Symons's Meteorological Magazine.

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Sir Charles Todd, K.C.M.G., F.R.S.

ISLINGTON, 7th JULY, 1826.—ADELAIDE, 29th JANUARY, 1910.

CHARLES TODD commenced life as a computor in Greenwich Observatory at the age of fourteen, and by hard work gained an increasing knowledge of astronomy and meteorology which were to the end his special hobbies as well as the objects of his more serious studies. In 1848 he was appointed an assistant astronomer in the Cambridge University Observatory, but was recalled to Greenwich by Sir George Airy, the Astronomer Royal, who gave him charge of the newly established electrical time-signals in 1854. He thus acquired a practical knowledge of telegraphy, and when the alarm created by the outbreak of the Crimean war brought home to the Australian colonies the importance of developing telegraphic communications, Charles Todd was recommended by Sir George Airy for the post of Superintendent of Telegraphs and Government Astronomer of South Australia. On the day when Todd landed at Port Adelaide, in 1855, the first telegraph line in the colony was opened, a private wire between the capital and the port. The extension of telegraphs immediately became the passion of his life, and he was happy in being able to secure not only the linking up of Adelaide with the systems of Victoria on the east, and Western Australia on the west; but also the connecting link in South Australia itself, which first made possible telegraphic communication between the Australian colonies and the mother-country. It is scarcely possible now to realize how vast an undertaking the over-land telegraph was when it was completed in 1872, joining Adelaide and Port Darwin across 2,000 miles of scarcely explored country, a great part of it arid desert, a great part trackless forest, and a considerable portion inhabited by the wildest and strongest tribes of Australian aborigines. Todd inspected the whole line before it was opened, and when long afterwards he was asked what were the proudest moments of his successful career, he replied :—"The proudest moment of my life was the day of my marriage to the daughter of Mr. Edward Bell, of Cambridge, who bravely consented to share my lot in a new and strange land.

Probably the next proudest moment of my life was, when returning overland from the Northern Territory, I sat on the ground near Central Mount Stuart on a cold night, with a little pocket relay connected with the wires, and communicated with Port Darwin and Adelaide."

To the office of Superintendent of Telegraphs that of Postmaster-General was added in 1869, and as the colony grew the labours of those positions grew also, and but for the fact that astronomy and meteorology were always a delight to him, Sir Charles Todd might have remained content with the position of one of the leading public men in Australia.

None of the Australian states is more dependent on climatic conditions than South Australia, and the rapid reduction of rainfall as one goes north from Adelaide makes the exact measurement of precipitation of supreme importance in determining the value of the land for agriculture or stock raising. Sir Charles Todd placed the official observations in South Australia on a satisfactory footing from the outset, and his annual reports were always both valuable and interesting. He forwarded the record at Adelaide regularly for publication in our pages from the beginning of the appearance of the Climatological Table for the British Empire. From time to time he communicated articles of general interest, the latest being that on the coldest spring on record in South Australia, which appeared in this Magazine for 1905 (vol. **40**, pp. 219-221), the year when Sir Charles retired from his various offices to pass the remainder of his days in the society of his many friends in Adelaide.

Although he contributed little to scientific literature beyond his official reports, Sir Charles Todd throughout his career, kept pace as a man of science with the developing colony in which his lot was cast, and did more to forward the best interests of science in public life than many writers of weighty monographs.

We have been favoured by several correspondents in South Australia with notices from the local press which show how deeply the genial qualities of the veteran had endeared him to the people of his State. They even dwell with pleasure on the facility he showed in making puns, some specimens of which were quoted, and certainly reach above the average of this little-appreciated variety of wit.

On the retirement of Sir Charles Todd, in 1905, the offices he held were divided, and Mr. Griffiths, now Chief Assistant to the Commonwealth Meteorologist at Melbourne, became Acting-Government Astronomer at Adelaide, where Mr. G. F. Dodwell is now the Government Astronomer.

RAINFALL OF THAMES VALLEY FEBRUARY, 1910.

Symons's Meteorological Magazine.

THE RAINFALL OF FEBRUARY, 1910.

Of all the fragments of proverbial quotation "February Fill-Dyke" has buzzed about us for years as the most irritating. Everyone remembers and quotes the first words, no two are agreed as to the remainder; but popular imagination cherishes the illusion that February is the wettest of the months, whereas the truth is that in most parts of the British Isles it is the driest month of the year when the rainfall of each month is averaged over a long period, and in none does a long period show it to be the wettest.

This year February has been drier than its dry average in the extreme north-east of Scotland, where less than one inch of rain fell; but over most of the British Isles it has been a month of excessive, and in a few instances of enormous, rainfall. In the Thames valley and surrounding regions our map shows that the rainfall was considerably in excess of the average, but that it was distributed in a manner characteristic of the frequent and steady rains of winter. The daily falls of rain were moderate and usually small, but rain fell on almost every day in the month, and in such conditions we expect to see the correspondence of precipitation with the form of the land well brought out. It will be noticed that the isohyetal of three inches outlines all the higher land of the Thames valley, and the isohyetal of four inches runs inside it on the still higher ground of the Cotteswolds, the Marlborough Downs, and the Hampshire and Surrey Downs. In the south rainfall exceeding five inches appears.

The remarkable rains of the month occurred in the hilly regions of the West Highlands, the Southern Uplands of Scotland, the Lake District, the Pennine Chain and Wales. In each of these there were great tracts of country over which more than ten inches of rain fell. We have not been favoured with any observations from Snowdonia, but in the heart of the English Lake district more than 20 inches fell, the figure for Seathwaite being 22·18 in., and that for the Stye being returned as the enormous total of 45·10 inches.

In Ireland there are few rain gauges so placed as to record the rainfall of such typically wet spots as are provided with observers in England, but 14·61 in. were reported from Caragh in Kerry, 13·10 in. from Fofanny, Co. Down, 10·56 in. from Dugort, on Achill Island, and 8·94 in. from Glendalough in the Wicklow Hills, and, as our Notes on the Month show, the rainfall at one or two stations in Ireland had never been exceeded in February in the case of very long records.

In spite of these great figures there was not a very large area of the country with more than twice the rainfall normal to the month, and in many places the recorded sunshine was greatly in excess of the average, while the temperature was high for the season and strong winds unusually prevalent.

THE WEATHER OF FEBRUARY.

By FRED. J. BRODIE.

THE type of weather last month was almost continuously cyclonic; and, as the centres of low pressure passed in most instances across the Iceland-Faëroe region, the prevailing winds in this country were from a south-westerly quarter. With such conditions the mean temperature was above the average in all districts excepting the north of Scotland, where the equatorial current was usually less pronounced than in places further south. At no time, however, did the thermometer rise to any unusual height for the time of year, the absolute maxima being such as are commonly experienced at some time or another in any ordinary winter month. The periods of greatest warmth occurred respectively about the 5th and 6th and between the 16th and 18th, the thermometer rising on each occasion to 55° or a trifle above it in many parts of England, Wales and Ireland. On the 5th a maximum of 58° was recorded at Cahir, and a reading of 59° at Foynes, near Limerick, and on the 6th a reading of 58° at Hawarden Bridge; on the 17th the highest values were attained in the east and south-east of England, a maximum of 56° being registered at Greenwich and Westminster, and also at Cambridge and Geldeston. In Scotland the thermometer did not once rise much above 50° No severe frosts were experienced in England or Ireland, the sharpest occurring on the 9th and 10th during the temporary extension of an anticyclone from the south-westward. In the screen there were very few readings below 25°, but on the surface of the grass the thermometer in many places fell below 20°, and at Cambridge it sank to 15°. In central Scotland the weather at the time was more severe, the thermometer at Balmoral falling early on the 9th to 9° in the screen and to 5° on the grass. On the 15th and 16th and again on the 27th and 28th the sheltered thermometer in the same district fell below 20°, the screen and grass readings at Balmoral on the 27th being respectively 14° and 12°.

