Symons's

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OUR FORTY-FIRST VOLUME AND THE RAINFALL TABLES.

With this number our forty-first volume commences, and the occasion seems to be appropriate for a few words to our readers on the objects for which this Magazine was founded and the means by which we endeavour to carry these aims into effect. Originally a two-page "Rain Circular," intended to keep the keener rainfall observers in touch with each other's work from month to month, it became an 8-page magazine in 1866, including one page of rainfall tables and four pages of remarks by observers on the weather of the month. Correspondence dealing with matters of immediate interest to meteorological observers soon came to occupy an important place, and the review of meteorological books, both English and foreign, was made a leading feature. The proceedings of meteorological societies in this country were always recorded punctually. Extreme conciseness was necessary on account of the modest size of the little Magazine, and as the monthly numbers grew to two and a half times their original size (though the price stood still at the original figure), the additional space was devoted to more numerous reviews, more frequent illustrations, and to occasional articles of a more abstract kind bearing on meteorological theories. More subjects were dealt with, but if anything the literary matter was more concentrated than before.

We are endeavouring to maintain this Magazine as a repository of recent meteorological news, as a mirror of meteorological thought, so far as meteorological thinkers care to allow their reflections fall upon it, and as an independent medium for the expression of opinion. It is true that to some extent the Magazine is supplementary to the annual volumes of "British Rainfall," and that its relation with rainfall observers is rather more intimate than with students of meteorology in general, but we should not like this fact to affect the conduct of the paper in any way.

Our attitude is one of friendliness to every person and institution engaged in the serious study of the atmosphere, and our ambition is to be helpful to all and to interfere with none. We see with

pleasure that during the last few years meteorology has entered upon a period of rapid advance, in which the observer has a smaller share than the investigator, but we see also on every hand how the work of the investigator has been hampered and harassed by the want of the solid basis of patiently accumulated fact which only a succession of conscientious and persevering observers can bring together. Both types of activity meet in our pages, and sometimes one, sometimes the other, preponderates, but we do not regard them as antagonistic and would view it as a calamity if either were to be discouraged. It is becoming more than ever necessary that while work is encouraged in every department, and the natural aptitudes of those who are enthusiastic taken advantage of to the full, the waste of time and money resulting from the overlapping of agencies working with the same ends in view should be checked and co-operation between them secured. There are difficulties in the way of such a result, but they do not seem to us to be insuperable.

We have referred before to the wonderful instinct, or rather genius, with which the founder and first editor, Mr. G. J. Symons, hit upon methods of presenting meteorological data which required scarcely any modification as the years went on, and it is only after long thought and much delay that we have allowed ourselves to make the slightest change. New readers and old friends often favour us with advice which we are always glad to receive and consider, and though the advice of an individual cannot always be accepted, we believe that the change in the Tables of Temperature and Rainfall which we introduce this month gives effect to a great number of the desiderata which have been put before us during the last five years. New observers constantly want to know the precise position of the stations the records of which are quoted, and in the new combined Table on pp. 16–17 we give not only the name and county but also the latitude and longitude to the nearest minute. A minute of latitude is a trifle more than a mile, a minute of longitude in these latitudes rather more than half a mile, so that on a map of the British Isles on the scale of 20 miles to an inch the position of each station is within an area not much larger than a pin head at the intersection of the parallel and meridian which are designated. The height above sea-level is given also in feet, usually correctly, and probably in no case more than 20 feet in error. The temperature data are given exactly as before, but we are unable to say that the figures are really comparable, because all the thermo meters are not exposed alike nor are all the instruments verified. It is incomprehensible to us how observers will sometimes lavish hours and days of their valuable time in reading scales, entering, adding, averaging and pondering over figures derived from thermometers which only cost perhaps half-a-crown, and were not worth that; yet we know that many people do so. As we do not know in every case that trustworthy thermometers are employed,

we lay less stress upon the first page of this table than on the second.

The second half of the Table, on p. 17, combines the former monthly rainfall table and the aggregate table, which for the last few years has wandered somewhat uneasily through the text. It contains additional information as well. To begin with, we give the average rainfall for the month in question at most stations, calculated in each case to the period of thirty years, 1870—99. A fifty-years' average would be better for monthly amounts, but the data are not available. In the next column the actual rainfall is expressed as a percentage of the average. In other words, the average rainfall for each station is represented as 100 and the actual rainfall is given by a figure bearing the same ratio to 100 as the number of inches measured bears to the average amount. Then follows the actual rainfall for the month as measured up to 9 a.m. on the 1st of the month following, and the difference between the actual and the average rainfall, the positive sign (+) indicating that the rainfall of the month is above the average, the negative sign (—) that it is below the average. The fall on the wettest day in the month, the date of that day, and the number of rain days—*i.e.*, days on which at least ·01 in. of rain was recorded—complete the statistics for the month.

The next four columns, blank on this occasion as they would merely be a repetition of the foregoing, will give the total rainfall from January 1st to the end of the month dealt with. Then in bold type comes the mean annual rainfall calculated to the average of 30 years, and the line is closed by the repetition in a somewhat abbreviated form of the name of the station, for the bookbinder is not always successful in folding the sheets so that the two pages shown at an opening correspond line for line.

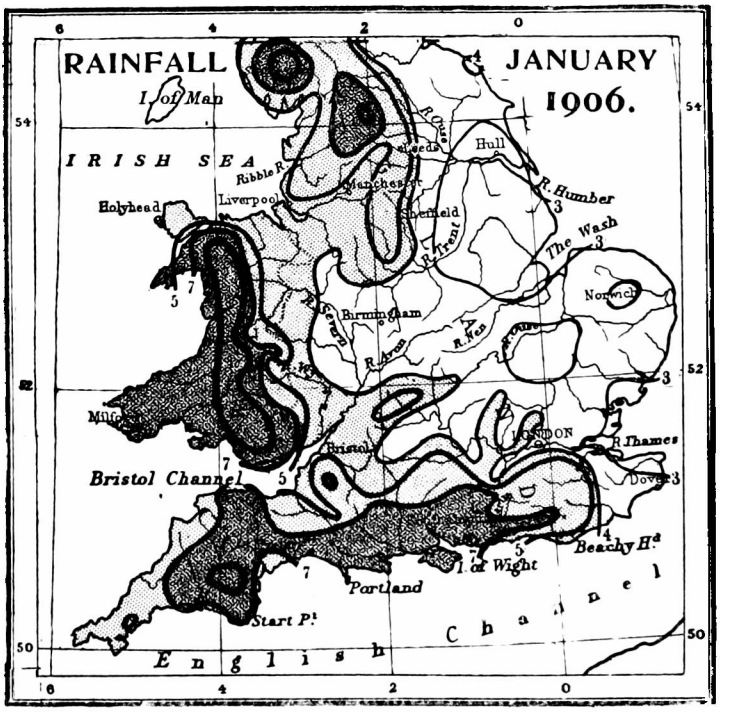
The new Table involves a greater expenditure of time than the old form, and we urge our readers whose records appear in it to send in their returns as early as possible, and at the latest by the 8th of the month. The compilers do not grudge their work, believing that the Table as now presented is both more interesting and more useful than it was before.

THE RAINFALL OF THE SOUTH OF ENGLAND IN JANUARY, 1906.

THE remarkable dryness of December, 1905, has been followed by a wet month in almost all parts of the country, and more particularly in the south of England. In the east of Scotland alone the rainfall was below the average; over the greater part of Scotland and Ireland the excess was less than 50 per cent., and we have heard of no case in either country in which the fall reached twice the average.

