

# SYMONS'S MONTHLY METEOROLOGICAL MAGAZINE.

CCCLX.]

JANUARY, 1896.

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## HIGH BAROMETRIC PRESSURE, JANUARY 9TH, 1896.

WHEN, in January, 1882, the pressure in London exceeded 30·9 in., Mr. Sowerby Wallis undertook to prepare for the Royal Meteorological Society an account of the phenomenon. He wrote the paper which occupies pages 146 to 154 of Vol. viii. of the Society's *Quarterly Journal*. We purpose extracting some of the leading facts stated in that paper, and in the discussion upon it, for comparison with the phenomena of January, 1896; and we shall not quote any values of less than 30·9 inches at sea level:—

					in.
1778.....	Dec. 26th	...London, Royal Society .....	2 p.m.....		30·918
" .....	" "	" " Sir G. Shuckburgh ...			30·935
1808.....	Feb. 24th	...Gordon Castle, Banffshire .....	9 p.m.....		31·007
1820.....	Jan. 8th	... " " " .....	11 p.m.....		31·046
" .....	" "	... Kinfauns, Perthshire .....	11 p.m.....		31·014
" .....	" 9th	... " " " .....	9 a.m.....		31·056
" .....	" "	... Leith .....	9 a.m.....		31·065
" .....	" "	... Hermitage Hill, Leith .....	9 a.m.....		31·050
1825 .....	" 9th	... Royal Obs, Greenwich .....	10 a.m.....		30·943
" .....	" "	... Mr. Belville, " .....			30·958
" .....	" "	... Royal Society, Somerset Ho. ....	9 a.m.....		30·922
" .....	" "	... " " " .....	3 p.m.....		30·913
" .....	" 10th	... " " " .....	9 a.m.....		30·914
" .....	" 9th	... Kinfauns, Perthshire .....	10 a.m.....		30·925
" .....	" "	... New Malton, Yorks .....	Max. ....		30·927
1835.....	" 2nd	... Mr. Belville, Greenwich .....			30·908
1882.....	" 18th	... St. Leonards, Sussex .....	10.30 a.m...		30·990
" .....	" "	... Camden Square, London .....	10.30 a.m...		30·975
1896.....	" 9th	... " " " .....	9 p.m.....		30·934

From the above it will be seen that as regards the vicinity of London the reading of 30·975 inches on January 18th, 1882, had never before been reached, nor has it on the present occasion, the maximum being 30·934 inches at 9 p.m. on the 9th.

But as regards the British Isles generally, we think that 1896 will be found to have considerably surpassed every instance on record.

The highest in the above table is 31·065 inches at Leith at 9 a.m. on January 9th, 1820; but the *Daily Weather Report* of January 9th, 1896, shows for 8 a.m. 31·06 inches at Stornoway and at Aberdeen, and 31·09 inches at Ardrossan, Ayrshire, and as these are probably not the absolute maximum at those stations, and as probably they are not any one of them in the actual spot where pressure was greatest, we shall not be surprised if next month we have to report an indisputable record of 31·10 inches.

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*To the Editor of the Meteorological Magazine.*

SIR,—The pressure at 9 a.m. on the 9th, corrected and reduced to sea level, was 31·071 inches. This is unprecedented for Edinburgh, where the only records (since 1770 ?) of 30·9 in. or upwards have been :

			in.
1820.....	January 9th .....	9 a.m.....	31·058
1825.....	” ” .. .. .	.....	30·961
1834.....	December 15th.....	.....	30·950
1835.....	January 2nd .....	.....	30·941
1854.....	March 4th.....	.....	30·902
1896.....	January 9th .....	9 a.m.....	31·071

It has therefore been 0·013 in. above any previous record.

Yours very truly,

R. C. MOSSMAN.

10, *Blacket Place, Edinburgh.*

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*To the Editor of the Meteorological Magazine.*

SIR,—I suppose that the sea level pressure here to-day has had no recorded precedent in England; it was exactly 31·000 in. at 8.15 a.m., and rose to, and remained at, 31·021 in. from 1 p.m., till about 1.45 p.m., and even as late as 10 p.m. it was 30·996 in. The above are corrected readings of a verified Fortin Standard.

Yours very truly,

CHARLES L. BROOK.

*Harewood Lodge, Meltham, Huddersfield, January 9th.*

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*To the Editor of the Meteorological Magazine.*

SIR,—The sea level pressure here at 10.20 a.m. to-day, as shown by a verified Standard by Hicks, was 31·013 inches.

Yours truly,

REGINALD BUSHELL.

*Hinderton Lodge, Neston, Cheshire, January 9th.*

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We have been favoured with several other records, but it would be endless to quote all—and therefore we have inserted only indisputable records exceeding 31 inches.

As far as we have at present ascertained, we believe that the

pressure exceeded 31 inches at every station north of latitude 53° N. An event for which there is no recorded precedent.

We have just heard from Mr. Mossman that at Fort William, Inverness, the pressure at 10 a.m. on the 9th reached 31·098 inches, or within ·002 inches of the 31·10 inches which we suggested on p. 182.

