SYMONS'S
MONTHLY
METEOROLOGICAL MAGAZINE.

CCCXLVIII.] JANUARY, 1895. [PRICE FOURPENCE, or 5s. per ann. post free.

Francois Denza.

Naples,
June 7th, 1834.

Rome,
December 15th, 1894.

PEACEFULLY, suddenly, in the middle of his labours, yet having lived to see the completion of his crowning work—the establishment of the Observatory at the Vatican,—Padre Denza has passed away. Like his teacher (Padre Secchi) he has left a name which will not soon be forgotten. Far from robust in health, Padre Denza's exhaustless energy enabled him to turn out a very large amount of work, the books and pamphlets issued by him numbering nearly 100, while his kindness to all whom he could help was practically unbounded.

THE GALE OF SATURDAY, DECEMBER 22ND.

IT has been arranged that Mr. Charles Harding will read a paper upon the above storm at the meeting of the Royal Meteorological Society on January 16th, and, therefore, as we have always opposed duplicate work as generally a waste of energy, we have sent on to him such data as we have received, and we intend, in the ordinary course, to summarize his paper in our next.

There was, however, one remarkable feature, respecting which a few particulars may be given here. Nearly 30 years ago—in *British Rainfall,* 1866, page 11—to an article on "The Detection of Sea-spray when mingled with Rain," we appended the following foot-note :—"Dr. Davy, F.R.S., says : 'I have been informed by a friend residing at Meltham Parsonage, and by another residing at Armitage Bridge, both places in the neighbourhood of Huddersfield, and about 80 miles from Scarborough, and 60 miles from Liverpool (the nearest ports of the opposite coasts), that after the great storm of January, 1839, salt was observed deposited on the leaves of the trees at both places ; they were about 4 miles apart.' "

Liverpool has had another storm ; not equal to that of 1839, but (as we can testify from personal experience) a very heavy one, and again the salt has been traced considerably more than half across England. However, we must not anticipate, but give our evidence :—

Salt-spray and Severe Gales.

To the Editor of the Meteorological Magazine.

Sir,—As evidence of the large amount of salt-spray carried inland from the sea during the severe gales, the following may be of interest:—Whilst staying in the neighbourhood of Garstang, Lancashire, I noticed, on December 23rd last (the day after the violent gale), that all objects—such as the twigs and branches of trees, plants, grass &c., tasted very strongly of salt. The following morning a fine drizzle set in, and about 9 a.m., when less than ·01 in. of rain had fallen, I collected, by means of a teacup, rather over an ounce of water from the drops on the twigs and branches of apple trees. One fluid ounce of this water, which tasted strongly of brine, and had a specific gravity of 1·059, gave (on evaporation) 38 grains of *dry* salt. This is equal to 6,080 grains, or nearly 14 ounces per gallon.

The gale of December 22nd blew first from the S.W. and W., and afterwards veered to the N.W. The distance from the sea to the place where I collected the drops is about 13 miles from the former points (Lytham and Blackpool), and 7 miles from the latter (the coast near Pilling).

I may mention that during a walk on December 23rd I noticed that the stems of rushes and grass in Bleasdale, about 4 miles further from the sea, did not taste appreciably less salty.

I enclose herewith, for your inspection, *half* of the salt obtained from one ounce of water.—Yours sincerely,

ALBERT WILSON.

20, *Merton Road, Bradford, December* 31*st*, 1894.

We sent the little bottle of salt on to Prof. Meldola, F.R.S., who very kindly had it analysed, the result being that it was almost precisely identical with sea-salt, chiefly, of course, chloride of sodium, with magnesium, and decidedly more sulphates than are usually found in sea-salt. The actual quantity of chlorine found was 60·7 per cent. (calculated for the salt when dried till constant in weight), corresponding to 87·2 per cent. of sodium chloride. Here then, about 10 miles inland, we have dripping from the trees brine of nearly twice the usual specific gravity of sea-water; what weight of salt, or how much sea-water, per acre this represents we do not attempt to compute.

We now come to the other aspect of the case—extreme distance inland at which it was detected,—and here we are almost entirely dependent upon one of our most careful observers, who sent the following letter to a local paper:—

The Brine in the Gale.

To the Editor of The Yorkshire Post.

Sir,—During the severe gale last Saturday morning salt was deposited by the rain on the windows of this house, which face in a westerly direction. The amount was afterwards estimated

by an experienced chemist, and found to be about one-hundredth of a gramme per square foot of glass. Perhaps some of your readers would estimate how much was deposited over the country between here and the Irish Sea, a distance of about 45 miles.

I am, yours truly,

CHARLES L. BROOK.

Harewood Lodge, Meltham, Yorkshire, December 24th.