The large cyclonic systems in the far north were accompanied in numerous instances by secondary depressions, mostly of a "V-shaped" character, which passed eastwards across the United Kingdom. Rain was therefore unusually frequent (at many places in the west and south-west a measureable quantity was recorded daily), but no snow-falls of any consequence were reported in any part of the Kingdom. Between the 16th and 20th of the month the primary disturbances which had hitherto kept well away to the northward or north-westward of these islands, pursued a more southerly course, their centres moving rapidly in a north-north-easterly direction along our Atlantic seaboard. A period of exceedingly rough weather was, therefore, experienced; strong southerly gales being experienced over England and Ireland on the 17th and 19th, and a storm of unusual severity between the 20th and 21st. On the latter occasion the wind blew in gusts with the force of a hurricane on many parts of our west and

south-west coasts, an extreme velocity of 85 miles an hour being attained at Southport, 86 miles at Scilly and 87 miles at Pendennis Castle (Falmouth). During this boisterous spell thunder and lightning occurred in many places—very generally over England during the violent gale which was blowing on the evening of the 20th.

In spite of so much disturbed weather there were, in nearly all parts of the Kingdom, many fine intervals, the total duration of bright sunshine for the month being in excess of the normal in most places. In London (at Westminster) the aggregate of 54 hours was as many as 20 hours in excess of the February average for the 25 years, 1881-1905.

Erratum.—In the report on the Weather of January the temperature observed at Balmoral on the night of the 27th was quoted as zero; the minimum reading was, it appears, 10° below zero.

ROYAL METEOROLOGICAL SOCIETY.

THE monthly meeting of this Society was held on Wednesday evening, February 16th, at the Institution of Civil Engineers, Great George Street, Westminster, Mr. Henry Mellish, President, in the chair.

Mr. E. Mawley presented his Report on the Phenological Observations for last year. He pointed out that the most noteworthy features of the weather of the phenological year ending November, 1909, as affecting vegetation, were the brief but severe frost at the end of December, 1908, several keen frosts in May, the low temperatures and frequent rainfall of the summer, and the continued warm and wet weather in October. During the whole year wild plants came into blossom behind their usual time, the departures from the average being greatest in March and April. The swallow, cuckoo and nightingale, made their appearance rather earlier than usual. The only deficient farm crops were beans, peas and hay. On the other hand, the yield of wheat, barley, oats, turnips, mangolds and potatoes, was well above the average, barley and turnips more so than the others. The crop of apples, pears and plums, was under the average, whereas that of raspberries, gooseberries, currants and strawberries taken together, was fairly good. As regards the farm crops, this was the fourth year in succession in which the yield has been above the average.

Mr. J. E. Clark, Mr. W. W. Bryant, Mr. R. H. Hooker, Mr. F. C. Bayard, Col. H. E. Rawson, Mr. W. W. Hamley, Dr. W. N. Shaw, Mr. W. B. Tripp and the President took part in the discussion, and Mr. Mawley replied.

Colonel H. E. Rawson read a paper on "The North Atlantic Anticyclone: tracks of the centres of high areas, 1882–3." He said that much work has been done of late years in charting the tracks of the centres of high areas as they pass over the land, and interest in those

which they follow over the oceans has recently been stimulated by the publication of additional facts regarding the progressive movements of anticyclonic systems from west to east in the southern hemisphere. The view of the late Mr. H. C. Russell, has been revived and advocated, that there is a succession of such systems travelling round the world at a rate of about 400 miles a day, and that it might be possible to follow one completely round, ever changing its form and intensity, but never losing its individuality, from day to day. They are regarded as crossing the southern oceans from land to land as individual systems.

Col. Rawson has now turned his attention to the movements of the anticyclones in the northern hemisphere. He has examined the "Synchronous Weather Charts of the North Atlantic," published by the Meteorological Office for the months of September, 1882, to August, 1883, and has made an analysis of the tracks of the centres of high pressure areas during that period. It is very rare for an individual system, which has traversed the American continent, to cross the ocean from land to land. The few cases which occur are restricted to the months, October, November, December, January and February. In every month centres of high pressures which have drifted across America, and have travelled out on to the ocean, are found coalescing there with one another or with the centre of the persistent Atlantic anticyclone. From April to July systems cannot be traced crossing the Atlantic and moving eastwards into Europe, nor do those which form over the ocean leave it and pass away eastwards. From mid-February to mid-September the charts indicate that on arrival on our coasts systems extend westwards, and their centres then reverse their easterly movement and drift to the west. In June and July centres of high areas form over the ocean, within the Atlantic anticyclone, instead of drifting into it from the American continent. March differs from all other months in the wide range in latitude which the tracks cover.

The following new Fellows were elected: Mr. R. S. Adair, Mr. A. Ballantine, Mr. J. S. Brownhill, J. P., Mr. J. F. Brennan, Mr. R. R. Dastidar, Mr. R. J. Garratt, Mr. N. R. Gopalan, Mr. F. S. Granger, Mr. W. Maughan, Mr. K. C. Mookerjee, B.A., Mr. R. J. Mules, Rev. J. C. Ross, Dr. J. E. Thomson, Rev. A. Thornley, M.A., and Mr. I. M. Xavier, Assoc.M.Inst.C.E.

Meeting at Manchester.

The Society held its first meeting out of London on Wednesday, 23rd February, when a large number of Fellows and others interested in meteorological matters were present in the Physical Laboratory of the University of Manchester.

The President, Mr. H. Mellish, having explained that Manchester had been chosen for this meeting on account of the valuable meteorological work done in the University, and having given some account of the Society, the Vice-Chancellor (Dr. A. Hopkinson) expressed on

behalf of the University of Manchester the great gratification which they felt in receiving the Fellows of the Royal Meteorological Society. What had been accomplished at the University in Meteorology was mainly by the work that had been initiated and liberally supported by Dr. Schuster, formerly Professor of Physics.

Prof. Schuster joined in welcoming the Society, and referred to the work that had been done not only within the walls of the University, but also at Glossop. Last July and August they attempted to fly kites continuously day and night for six weeks, an effort that could only be made by having many helpers, and he did not think it would be possible to get volunteers for such work except in institutions like the Universities, where young men could talk together and arouse one another's interest in the matter. In this way the experiment not only became a notable contribution to scientific work, but it was of high educational value.

The first paper read, on the "Investigation of the Electrical State of the Upper Atmosphere, made at the Howard Estate Observatory, Glossop," was the joint work of Dr. W. Makower, Mr. A. J. Makower, and Miss Margaret White.