### ROYAL METEOROLOGICAL SOCIETY.

THE monthly meeting of this Society was held on Wednesday evening, December 18th, at the Institute of Civil Engineers, Great George Street, Westminster, Mr. R. Inwards, F.R.A.S., President, in the chair.

Mr. R. H. Scott, F.R.S., read a paper on "Some of the Differences between Fogs, as related to the weather systems which accompany them." In this it was shown that there are at least two distinct classes of phenomena described under the generic name of "fog." In the case of anticyclonic fogs, no rainfall takes place, the temperature is low in the morning, and there is a considerable rise of temperature during the day, while in the case of cyclonic fogs rainfall does take place, and the temperature is high in the morning, frequently approaching or even equalling the maximum for the day. Mr. Scott also investigated the cases of several well-marked fogs in London, and found that there was no direct relation traceable between the temperature accompanying them and the death-rate.

Major H. E. Rawson described the results of his analysis of the Greenwich Barometrical Observations from 1879 to 1890, with special reference to the declination of the sun and moon.

A paper by Mr. S. C. Knott was read, giving the results of his meteorological observations taken at Mojanga, Madagascar.

Mr. R. H. Scott also exhibited some specimens of the illustrations for the "International Cloud Atlas," which is now being prepared for publication.

### REVIEWS.

*Congrès de l'Atmosphère organisé sous les auspices de la Soc. royale de Géographie d'Anvers*, 1894. Compte rendu par le Chevalier Le CLEMENT DE S. MARCQ, Capitaine du Génie, Secrétaire général. Backer, Anvers, 1895. Large 8vo., 272 pp.

WE regret having been unable earlier to report upon the meeting at Antwerp in August, 1894, which, we understand, was an extremely pleasant one. But thanks to the kindness of the Secretary, the above excellent report of the business of the meeting places the papers upon record for years to come. As to the hospitality of the city it will not soon be forgotten by those who experienced it. We gave\* the programme and some details in advance, and therefore need merely point out how far they were fulfilled.

\* *Met. Mag.*, Vol. xxix. (1894), p. 89.

There was an official reception at which the President, Lieut.-Gen. Wauvermans, delivered an address upon the progress of aerostation. Subsequently the work of the two sections went on simultaneously. We cannot report it all, but among the more important subjects were:—

Variation in wind velocity, according to altitude and to geographical position; and on the origin of storms; by M. Plumandon, of the Observatory on the Puy de Dôme.

The wind in squalls; by M. E. Durand-Gréville. (A very interesting and suggestive paper.)

The direction of upper currents as indicated by astronomical observations; by M. Ventosa, of the Madrid Observatory.

On synoptic weather charts; on the nature of wind; and on the force of the wind in Belgium; by M. Lancaster.

Experiments with, and theory of, Helices for balloons; by le Chev. Le Clément de S. Marcq.

Contribution to the bibliography of aerial navigation; by M. A. Wouvermans.

This last article occupies 35 pages and, although (as its author very modestly describes it) only a "Contribution," it is one of great value, which must not be overlooked by anyone who professes to give a complete bibliography.

On the whole, the volume is very interesting and generally useful.

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*U. S. Department of Agriculture. Weather Bureau. Reports of the Chief of the Weather Bureau, for 1891-92, and for 1893. Government Printing Office, Washington, 1893. 4to., 528 pp., 4 plates, and 1894, 319 pp., 2 plates.*

THESE being initial volumes of the U. S. reports under the civil administration, call for brief notice. They are signed by Prof. Harrington the first chief under the new régime. The first noticeable feature is the adoption of quarto size, instead of octavo. This is an indisputable improvement, as it enables the matter to be grouped very much in the manner recommended many years since by the International Meteorological Congress.

The list of observing stations is very good, and quite a model of condensed information. A single line of type gives the name of the station, what continuously-recording instruments it possesses, its latitude and longitude, the difference between local time and 75th meridian time, the altitude of the barometer above sea level, the height of the thermometer, rain-gauge, and anemometer above the ground, and the date at which the record commenced. We may mention one feature, which is very satisfactory, and one quite the reverse. We see with pleasure and surprise the large number of recording instruments in use—there are, for instance, 61 stations with Richard's recording barometers. On the other hand, we find that roof stations are almost universal, in fact out of about 171

stations, only 39 have either their thermometer or rain gauge within 6 ft. of the ground. The average height must be quite 50 ft., and 25 of them are over 100 ft. Among the highest are Boston 174 ft., Chicago 238 ft., Cincinnati 145 ft., Detroit 144 ft., New York 155 ft., Philadelphia 166 ft., Portland, Oregon, 196 ft., and San Francisco 154 ft.

We thought of comparing the records for New York at 155 ft. with those at the Central Park, which we imagined would be made at or near ground level, but on turning up Dr. Draper's volumes we find that his instruments are also on a roof 53 ft. above sea level.

There seem to be signs of a desire on the part of the authorities to decrease the number of these roof stations, and surely now that the office is under the Department of Agriculture, there ought to be no difficulty in getting observations made under normal conditions. At present we are at a loss to know how American engineers utilize the rainfall records of the Weather Bureau. We learn from the introduction that at most of the volunteer stations the heights are less, but in the long lists of the results from these stations, on pages 367 to 433, no information is given as to the heights of the gauges above ground, or above sea level.