The stations cited in the table on p. 17 are sufficiently uniformly distributed to allow us to take the average of a large group of them as the general rainfall of the area they represent, and by doing so we find that in January, 1906, the general rainfall of Scotland showed an excess of 23 per cent., that of Ireland of 48 per cent., and that of England and Wales of 79 per cent. None of these figures is in any way unusual, for the rainfall of a couple of very wet days may in most places equal the average of a month. A large part of the country is often subjected to more than double the average monthy rainfall, and in January, 1906, this occurred along a pretty wide belt of country from Devon to Norfolk, passing through London, which was relatively the wettest part of the country. The actual figures of rainfall recorded in this belt were somewhat remarkable, and we reproduce a rainfall map of the south of England showing the way in which a rainfall exceeding 5·00 in. prevailed over that part of the country, and that a rainfall of 7·00 in. and upwards spread eastward into the middle of Sussex, and in several a fall exceeding 8·00 inches was recorded.

We are indebted to many correspondents for kindly sending special notes of the remarkably heavy falls, chiefly in eastern Hampshire and western Sussex, and though we only publish a selection, we are equally grateful for all the letters.



The rainfall here in January was 4·46 in., falling on 22 days. It is the greatest in any January since 1877, when I registered 4·93 in. on the same spot, but not by the same gauge.

The January rainfall has already raised the plane of saturation in the chalk in this neighbourhood, on or near the water-parting between the valleys of the Gade and Colne, a little more than two feet.

Weetwood, Watford, Feb. 9th, 1906. JOHN HOPKINSON.

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		in.
Dec.	30	·02
,,	31	·18
Jan.	1	·68
,,	2	·80
,,	3	·31
,,	4	·73
,,	5	·61
,,	6	·29
,,	7	·32
,,	8	·05
,,	9	·12
,,	10	·01
,,	11	·28
,,	12	·30
,,	13	·21
,,	14	·03
,,	15	·28
,,	16	·42
,,	17	·20
,,	18	·19
,,	19	·01
,,	20	·02

I find that in several places around here there has not been a record of continuous rainfall quite so long or so unbroken as I have noted here. I think that I may therefore send you my experience. I do not remember ever before to have noted 22 *consecutive* days with rain.

W. C. PLENDERLEATH.

Blyth, Dawlish, S. Devon,
Feb. 3rd, 1906.

I send you my notes on rainfall in January. They are somewhat remarkable, constituting a "record" for January during 70 years :—

Total rainfall in January, 1906 ..... 9·77 in.
Average ,, ,, ,, 1834 to 1905... 3·90 ,,
Previously wet Januaries :—1872 ... 7·42 in. | 1894 ... 6·84 in.
1877 ... 8·28 ,, | 1904 ... 6·82 ,,

Chilgrove, Chichester, 13th Feb., 1906. JOHN W. WOODS.

Rain fell here on twenty-three days in January, the total amount being 7·45 in., and the greatest fall in twenty-four hours 1·22 in. on the 16th. The wettest period was from 1st to 18th, during which there was only one day without rain ; total for eighteen days 6·72 in. Winds S.E. round to W. The ten-years' mean for January is 2·96 in. The wettest January previously recorded at Hazelhurst (the record commenced in 1888) was 6·05 in. in 1904 ; of this amount 3·75 in. fell in the seven days 25th to 31st. The wet period continued until February 17th ; during this part of February 4·27 in. fell—the total for twenty-four consecutive days on that occasion being 8·02 in. Prevailing winds S.W.

T. P. NEWMAN.

Hazelhurst, Haslemere.

		in.
Jan. 1	.....	·25
,, 2	.....	2·50
,, 3	.....	1·00
,, 4	.....	·82
,, 5	.....	·48
,, 7	.....	·70
,, 8	.....	·05
,, 11	.....	·50
,, 12	.....	·57
,, 13	.....	·07
,, 15	.....	·12
,, 16	.....	·65
,, 17	.....	·14
,, 18	.....	·18
		8·03

You may possibly have been overwhelmed with letters *re* the phenomenal rainfall of the first 17 days of January, 1906; but as, at present, I have not heard of any in this neighbourhood, except at Compton (Rev. H. M. Langdale), I write to tell you of my record at Forest Side Vicarage, in West Sussex, close to the border of Hampshire.

From January 1st to 18th my rain gauge has recorded (by daily observations at 9 a.m.) no less than 8·03 in. The *average* January fall for the past 17 years, 1889–1905, is *2·51* in. As you will see, I measured close on that in one day! The wells, which had been very low in 1905, are now rising fast.

MARY B. PARSONS.

19th January, 1906.

P.S.—To complete the record taken here of the rainfall in January, I may add that the total amount for the month is **8·90** in.—M.B.P.

Forest Side Vicarage, Emsworth, Hants, 2nd Feb., 1906.

THE THUNDERSTORM OF FEBRUARY 8th, 1906.

A SEVERE thunderstorm of a somewhat exceptional kind swept over a large part of England on February 8th, causing considerable damage and no little alarm by the sudden outburst of vivid lightning loud thunder and violent hail, accompanied by fierce squalls often more destructive than the lightning. Winter thunderstorms, though common enough in the north-west of Scotland, where thunder is comparatively rare in summer, are so rare in the south-east of England as to arrest public attention, and we have consequently received many letters on the subject, a few of which we are able to reproduce. On this occasion the storm has more interest than always attaches to a stray phenomenon appearing out of due season, and we print first a letter from the Meteorological Office, asking for the records of self-recording instruments during the storm. Unfortunately, we are unable to show a barograph record, for the Redier barograph, with whose virtues and defects our readers must now be fairly familiar, had been taken to pieces eight days before the storm, and the four clocks which enter into its construction had been sent for a much-needed cleaning with a "faithful promise" of return within the week. The cheerful optimism of the skilled workman in his time-estimates is well known, and although we are sure that the barograph will return to its work like a giant refreshed—some time in the future—this particular storm has

meanwhile crept past Camden Square unrecorded barometrically between 2.50 and 3.5 p.m. We hope that some of our readers more fortunately circumstanced will be able to assist the Meteorological Office by sending traces of their barographs and other recording instruments.

We quote only a few of the letters we have received. The newspapers teem with instances of houses struck by lightning or severely damaged by wind, especially in East Anglia. It is interesting to note that the storm was felt in Norwich before 2 p.m., in Watford about 2.30, in London about 2.50, and at Tottingworth Park at 4 p.m. Slender data to found an estimate of rate of travel upon, but the figures suggest a rate of travel twice as fast north of London as south of it.

On the afternoon of Thursday, February 8th, a violent hail squall with much thunder and lightning occurred in the Midlands and the south-east of England, and in London it was accompanied by very striking changes of temperature and pressure.

The Director is of opinion that a detailed examination of the phenomenon in its connexion with the meteorological situation over the country as a whole, would yield interesting results, and he has instructed me to ask whether you would have the goodness to lend him for a short period the traces of your self-recording instruments for this day, or copies of them, and also furnish him with a brief account of any striking meteorological occurrence which may have come under your notice during the day in question. The value of such notes would be greatly increased by stating as accurately as possible the times at which the events took place. Any remarks which would aid in the correct evaluation of the time scale of the automatic records would also be most useful.

R. G. K. LEMPFERT.

Meteorological Office, 63, Victoria Street, London, S. W., 10th February, 1906.