This letter elicited reports as to the detection of salt from Settle (24), Sowerby Bridge (40), Bolton Abbey (42), Harrogate (50), East Ardsley, Wakefield (57), Bramhope (60), and Burton House, Masham (65) miles from the west coast. The above distances are only approximate, but roughly they cover an area of nearly 2,500 square miles, and reach eastward to Long., 1°30′ W. Saline incrustation 25 miles inland is recorded on p. 169 of Vol. xxiii. of this *Magazine*, and there is a long article on "Sea-spray in London," on pp. 65–70 of Vol. xvii. It seems indisputable that sea-spray can be carried from 60 to 70 miles inland.

Since writing the above, we learn from two sources that objects near Birmingham were encrusted with salt. Birmingham is about 55 miles from the Bristol Channel, and nearly 100 from Cardigan Bay.

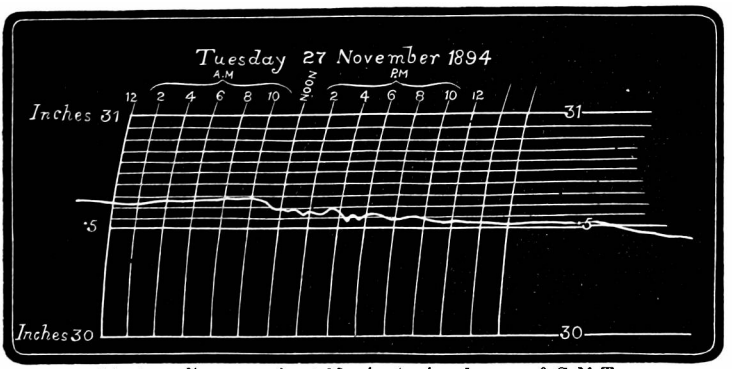
BAROMETRIC OSCILLATIONS IN CALM WEATHER.

To the Editor of the Meteorological Magazine.

SIR,—On the afternoon of Nov. 27th the barometer, as shown by the barograph trace, became very greatly disturbed; yet there was not the slightest perceptible effect upon the weather. The trace had been very steady for two or three days, with dull, calm, weather; and there was no observable change in this weather during the time the barometer was so much excited, except that such wind as there was changed from E. through S. to W., but there was almost a dead calm all the time. I send a fairly correct copy of the barograph trace, which shows a fall of ·07 in. in about three-quarters of an hour, besides minor irregularities.

T. W. BACKHOUSE.

Sunderland, December 4th, 1894.



The hour lines are about 18 minutes in advance of G.M.T.

REVIEW.

Ostwald's 'Klassiker der exakten Wissenschaften' herausgegeben von Prof. Dr. A. von OETTINGEN.

No. 53. **C. F. Gauss,** Die intensität der erdmagnetischen Kraft auf absolutes Maass zurückgeführt. In der Sitzung der Kgl. Gesellschaft der Wissenschaften zu Göttingen am 15. December 1832 vorgelesen. Herausg. v. E. DORN. (62 pages.)

No. 57. **Fahrenheit, Réaumur, Celsius,** Abhandlungen über Thermometrie. (1724, 1730—1733, 1742.) Herausgegeben von A. J. v. OETTINGEN. With 17 engravings. (140 pages.)

No. 59. **Otto von Guericke's** Neue "Magdeburgische" Versuche über den leeren Raum. (1672.) Aus dem Lateinischen übersetzt und mit Anmerkungen herausg. von FRIEDRICH DANNEMANN. With 15 engravings (116 pages.)

Leipzig: Wilhelm Engelmann, 1894, 8vo.

IT would be hard to find an English publisher who would bring out a series of such capital little books as these, with red edges, rounded corners and durable cloth covers at prices ranging from 1s. to 2s. 4d. We do not know the relative number of persons in the world who speak English and who speak German, but we are quite certain that the Germans who will read and enjoy books of the above type must be tenfold or a hundredfold that of the Britishers (including India, Australia and Canada) and Americans, or else Herr Engelmann would not have reached No. 59 of this remarkable series. Questions of education, of culture, of social habits, and of politics are altogether foreign to these pages, but if Englishmen wish to hold their own they will certainly have to make some changes.

No. 53 is a translation of the celebrated memoir by Gauss "Intensitas vis magneticæ terrestris ad mensuram absolutam revocata," read by him before the Scientific Society of Göttingen, on December 15th, 1832. It has always been regarded as having been —not merely of the highest importance—a sort of foundation-stone to the study of terrestrial magnetism, determining as it does exactly with what force the earth pulls a compass needle, but also as leading to the accurate determination of many other physical constants.