There is an interesting note by Prof. Marvin as to the patterns of instruments mostly employed. Among them is one, Eccard's recording rain-gauge, which appears to be (except that it is arranged to suit a roof exposure) identical with that made by Mr. Apps in about 1864, and described in *Brit. Rain.*, 1878.

The volume for 1893 is, of course, generally similar to the previous one—but there are two special features. In the introduction, there is an engraving and description of the instrument used in the U.S. to record sunshine. It is neither on the Burning nor the Photographic principle which are the two chiefly, if not solely, employed in Europe, but is really a modification of Prof. Leslie's differential thermometer—and is therefore coming very near to the black and bright bulb recording thermometer shown by Marie Davy in the Montsouris Exhibit at the Paris Exposition of 1878, and in a modified form now quoted in the catalogue of MM. Richard Frères. The U.S. pattern works electrically which, in our opinion, is a disadvantage, but of one thing we are certain, namely, that at Washington, or some other station, there should be regularly worked, side by side, all the various modes of recording this element; as, until that is done, no one knows what relation the various records bear one to another.

Another departure from European practice, (the merit of which we doubt) and which is certainly fatal to rigorous comparison, is set out in the following sentences:—

COMPILATION OF SUNSHINE DATA.

“The Automatic records of sunshine obtained from both the thermometric and the photographic records are tabulated in monthly forms, giving hourly amounts of sunshine, from which daily and monthly sums and percentages are calculated. The following extracts

from existing instructions illustrate the manner of compensating for instrumental imperfections :—

**TWILIGHT CORRECTIONS**—When the sun is just above the horizon, either morning or evening, the intensity of its action is greatly diminished, even with clear skies, so that a portion of early morning and late afternoon sunshine will not generally be recorded; an allowance therefore must be made in order to ascertain more accurately the actual amount of sunshine. For convenience, this allowance will be called the “Twilight Correction.” In the forenoon, it will be the difference between the time of sunrise for the latitude of the station (as shown by table of sunrise and sunset) and the local time at which the sunshine record commenced, provided, the sun was not obscured by clouds or thick haze during the period. The afternoon twilight correction, similarly, will be the difference between the actual time of sunset and the time the record of sunshine stops. These corrections will be apportioned between the appropriate hours of early morning and late afternoon.

If the character of sunset is cloudy, the twilight correction will be regarded as zero, but when the observer knows that cloudiness has prevailed but a part of the time, he will employ such a value of twilight correction as will represent, in his judgment, the actual sunshine not recorded.”

Part VI. of the volume contains several papers of interest, especially the hourly observations on Pike's Peak, 14,134 feet above sea level. There are also interesting tables of the mortality (on land) by wind, averaging 258 deaths per annum, and by lightning, averaging 196 per annum.

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## A NEW OBSERVATORY FOR WEST AUSTRALIA.

WE hear from Sir Charles Todd, K.C.M.G., Government Astronomer for South Australia, that the Government of West Australia having decided to establish an observatory at Perth, asked Sir Charles if he would prepare detailed plans and specifications for the proposed observatory and for its equipment. This he has done, and it includes a 6-inch transit circle and an 8-inch equatorial.

An observatory without a director would be useless, and Sir Charles' chief assistant, Mr. Ernest Cooke, M.A., has been appointed.

It is hardly likely that such an establishment, which is to cost about £5,000 for equipment, will do nothing for meteorology—and if it is to be wholly astronomical we do not see why Sir Charles reported it to us—so we hope that, though not a single word is said as to meteorology or meteorological instruments, some good may come of the new Perth Observatory, to which we wish all success.

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, JULY, 1895.

STATIONS.  <i>(Those in italics are South of the Equator.)</i>	Absolute.				Average.				Absolute.		Total Rain.		Aver. Cloud.	
	Maximum.		Minimum.		Max.	Min.	Dew Point.	Humidity.	Max. in Sun.	Min. on Grass.	Depth.	Days.		
	Temp.	Date.	Temp.	Date.										
England, London .....	82·0	8	47·7	7	72·7	54·6	49·1	63	0·100	125·2	43·1	3·42	12	6·0
Malta.....	103·6	5	64·6	11	87·7	69·7	68·0	61		159·0	59·4	·60	0	1·2
<i>Mauritius</i> .....	77·3	12	59·0	17 <sup>a</sup>	75·2	64·1	61·3	77		125·2	49·2	1·12	9	4·4
Calcutta.....	92·0	2	75·7	4	88·7	79·0	77·6	83		160·5	74·6	4·53	12	7·9
Bombay.....	89·0	4	74·6	11	84·7	77·7	76·2	85		135·0	72·2	18·04	28	8·7
Ceylon, Colombo .....	88·2	29	73·8	21	86·1	77·1	71·4	78		150·5	70·0	·52	5	5·8
<i>Melbourne</i> .....	63·2	18	33·3	5	54·7	40·3	39·9	75		112·2	24·2	1·78	14	6·5
<i>Adelaide</i> .....	65·9	17	37·1	25	57·9	43·5	43·5	77		120·7	30·1	4·48	20	6·5
<i>Sydney</i> .....	66·8	15	36·8	9	57·6	41·9	37·7	76		112·0	24·6	·35	8	1·9
<i>Wellington</i> .....	57·3	16	32·0	13 <sup>b</sup>	51·2	38·3	36·5	73		105·0	20·0	4·35	17	4·7
<i>Auckland</i> .....	58·0	19	37·0	21	54·4	42·6	39·1	71		114·0	32·0	6·65	25	5·8
Jamaica, Kingston.....	92·8	25	71·4	12	89·8	73·3	69·8	71	...	...	...	·51	5	2·8
Trinidad .....	92·0	6	68·0	c	88·7	69·7	70·5	75		169·0	65·0	2·57	16	...
Grenada.....	84·8	31	71·0	21	83·1	74·3	69·9	73		146·2	...	7·89	23	4·6
Toronto .....	90·0	7	49·1	11	76·3	56·3	54·2	67		105·2	43·2	2·49	13	6·2
New Brunswick, Frederickton .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Manitoba, Winnipeg... British Columbia, Esquimalt.....	86·3	2	41·3	8	75·8	51·7	...	...	...	...	...	3·30	14	6·0
	79·2	10	42·7	2	69·3	50·0	55·4	88	...	...	...	·12	6	4·3