This morning was mild with a spring-like wind from the west. About 1 o'clock I noticed the wind was rising, the sun shining brightly at the time. At 1.30 there was a dark cloud in the west, and a few drops of rain fell and distant thunder was heard. At 1.40 we had a heavy clap of thunder with hail. After about two minutes the hail ceased and snow began to fall thick and fast. At 1.45 there was a strong flash of lightning closely followed by a crashing peal of thunder which seemed to shake the buildings. Another clap of thunder was heard about five minutes afterwards, and then ceased. Snow fell till 2.10 and then the weather cleared up, and at 3.30 the sky was clear and cloudless. Temperature in the shade had been as high as 45°·0 in the morning, but at 2.30 p.m. had gone down to 35°·0. At 9 a.m. the barometer registered 29·883 in., at 1 o'clock it

had gone down to 29·705 in.; it did not fall during the storm, and up to the time of writing (4.45) shows no change either way. We had a heavy fall of snow for a few minutes about 4 o'clock. The sky is now clear and looks like being a sharp frost. Wind calm and still westward. Min. temperatures this week—Sunday, 31°·0; Monday, 27°·0; Tuesday, 21°·0; Wednesday, 23°·0; this morning, 30°·0. The temperature is now 32°·0. The oldest inhabitant does not remember such a heavy thunderstorm in the winter here.

WILLIAM HALL.

Swerford, Oxford, 8th February, 1906.

We had a thunderstorm here with big hail last Saturday night. Thunderstorms in February are very rare here, but *two* in that month are almost unknown. This afternoon from 1.50 to 2.20 we had a thunderstorm which might have been expected in June or July after an outburst of great heat, but which was most extraordinary at this season. The lightning flashes were frequent and brilliant, and the thunder peals followed almost instantaneously Much hail accompanied the lightning, followed by heavy snow whitening the ground. There were only two storms (in June) all last summer of equal violence, and I have never known the like in February before. ARTHUR W. PRESTON.

Christchurch Lodge, Eaton, Norwich, 8th February, 1906.

I see by the papers this morning that the storm was a general and not a local one—all the more unusual at this season. For the purpose of comparison I give you the *time* of the storm here. 1.35 p.m., first thunder; 1.55, storm broke in full fury; 2.10, storm passing; 2.20, last thunder. A. W. P.

9th February, 1906.

A severe, short and remarkably sudden thunderstorm occurred here yesterday afternoon. A few distant peals of thunder were heard from about 2.25, and at 2.28 came a vivid flash of lightning with almost instantaneous thunder, followed by sleet, hail and snow. The storm was over in seven minutes, but the snow continued for some time, leaving the ground white until the following day and yielding ·16 in. of rain.

A man in Watford, with a horse and cart, seeing the storm coming, threw a sack over his shoulders and was about to adjust a nose-bag on his horse, when he was struck and knocked down by an early (probably the first) flash of lightning. He soon recovered, but the horse was brought to its knees and killed instantaneously. It remained so rigid that after the cart had been removed it had to be shoved over on to its side. JOHN HOPKINSON.

Weetwood, Watford, 9th February, 1906.

A storm of thunder, lightning and hail, lasting 15 minutes, passed overhead at 4 p.m. yesterday. The melted hail measured ·11 in. The lightning struck a tree and a telegraph pole about one mile south of this place. J. MASSON.

Tottingworth Park Gardens, Heathfield, Sussex, February 9th, 1906.

Correspondence.

THE PACKING OF METEOROLOGICAL INSTRUMENTS.

To the Editor of Symons's Meteorological Magazine.

THOSE of us who are privileged to control a meteorological service, however primitive it may be, find a deal to try our patience. Our troubles spring from many sources, but I wish to draw your attention to two, which may be interesting because they may not be so universal as other sources.

In the forefront of offenders I should place those who pack instruments for export. That the trouble is in the packer and not in the instruments is proved by my experience during the last few years in one of our colonies. I have had to unpack considerable quantities of apparatus for the teaching of Physics and Chemistry, such as a quadrant electrometer, several galvanometers, several Beckmann thermometers, X-ray tubes and glass ware of every description. The breakages have been few and trifling. But in the same time I have unpacked several consignments of meteorological instruments from several British firms and the number of breakages has been abnormally high. Fully fifty per cent. of the Kew barometers have been broken. Grass minimum thermometers especially suffer, the guard tube breaking. A nephoscope was packed with the compass needle *in situ* under the mirror! Result: a broken mirror, a broken agate and a broken pivot! One large case, containing a heterogeneous collection of rain gauges, an evaporation gauge, a barograph and a Campbell-Stokes sunshine recorder, came to hand with the packing sunk a good six inches below the lid. The evaporation gauge was beyond recognition, the barograph was so knocked about as to be almost useless. In another case a self-recording instrument had the drum removed, leaving the spindle projecting some three inches. It was bent through an angle of 30°. I need not mention breakages amongst such small fry as dry and wet bulb and maximum and minimum thermometers. They do not escape the general *debâcle*.

My advice to the packer is to take all instruments to pieces and pack the various pieces in small boxes, which may then be packed in one large case. This advice must be followed particularly in the case of so-called portable instruments. The ratio of packing material to instruments should be as 4 : 1.

Another source of trouble is the design of the instruments. The colony I speak of is exceedingly dry and dusty. The aforementioned nephoscope will illustrate what I mean, and the defect may be found also in theodolites, levels and dip needles. I refer to the electrification caused by wiping the mirror, even with one's hand. The compass needle being in close proximity to the mirror will point anywhere but North. In this connection I may tell you that in that climate black and bright bulbs may be tested for vacuum by simply drawing the hand over them. The whole interior glows like a Geissler tube, if the vacuum is good. The dry and wet bulb in the hands of an observer who simply takes readings must be a very misleading instrument, as between dust and drought the cotton cannot be relied on to keep the bulb wet.

Such a useful instrument as the Kew barometer is not reliable. I question if the constriction is worth retaining. It is there the tube breaks. The constriction must also be a cause of the sluggishness of the instrument. I have found a Fortin Standard more portable and more reliable in many ways.

A. W.

NOTE ON THE MODE OF FORMATION OF RAIN.

WHILST walking across the ridge of Ashdown Forest this morning in a storm of wind and rain, one of this prolonged series, I was especially struck both by the peculiar manner in which the rain seemed to grow out of the air, and by the apparent fact that the rain executed a complicated spiral movement before finally reaching the ground. I have repeatedly observed the phenomena to the best advantage perhaps among the higher hills of England which afford excellent back-grounds for observing similar effects. In such cases as this the eye can never, of course, attempt to analyse the motion of the rain drops, but it can perceive that it is of an exceedingly complicated nature.

It would seem that in cyclonic storms of this nature there is no line of demarcation between the rain zone and the cloud zone, the one merging imperceptibly into the other, rain being distinguished from cloud only by the greater size of the water-drops composing it. Very different is the rain which falls in showers and thunderstorms. Then the clouds seem to have some analogy to a saturated sponge, when it is suddenly compressed, the water falling in streams from this under surface, and the boundary between rain and cloud is often quite well defined by characteristic black streaks. Furthermore the cloud-density in heavy showers and thunderstorm rains must, on the whole, be very much greater than in the cyclonic rains of winter, and the inky-blackness of a thunder sky is very distinct from the dull grey-blackness of the more diffused clouds of large cyclonic storms.

L. C. W. BONACINA.

Forest Row, Sussex, January 18th, 1906.

GREEN FLASH AT SUNSET.

