	4·22
,,	Keswick, The Bank.....	5·29	,,	Westport, St. Helens	3·11
XI.	Llanfrechfa Grange	5·05	,,	Achill Island, Dugort	2·91
,,	Treherbert, Tyn-y-waun	6·75	,,	Mohill, The Rectory	2·41
,,	Carmarthen, The Friary	4·29	XXIII.	Enniskillen, Portora.....	...
,,	Castle Malgwyn [Llechryd]...	2·59	,,	Dartrey [Cootehill]	3·59
,,	Crickhowell, Tal-y-maes.....	5·50	,,	Warrenpoint, Manor House ..	3·48
,,	New Radnor, Ednol	4·50	,,	Banbridge, Milltown	3·44
,,	Rhayader, Tyrmynydd	4·79	,,	Belfast, Cave Hill Road	3·72
,,	Lake Vyrnwy	5·07	,,	Glenarm Castle.....	3·61
,,	Llangyhanfal, Plâs Draw.....	2·56	,,	Londonderry, Creggan Res...	...
,,	Dolgelly, Bryntirion.....	5·43	,,	Killybegs	4·42
,,	Bettws-y-Coed, Tyn-y-bryn...	6·27	,,	Horn Head	5·32

METEOROLOGICAL NOTES ON JULY, 1912.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Temp. for Temperature; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; TS for Thunderstorm; R for Rain; H for Hail; S for Snow; F for number of days Frost in Screen; f on Grass.

LONDON, CAMDEN SQUARE.—The conditions were generally dull with frequent light showers, except for a fine dry week with high temp. from 10th to 17th. Temp. was low in the first week and in the last few days. Duration of sunshine 134·7* hours, and of R 22·2 hours. Mean temp. 64°·5, or 1°·0 above the average. Evaporation 2·55 in. Shade max. 91°·4 on 12th; min. 47°·1 on 9th. F 0, f 0.

TENTERDEN.—Hot days from 10th to 17th, five having temp. over 80°. Duration of sunshine 226·0† hours. Shade max. 88°·0 on 12th; min. 45°·0 on 19th. F 0, f 0.

PITSFORD.—Mean temp. 61°·8. Shade max. 85°·2 on 12th and 15th; min. 44°·5 on 9th.

IPSWICH, COPDOCK.—A brilliant week from the 10th to the 17th, several cold sunless days, but the R was very welcome from an agricultural point of view. Duration of sunshine 198·4† hours. Mean temp. 63°·0. Shade max. 86°·2 on 12th; min. 45°·6 on 18th. F 0, f 0.

POLAPIT TAMAR.—Shade max. 83°·9 on 15th; min. 38°·0 on 9th. F 0, f 0.

NORTH CADBURY.—Extremely humid, except from noon on the 14th to noon on 19th. Numerous showers were exasperating to haymakers, who made no real progress save in the one short dry hot spell. Last 4 days stormy and cool. Shade max. 91°·0 on 15th; min. 43°·5 on 9th. F 0, f 0.

ROSS.—Shade max. 87° 0 on 15th; min. 42°·6 on 9th. F 0, f 0.

HODSOCK PRIORY.—The wettest and dullest July since 1888, which was a little worse in both respects. The nights were very mild and the daily temp. range very small. Shade max. 83°·4 on 12th; min. 43°·6 on 9th. F 0, f 0.

SOUTHPORT.—Duration of sunshine 147·3* hours or 68·0 hours below the average, and the smallest in 20 years. Duration of R 49·6 hours. Evaporation 2·87 in. Mean temp. 60°·1 or 0°·7 above the average. An excess of E. winds and a deficiency of W. winds unprecedented in 40 years. Shade max. 78°·0 on 16th; min. 47°·0 on 5th. F 0, f 0.

HULL.—Cloudy and showery to 8th, then finer to 18th, and again unsettled with persistent R, squally winds and frequent T to the end. Shade max. 79°·0 on 12th; min. 46°·0 on 9th. F 0, f 0.

GOGERDDAN.—The month closed with heavy TSS. The R on 28th and 31st was exceptionally heavy, and on the latter day there was a strong gale. Shade max. 77°·0 on 7th; min. 36°·0 on 19th. F 0, f 0.

CARGEN.—Fine weather during the first three weeks, but last nine days wet and sunless. Shade max. 83°·5 on 15th; min. 42°·0 on 19th.

EDINBURGH.—Sunshine much below the average. Shade max. 74°·6 on 12th; min. 46°·8 on 19th. F 0, f 0.

INVERARAY.—An unusually fine July, with pleasant warm weather, but only two or three days really hot.

COUPAR ANGUS.—Mean temp. 3°·4 below the average. Shade max 78°·5 on 20th; min. 40°·0 on 23rd. F 0, f 0.

FORT AUGUSTUS.—Shade max. 74°·0 on 4th; min. 39°·0 on 23rd.

LOCH STACK.—Duration of sunshine, 123·1* hours.

GLANMIRE.—Up to 19th the month was dry and moderately warm, but a spell of heavy R storms then set in and continued to the end.

CLONMEL.—The wettest July since 1903. Shade max. 78°·0 on 15th and 16th; min. 41°·0 on 8th.

DUBLIN.—Save for a break in the second week the weather was favourable until 21st. From that day to the end very unsettled weather prevailed. Mean temp. 58°·9. Shade max. 73°·1 on 15th; min. 46°·9 on 19th. F 0, f 0.

WARRENPOINT.—A month of low temp. Fairly dry to 20th, when almost continuous R set in, with heavy clouds and fog.