a—and 19; b—and 26; c—various.

REMARKS.

MALTA.—Adopted mean temp. 78°·6, 1°·3 above the average. Mean hourly velocity of wind 6·8 miles. Temp. of sea rose to 82°·5. Lightning on the 6th.

J. F. DOBSON.

*Mauritius*.—Mean temp. of air 0°·6 above, of dew point 1°·8 above, and rainfall 1·20 in. below, their respective averages. Mean hourly velocity of wind 10·0 miles, or 1·8 miles below average; extremes, 25·9 on 23rd, and 1·7 on 2nd, 6th and 7th; prevailing direction, E.S.E.

C. MELDRUM, F.R.S.

*Adelaide*.—Mean temp. 0°·9 below the average of 38 years. Rainfall very heavy, 1·84 in. above the average. The rains were very general but rather light in the north, heavy over the southern portion of the colony.

C. TODD, F.R.S.

*Sydney*.—Mean temp. 2°·7 below, and rainfall 4·05 in. below, their respective averages.

H. C. RUSSELL, F.R.S.

*Wellington*.—Total rainfall under the average, although it was very showery during the latter part of the month. Variable winds, and on the whole moderate, and frequent calms; generally cold weather. Hail on 4 days. Fog on 3 days. Earthquake on 17th.

R. B. GORE.

*Auckland*.—An unusually cold, wet and stormy month. Rainfall two inches above the average of 28 years. Mean temp. 3°·8 below the average; barometrical pressure unusually low during most of the month.

T. F. CHEESEMAN.

JAMAICA, KINGSTON.—Mean hourly velocity of wind 4·8 miles. Fair in Kingston, with a fourth of the average fall of rain.

R. JOHNSTONE.

TRINIDAD.—Rainfall 6·88 in. below the average of 30 years.

J. H. HART.

## CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, AUGUST, 1895.

STATIONS.  <i>(Those in italics are South of the Equator.)</i>	Absolute.				Average.				Absolute.		Total Rain.		Aver.	
	Maximum.		Minimum.		Max.	Min.	Dew Point.	Humidity.	Max. in Sun.	Min. on Grass.	Depth.	Days.	Cloud.	
	Temp.	Date.	Temp.	Date.										
England, London .....	81·3	21	46·0	25	72·2	54·2	53·4	75	123·8	41·0	inches	3·09	18	5·8
Malta .....	91·9	1	61·4	26	87·1	68·8	67·6	70	144·6	...	·37	1	1·7	
<i>Mauritius</i> .....	77·3	5	59·9	5	74·6	64·6	60·7	76	125·0	46·9	4·66	21	5·7	
Calcutta .....	91·0	11	74·0	19	87·1	77·9	77·4	87	158·5	72·9	11·84	20	8·4	
Bombay .....	86·4	18	74·0	30	83·9	76·7	75·4	85	133·8	71·8	15·97	28	8·6	
Ceylon, Colombo .....	89·2	10	75·4	9	87·4	78·2	72·2	76	150·5	72·0	·92	11	5·7	
<i>Melbourne</i> .....	72·9	24	34·9	8	60·5	45·8	44·6	73	120·5	26·5	1·81	17	6·5	
<i>Adelaide</i> .....	73·2	17	38·8	15	63·7	47·1	45·9	70	133·1	31·3	2·42	20	6·6	
<i>Sydney</i> .....	76·0	24	40·6	30	64·3	49·4	43·7	71	122·0	27·7	·42	11	4·1	
<i>Wellington</i> .....	62·1	26	34·0	8	53·1	42·7	39·4	74	115·0	23·0	3·26	16	4·8	
<i>Auckland</i> .....	66·2	29	37·0	3	56·4	44·1	40·7	70	118·0	32·0	1·63	15	5·0	
Jamaica, Kingston .....	94·6	17	70·4	20	89·9	73·3	70·7	76	..	..	2·39	9	3·2	
Trinidad .....	93·0	3	68·0	3a	89·3	70·6	72·8	76	178·0	67·0	4·86	20	...	
Grenada .....	86·8	19	72·6	6	84·1	75·6	70·0	74	153·6	..	6·08	26	4·7	
Toronto .....	84·0	12	43·2	22	75·6	56·2	56·2	75	99·5	37·3	3·02	13	4·6	
New Brunswick, Fredericton .....	...	...	...	...	...	...	...	...	...	...	...	...	...	
Manitoba, Winnipeg .....	88·3	15	32·8	20	74·8	48·1	...	...	...	...	1·01	13	5·3	
British Columbia, Esquimalt .....	77·7	23	43·2	13	67·4	49·2	54·2	90	...	...	·45	3	5·7	