The method of experimenting consisted in flying the kite at the end of a steel wire, the other extremity of which could be attached to a long thick piece of ebonite securely attached to the ground, At the end of the kite-wire, just above the ebonite, was fixed a wire connected to one pole of a Kelvin-White high potential electrostatic voltmeter, reading to 100,000 volts, the other pole of which was earthed. As in the previous experiments the kite-wire was made up in sections, which could be separately detached from the winding-drum and insulated, so that the kite could be let out at the end of wires of various lengths. The potential taken up by the kite was read directly on the voltmeter. When there was insufficient wind a balloon was substituted for the kite. The height above the ground was determined by measuring the length of wire let out and the angle of the kite above the horizon. The method thus depends on the assumption that the kite takes up the potential of the air surrounding it, and that there is no appreciable current flowing out from the wire into the air at lower levels through which it passes on its way to the ground. It is difficult to test the correctness of this assumption, and experiments have not yet been carried out to verify it with certainty; but having regard to the very large collecting surfaces of the kites used, the assumption is probably correct. After each measurement of the potential of the kite, the lead connecting the kite-wire to the voltmeter was detached, and the kite earthed through the galvanometer, in order to measure the current flowing from the kite to earth. This was done to see whether any connection existed between the potential of the insulated kite and the current flowing down the kite-wire when earthed. It was found that generally the voltage and current vary together, a high reading of the potential corresponding to a high reading of the current and *vice-*

versâ. The potential gradient falls off with height, the value falling from about 0·7 volt per centimetre near the ground to about 0·3 volt per centimetre at 2,500 feet.

An interesting discussion followed in which Mr. F. C. Bayard, Prof. Rutherford, Mr. E. Gold, Prof. Petavel, Col. H. E. Rawson, Mr. J. S. Dines, and Mr. J. R. Gibbs took part, and Dr. Makower replied.

The second paper was on the "Results of twenty-five Registering-Balloon Ascents made from Manchester, June 2nd and 3rd, 1909," by Mr. W. A. Harwood. The paper was based on 18 satisfactory records. The points on which it was hoped that the experiments would throw some light were: Diurnal variation of temperature (if any) at great altitudes; the relation of horizontal temperature distribution to the surface pressure distribution; the lag (or otherwise) of variations at high altitudes behind those at lower altitudes; and the magnitude of the effect of solar radiation on the records of the instruments. A decided diurnal temperature variation was observed at the ground, but this disappeared between 2 and 3 kilometres. Although, unfortunately, the pressure variation was such as to produce an apparent diurnal effect on first examination, closer study showed that already at a height of 3 kilometres the temperature had begun to increase at 1 a.m., while the sun did not rise until 3.50 a.m. No decided change was noticeable in the curves at the time of sunrise. Moreover the two maxima of temperature which occurred at the higher levels were recorded at 9 a.m. and 4 p.m., while at the extreme heights noon was marked by a minimum of temperature. The pressure distribution on the days in question consisted of an anticyclone with its centre to the north-west of Ireland and a cyclone which was developing over France and Spain. The variations of the barometer were slight and were caused by the alternate advance and withdrawal of the anticyclone. Subsequently the cyclone over France commenced to extend steadily northwards over the British Isles. The plotting of the temperature at various levels and the ground level pressures showed a distinct correspondence in spite of the fact that the pressure variations were so slight. Each rise of the barometer was accompanied by a fall of temperature at almost all heights, and *vice versâ*. The minima of temperature corresponding to the maxima of pressure were more marked at the extreme heights. The variations of temperature at 10 kilometres showed a lag of about two hours behind the variations of pressure. In one case they occurred later than the variations at lower altitudes; but in another, preceded them.

Dr. W. N. Shaw described this series of ascents as unique and one of the boldest experiments ever made in meteorology.

The last paper was on "Line Squalls and Associated Phenomena," by Mr. R. G. K. Lempfert and Mr. R. Corless. Line-squalls are associated with the displacement of an air current moving from south-west by a colder current moving from north-west. Several notable squalls were investigated by the authors.

The discussion on this paper will be taken at the meeting of the Society on April 20th.

The Fellows and their friends subsequently dined together at the University Refectory.

SCOTTISH METEOROLOGICAL SOCIETY.

A MEETING of the Society was held at 5, St. Andrew's Square, Edinburgh, on 25th February, at 4 p.m., when Mr. W. B. Wilson, W.S., presided over a large attendance.

Mr. Ralph Richardson communicated a paper "On the occurrence of great cold throughout Scotland during November and December, 1909, and January, 1910." Considering only records from thermometers exposed in Stevenson screens, it was recalled that exceptionally cold weather had been experienced at the end of October, whilst during the three following months there had been four periods of very acute cold. In November the weather conditions during the third and part of the fourth week were altogether abnormal; a reading of only 3° above zero was recorded at Balmoral on the 18th, and the Royal Caledonian Curling Club, founded in 1847, had for the first time in its history been able to play the North v. South match in the month of November. In December two cold periods occurred, from the 6th to the 9th and from the 19th to the 22nd, with a zero reading at Balmoral on the 7th. January opened with very mild weather, which was in extraordinary contrast to the great cold experienced towards the end of the month, when readings as low as 10° *below* zero occurred at Balmoral and Logie Coldstone on the night of the 27th to 28th. Slightly lower readings were experienced in January, 1881, but with that exception last month's records were the lowest for January since observations were organised in 1856. Readings below zero had occurred in January, 1910, also at Loanhead (Logie Coldstone), Lednathie, Kettins, Perth, Ballendrick, Duncrub, Stronvar, Buchlyvie and West Linton.

A valuable note was submitted of all the occasions from 1856 onwards during which temperatures below zero had occurred in Scotland, and of the extreme readings at these times. The lowest reading ever officially recorded in the British Isles was one of 17° below zero at Braemar, in January, 1895.

Taking a general view of the statistics for the last three months, it was clear that the lowest temperatures were experienced at inland stations, and that height above sea-level was not in itself a determining factor of climatic extremes, for at the two highest stations reporting to the Society, Tillypronie and Leadhills, both above 1,000 feet, relatively high minimum readings were recorded. In conclusion, an interesting report was submitted on the effect of the cold weather on agricultural and horticultural interests.

Messrs. Cadell, Moncur, Williamson, Watt and Davidson-Smith, took part in a discussion of the paper.

A paper by Mr. Herbert Bell discussed "The Daily Variation of Wind Velocity at Blackford Hill Observatory, Edinburgh, and at some higher and lower levels." It was well-known that at low-level stations, wind-force was on the average greatest in the early afternoon, and that the reverse was the case on mountain summits, where the night hours were the windiest, these distinctions being most marked in summer. The transition from the low-level to the high-level type was already well marked on the summit of the Eiffel Tower, in Paris, which was rather less than 1,000 feet high. Examing the Blackford Hill wind records (440 ft.), it was found that in summer the daily curve of wind velocity was that characteristic of low-level stations, but with a somewhat late afternoon maximum. In winter, however, the curve appeared to be intermediate in type between those of high and of low-levels, and, if strong winds alone were considered, to approximate to the high level type. The neutral plane, where there was no diurnal range of wind-force, appeared in Scotland to be at a lower level in winter than in summer. The accepted Espy-Köppen theory did not explain all the phenomena in question. It did not, for example, explain the curious fact that at sea-level in the South Orkneys the winter curve of wind-force was of the high-level type, though the summer curve had the characteristic low-level afternoon maximum. Considerations were submitted, which indicated that diurnal variations in the humidity of the air accounted at least in part for some of the peculiarities discussed.

Correspondence.

To the Editor of Symons's Meteorological Magazine.

THE GALE AND SQUALLS OF FEBRUARY 20th, 1910.