SURELY the phenomenon described by your correspondent, Admiral Maclear, is a physiological phenomenon of colour due to contrast. The green flash seen as the last ray of the setting sun disappears is the apparent image or spectrum of the sun which has just sunk below the horizon seen in the complementary green colour.

This phenomenon may be illustrated by the following experiment:—"Let a small piece of bright red paper be held before a moderately lighted white surface; let the observer look steadfastly at the small piece of coloured paper, and let it be taken away after a time, while his eyes remain unmoved; a green spectrum will then be visible on the white surface. The coloured paper may also be left in its place, while the eye is directed to another part of the white surface, the same coloured appearance will be visible there too, for it arises from an image, which now belongs to the eye," see Goethe, "Zur Farbenlehre," vol. i., pp. 49, 50, 54.

The reason why some observers may describe the colour of the flash as blue is due to the fact that the colour of the setting sun or planet is sometimes of a yellow-red or orange colour, the complementary colour of which is blue.

R. C. CANN LIPPINCOTT.

Over Court, Almondsbury, Bristol, January 20th, 1906.

WITH reference to "the green flash," I saw it continually on my way from Tasmania, in 1854, in the South Pacific. But it then occurred at *sunrise*. I used to get up to observe it morning after morning. I do not think I ever witnessed it at sunset.

GEORGE H. COURTENAY.

Southtown House, Kenton, nr. Exeter, January 19th, 1906.

[Major Courtenay's observation of the green ray at sunrise, *i.e.*, *before* the sun appears, seems to dispose of Mr. Lippincott's argument that the appearance is due to fatigue of the eye suggesting the complementary colour, a suggestion often made before seeing the phenomenon but rarely upheld by one who has actually observed it. We reserve further comment until the promised article on the subject appears.—ED. *S.M.M.*]

ROYAL METEOROLOGICAL SOCIETY.

THE Annual General Meeting of this Society was held on Wednesday, January 17th, at the Institution of Civil Engineers, Great George Street, Westminster, Mr. Richard Bentley, President, in the chair.

The Council, in their Report, stated that the new scheme of Lectures and Exhibitions had been successfully inaugurated during the year, and that they had appointed Mr. W. Marriott as the Lecturer. The work of the Kite Committee had been continued, the special observations being carried out by Mr. G. C. Simpson, on board the mission steamer *Queen Alexandra* in the North Sea. The number of Fellows was 674, being an increase of 16 in the year.

The Report having been adopted and the usual votes of thanks passed, the President read from the Council minutes a statement of Lieut.-Gen. Sir Richard Strachey's services to Meteorology, and then in a few appropriate words handed the Symons Gold Medal to Dr. W. N. Shaw, on behalf of Sir R. Strachey, who had written expressing his great regret that he was unable to attend and receive it in person.

The President then delivered an address on "Meteorology in Daily Life." He referred to the increasing interest being shown throughout the country in the study of Meteorology, and to the recent advances which had been made in the science, more especially in the analysis of the composition of the atmosphere, and in the investigation of the upper air. He laid stress on the increasing urgency of safeguarding the water supply of the country, pointing out that, while in the reign of William the Conqueror there were barely two millions of inhabitants in these islands and no water was then used for sanitation or manufactures—to-day the population has risen to over forty-two millions, and a large proportion of the land had either been drained or built over. In the course of his address Mr. Bentley touched upon a large number of meteorological topics and gave various illustrations of the effects of weather on human life, animals, vegetation, agriculture, food, navigation, and railways.

A vote of thanks having been passed to the President for his address, the scrutineers of the ballot announced that the following gentlemen had been elected the Officers and Council for the ensuing year:—

President—Mr. R. Bentley. *Vice-Presidents*—Capt. W. F. Caborne, C.B., Mr. F. Druce, Sir J. W. Moore, and Capt. D. Wilson-Barker. *Treasurer*—Dr. C. T. Williams. *Secretaries*—Mr. F. C. Bayard and Dr. H. R. Mill. *Foreign Secretary*—Dr. R. H. Scott, F.R.S. *Council*—Mr. J. E. Clark, Mr. R. H. Curtis, Mr. W. H. Dines, F.R.S., Mr. W. Ellis, F.R.S., Capt. M. W. C. Hepworth, C.B., Mr J. Hopkinson, Mr. R. Inwards, Mr. B. Latham, Mr. E. Mawley, Mr. H. Mellish, Dr. W. N. Shaw, F.R.S., and Mr. C. T. R. Wilson, F.R.S.

The Annual General Meeting was preceded by a brief Ordinary Meeting, at which the following gentlemen were elected Fellows:—Rev. I. K. Anderson, Sir Hugh Bell, Bart., Capt. F. Coode, Mr. C. H. Gott, Mr. C. H. Grant, Mr. M. W. Hilton-Simpson, Dr. K. W. Kumm, Mr. A. T. Millroy, and Mr. M. Thakado.

METEOROLOGICAL NEWS AND NOTES.

THE WEEKLY WEATHER REPORT of the Meteorological Office has undergone change and improvement with the beginning of the current year. The front page contains general remarks on the weather for the week over the British Isles and a general statistical summary of the temperature, rainfall and sunshine for each of the forecasting districts in three sections—the first dealing with the week just elapsed, the second with the season, the third with the current year—so far as they have respectively gone. The second page contains the values for the individual stations from which the summary has been compiled. The next three and a half pages contain, as formerly, three weather-maps of Europe for each day of the week just past, the map of temperature and weather at 8 a.m. and those of barometer and wind at 8 a.m. and 6 p.m. The second half of the last page is devoted to a supplementary table of sunshine, and —the most striking and valuable innovation—a table of observations in the upper air, taken by means of kites at the Meteorological Office's kite stations at Oxshott, and elsewhere during the week to which the Report refers. To all who have read Dr. Shaw's paper on "Seasons in the British Isles," recently published by the Royal Statistical Society, the new form of the Weekly Weather Report will appeal with special force.

THE SCIENCE YEAR BOOK, edited by Major B. F. S. Baden-Powell, is one of those books a review of which was crowded out of our last issue, but although it is now late in the year to invest in a diary, we can commend the text of this conveniently arranged handbook as worth the cost of it. It contains a great amount of useful information and abounds with ingenious modes of arrangement, the originality and efficiency of which are very refreshing to meet with.

A LEADING ARTICLE IN "THE TIMES" of February 5th, calls attention to the harm that is done by the exaggerated ideas prevailing as to the frequency of destructive atmospheric disturbances. The particular case is one which admits of the only argument comes home to the unscientific mind, that of adding up and reducing to pounds, shillings and pence. Mr. Hesketh Bell, who had held an administrative office in the West Indies, pointed out that the rates of insurance against hurricanes were so high as to deter planters and farmers from protecting themselves against the calamitous results of these storms, and he showed that this arises from the exaggerated idea entertained by the insurance offices as to the frequency of hurricanes. In consequence of these representations new rates of insurance of crops in the West Indies against hurricanes, have been drawn up, bananas being excluded on account of their more ready destruction by wind, and it is believed that both planters and insurance companies will profit by the result.

CAN ANY OF OUR READERS tell us of a house with grounds suitable for kite experiments on a large scale, or near an expanse of open country in a thinly peopled district, within two hours by rail of London, as far as possible from the sea?

REVIEWS.

Travaux de la Station Franco-Scandinave de Sondages aëriens à Hald, 1902—1903. [Work of the Franco-Scandinavian Station for aërial soundings at Hald for 1902—1903]. Viborg: 1904. Size 12½ × 10. Pp. 52 + 162. Plates.