a—and 10, 17

## REMARKS.

MALTA.—Adopted mean temp. 77°·6, 0°·6 below the average; mean hourly velocity of wind 6·3 miles. Average temp of sea, 80°·0. Lightning was seen on 4 days.

J. F. DOBSON.

*Mauritius*.—Mean temp. of air 0°·2 above, of dew point 1°·4 above, and rainfall 2·38 in. above, their respective averages. Mean hourly velocity of wind 13·1 miles, or 0·8 mile below average; extremes, 35·5 on 24th and 2·0 on 2nd, 3rd and 22nd; prevailing direction E.S.E. Thunder and lightning on 13th. The wettest August in 21 years.

C. MELDRUM, F.R.S.

CEYLON, COLOMBO.—Lightning was seen on 5 days.

D. G. MANTELL.

*Adelaide*.—Mean temp. 1°·4 above, and rainfall ·05 in. above, the average.

C. TODD, F.R.S.

*Sydney*.—Mean temp. 1°·9 above, humidity 2 below, and rainfall 2·43 in. below, their respective averages.

H. C. RUSSELL, F.R.S.

*Wellington*.—On the whole showery, with intervals of fine weather. Prevailing wind N.W., strong on nine days. Thunder and lightning on 24th; hail on 5 days. Rainfall 1·94 in. below, and mean temp. 0°·1 below, the average. Earthquakes on 17th and 21st.

R. B. GORE.

*Auckland*.—An unusually dry and cool month, the rainfall being little more than one-tenth of, and the mean temp. 2°·2 below, the average. Barometrical pressure unusually high.

T. F. CHEESEMAN.

JAMAICA, KINGSTON.—Mean hourly velocity of wind 4·3 miles. Rainfall half the average. Sharp thunderstorm on 23rd for about 5 hours.

R. JOHNSTONE.

TRINIDAD.—Rainfall 5·45 in. below the average of 30 years.

J. H. HART.

SUPPLEMENTARY TABLE OF RAINFALL,  
DECEMBER, 1895.

[For the Counties, Latitudes, and Longitudes of most of these Stations,  
see *Met. Mag.*, Vol. XIV., pp. 10 & 11.]