DURING the southerly gale prevailing on February 20th, two wind squalls of exceptional violence were recorded, and from the particulars I have been able to gather all the damage wrought by the gale appears to be attributed to those two squalls. Rain commenced to fall at 1.30 p.m., a steady southerly gale blowing at the time. The first squall took place as nearly as possible at 3.30 p.m. At this hour a large plate glass shop front, measuring 18 ft. by 12 ft., was blown in, considerable damage to chimney pots and slates also occurring at this time. At Woodcote Park, distant about half-a-mile in a S.W. direction, a large elm was uprooted, and two valuable shire horses were killed by the falling tree. The second squall took place at 8.54 p.m., and the only damage that I have been able to ascertain with any degree of certainty was to timber. All the trees uprooted in this squall are lying in a N.W. to N. direction. In the rear of the second squall, at 9.10 p.m., vivid sheet lightning was seen to the S., being followed in 20 seconds by rolling thunder to

S.W., a distant thunderstorm prevailed to 9.26 p.m., the shortest time interval between the lightning and thunder occurring at 9.20 p.m. (15 secs.). The lightning (mainly sheet) worked round rapidly through S.E. to E., and faded quickly in colour; occasional sheet lightning was still visible to E. at 10.5 p.m.

The heaviest rain splashes were entirely independent of the wind squalls, the largest amount recorded being between 5.35 p.m. and 5.46 p.m., ·30 in., and a second heavy splash at 8 p.m., ·15 in., falling in three minutes.

The pressure trace until the first wind squalls (3.30 p.m.) had been running steadily for about an hour at 29·08 in. (corrected); on the commencement of the squalls a fresh fall set in. During the second squall (8.54 p.m.) pressure, which had decreased to 29·00 (corrected), jumped 04 in. The changes in temperature connected with both squalls were sudden, but very small, decreases of 1° and 2° respectively being recorded.

Both squalls were accompanied by a temporary easting of the southerly wind, a permanent change to S.W. taking place in the rear of the thunderstorm at 9.30 p.m.

SPENCER C. RUSSELL.

Epsom, Surrey, February 26th, 1910.

[The gale on February 20th did serious damage to property in many parts of the country. About 2 p.m. a terrific squall at Aspley Guise, Bedfordshire, snapped off a magnificent Scots pine the trunk of which was found to be hollow. About 2.30 p.m. a similar squall carried the roof off a stable near Mill Hill Station on the Midland Railway, and blew over about 35 feet of a brick wall 10 feet high, forming the northern boundary of the garden at the Hollies, Mill Hill.—Ed. *S.M.M.*]

AN UNUSUAL ANEMOMETER.

We are favoured by the Meteorological Office with the following interesting extract from an observer's remarks :—

November 12th, 1909.—The day was fine but very windy. In the evening as it shifted from S.W. to about W.S.W. it became very strong indeed—I estimated it at 9—and stopped the Pyton Ferry (too rough on river), whilst it rang Heddon Church bell for a long while. This seldom occurs, and only I think when a whole gale or more is blowing from W.S.W. or W. by S. The church stands about E.N.E. and W.S.W., and the bell turret gets the full sweep of the W.S.W. wind through it. It is a fairly heavy bell, and I think it is rung by the wind swinging the tongue. I don't know of any other church where this happens—though there may be other cases.

W. G. PRINGLE.

The Vicarage, Heddon-on-the-Wall, Northumberland.

THE PRESERVATION OF RAINFALL RECORDS.

I THINK it would be of interest to other observers than myself to know something of what happens to our yearly records when they have reached Camden Square. May I therefore be bold to ask whether they are preserved intact, or if the totals only are kept? Would it be possible for an inquirer to learn from you what rain fell at his station on a day 10 years ago—supposing his record to have been kept so long?

AGNES FRY.

Failand, near Bristol.

[We are glad of this opportunity of explaining to Rainfall Observers that every record sent to Camden Square during the last fifty years has been preserved and is always available for reference. The British Rainfall Organization has been conducted under no more formal guarantee than the personal sense of responsibility of an individual who recognizes that the records sent to him, though often taken from habit or as a recreation by Observers, are not only of scientific but also of national importance as bearing on one of the richest of the natural resources of the country; but that sense of responsibility has led to the records being preserved as scrupulously and discussed as completely as if they had been confided to a Government Department or a learned society. It frequently happens that Observers lose their early records and have the loss made good on application to Camden Square. It too often happens, on the other hand, that records of great value are totally lost because only one copy has been in existence, and that in the hands of the Observer, at whose death it has been destroyed as of no importance.—ED. *S.M.M.*]

THE PAST WINTER.

ATTENTION may be called to the persistent low barometer during the past winter. Here the mean pressure, reduced to sea level, for the three months, December to February, was 29·66, or ·30 below the average, which appears to be an unusually large deficiency for so long a period.

H. MELLISH.

Hodsock Priory, Worksop, 4th March, 1910.

WHY ARE ATMOSPHERIC TIDES INCONSPICUOUS?

MAY I ask for an answer in your Magazine to a question which has been puzzling me? Aerial tides must, I suppose, be very considerable. Why does not their ebb and flow influence the barometer? I do not know where to find any information about this, and no one that I have asked can give me any.

T. H. PHILPOTT.

Hedge End, Botley, Hants, Jan. 30th, 1910.

RECORDS OF THE CONDENSATION OF AQUEOUS VAPOUR IN FORMS OTHER THAN "RAIN."

WHILST not claiminig either the exceptionally good instruments or the incredible watchfulness referred to in the Editorial Note on the "Units of Rainfall Measurement" (Vol. **44**, p. 227), I feel sufficiently confident to extract from what I believe is a careful rain register, in conjunction with the observations from a daily register of weather and weather phenomena, a record for the five years, 1905 to 1909, of the precipitation of water in a form other than that commonly described as "rain."

Dew days, hoar frost days, fog-precipitation days, snow days, and hail days have been taken from the weather register, and the accompanying precipitation allocated from the rain register. It must, of course, be understood that the tables show only the days when measurable condensation accompanied the particular phenomenon referred to.

The snow days are those on which the precipitation was in the form of snow, and snow only; a fall of snow accompanied at some time or another by rain or hail, or a change to one or the other, would not be classed as a snow day.

The hail days may be dismissed summarily, only on one occasion during the period has a day of hail alone been recorded, viz.: the 11th of February, 1906, the accompanying deposition of moisture amounting to ·03 in. A fall of hail not preceded or succeeded by rain or snow is a very rare phenomenon.

SPENCER C. RUSSELL.

Epsom, Surrey, February 17th, 1910.

Dew Days.

	1905.		1906.		1907.		1908.		1909.		TOTAL.	
	No. of days.	in.	*No. of days.*	in.	*No. of days.*	in.	*No. of days.*	in.	*No. of days.*	in.	*No. of days.*	in.
Jan.	...	...	...	...	*1*	·02	*1*	·02	...	...	*2*	·04
Feb.	...	...	...	...	...	...	...	...	...	...	...	...
March ...	...	...	...	...	*1*	·01	...	...	...	...	*1*	·01
April	...	...	...	...	...	...	...	...	*1*	·01	*1*	·01
May	...	...	*1*	·01	...	...	*1*	·01	...	...	*2*	·02
June	...	...	...	...	*1*	·01	...	...	...	...	*1*	·01
July	*1*	·01	...	...	...	...	...	..	*1*	·01	*2*	·02
August ...	...	...	...	...	...	...	...	...	...	...	...	...
Sept.	...	...	*2*	·02	...	...	*1*	·01	...	...	*3*	·03
Oct.	...	...	...	...	...	...	*2*	·03	...	...	*2*	·03
Nov.	*1*	·01	*1*	·01	...	...	*1*	·01	...	...	*3*	·03
Dec.	*1*	·01	...	...	...	...	*1*	·01	...	...	*2*	·02
Total...	*3*	·03	*4*	·04	*3*	·04	*7*	·09	*2*	·02	*19*	·22

Hoar Frost Days.