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* Campbell-Stokes† † Jordan

Climatological Table for the British Empire, February, 1912.

STATIONS. (*Those in italics are South of the Equator.*)	Absolute. Maximum. Temp.	Maximum. Date.	Minimum. Temp.	Minimum. Date.	Average. Max.	Min.	Dew Point.	Humidity.	Absolute. Max. in Sun.	Min. on Grass.	Total Rain Depth.	Days.	Aver. Cloud.
	°		°		°	°	°	0-100	°	°	inches		
London, Camden Square	58·5	28	16·7	3	48·7	38·0	40·7	88	92·3	18·5	1·71	20	8·1
Malta	71·4	25	49·1	18	61·8	53·3	49·5	80	131·8	.	·64	3	5·0
Lagos	91·5	22	71·3	23	88·8	76·6	74·1	72	150·0	69·0	1·87	3	...
Cape Town	90·4	26	47·7	16	77·8	59·0	59·1	74	...	...	·34	5	3·9
Durban, Natal ...	90·3	22	63·7	27	84·1	70·2	70·6	74	152·4	...	2·58	16	6·3
Johannesburg	80·5	2	50·2	27	76·4	58·5	58·1	80	152·9	49·0	5·28	14	5·6
Mauritius	88·0	1	71·1	16	83·7	74·8	74·0	86	155·0	66·4	31·51	25	8·5
Bloemfontein	94·1	1	51·9	7	82·2	61·8	58·1	68	...	...	3·60	15	5·4
Calcutta...	93·6	29	58·0	21	84·8	64·5	62·5	69	...	51·5	·74	2	3·0
Bombay...	92·0	21	66·4	3	84·7	71·2	66·5	70	133·8	57·9	·00	0	1·3
Madras	89·3	28	66·5	26	86·7	71·3	70·3	78	135·3	62·8	·00	0	2·4
Kodaikanal	71·5	10	44·2	22	67·6	49·4	45·4	67	144·9	34·6	·64	2	3·5
Colombo, Ceylon ...	91·6	22	71·7	24	88·1	74·7	71·6	73	154·8	63·9	3·63	5	3·7
Hongkong	76·8	28	47·8	1	64·4	56·4	52·7	75	130·5	...	2·44	11	6·8
Sydney	87·4	7	60·9	20	78·0	66·3	62·9	73	148·3	51·2	7·00	26	6·8
Melbourne	106·5	1	51·6	29	79·7	60·6	55·1	58	155·6	45·5	·94	7	4·4
Adelaide	112·8	2	53·9	19	90·7	66·8	55·0	44	168·0	45·4	·38	5	2·7
Perth	106·6	19	55·2	7	85·8	64·8	59·0	59	155·6	46·8	·38	3	2·9
Coolgardie	110·5	1	58·0	17	98·4	67·6	55·9	39	175·2	57·0	·10	2	3·0
Hobart, Tasmania ...	101·0	3	47·0	15	74·2	55·5	49·1	54	146·9	42·1	·29	2	5·6
Wellington	72·4	29	47·2	18	65·4	53·7	49·6	70	126·0	38·0	3·53	9	6·4
Auckland	77·0	4	49·0	18	71·4	57·9	58·5	77	109·0	45·0	3·62	15	6·5
Jamaica, Kingston ...	90·8	23	61·2	9	85·6	68·5	67·8	81	...	...	·74	4	3·3
Grenada	84·0	var.	70·0	15	82·0	74·0	...	72	140·0	...	2·12	11	2·5
Toronto	45·6	25	—18·8	10	26·1	11·9	...	...	119·0	23·8	1·66	13	6·8
Fredericton	45·2	22	—25·0	10	26·1	5·1	...	86	...	...	2·60	10	5·1
St. John, N.B. ...	43·7	22	—12·0	11	27·8	13·0	...	...	...	...	2·99	12	4·9
Edmonton, Alta. ...	46·3	16	—20·9	8	30·8	11·7	...	80	107·4	—22·3	·10	4	6·9
Victoria, B.C.	53·9	9	28·5	27	48·2	37·7	...	82	...	...	3·14	17	7·0
Dawson	40·0	20	—23·0	26	10·6	—2·0	...	...	...	...	1·05	5	...

MALTA.—Mean temp. of air, 56°·7, or 4°·5 higher than in 1911. Average bright sunshine, 7·6 hours per day.

Johannesburg.—Bright sunshine, 208·6 hours.

Mauritius.—R 24·48 in. above average. Mean hourly velocity of wind 13·2 miles, or 4·0 above average.

KODAIKANAL.—Bright sunshine, 232 hours.

COLOMBO.—Mean temp. of air 81°·4 or 1°·2 above, of dew point 1°·0 above, and R 1·62 in. above, averages. Mean hourly velocity of wind 4·1 miles. TS on 2 days.

HONGKONG.—Mean temp. of air 59°·9. Bright sunshine 138·8 hours.

Sydney.—Mean temp. of air 1°·1 above, and R 2·26 in. above, averages.

Melbourne.—Mean temp. of air 2°·7 above, and R ·82 in. below, averages.

Adelaide.—Mean temp. of air 4°·8, above, and R ·20 in. below, averages. A hot month, max. temp. over 90° on 14, and 6 being over 100°.

Coolgardie.—Mean temp. of air 7°·5 above average, and the hottest February on record here.

Wellington.—Mean temp. of air 2°·9 below average. Bright sunshine 229·7 hours.