Div.	STATION.	Total Rain.	Div.	STATION.	Total Rain.
		in.			in.
II.	Dorking, Abinger Hall .	3·21	XI.	Lake Vyrnwy .....	5·59
„	Birchington, Thor .....	2·22	„	Corwen, Rhug .....	3·19
„	Hailsham .....	3·28	„	Carnarvon, Cocksidia ...	2·98
„	Ryde, Thornbrough .....	3·87	„	I. of Man, Douglas .....	3·73
„	Emsworth, Redlands ...	3·17	XII.	Stoneykirk, Ardwell Ho.	3·06
„	Alton, Ashdell .....	3·07	„	New Galloway, Glenlee	6·98
III.	Oxford, Magdalen Col..	1·92	„	Melrose, Abbey Gate ...	...
„	Banbury, Bloxham .....	2·18	XIII.	N. Esk Res. [Penicuik]	4·80
„	Northampton, Sedgebrook	1·71	„	Edinburgh, Blacket Pl..	2·27
„	Alconbury .....	1·78	XIV.	Glasgow, Queen's Park..	4·49
„	Wisbech, Bank House...	1·76	XV.	Inverary, Newtown .....	8·62
IV.	Southend .....	2·70	„	Islay, Gruinart Schools..	6·06
„	Harlow, Sheering.....	1·90	XVI.	Dollar .....	5·09
„	Colchester, Lexden .....	2·40	„	Balquhidder, Stronvar...	9·10
„	Rendlesham Hall .....	1·35	„	Ballinluig .....	5·13
„	Diss .....	2·46	„	Dalnaspidal H. R. S.....	8·11
„	Swaffham .....	1·91	XVII.	Keith H. R. S.....	5·05
V.	Salisbury, Alderbury ...	2·05	„	Forres H. R. S. ...	2·50
„	Bishop's Cannings .....	2·80	XVIII.	Fearn, Lower Pitkerrie..	2·30
„	Blandford, Whatcombe .	3·47	„	Loch Shiel, Glenaladale	8·91
„	Ashburton, Holne Vic...	6·17	„	N. Uist, Loch Maddy ...	4·41
„	Okehampton, Oaklands.	7·26	„	Invergarry .....	7·68
„	Hartland Abbey .....	5·45	„	Aviemore H. R. S. ....	3·36
„	Lynmouth, Glenthorne.	5·62	„	Loch Ness, Drumnadrochit	3·91
„	Probus, Lamellyn .....	7·35	XIX.	Invershin .....	1·88
„	Wellington, Sunnyside..	...	„	Scourie .....	3·17
„	Wincanton, Stowell Rec.	2·69	„	Watten H. R. S.....	3·94
VI.	Clifton, Pembroke Road	2·94	XX.	Dunmanway, Coolkelure	12·85
„	Ross, The Graig .....	2·13	„	Fermoy Gas Works .....	...
„	Wem, Clive Vicarage ...	1·67	„	Killarney, Woodlawn ...	9·42
„	Cheadle, The Heath Ho.	2·75	„	Caher, Duneske .....	5·49
„	Worcester, Diglis Lock	1·53	„	Ballingarry, Hazelfort...	3·65
„	Coventry, Coundon ....	2·13	„	Limerick, Kilcornan ...	...
VII.	Ketton Hall [Stamford]	1·58	„	Ennis .....	4·30
„	Grantham, Stainby .....	1·70	„	Miltown Malbay .....	...
„	Horncastle, Bucknall ...	1·92	XXI.	Gorey, Courtown House	4·84
„	Worksop, Hodsck Priory	2·12	„	Athlone, Twyford .....	3·76
VIII.	Neston, Hinderton .....	2·26	„	Mullingar, B-lvedere ...	4·60
„	Preston, Haighton .....	3·87	„	Longford, Currygrane...	4·11
„	Broughton-in-Furness ...	7·07	XXII.	Woodlawn .....	5·06
IX.	Ripon, Mickley .....	2·87	„	Crossmolina, Enniscoe ..	6·13
„	Melmerby, Baldersby ...	2·18	„	Collooney, Markree Obs.	4·66
„	Scarborough, South Cliff	...	„	Ballinamore, Lawderdale	...
„	Middleton, Mickleton ...	3·47	XXIII.	Lough Sheelin, Arley...	3·98
X.	Haltwhistle, Unthank...	3·44	„	Warrenpoint .....	3·93
„	Bamburgh .....	1·93	„	Seaforde .....	3·73
„	Keswick, The Beeches...	...	„	Belfast, Springfield .....	4·99
XI.	Llanfrechfa Grange .....	4·48	„	Bushmills, Dundarave..	5·13
„	Llandoverly .....	4·13	„	Stewartstown .....	4·38
„	Castle Malgwyn .....	2·97	„	Buncrana .....	4·01
„	Builth, Abergwessin Vic.	6·84	„	Louge Swilly, Carrablagh.	5·24
„	Rhayader, Nantgwillt ...	5·68			

DECEMBER, 1895.