	1905.		1906.		1907.		1908.		1909.		TOTAL.	
	No. of days.	in.	*No. of days.*	in.	*No. of days.*	in.	*No. of days.*	in.	*No. of days.*	in.	*No. of days.*	in.
Jan.	2	·02	...	...	1	·01	1	·01	...	...	4	·04
Feb.	...	...	1	·01	1	·01	1	·01	...	...	3	·03
March ...	...	...	1	·01	...	...	1	·01	...	...	2	·02
April	...	...	...	...	...	...	...	...	...	...	...	...
May	...	...	...	...	...	...	...	...	...	...	...	...
June	...	...	...	...	..	...	...	...	...	...	...	...
July	...	...	...	...	...	...	...	...	...	...	..	...
August ...	...	...	...	...	...	...	...	...	...	...	...	...
Sept.	...	...	...	...	...	...	...	...	...	...	...	...
Oct.	2	·02	...	...	...	...	...	...	...	...	2	·02
Nov.	2	·02	...	...	2	·02	...	...	...	...	4	·04
Dec.	1	·01	1	·01	1	·02	2	·03	..	...	5	·07
Total ...	7	·07	3	·03	5	·06	5	·06	...	...	20	·22

Fog-Precipitation Days.

	1905.		1906.		1907.		1908.		1909.		TOTAL.	
	No. of days.	in.	*No. of days.*	in.	*No. of days.*	in.	*No. of days.*	in.	*No. of days.*	in.	*No. of days.*	in.
Jan.	...	...	...	...	2	·03	4	·06	...	...	6	·09
Feb.	...	..	...	...	...	...	1	·02	...	...	1	·02
March ...	...	...	...	..	...	...	...	...	...	...	...	...
April	...	..	...	...	...	...	...	...	...	...	...	...
May	...	...	...	...	...	...	...	...	...	...	...	...
June	...	...	...	...	...	...	...	...	...	...	...	...
July	...	...	...	...	...	...	...	...	...	...	...	...
August ...	...	...	...	...	...	...	...	...	...	...	...	...
Sept.	...	...	3	·04	1	·01	...	...	...	...	4	·05
Oct.	1	·01	...	...	1	·02	6	·09	...	...	8	·12
Nov.	1	·01	2	·02	3	·06	1	·01	2	·03	9	·13
Dec.	3	·03	...	...	...	...	...	...	...	...	3	·03
Total ...	5	·05	5	·06	7	·12	12	·18	2	·03	31	·44

Snow Days.

	1905.		1906.		1907.		1908.		1909.		TOTAL	
	No. of days.	in.	*No. of days.*	in.	*No. of days.*	in.	*No. of days.*	in.	*No. of days.*	in.	*No. of days.*	in.
Jan.	1	·10	...	...	2	·05	2	·03	...	...	5	·18
Feb.	4	·06	5	·14	4	·11	...	...	4	·42	17	·73
March ...	...	...	6	·44	...	...	2	·06	6	1·40	14	1·90
April	1	·04	1	·01	..	...	1	·08	...	...	3	·13
May	...	...	...	...	...	...	...	...	...	...	...	...
June	...	...	..	...	...	...	...	...	...	...	...	...
July	...	...	...	...	...	...	...	...	...	...	...	...
August ...	...	...	...	...	...	...	...	...	...	...	...	...
Sept.	...	...	...	...	...	...	...	...	...	...	...	...
Oct.	...	...	...	...	...	...	...	..	...	...	...	...
Nov.	...	...	...	...	...	...	...	...	...	...	...	...
Dec.	...	...	5	·90	...	...	4	·46	...	...	9	1.36
Total ...	6	·20	17	1·49	6	·16	9	·63	10	1·82	48	4·30

[These tables are interesting because they are maximum values of the frequency of precipitation other than ordinary rain obtained by an exceptionally careful Observer. We say these records show the maximum values, for unless Mr. Russell sat up all night he can hardly have been sure that there was not a slight shower of ordinary rain in the darkness, which may have produced some of the precipitation assigned to dew or fog. They show that at most ·85 in. resulted at Epsom from fog, hoar-frost and dew in five years, *i.e.*, only ·17 in. per annum; but we know of some stations where the amounts must be very much larger.—Ed., *S.M.M.*]

METEOROLOGICAL NEWS AND NOTES.

The effect of Sunshine and high altitudes on biological and medical processes is the subject of investigation by an international expedition to the Peak of Tenerife, which sailed from Southampton on March 13th. Dr. J. Barcroft, of Cambridge, is one of the British representatives on the expedition, and Germany, France and Austria are also represented. The preliminary meteorological discussion has been carried out by Professor Hergesell, and the object of the expedition is to repeat and extend the observations made by Professor Zuntz on Monte Rosa at greater altitudes and in a different zone of climate.

The Meteorological Office announce that from April onwards weather forecasts will be issued, when the conditions warrant it, for periods longer than twenty-four hours in advance. It is not anticipated that the occasions of such extended forecasts will, at first at any rate, be very numerous.

Errors in Newspapers on the subject of meteorology are less common than might be expected, and it is unkind to refer to those which arise from mere inadvertence; but when we find the enclosed paragraph in the *Globe* of February 1st calmly stating that because the mean temperature of January, 1910, was 1°·4 above the average of 60 years, it was therefore the "hottest" in that period, a warning to the public seems to be invited. The paragraph we refer to (with one clause italicized) is :—

THE HOTTEST JANUARY FOR 60 YEARS.

Despite the cold spells, the past January has been, on an average, warmer, drier, and more sunny than the month usually is. The mean temperature for the month at Greenwich was 39°·8, which *is 1°·4 warmer than the average for the previous 60 years.* The aggregate rainfall was 1·72 in., which is 0·16 in. less than the normal. The sun was shining for 51 hours, which is ten hours more than the average.

RAINFALL TABLE FOR FEBRUARY, 1910.