ON the initiative of M. Teisserenc de Bort it was resolved in 1901 to establish a station at which for several months continuous observations could be made, day and night, of the meteorological conditions of the upper air. The place selected for this purpose was Hald, near the little town of Viborg, in the centre of the peninsula of Jutland, and the governments of Denmark and Sweden assisted in the work, which was commenced in May, 1902, and continued for a whole year. M Teisserenc de Bort writes the introduction to this report, Professor Hildebrandsson follows with an account of the organization of the station, which shows that half the cost was borne by M. Teisserenc de Bort, and that a Danish landed proprietor, Mr. A. Krabbe, gave the use of part of his estate free of charge for the installation of the station. Other participators in the work describe their special share. Various sheds, workshops, and a villa for the assistants were put up, and the complete staff included 6 meteorologists, 1 computor, 1 watchmaker, 5 mechanics, 1 foreman, 6 carpenters or kite makers, 6 men in three watches of two each, 1 coachman, and 1 labourer—a total of 28 all told.

Ascents were made almost every day and the kites were kept up for a very long time, frequently for more than twenty consecutive hours in a single experiment. *Ballons-sondes*, or small free balloons, carrying meteorographs with an arrangement to secure their fall after a definite interval of time, were also used, and of those sent up 80 per cent. were recovered. In addition, on several occasions ascents were made from ship-board in the adjacent sea. The bulk of the volume before us is occupied with the data of the various ascents reduced from the curves of the meteorographs, and it constitutes an immense storehouse of raw material for subsequent study.

Ueber die Energie der Stürme. [On the Energy of Storms]. Von MAX MARGULES. Wien: 1905. Size 12 × 9. Pp. 26.

THIS mathematical discussion of the energy of storms is reprinted from the annual publication of Central Institute for Meteorology in Vienna for 1903.

The State of the Ice in the Arctic Sea, 1904. [Copenhagen: 1905]. Size 12 × 9½. Pp. xvi. Plates.

THE Danish Meteorological Institute are punctual in the publication of this important series of monthly charts showing the distribution of ice in the North Atlantic and Arctic Sea during the open season of 1904. The winter of 1903-04 was found to be milder than usual to the north of the Atlantic, and in 1904 the East Greenland Current brought rather less and the Labrador Current considerably more ice than usual into the Atlantic.

The Floods of the Spring of 1903 in the Mississippi Watershed. By H. C. FRANKENFIELD. Washington Weather Bureau, 1904. Size 11½ × 9½. Pp. 64. Plates.

THE floods in question, produced by the heavy rainfall of February, 1903, affected the river for three months. The rise of water was unprecedented in many places, and the numerous photographs illustrating the memoir give a vivid idea of the damage done.

La représentation des situations atmosphériques. Par A. BRACKE. Mons: 1904. Size 10 × 6½. Pp. 32. Plates.

As heights in a country may be represented either by contour lines on a map or by a succession of sections, so M. Bracke proposes to represent atmospheric conditions by a series of sectional diagrams instead of the usual cartographic representation of isobars and isotherms.

La Théorie hydrothermodynamique des Tourbillons atmosphèriques en face du problème des variations de la température de l'air. [The hydrothermodynamic theory of atmospheric whirls and the problem of the variations of the temperature of the air.] Par R. P. MAX DECHEVRENS, S.J. Jersey: 1905. Size 8½ × 5½. Pp. 36.

IN 1879 Father Dechevrens put forward a theory of atmospheric whirls in which he looked upon the cyclone and anticyclone as parts of one whole, one being always superimposed upon the other and separated by a stratum of air at an elevation of from 18,000 to 21,000 feet. In 1886 he showed how mountain observations confirmed his view, and now he finds in the kite and balloon work recently undertaken still more ample confirmation of the correctness of a theory which proves applicable to all the facts regarding the distribution of temperature in cyclones and anticyclones at ground level and throughout all heights in the atmosphere.

TEMPERATURE FOR JANUARY, 1906.

STATION.	COUNTY.	Lat. N.	Long. W. [*E.]	Height above Sea. ft.	TEMPERATURE. Max. °	Max. Date.	Min. °	Min. Date.	No. of Nights at or below 32° Shade.	Grass
Camden Square	*London*	51 32	0 8	111	53·0	26	25·3	23	8	16
Tenterden	*Kent*	51 4	*0 41	190	52·5	5	23·5	24	26	15
Hartley Wintney	*Hampshire*	51 18	0 53	222	58·0	13, 14	24·0	23, 24	10	12
Hitchin	*Hertfordshire*	51 57	0 17	238	51·0	4, 27	25·0	22, 23	8	...
Winslow (Addington)	*Buckinghamshr.*	51 58	0 53	309	53·0	27	26·0	20, 23	9	18
Bury St. Edmunds (Westley)	*Suffolk*	52 15	*0 40	226	55·0	27	25·0	23	9	...
Brundall	*Norfolk*	52 37	*1 26	66	...	..	...	...	...	...
Alderbury	*Wiltshire*	51 2	1 44	263	54·0	26	20·0	23	12	...
Winterbourne Steepleton	*Dorset*	50 42	2 31	316	52·1	5	21·0	24	8	10
Torquay (Cary Green)	*Devon*	50 28	3 32	12	54·4	5	29·8	24	2	15
Polapit Tamar [Launceston]	,,	50 40	4 22	315	54·1	5	22·8	24	7	9
Bath	*Somerset*	51 3	2 22	67	56·0	26	24·0	24	9	...
Stroud (Upfield)	*Gloucestershire*	51 44	2 13	226	56·0	3 †	28·0	22	7	...
Church Stretton (Woolstaston)	*Shropshire*	52 35	2 48	800	51·0	26	22·5	1	18	...
Bromsgrove (Stoke Reformatory)	*Worcestershire*	52 19	2 4	225	50·0	27	22·0	23	11	...
Boston	*Lincolnshire*	52 58	0 1	25	52·0	27	25·0	23	8	...
Worksop (Hodsock Priory)	*Nottinghamshire*	53 22	1 5	56	56·7	27	26·6	23	6	22
Derby (Midland Railway)	*Derbyshire*	52 55	1 28	156	54·0	27	24·0	23	6	...
Bolton (Queen's Park)	*Lancashire*	53 35	2 28	390	49·4	28	29·4	1	3	15
Wetherby (Ribston Hall)	*Yorkshire, W.R.*	53 59	1 24	130	...	...	...	...	...	..
Arncliffe Vicarage	,, ,,	54 8	2 6	732	...	...	...	...	...	...
Hull (Pearson Park)	,, *E.R.*	53 45	0 20	6	54·0	28	30·0	20, 22	2	19
Newcastle (Town Moor)	*Northumberland*	54 59	1 38	201	...	...	...	...	...	...
Borrowdale (Seathwaite)	*Cumberland*	54 30	3 10	423	49·7	26	28·2	22	4	...
Cardiff (Ely)	*Glamorgan*	51 29	3 13	53	...	...	..	...	...	...
Haverfordwest (High Street)	*Pembroke*	51 48	4 58	95	51·7	3	24·3	23	3	12
Aberystwyth (Gogerddan)	*Cardigan*	52 26	4 1	83	...	...	...	...	...	...
Llandudno	*Carnarvon*	53 20	3 50	72	57·0	4	34·0	1	0	...
Cargen [Dumfries]	*Kirkcudbright*	55 2	3 37	80	52·0	27	28·0	22	4	...
Lilliesleaf (Riddell House)	*Roxburgh*	55 31	2 46	550	49·0	27	26·0	21	...	23
Edinburgh (Royal Observy.)	*Midlothian*	55 55	3 11	442	50·1	28	28·0	1	3	8
Colmonell (Clachanton)	*Ayr*	55 8	4 54	140	50·0	26, 28	26·0	21	2	...
Glasgow (Queen's Park)	*Renfrew*	55 53	4 18	144	49·0	26, 27	28·0	21	6	26
Tighnabruaich	*Argyll*	55 55	5 14	50	44·0	3, 26	28·0	19, 21	7	9
Mull (Quinish)	,,	56 36	6 13	35	...	...	...	...	...	...
Dundee (Eastern Necropolis)	*Forfar*	56 28	2 57	199	53·2	26	27·0	22	8	...
Braemar	*Aberdeen*	57 0	3 24	1114	...	...	...	...	...	...
Aberdeen (Cranford)	,,	57 8	2 7	120	57·0	26	28·0	7, 22	15	...
Cawdor (Budgate)	*Nairn*	57 31	3 57	250	...	...	...	...	...	...
Invergarry	*E. Inverness*	57 4	4 47	130?	...	...	...	...	...	...
Loch Torridon (Bendamph)	*W. Ross*	57 32	5 32	20	...	...	...	...	...	...
Dunrobin Castle	*Sutherland*	57 59	3 56	14	54·5	26	28·0	8	14	...
Castletown	*Caithness*	58 35	3 23	100	47·0	21, 27	25·0	8	14	16
Killarney (District Asylum)	*Kerry*	52 4	9 31	178	55·0	29	29·0	20	...	...
Waterford (Brook Lodge)	*Waterford*	52 15	7 7	104	52·0	3 ‡	23·0	23	6	...
Broadford (Hurdlestown)	*Clare*	52 48	8 38	167	49·0	27	26·0	19, 22	6	...
Carlow (Browne's Hill)	*Carlow*	52 50	6 53	291	..	...	...	...	...	...
Dublin (Fitz William Square)	*Dublin*	53 21	6 14	54	54·9	28	29·0	23	2	11
Ballinasloe	*Galway*	53 20	8 15	160	58·0	27	24·0	20	16	...
Clifden (Kylemore House)	,,	53 32	9 52	105	...	...	...	...	...	...
Crossmolina (Enniscoe)	*Mayo*	54 4	9 18	74	...	...	...	...	...	..
Seaforde	*Down*	54 19	5 50	180	52·0	26	27·0	20	5	13
Londonderry (Creggan Res.)	*Londonderry*	54 59	7 19	320	...	...	...	...	...	...
Omagh (Edenfel)	*Tyrone*	54 36	7 18	280	50·0	2 §	28·0	21	7	13