Div.	STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL.					TEMPERATURE.				No. of Nights below 32°.	
		Total Fall.	Difference from average 1880-9.	Greatest Fall in 24 hours		Days on which $\geq 0.1$ or more fell.	Max.		Min.		In shade.	On grass.
				Dpth	Date		Deg.	Date	Deg.	Date		
I.	London (Camden Square) ...	2.19	+ .12	.34	14	16	56.4	5	26.1	22	8	19
II.	Maidstone (Hunton Court)...	1.72	— .52	.98	16	6	...	...	...	...	...	...
III.	Strathfield Turgiss .....	2.28	+ .27	.38	14	21	56.0	5	20.4	11	14	22
IV.	Hitchin .....	1.79	— .24	.38	14	17	54.0	5, 30	21.0	21	15	...
V.	Bury St. Edmunds (Westley)	1.97	— .27	.51	14	13	56.0	6	26.0	22	...	...
VI.	Norwich (Brundall) .....	1.80	...	.28	12a	20	56.4	5	26.4	22	10	25
VII.	Weymouth (Langton Herring)	4.63	+ 1.53	1.09	17	20	55.0	5	30.0	20f	5	...
VIII.	Torquay (Cary Green) .....	5.65	...	.90	23	25	54.4	5	30.5	21	2	8
IX.	Polapit Tamar [Launceston]..	4.80	+ .57	.96	5	28	54.7	30b	21.7	21	3	8
X.	Stroud (Upfield) .....	2.05	— .40	.40	14	20	52.0	5, 30	28.0	7g	15	...
XI.	Churchstretton (Woolstaston)	2.56	— .49	.52	12	21	53.0	5	25.0	21	17	23
XII.	Tenbury (Orleton) .....	2.08	— .29	.51	12	15	56.8	5	24.0	11	10	19
XIII.	Leicester (Barkby) .....	2.26	+ .12	.46	12	18	55.0	5, 30	16.0	21	22	26
XIV.	Boston .....	1.58	— .27	.40	12	10	50.0	30	24.0	22	20	...
XV.	Hesley Hall [Tickhill].....	2.09	+ .11	.40	12	13	55.0	4	23.0	22	19	...
XVI.	Manchester (Plymouth Grove)	3.69	+ .25	.70	12	17	54.0	7, 12	25.0	21	11	12
XVII.	Wetherby (Ribston Hall) ...	1.50	— .94	.42	5	10	...	...	...	...	...	...
XVIII.	Skipton (Arncliffe) .....	6.93	+ .12	2.15	4	21	...	...	...	...	...	...
XIX.	Hull (Pearson Park) .....	2.37	+ .10	.40	28	13	55.0	5	27.0	8, 22	18	19
XX.	Newcastle (Town Moor) .....	1.42	— .88	.30	28	14	...	...	...	...	...	...
XXI.	Borrowdale (Seathwaite).....	14.15	— .66	4.02	4	20	...	...	...	...	...	...
XXII.	Cardiff (Ely).....	4.57	+ .02	.67	15	25	...	...	...	...	...	...
XXIII.	Haverfordwest .....	3.96	— 1.03	.44	23	28	54.4	5	23.0	21	7	14
XXIV.	Aberystwith (Gogerddan) ...	5.58	+ .70	.78	14	21	50.0	4c	16.0	20	15	...
XXV.	Llandudno.....	2.33	— .63	.32	12	21	54.0	5	23.5	21	...	...
XXVI.	Cargen [Dumfries] .....	5.10	+ 1.08	.92	4	14	51.6	5	23.4	21	12	...
XXVII.	Jedburgh (Sunnyside).....	1.58	— .62	.34	30	13	47.0	9	26.0	23	12	...
XXVIII.	Colmoneil .....	5.11	...	.78	12	21	57.0	1	21.0	20	13	...
XXIX.	Lochgilphead (Kilmory).....	7.58	+ .21	.84	4	22	...	...	24.0	21	10	...
XXX.	Mull (Quinish).....	5.81	— 1.76	.79	28	18	...	...	...	...	...	...
XXXI.	Loch Leven Sluices .....	4.10	+ .79	1.10	5	16	...	...	...	...	...	...
XXXII.	Dundee (Eastern Necropolis)	3.10	+ 1.02	.50	28	22	53.2	5	24.1	21	13	...
XXXIII.	Braemar .....	4.44	+ 1.97	1.31	16	22	47.3	5	12.4	21	23	29
XXXIV.	Aberdeen (Cranford) .....	4.65	...	1.16	12	24	50.0	4, 5	25.0	20f	13	...
XXXV.	Strathconan [Beaully] .....	7.32	+ 1.55	1.80	4	13	...	...	...	...	...	...
XXXVI.	Glencarron Lodge.....	7.76	...	1.79	4	19	49.5	14	24.0	20	14	...
XXXVII.	Cawdor [Nairn] .....	3.22	+ .76	.71	4	17	...	...	...	...	...	...
XXXVIII.	Dunrobin .....	3.01	+ .36	.50	12	16	49.0	4	26.0	22	13	...
XXXIX.	S. Ronaldsay (Roeberry).....	5.91	+ 2.25	2.15	12	29	48.0	3	29.0	6	7	...
XL.	Darrynane Abbey.....	6.05	...	1.06	23	26	...	...	...	...	...	...
XLI.	Waterford (Brook Lodge) ...	6.20	+ 2.56	1.27	22	24	57.0	4, 5	27.0	8f	7	...
XLII.	O'Briensbridge (Ross) .....	3.67	...	.43	15	24	...	...	...	...	...	...
XLIII.	Carlow (Browne's Hill) .....	4.75	+ 1.63	.98	22	25	...	...	...	...	...	...
XLIV.	Dublin (Fitz William Square)	3.94	+ 1.78	.86	24	27	56.0	30	25.3	21	4	10
XLV.	Ballinasloe .....	3.81	+ .39	.58	11	28	51.0	29d	22.0	21	16	...
XLVI.	Clifden (Kylemore) .....	9.75	...	1.29	23	26	...	...	...	...	...	...
XLVII.	Waringstown .....	3.31	+ .27	.58	29	24	52.0	29	20.0	21	19	24
XLVIII.	Londonderry (Creggan Res.)..	5.06	+ .85	.73	12	25	...	...	...	...	...	...
XLIX.	Omagh (Edenfel).....	5.16	+ 1.48	.73	29	21	50.0	14e	19.0	20	13	21

+ Shows that the fall was above the average ; — that it was below it.

a—and 14. b—and 31. c—and 5, 29. d—and 30. e—and 29, 30. f—and 21. g—and 20, 21.

## METEOROLOGICAL NOTES ON DECEMBER, 1895.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; T S for Thunderstorm; R for Rain; H for Hail; S for Snow.

## ENGLAND.

STRATHFIELD TURGISS.—The month commenced with unsettled and stormy weather, with rapid and considerable changes, and during the greater part of the month, and especially towards the close, it was very dull and gloomy, with many wet days, but little R. Gales on 3rd, 4th, 12th and 13th.

ADDINGTON.—December was not marked by any particular feature. A moderate quantity of R; occasional frosts of no great severity; a little S; very little fog, but generally dull weather.

BURY ST. EDMUNDS, WESTLEY.—A rough, windy, and mild month. L at night on 6th; S on 27th.

NORWICH, BRUNDALL.—A stormy, unsettled month, with gales at times. The rainfall half an inch under, and mean temp. slightly above, the average. Very dark, damp weather at the close. Terrific gale on 5th, gales on 12th, 13th, 24th, 25th, and 26th. L in N.E. on 6th; slight S on 7th.