STATION.	COUNTY.	Lat. N.	Long. W. [*E.]	Height above Sea. ft.	RAINFALL OF MONTH. Aver. 1875—1909. in.	1910. in.
		° ′	° ′			
Camden Square	*London*	51 32	0 8	111	1·66	2·96
Tenterden	*Kent*	51 4	*0 41	190	1·90	3·59
Steyning	*Sussex*	50 53	0 20	80	2·42	6·33
Southampton (Cadland)	*Hampshire*	50 50	1 22	52	2·28	3·66
Hitchin	*Hertfordshire*	51 57	0 17	238	1·58	2·75
Oxford (Magdalen College)	*Oxfordshire*	51 45	1 15	186	1·62	2·47
Bury St. Edmunds (Westley)	*Suffolk*	52 15	*0 40	226	1·59	1·92
Geldeston [Beccles]	*Norfolk*	52 27	*1 31	38	1·41	1·99
Polapit Tamar [Launceston]	*Devon*	50 40	4 22	315	2·95	6·97
Rousdon [Lyme Regis]	,,	50 41	3 0	516	2·50	3·71
Stroud (Upfield)	*Gloucestershire*	51 44	2 13	226	2·12	3·86
Church Stretton (Wolstaston)	*Shropshire*	52 35	2 48	800	2·17	2·92
Coventry (Kingswood)	*Warwickshire*	52 24	1 30	340	2·01	3·12
Market Overton	*Rutland*	52 44	0 41	475	1·79	2·62
Boston	*Lincolnshire*	52 58	0 1	25	1·53	2·58
Worksop (Hodsock Priory)	*Nottinghamshire*	53 22	1 5	56	1·64	1·80
Macclesfield	*Cheshire*	53 15	2 7	501	2·30	2·85
Southport (Hesketh Park)	*Lancashire*	53 38	2 59	38	2·07	3·22
Wetherby (Ribston Hall)	*Yorkshire, W.R.*	53 59	1 24	130	1·71	2·77
Arncliffe Vicarage	,, ,,	54 8	2 6	732	4·88	10·61
Hull (Pearson Park)	,, *E.R.*	53 45	0 20	6	1·78	1·72
Newcastle (Town Moor)	*Northumberland*	54 59	1 38	201	1·63	2·66
Borrowdale (Seathwaite)	*Cumberland*	54 30	3 10	423	10·96	22·18
Cardiff (Ely)	*Glamorgan*	51 29	3 13	53	3·07	5·50
Haverfordwest (High Street)	*Pembroke*	51 48	4 58	95	3·42	4·93
Aberystwyth (Gogerddan)	*Cardigan*	52 26	4 1	83	3·09	5·12
Llandudno	*Carnarvon*	53 20	3 50	72	2·11	3·69
Cargen [Dumfries]	*Kirkcudbright*	55 2	3 37	80	3·42	7·39
Marchmont House	*Berwick*	55 44	2 24	498	2·15	2·46
Girvan (Pinmore)	*Ayr*	55 10	4 49	207	3·87	10·01
Glasgow (Queen's Park)	*Renfrew*	55 53	4 18	144	2·70	3·83
Inveraray (Newtown)	*Argyll*	56 14	5 4	17	5·71	8·96
Mull (Quinish)	,,	56 36	6 13	35	4·45	7·00
Dundee (Eastern Necropolis)	*Forfar*	56 28	2 57	199	1·91	1·93
Braemar	*Aberdeen*	57 0	3 24	1114	2·55	4·60
Aberdeen (Cranford)	,,	57 8	2 7	120	2·36	2·83
Cawdor	*Nairn*	57 31	3 57	250	2·06	1·11
Fort Augustus (S. Benedict's)	*E. Inverness*	57 9	4 41	68	4·20	4·37
Loch Torridon (Bendamph)	*W. Ross*	57 32	5 32	20	7·53	9·74
Dunrobin Castle	*Sutherland*	57 59	3 56	14	2·58	1·36
Wick	*Caithness*	58 26	3 6	77	2·23	1·73
Killarney (District Asylum)	*Kerry*	52 4	9 31	178	4·99	8·77
Waterford (Brook Lodge)	*Waterford*	52 15	7 7	104	3·18	4·14
Nenagh (Castle Lough)	*Tipperary*	52 54	8 24	120	2·89	6·35
Miltown Malbay	*Clare*	52 52	9 26	400	3·21	5·28
Gorey (Courtown House)	*Wexford*	52 40	6 13	80	2·75	3·16
Abbey Leix (Blandsfort)	*Queen's County*	52 56	7 17	532	2·55	4·78
Dublin (Fitz William Square)	*Dublin*	53 21	6 14	54	1·93	3·76
Mullingar (Belvedere)	*Westmeath*	53 29	7 22	367	2·67	4·86
Ballinasloe	*Galway*	53 20	8 15	160	2·50	4·86
Crossmolina (Enniscoe)	*Mayo*	54 4	9 18	74	4·20	8·19
Collooney (Markree Obsy.)	*Sligo*	54 11	8 27	127	3·20	7·24
Seaforde	*Down*	54 19	5 50	180	2·81	5·22
Bushmills (Dundarave)	*Antrim*	55 12	6 30	162	2·56	4·52
Omagh (Edenfel)	*Tyrone*	54 36	7 18	280	2·68	5·80

RAINFALL TABLE FOR FEBRUARY, 1910—*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.	1910. in.	Diff. from Aver. in.	% of Av.	Mean Annual 1875–1909. in.	STATION.
+1·30	178	·39	14	21	3·49	4·53	+1·04	130	25·11	Camden Square
+1·69	189	·58	14	23	4·04	6·68	+2·64	165	27·64	Tenterden
+3·91	262	1·46	20	22	5·50	9·79	+4·29	178	33·58	Steyning
+1·38	161	·60	22	22	5·03	6·90	+1·87	137	31·86	Cadland
+1·17	174	·63	14	23	3·32	4·43	+1·11	133	25·16	Hitchin
+ ·85	152	·37	22	22	3·40	3·93	+ ·53	116	24·58	Oxford
+ ·33	121	·34	14	18	3·29	3·76	+ ·47	114	25·40	Westley
+ ·58	141	·26	14	24	2·94	3·84	+ ·90	131	23·73	Geldeston
+4·02	236	·84	20	27	6·54	13·27	+6·73	203	38·27	Polapit Tamar
+1·21	148	·59	1	25	5·44	6·94	+1·50	128	33·54	Roundon
+1·74	182	·58	14	24	4·45	6·06	+1·61	136	29·81	Stroud
+ ·75	135	·35	24	24	4·68	5·39	+ ·71	115	32·41	Wolstaston
+1·11	155	·63	4	24	4·23	5·49	+1·26	130	28·98	Coventry
+ ·83	146	·47	24	25	3·73	4·66	+ ·93	125	27·10	Market Overton
+1·05	169	·40	22	24	3·07	3·74	+ ·67	122	23·35	Boston
+ ·16	110	·28	14	23	3·34	3·71	+ ·37	111	24·46	Hodsock Priory
+ ·55	124	·48	20	22	4·96	5·85	+ ·89	118	34·73	Macclesfield
+1·15	155	·39	20, 25	26	4·62	6·70	+2·08	145	32·70	Southport
+1·06	162	·45	20	23	3·60	6·82	+3·22	189	26·87	Ribston Hall
+5·73	217	1·75	20	26	11·14	21·88	+10·74	197	61·49	Arncliffe
— ·06	97	·25	14	23	3·48	3·50	+ ·02	101	26·42	Hull
+1·03	163	·66	7	22	3·53	5·94	+2·41	168	27·94	Newcastle
+11·22	202	3·60	20	27	24·40	37·49	+13·09	153	129·48	Seathwaite
+2·43	179	·86	6	27	6·72	11·15	+4·43	166	42·28	Cardiff
+1·51	144	·51	14	28	8·11	9·17	+1·06	113	46·82	Haverfordwest
+2·03	166	·63	6	26	7·00	9·65	+2·65	138	45·46	Gogerddan
+1·58	175	·74	20	27	4·62	7·30	+2·68	158	30·36	Llandudno
+3·97	216	·92	17	26	7·52	10·88	+3·36	145	43·47	Cargen
+ ·31	114	·49	7	21	4·55	4·65	+ ·10	102	33·76	Marchmont
+6·14	259	·83	20	28	8·65	14·37	+5·72	166	49·77	Girvan
+1·13	142	·66	16	25	6·23	7·78	+1·55	125	35·97	Glasgow
+3·25	157	·93	20	26	13·05	18·72	+5·67	144	68·67	Inveraray
+2·55	158	·65	18	24	10·00	12·54	+2·54	125	56·57	Quinish
+ ·02	101	·30	16	21	3·92	3·66	— ·26	93	28·64	Dundee
+2·05	180	...	...	...	5·47	8·63	+3·16	158	34·93	Braemar
+ ·47	120	·38	22	20	4·72	4·60	— ·12	97	32·73	Aberdeen
— ·95	54	·22	16	8	4·34	4·37	+ ·03	101	29·33	Cawdor
+ ·17	104	·54	19	24	9·78	11·60	+1·82	119	44·53	Fort Augustus
+2·21	129	·84	11	24	16·79	22·19	+5·40	132	83·61	Bendamph
—1·22	53	·25	17	13	5·33	4·69	— ·64	88	31·90	Dunrobin Castle
— ·50	78	·30	9	20	4·71	3·87	— ·84	82	29·88	Wick
+3·78	176	·73	21	28	10·93	15·12	+4·19	138	54·81	Killarney
+ ·96	130	·47	19	22	6·96	6·36	— ·60	91	39·57	Waterford
+3·46	220	·76	20	28	6·77	11·66	+4·89	172	39·43	Castle Lough
+2·07	164	·52	27	28	7·22	9·78	+2·56	135	45·11	Miltown Malbay
+ ·41	115	·58	24	23	5 94	5·23	— ·71	88	34·99	Courtown Ho.
+2·23	187	·55	18	26	5·70	8·55	+2·85	150	35·92	Abbey Leix
+1·83	195	·81	18	24	4·07	6·75	+2·68	166	27·68	Dublin
+2·19	182	·45	20, 27	22	5·77	9·27	+3·50	161	36·14	Mullingar.
+2·36	194	·36	22	26	5·85	8·62	+2 77	148	36·64	Ballinasloe
+3·99	195	·83	16	27	9·55	15·83	+6·28	166	52·87	Enniscoe
+4·04	226	·95	26	28	7·07	12·42	+5·35	176	42·71	Markree
+2·41	186	·81	20	25	6·22	7·34	+1·12	118	38·91	Seaforde
+1·96	177	·39	20	27	5·75	9·17	+3·42	160	37·56	Dundarave
+3·12	216	·63	18	26	6·14	10·44	+4·30	170	39·38	Omagh