† and 5, 26 and 27. ‡ and 4, 26 and § and 24, 26 and 28.

RAINFALL FOR JANUARY, 1906.

RAINFALL OF MONTH.							RAINFALL FROM JAN. 1.					
ver. '0-99.	1906.	Diff. from Av.	% of Av.	Max. in 24 hours.		No. of Days	Aver. 1870-99.	1906.	Diff. from Aver.	% of Av.	Mean Annual 1870-1899.	STATION.
in.	in	in.		in.	Date.		in.	in.	in.		in.	
·89	4·02	+2·13	213	·74	12	18	...	...	...	...	25·16	Camden Square
·36	3·64	+1·28	154	·55	4	20	...	...	...	...	28·36	Tenterden
·39	4·34	+1·95	182	·69	16	22	...	...	...	...	27·10	HartleyWintney
·81	3·54	+1·73	196	·53	4	20	...	...	...	...	24·66	Hitchin
·05	3·67	+1·62	179	·60	5	21	...	...	...	...	26·75	Addington
·70	3·64	+1·94	214	·50	4	22	...	...	...	..	25·39	Westley
·67	3·94	+2·27	236	·57	5	23	...	...	..	...	25·40	Brundall
·67	5·65	+2·98	212	·68	1	19	...	...	...	...	29·17	Alderbury
·90	8·91	+5·01	228	1·42	2	24	...	...	...	...	39·00	Winterbourne Stpltn
·19	6·21	+3·02	194	·77	16	20	...	...	...	...	35·00	Torquay
·87	7·46	+3·59	193	·88	2	24	...	...	...	...	38·85	Polapit Tamar
·52	4·26	+1·74	169	·65	12	21	...	...	...	...	30·75	Bath
·46	4·71	+2·25	191	·69	5	21	...	...	...	...	29·85	Stroud
·81	4·16	+1·35	148	·85	5	23	...	...	...	...	33·04	Woolstaston
·91	3·54	+1·63	185	·59	5	18	...	...	..	..	24·50	Bromsgrove
·59	2·44	+ ·85	153	·40	6, 7	18	...	...	...	..	23·30	Boston
·74	2·91	+1·17	167	·56	7	17	...	...	...	..	24·70	Hodsock Priory
·95	3·28	+1·33	168	·66	5	23	...	...	...	...	26·18	Derby
·38	6·47	+3·09	191	·84	5	25	...	...	...	...	42·43	Bolton
·89	3·95	+2·06	209	·88	16	21	...	...	...	...	26·96	Ribston Hall
·33	9·96	+3·63	157	1·82	28	28	...	..	...	...	60·96	Arncliffe Vic.
·80	2·50	+ ·70	139	·44	5, 7	19	...	...	...	...	27·02	Hull
·96	2·42	+ ·46	123	·63	18	22	...	...	...	...	27·99	Newcastle
·71	19·93	+5·22	135	6·15	28	28	...	...	...	...	132·68	Seathwaite
·85	7·57	+3·72	197	·80	5	26	...	...	...	...	42·81	Cardiff
·13	7·34	+2·21	143	1·10	5	23	...	...	...	...	47·88	Haverfordwest
·87	...	..	...	...	...	...	...	...	...	...	45·41	Gogerddan
·57	3·88	+1·31	151	·91	5	21	...	...	..	...	30·98	Llandudno
·54	4·84	+ ·30	107	·92	28	24	..	...	...	...	43·43	Cargen
·60	2·98	+ ·38	115	·51	11	26	...	...	...	...	33·04	Riddell House
...	3·11	...	...	·87	28	16	...	...	...	...	...	Edinburgh
·52	4·90	+ ·38	108	·60	14	25	..	...	...	...	44·85	Colmonell
·25	4·77	+1·52	147	·70	28	24	...	...	...	...	35·80	Glasgow
·86	7·20	+1·34	123	·67	11	27	...	...	...	...	57·90	Tighnabruaich
·85	6·81	+ ·96	116	1·02	14	29	...	..	...	...	57·53	Quinish
·10	2·05	— ·05	98	·45	28	15	...	...	..	...	28·95	Dundee
·91	3·63	+ ·72	125	..	...	...	...	...	...	...	36·07	Braemar
·32	1·57	— ·75	68	·34	3	14	...	...	...	...	33·01	Aberdeen
·14	2·76	+ ·62	129	·67	14	21	...	...	...	...	29·37	Cawdor
·63	12·73	+6·10	192	2·15	24	20	...	...	...	...	56·00	Invergarry
·75	14·70	+5·95	168	2·10	28	29	...	...	...	...	86·50	Bendamph
·62	2·87	+ ·25	110	·41	24	15	...	...	...	...	31·60	Dunrobin Castle
...	2·75	...	...	·36	10	25	...	...	...	...	...	Castletown
·57	6·36	— ·21	97	·84	11	25	...	...	...	...	58·11	Killarney
·06	4·86	+ ·80	120	·80	5	20	...	...	...	...	39·30	Waterford
·98	5·36	+2·38	180	·80	17	25	...	...	...	...	33·47	Hurdlestown
·15	3·86	+ ·71	123	·57	17	19	...	...	...	...	34·44	Carlow
·16	4·13	+1·97	191	·64	2	22	...	...	...	...	27·75	Dublin
·49	5·70	+2·21	163	·57	11	27	...	...	...	...	37·04	Ballinasloe
·86	11·08	+3·22	141	1·33	15	25	...	...	...	...	80·23	Kylemore House
·00	7·08	+2·08	142	1·27	11	27	...	...	...	...	50·50	Enniscoe
·63	3·97	+ ·34	109	·67	7	24	...	...	...	...	38·61	Seaforde
·56	5·77	+2·21	162	1·03	28	29	...	...	...	...	41·20	Londonderry
·34	5·34	+2·00	160	·70	14	27	...	...	...	...	37·85	Omagh