WEYMOUTH, LANGTON HERRING.—On the whole a mild, unsettled, wet month, the mean temp. 2° above the average of 23 years. Very high winds from the 5th to the 7th, and also from the 23rd to the 25th, inclusive. Dense fogs on the 29th and 30th. Mean 9 a.m. temp. 41°·6.

TORQUAY, CARY GREEN.—R 2·50 in. above the average. Mean temp. 44°·2, or 1°·3 above the average. Duration of sunshine 26 hours 25 minutes, being 27 hours 5 minutes below the average; 15 sunless days.

POLAPIT TAMAR [LAUNCESTON].—A very wet month. N.N.W. gale on 6th; S.E. gale at night on 23rd. Warm, calm, and summerlike on 31st.

STROUD, UPFIELD.—N.W. gale in the evening on 6th; storm of H and R at 4 p.m. on the 11th; a few flakes of S on 19th.

WOOLSTASTON.—A cold and stormy month. A sharp spell of frost set in on the 6th, and continued till the 29th, S falling on five days. Mean temp. 37°·4. Gales on the 4th, 5th, and 12th.

TENBURY, ORLETON.—A fairly warm dry month, with a mean temp. about the average, and very little frost, the ther. in the screen falling below 30° on only four nights. S on the 6th, 18th, 24th, and 26th; T on the 12th. The last half of the month was singularly cheerless, neither sun, moon, nor stars being visible for days together.

LEICESTER, BARKBY.—A very mild and windy month. Mean temp. 37°·3.

MANCHESTER, PLYMOUTH GROVE.—Great storm of wind and R on the 6th; dense fog on the 20th and 21st. Fine winterly weather on 22nd, 23rd, 27th and 28th. Thick fog on the 31st, but mild as May. Mean temp. 44°·1.

SEATHWAITE.—Heavy R on 4th, 4·02 in.; S two inches deep at 9 a.m. on 7th, and one and a half inches deep on 25th. Fog on 2nd, 9th, 14th and 29th. H on 6th.

## WALES.

HAVERFORDWEST.—Except on the 7th and 20th, R or S fell on every day throughout the month, but no heavy fall at any time. The general character of the whole month was mildness and storm, with unusual dampness of the air. It was cold for a day or two about the 7th, followed by mild, damp, foggy weather, which continued up to the 17th. A cold period again occurred between that date and the 27th, sharp frost occurring on five nights, winding up with a S storm, which covered the high and low lands, accompanied by a violent gale from the east. It lasted fully four days. Prevailing winds S.S.W., S.E., E., and N.N.W.

ABERYSTWITH, GOGERDDAN.—Very stormy throughout the month. Very strong gales on 24th, 25th, and 26th from S.E. The last three days very mild.

## SCOTLAND.

CARGEN [DUMFRIES].—The feature of the month was the remarkable absence of sunshine, the number of hours being only 25 against an average of 54. In the ten years 1860-69, the average number of hours of sunshine in December was 66; in 1870-79, was 59; in 1880-89, 43; while in the six years 1890-95 it was only 40 hours. Light winds, mostly easterly, prevailed, and the mean temp. is  $1^{\circ}4$  below the average. T on 5th and 6th, S showers on 6th and 28th.

JEDBURGH.—The weather was foggy with little or no wind till the 28th. Frosts occurred, but not for more than a day at a time.

COLMONELL.—Rainfall  $\cdot 16$  in. above average of 19 years. S on 28th.

S. RONALDSAY, ROEBERRY.—A very wet, cold and windy month. The wettest December since 1872. Mean temp.  $38^{\circ}5$ .

## IRELAND.

DARRYNANE ABBEY.—A wet but very mild month. The last few days foggy, but mild as April. Frost on 19th and 20th.

WATERFORD, BROOK LODGE.—H showers on 6th. Dense fog on 19th and 20th. Heavy gale from S.E. on 22nd. S on 26th.

O'BRIEN'S BRIDGE, ROSS.—Rainfall moderate for the season, in no case amounting to  $\cdot 50$  in. in 24 hours, but very constant, with storms from S.E. to S.W. up to 27th. Very calm with high temp. at the close.

DUBLIN.—A gloomy, wet, stormy and generally inclement month. Fog also was often observed. Christmas week is memorable for a long continued south-easterly gale. Mean temp.  $41^{\circ}6$ ,  $0^{\circ}3$  above the average. Lunar halos were seen on 30th and 31st; solar halo on the 31st. High winds were noted on 15 days, and attained the force of a gale on seven. Foggy on 10 days. S or sleet on 8 days, H on 3 days, T was heard on the 12th, L seen on the 15th. Faint Aurora on the 7th.

BALLINASLOE.—S on 6th, 7th, 12th and 26th. Gales on 15th, 22nd, 23rd, 24th and 25th. Fog on 17th, 19th and 20th.

OMAGH, EDENFEL.—The first half of the month was persistently wet and unsettled, reaching to a strong gale on the night of the 4th. From the 18th to nearly the end a spell of strong easterly weather, more characteristic of February, prevailed, culminating in a steady gale on the 23rd, 24th and 25th of almost unvarying force, with a comparatively high and absolutely steady barometer and occasional downpours of rain. Although cold snaps were frequent they only lasted a few hours, and there was but little snow.