SUPPLEMENTARY RAINFALL, FEBRUARY, 1910.

Div.	STATION.	Rain inches	Div.	STATION.	Rain. inches
II.	Warlingham, Redvers Road	4·85	XI.	Llangyhanfal, Plâs Draw....	2·74
,,	Ramsgate	2·57	,,	Dolgelly Bryntirion	6·89
,,	Hailsham	4·38	,,	Bettws-y-Coed, Tyn-y-bryn	6·46
,,	Totland Bay, Aston House.	3·23	,,	Lligwy	3·13
,,	Stockbridge, Ashley	4·52	,,	Douglas, Woodville	4·23
,,	Grayshott	4·72	XII.	Stoneykirk, Ardwell House	4·32
,,	Reading, Calcot Place	2·98	,,	Dalry, The Old Garroch ...	11·38
III.	Harrow Weald, Hill House.	3·00	,,	Langholm, Drove Road	7·13
,,	Pitsford, Sedgebrook	2·41	,,	Moniaive, Maxwelton House	7·71
,,	Huntingdon, Brampton	2·15	XIII.	StMary'sLoch,CramiltLdge	6·50
,,	Woburn, Milton Bryant	2·93	,,	Edinburgh, Royal Observty.	2·84
,,	Wisbech, Monica Road	2·35	XIV.	Maybole, Knockdon Farm..	4·94
IV.	Southend Water Works	2·50	XV.	Campbeltown, Witchburn...	8·51
,,	Colchester, Lexden	2·20	,,	Glenreasdell Mains	7·23
,,	Newport	2·91	,,	Ballachulish House	12·95
,,	Rendlesham	2·14	,,	Islay, Eallabus	8·85
,,	Swaffham	2·63	XVI.	Dollar Academy	2·18
,,	Blakeney	2·72	,,	Balquhidder, Stronvar	9·32
V.	Bishops Cannings	3·73	,,	Coupar Angus	2·79
,,	Winterbourne Steepleton ...	5·20	,,	Blair Atholl	3·97
,,	Ashburton, Druid House ..	8·25	,,	Montrose,SunnysideAsylum	2·62
,,	Honiton, Combe Raleigh ...	5·09	XVII.	Alford, Lynturk Manse ...	2·49
,,	Okehampton, Oaklands	8·73	,,	Keith Station	2·01
,,	Hartland Abbey	4·07	XVIII.	Glenquoich, Laon	16·80
,,	Lynmouth, Rock House ...	6·61	,,	Skye, Dunvegan	9·13
,,	Probus, Lamellyn	5·75	,,	N. Uist, Lochmaddy	6·26
,,	North Cadbury Rectory ..	3·84	,,	Alvey Manse	2·32
VI.	Clifton, Pembroke Road ...	5·06	,,	Loch Ness, Drumnadrochit.	1·91
,,	Ross, The Graig	3·56	,,	Glencarron Lodge	6·67
,,	Shifnal, Hatton Grange	2·42	,,	Fearn, Lower Pitkerrie	·62
,,	Blockley, Upton Wold	4·23	XIX.	Invershin	1·91
,,	Worcester, Boughton Park.	3·08	,,	Altnaharra	3·65
VII.	Market Rasen	2·52	,,	Bettyhill	2·30
,,	Bawtry, Hesley Hall	2·36	XX.	Dunmanway, The Rectory..	8·98
,,	Derby, Midland Railway ...	2·36	,,	Cork	5·42
,,	Buxton	4·61	,,	Mitchelstown Castle	7·23
VIII.	Nantwich, Dorfold Hall	2·36	,,	Darrynane Abbey	9·62
,,	Liscard	2·82	,,	Glenam [Clonmel]	5·78
,,	Chatburn, Middlewood	4·92	,,	Nenagh, Traverston	7·46
,,	Cartmel, Flookburgh	5·60	,,	Newmarket-on-Fergus,Fenloe	5·11
IX.	Langsett Moor, Up. Midhope	5·41	XXI.	Laragh, Glendalough	8·94
,,	Scarborough, Scalby	3·24	,,	Moynalty, Westland	4·31
,,	Ingleby Greenhow	3·42	,,	Athlone, Twyford	4·34
,,	Mickleton	2·44	XXII.	Woodlawn	5·58
X.	Bardon Mill, Beltingham ...	4·40	,,	Westport, St. Helens	6·82
,,	Ilderton, Lilburn Cottage...	2·57	,,	Achill Island, Dugort	10·56
,,	Keswick, The Bank	10·03	,,	Mohill	5·65
XI.	Llanfrechfa Grange	6·19	XXIII.	Enniskillen, Portora	5·85
,,	Treherbert, Tyn-y-waun ...	12·57	,,	Dartrey [Cootehill]	5·05
,,	Carmarthen, The Friary	5·32	,,	Warrenpoint, Manor House	5·97
,,	Castle Malgwyn [Llechryd].	6·74	,,	Banbridge, Milltown	3·69
,,	Plynlimon	13·00	,,	Belfast, Springfield	5·21
,,	Crickhowell, Ffordlas	6·60	,,	Glenarm Castle	6·89
,,	New Radnor, Ednol	4·98	,,	Londonderry, Creggan. Res.	5·32
,,	Rhayader, Tyrmynydd	7·50	,,	Killybegs	9·58
,,	Lake Vyrnwy	6·57	,,	Horn Head	6·14

METEOROLOGICAL NOTES ON FEBRUARY, 1910.

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.—Changeable conditions prevailed throughout, R and sunshine alternating with great frequency. A squally period occurred from 17th to 20th culminating in a strong S gale on the latter day. Duration of sunshine 59·2* hours, and of R 58·6 hours. Mean temp. 42°·2 or 2°·5 above the average of 50 years. Shade max. 56°·0 on 17th; min. 27°·5 on 5th. F 7, f 21.

TENTERDEN.—The wettest February since 1900. Duration of sunshine, 73·7† hours. Shade max. 52°·5 on 17th; min. 28°·0 on 5th. F 7, f 15.