SUPPLEMENTARY RAINFALL, JANUARY, 1906.

Div.	STATION.	Rain. inches	Div.	STATION.	Rain. inches
II.	Abinger Hall	5·45	XI.	Rhayader, Tyrmynydd	11·18
,,	Ramsgate, West Cliff Villas	2·18	,,	Lake Vyrnwy	9·30
,,	Hailsham	5·23	,,	Llangyhanfal, Plâs Draw	4·39
,,	Crowborough, Uckfield Lodge	6·74	,,	Criccieth, Talarvor	5·65
,,	Osborne, Newbarn Cottage.	7·05	,,	Llanberis, Pen-y-pass	22·32
,,	Emsworth, Redlands	7·73	,,	Lligwy	4·13
,,	Alton, Ashdell	7·23	,,	Douglas, Woodville	4·81
,,	Newbury, Welford Park	5·55	XII.	Stoneykirk, Ardwell House	3·77
III.	Harrow Weald, Hill House.	3·74	,,	Dalry, The Old Garroch	8·59
,,	Oxford, Magdalen College..	3·16	,,	Langholm, Drove Road	6·73
,,	Bloxham Grove	3·97	,,	Moniaive, Maxwelton House	5·73
,,	Pitsford, Sedgebrook	3·79	XIII.	N. Esk Reservoir [Penicuick]	4·95
,,	Huntingdon, Brampton	3·38	XIV.	Maybole, Knockdon Farm..	4·21
,,	Wisbech, Bank House	3·12	,,	Campbeltown, Witchburn	5·52
IV.	Southend Water Works	3·09	XV.	Inveraray, Newtown	9·13
,,	Colchester, Lexden	2·77	,,	Ballachulish House	16·78
,,	Newport, The Vicarage	3·55	,,	Islay, Eallabus	6·12
,,	Rendlesham	3·54	XVI.	Dollar Academy	4·74
,,	Swaffham	3·65	,,	Loch Leven Sluice	4·47
,,	Blakeney	3·23	,,	Balquhidder, Stronvar	12·96
V.	Bishops Cannings	3·97	,,	Perth, Pitcullen House	3·30
,,	Ashburton, Druid House	11·00	,,	Coupar Angus Station	2·95
,,	Okehampton, Oaklands	7·72	,,	Blair Atholl	4·68
,,	Hartland Abbey	6·13	,,	Montrose, Sunnyside Asylum	2·02
,,	Lynmouth, Rock House	7·59	XVII.	Alford, Lynturk Manse	1·97
,,	Probus, Lamellyn	6·10	,,	Keith Station	1·28
,,	Wellington, The Avenue	5·55	XVIII.	N. Uist, Lochmaddy	3·43
,,	North Cadbury Rectory	5·14	,,	Alvey Manse	2·82
VI.	Clifton, Pembroke Road	4·95	,,	Loch Ness, Drumnadrochit.	6·37
,,	Moreton-in-Marsh, Longboro'	4·77	,,	Glencarron Lodge	15·62
,,	Ross, The Graig	4·08	,,	Fearn, Lower Pitkerrie	1·89
,,	Shifnal, Hatton Grange	3·42	XIX.	Inversbin	3·51
,,	Cheadle, The Heath House.	4·94	,,	Altnaharra	7·49
,,	Coventry, Kingswood	3·59	,,	Bettyhill	3·81
VII.	Market Overton	4·00	,,	Watten Station	1·86
,,	Market Rasen	2·73	XX.	Dunmanway, The Rectory..	8·92
,,	Bawtry, Hesley Hall	2·36	,,	Cork	5·42
VIII.	Neston, Hinderton	4·76	,,	Darrynane Abbey	7·65
,,	Southport, Hesketh Park	4·08	,,	Glenam [Clonmel]	5·21
,,	Chatburn, Middlewood	6·95	,,	Ballingarry, Gurteen	4·07
,,	Cartmel, Flookburgh	5·83	,,	Miltown Malbay	6·50
IX.	Langsett Moor, Up. Midhope	6·04	XXI.	Gorey, Courtown House	4·17
,,	Scarborough, Scalby	4·51	,,	Moynalty, Westland	4·56
,,	Ingleby Greenhow	3·45	,,	Athlone, Twyford	5·34
,,	Mickleton	3·49	,,	Mullingar, Belvedere	4·29
X.	Bardon Mill, Beltingham	3·64	XXII.	Woodlawn	6·59
,,	Ewesley, Fallowlees	3·45	,,	Westport, Murrisk Abbey..	7·54
,,	Ilderton, Lilburn Cottage..	1·91	,,	Collooney, Markree Obsy..	5·92
,,	Keswick, York Bank	8·85	XXIII.	Enniskillen, Portora	4·06
XI.	Llanfrechfa Grange	7·53	,,	Warrenpoint, Summer Hill.	3·98
,,	Treherbert, Tyn-y-waun	15·93	,,	Banbridge, Milltown	2·58
,,	Carmarthen, The Friary	8·09	,,	Belfast, Springfield	4·72
,,	Castle Malgwyn [Llachryd].	7·05	,,	Bushmills, Dundarave	3·96
,,	Plynlimon	16·05	,,	Stewartstown, The Square..	3·54
,,	Tall-y-llyn	5·60	,,	Killybegs	7·75
,,	New Radnor, Ednol	6·99	,,	Horn Head	6·97

METEOROLOGICAL NOTES ON JANUARY, 1906.

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.

LONDON, CAMDEN SQUARE.—Mild and excessively wet, the R having been only once exceeded and once equalled in January in 49 years. Mean temp. 41°·9, or 3°·8 above the average. A short but violent TS occurred on 9th, accompanied by showers of H and great darkness, and there was again extraordinary darkness from 10 to 11.40 a.m. on 23rd. Duration of sunshine 43·3* and of R 62·5 hours, the latter being 21·2 hours above the average.

TENTERDEN.—Wet and warm with a great deal of wind. Duration of sunshine 77 † hours,

CROWBOROUGH.—Mild, stormy and wet. R 3·56 in. above the average of 35 years and mean temp. 40°·0, or 3°·5 above the average.

OSBORNE.—The largest R in any January in 48 years.

ADDINGTON MANOR.—The R was the largest with two exceptions yet recorded and big floods covered the meadows for days. The wind was often very high and several large trees were blown down.

BURY ST. EDMUNDS.—The wettest January in 50 years.

TORQUAY.—Duration of sunshine 80·5* hours, or 17·6 hours above the average. Mean temp. 45°·4, or 3°·1 above the average. Mean amount of ozone 5·5.

CLIFTON.—Wet and stormy till 18th owing to a series of depressions from the Atlantic. The remainder was fine but changeable. Very mild throughout. Tremendous gale from W. on the early morning of 6th, doing much damage to roofs and trees.

BOLTON.—Mean temp. 40°·7, or 2°·6 above the average. Duration of sunshine 19·1* hours, or 2·2 hours below the average. The R was particularly heavy, but most of it fell during the nights, the day time being fair and often bright.

HAVERFORDWEST.—Mild with no extremes of temp. Severe gales, especially on 6th and 15th, with large R. Duration of sunshine 49·6* hours. Primroses, violets and other flowers in bloom.

DOUGLAS.—Wet, very mild and exceedingly stormy. Snowdrops, primroses, polyanthus and crocus were in flower, and currants and pears showed bloom unusually early. S on 18th with T, L and H.

LANGHOLM.—R 2·08 in. above the average of 30 years.

COUPAR ANGUS.—Exceptionally mild, the mean temp. being 39°·5, or 4°·0 above the average, making the second month in succession with abnormally high temp. Persistent wet weather.

DRUMNADROCHIT.—R 2·60 in., and rainy days 2·5, above the average of 20 years, the amount being the greatest in that period except in 1903. Destructive flood on 14th caused by melting S on the hills. Floods again on 24th and 27th. Great damage to river banks, roads and cultivated land.

CASTLETOWN.—Open, dull and cloudy, with westerly winds, slight frosts and no S. Mean temp. 36°·9. Shrubs beginning to sprout.

DARRYNANE ABBEY.—A wet month, especially in the first part, the fall up to 15th being equal to the average and the total 40 per cent. above the average, being exceeded only three times in 25 years.

DUBLIN.—W. and S.W. winds and heavy and frequent R with open but not warm weather. Mean temp. 43°·9, or 2°·3 above the average. Atmospheric pressure was very unstable during the first three weeks.

BANBRIDGE.—R ·01 in. below the average of 40 years.

OMAGH.—A saturating month with abnormal mildness. It could not be said that the ground was once wholly covered with S, and such frost as there was was of a light and ephemeral character.

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* Campbell-Stokes. † Jordan

Climatological Table for the British Empire, August, 1905.

STATIONS. (*Those in italics are South of the Equator.*)	Absolute. Maximum. Temp.	Absolute. Maximum. Date.	Absolute. Minimum. Temp.	Absolute. Minimum. Date.	Average. Max.	Average. Min.	Average. Dew Point.	Average. Humidity.	Absolute. Max. in Sun.	Absolute. Min. on Grass.	Total Rain. Depth.	Total Rain. Days.	Aver. Cloud.
	°		°		°	°	°	0-100	°	°	inches		
London, Camden Square	78·1	15	45·4	24	72·1	53·2	53·5	77	126·9	38·1	2·24	16	6·4
Malta	96·2	29	66·6	24	87·8	71·6	70·8	75	141·8	61·7	·00	0	1·0
Lagos	84·0	17*a*	70·0	5*b*	81·5	72·8	70·1	76	140·0	62·0	·49	7	7·5
Cape Town	76·4	11	38·2	15	60·6	46·2	45·8	73	...	...	3·06	14	4·0
Durban, Natal	84·2	14	47·2	9	72·9	54·4	...	...	137·3	...	1·29	13	4·6
Johannesburg	73·0	31	34·7	25	63·2	42·6	36·5	64	138·0	20·5	·06	2	2·2
Mauritius	78·5	18	52·3	2	75·7	60·6	58·9	74	140·8	44·9	2·35	14	6·3
Calcutta	91·5	24	74·9	13	88·6	79·7	78·4	86	158·1	73·4	6·31	15	8·8
Bombay	87·6	31	75·3	24	85·6	77·9	76·0	83	135·0	73·8	4·35	23	8·2
Madras	101·2	21	72·7	2	95·4	77·8	72·6	72	151·3	71·3	1·92	11	5·8
Kodaikanal	68·4	6	50·1	4	64·4	52·7	51·1	80	144·6	40·4	8·54	17	6·5
Colombo, Ceylon	89·0	7	76·5	22	87·5	78·7	74·5	80	153·5	74·8	·59	10	6·0
Hongkong	90·5	14	73·0	1	86·7	77·3	75·7	84	146·8	...	12·12	15	6·8
Melbourne	65·5	4, 25	32·0	2	58·3	43·0	40·4	71	120·0	24·5	1·33	12	6·2
Adelaide	68·8	4	34·8	21	59·5	43·5	41·8	71	126·3	30·3	1·48	15	5·4
Coolgardie	76·0	31	32·4	11	62·4	39·3	36·7	58	144·9	24·6	·54	4	2·8
Sydney	76·9	20	40·4	10	62·4	46·4	41·2	72	109·8	30·5	·63	22	3·1
Wellington	62·8	16	32·5	30	54·2	43·2	39·1	69	109·0	28·0	2·73	19	6·1
Auckland	60·5	19	39·5	11	56·9	46·2	45·8	82	115·0	36·0	3·05	15	5·7
Jamaica, Negril Point	91·0	21	71·3	29	87·8	73·9	73·8	78	...	...	5·45	10	...
Trinidad	...	...	...	...	...	...	...	...	...	...	...	...	...
Grenada	89·4	13	71·0	31	84·5	75·0	72·0	78	145·4	...	11·64	25	3·4
Toronto	83·8	10	48·9	17	77·4	57·7	59·0	76	...	36·8	4·22	4	4·4
Fredericton	88·7	12	35·4	15	75·6	49·5	50·8	56	...	...	1·60	8	5·2
Winnipeg	84·4	22	43·5	31	76·5	54·4	...	...	...	...	1·41	12	5·5
Victoria, B.C.	78·4	8	46·9	25	65·9	52·9	...	...	...	...	1·21	7	3·7
Dawson	80·0	1	26·4	27	66·4	44·3	...	...	...	...	2·51	9	5·2

a and 21. *b* and 9, 27.

MALTA.—Mean temp. of air 79°·1, or 1°·0 above average. Mean temp. of sea 81°·7.

Durban.—R ·64 in. below the average of 30 years.

Mauritius.—Mean temp. of air 0°·3, and dew point 0·5 below, and R ·09 in. above, averages. Mean hourly velocity of wind 9·8 miles, or 2·5 below average.

MADRAS.—Deficient R, with persistent N.W. winds. Bright sunshine 154·2 hours.

KODAIKANAL.—Bright sunshine 150 hours. Very many TSS.

COLOMBO.—Mean temp. of air 82°·4, or 1°·6 above, of dew point 1°·3 above, and R 3·11 in. below, averages. Mean hourly velocity of wind 10·0 miles.

HONGKONG.—Mean temp. of air 81°·2. Mean direction of wind E.S.E., and mean hourly velocity 9·3 miles. Bright sunshine 223·4 hours.

Adelaide.—Mean temp. of air 2°·4 below, R ·84 in. below 48 years' average. The coldest August, with one exception (1872, 49°·9).

Sydney.—R 2·54 in. below; mean temp. 0°·4 below, average.

Wellington.—R 2·31 in. below average.

Auckland.—R 1·25 in. below average.