TOTLAND BAY.—Duration of sunshine, 92·1* hours. Shade max. 52°·1 on 17th; min. 31°·3 on 12th. F 1, f 11.

PITSFORD.—R ·42 in. above the average. Mean temp. 40°·1. Shade max. 53°·5 on 17th; min. 27°·6 on 10th. F 11.

NORTH CADBURY.—The windiest February in the record and with the greatest number of rain days. Shade max. 56°·5 on 17th; min. 31°·0 on 12th. F 5, f 18.

ROSS.—Remarkable for frequency and amount of showers. A violent gale on 20th brought down trees and slates off the houses. Shade max. 52°·1 on 17th; min. 29°·6 on 4th. F 2, f 12.

HODSOCK PRIORY.—Shade max. 55°·1 on 7th and 17th; min. 26°·4 on 28th. F 10, f 17.

SOUTHPORT.—The number of rain days was 4 more than in any February in the previous 39 years. Duration of sunshine 98·3* hours, or 27·9 hours above the average. Duration of R 76·1 hours. Mean temp. 41°·4. Shade max. 53°·0 on 19th; min. 30°·0 on 9th. F 2, f 13.

ILDERTON.—Unsettled throughout with much R and strong winds. Severe gale on 17th with R; many trees uprooted and broken.

HAVERFORDWEST.—Duration of sunshine 96·8* hours. Shade max. 52°·0 on 17th; min. 33°·2 on 3rd. F 0, f 5.

LLANDUDNO.—Wet, wild and stormy month. Sheep farmers suffered great loss owing to the continuous wind and R. Shade max. 52°·8 on 5th; min. 33°·2 on 23rd and 26th. F 0.

DOUGLAS.—Wet and stormy with W. gales almost without intermission. An unusual amount of bright sunshine with temp. above the normal.

CARGEN.—Shade max. 52°·0 on 19th; min. 25°·0 on 9th. F 10.

EDINBURGH.—Shade max. 49°·9 on 19th; min. 25°·8 on 9th. F 5, f 15.

ISLAY, EALLABUS.—R fell on every day and the fall was the greatest for February since observations began in 1866.

FORT AUGUSTUS.—Shade max. 49°·8 on 13th; min. 23°·3 on 9th. F 12.

WATERFORD.—Shade max. 56°·0 on 6th; min. 27°·0 on 1st. F 8.

DUBLIN.—Very unsettled, stormy and wet. R occurred daily from 10th and was especially heavy from 18th to 21st. Mean temp. 42°·5. Shade max. 55°·4 on 5th; min. 32°·7 on 1st. F 0, f 12.

MARKREE.—R fell on every day and was the heaviest fall yet recorded here. Shade max. 53°·5 on 5th; min. 24°·8 on 25th. F 11, f 14.

WARRENPOINT.—Shade max. 53°·0 on 6th; min. 35°·0 on 15th, 22nd and 24th. F 0, f 11.

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* Campbell-Stokes. † Jordan.

Climatological Table for the British Empire, September, 1909.

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	70°2	6	39°7	2	63°6	48°6	51°2	88	118°0	36°2	2·56	21	7 0
Malta	93·0	12	61·2	7	80·3	69·7	64·8	76	154·2	...	·08	2	4·0
Lagos	87·0	2	70·0	12†	84·5	73·1	73·6	79	159·0	68·0	5·31	14	8·6
Cape Town	89·2	21	39·4	25	69·5	51·0	51·9	74	...	...	·78	6	4·0
Durban, Natal ...	97·9	11	50·6	3	72·7	59·6	...	...	141·4	...	6·21	16	6·1
Johannesburg	77·8	18	32·6	26	69·2	47·8	43·6	65	135·4	...	·35	5	1·8
Mauritius	79·0	21*	56·5	17	77·5	63·1	60·8	74	151·9	50·4	2·24	17	6·9
Calcutta...	93·5	10	75·5	20	88·8	78·1	77·6	85	159·0	73·7	9·29	12	7·0
Bombay...	87·2	3	74·2	26	83·7	76·0	75·0	86	132·0	70·8	15·35	25	7·4
Madras	96·0	20	72·1	12	90·4	76·9	75·9	84	141·9	...	8·36	14	6·0
Kodaikanal	67·2	24	48·7	20	62·7	51·7	51·2	83	136·6	41·1	2·23	14	6·8
Colombo, Ceylon ...	87·2	27*	74·2	5	85·5	77·2	73·1	76	154·8	72·2	1·07	11	6·7
Hongkong	90·7	8	76·2	29	87·0	78·5	75·4	80	142·8	...	8·51	17	6·3
Melbourne	74·5	28	38·0	14	60·9	46·1	44·3	71	128·1	35·2	1·85	14	6·0
Adelaide	78·9	28	39·3	25	64·4	45·9	45·4	71	142·2	30·2	2·19	10	4·1
Coolgardie	88·0	17	39·6	29	70·9	46·3	40·8	52	149·0	35·0	·45	7	2·5
Perth	79·7	21	46·4	23	67·9	51·2	49·9	71	132·0	42·0	4·88	15	4·9
Sydney	76·0	24	43·5	2	64·0	50·1	48·0	73	115·1	31·4	5·11	25	5·3
Wellington ...	65·0	29	37·0	3	56·5	46·3	42·4	72	117·0	30·0	2·61	14	7·4
Auckland	65·5	28	39·0	3	60·7	50·2	49·4	81	146·0	36·0	3·53	20	6·5
Jamaica, Kingston ...	92·3	12	71·4	22	88·3	73·0	72·6	80	...	...	10·27	19	7·2
Trinidad	...	...	...	...	...	...	...	...	...	...	...	...	...
Grenada	90·8	20	71·4	16	85·7	75·7	73·3	78	142·2	...	6·86	22	4·9
Toronto	89·0	14	41·0	2	70·0	50·0	...	...	103 0	35·0	1·91	11	...
Fredericton	76·0	4	33·0	10	66·0	47·0	...	83	...	...	10·95	10	6·4
St. John's, N.B. ...	67·0	11	43·0	19	62·0	52·0	...	...	...	...	7·43	14	6·3
Victoria, B.C.	81·0	1	38·0	26	66·0	48·0	...	79	...	...	·79	7	4·0
Dawson	69·0	2	12·0	26	47·0	32·0	...	...	...	...	2·40	18	7·7

* and 29. † 17 and 30.

MALTA.—Mean temp. of air 74°·5. Average bright sunshine 8·2 hours.

Johannesburg.—Bright sunshine 272·3 hours.

Mauritius.—Mean temp. of air 0°·2 below, of dew point 0°·6 and R ·81 in. below averages. Mean hourly velocity of wind 10·6 miles or 1·4 below average.

KODAIKANAL.—Bright sunshine 146 hours.

COLOMBO.—Mean temp. of air 78°·8 or 2°·0 below, of dew point 0°·2 below, and R 3·68 in. below, averages. Mean hourly velocity of wind 8·1 miles.

HONGKONG.—Mean temp. of air 82°·2, or 1°·8 above average. Bright sunshine 202·6 hours. Mean hourly velocity of wind 9·0 miles. R 1·14 in. below average.

Melbourne.—Mean temp. of air 0°·4 below, and R ·46 in. below, averages.

Adelaide.—Bright sunshine 33·6 hours above, and R ·46 in. above, averages.

Coolgardie.—Temperature slightly above and R ·24 in. above average.

Perth.—Rainfall 1·60 in. above 33 years' average.

Sydney.—Mean temp. of air 1°·7 below, and R 2·19 in. above, averages.

Wellington.—Bright sunshine 142·4 hours..