No. 57 is of extreme interest to meteorologists; it contains the original papers which led to the introduction of the three leading thermometer scales, with reproductions of the original engravings. There are five papers by Fahrenheit, translated from the *Philosophical Transactions* for 1724; there are the Rules for the construction of Thermometers with comparable scales, and two other papers, by R. A. Ferchault de Réaumur, from the *Hist. et Mém. de l'Acad. de Paris*, 1730, 1731 and 1733; and there is Celsius's paper on "Two fixed points for Thermometers," from the *Abh. d. schewdischen Akad.*, 1742; lastly in this (as also in the two other works) there are

12 pages of "Remarks" upon points raised by the papers. If we ever have a fuller history of the thermometer than that given some years since by M. Renou, the compiler must not overlook this No. 57, upon which we wish that we had time to linger longer.

No. 58. This is a translation (with excellent—reduced—reproductions of the engravings) of the third book of Otto de Guericke's *Experimenta Nova (ut vocantur) Magdeburgica de Vacuo Spatio*, Amsterdam, 1672. Here we have not only full details of the first air-pump and of the Magdeburg hemispheres, but also perfect reproductions of the portrait, the title-page, the celebrated two-page plate of the 16 horses trying to separate the hemispheres, in fact all the most important portions of that epoch-making, and now rather scarce, book—and all for two shillings; why the pictures alone are worth that, even to those who cannot read German.

ROYAL METEOROLOGICAL SOCIETY.

THE opening meeting of the session was held on Wednesday evening, the 21st November, at the Institution of Civil Engineers, Westminster, Mr. R. Inwards, F.R.A.S., President, in the chair.

Dr. H. B. Guppy read a paper on "Suggestions as to the methods of determining the influence of Springs on the temperature of a River, as illustrated by the Thames and its tributaries." The methods suggested were :—1. Comparison of the curves of the monthly means of the temperatures of the air and of the water for the river under observation with those of a river beyond the controlling influence of springs. 2. Comparison of the monthly means of the temperature of the river under investigation with that of a river beyond the control of the springs. 3. Comparison of the range of the monthly means of the river temperature with that of the air in the shade. 4. Comparison of the daily range of water temperature at different stations along a river's course. 5. Comparison of sunrise observations made at different stations along a river's course. 6. Comparison of observations made at different stations along a river's course at the hour of maximum temperature. 7. Comparison of the results obtained from a single series of observations made in one day along the whole course of a small tributary like the Wandle, or along the upper course of a larger tributary, as the Kennet. 8. Determination of the distance from its sources at which the river begins to freeze.

Mr. Eric S. Bruce, F.R.Met.Soc., exhibited and described some lantern photographs showing the disastrous effects of the great gale of November 17th and 18th, 1893, upon trees in Perthshire, Scotland.

Mr. Alfred B. Wollaston gave an account of the formation of some waterspouts which he had observed in the Bay of Bengal.

THE monthly Meeting of this Society was held on Wednesday, December the 19th, at the Institution of Civil Engineers, Westminster, Mr. R. Inwards, F.R.A.S., President, in the chair.

Twenty-six new Fellows were elected.

Mr. R. H. Scott, F.R.S., gave an account of the proceedings of

the International Meteorological Committee, at Upsala, in August last, with special reference to their recommendations on the classification of clouds and the issue of a Cloud Atlas.

The classification adopted is as follows:—

a. Separate or globular masses (most frequent in dry weather).

b. Forms which are widely extended, or completely cover the sky (in wet weather).

A. UPPER CLOUDS, average altitude 9,000 m. (29,528 ft.).

a. 1. Cirrus.

b. 2. Cirro-stratus.

B. INTERMEDIATE CLOUDS, between 3,000 m. (9,842 ft.) and 7,000 m. (22,966 ft.).

a. { 3. Cirro-cumulus.
   { 4. Alto-cumulus.

b. 5. Alto-stratus.

C. LOWER CLOUDS, between 1,000 m. (3,281 ft.) and 2,000 m. (6,562 ft.).

a. 6. Strato-cumulus.

b. 7. Nimbus.

D. CLOUDS OF DIURNAL ASCENDING CURRENTS.

8. Cumulus; apex 1,800 m. (5,906ft.); base 1,400 m. (4,593ft.)

9. Cumulo-nimbus; apex 3,000 m. (9,842 ft.) to 5,000 m. (16,405 ft.); base 1,400 m. (4,593 ft.)

E. HIGH FOGS, under 1,000 (3,281 ft.).

10. Stratus.

DEFINITIONS.

1. CIRRUS (Ci.) *Detached clouds, delicate and fibrous looking, taking the form of feathers, generally of a white colour.*

2. CIRRO-STRATUS (Ci-S.). *A thin, whitish sheet.*

3. CIRRO-CUMULUS (Ci-Cu.). *Small globular masses or white flakes without shadows, or having very slight shadows, arranged in groups, and often in lines.*

4. ALTO-CUMULUS (A.-Cu.). *Largish globular masses, white or greyish, partially shaded, arranged in groups or lines, and often so closely packed that their edges appear confused.*

5. ALTO-STRATUS (A.-S.). *A thick sheet of a grey or bluish colour.*

6. STRATO-CUMULUS (S.-Cu.). *Large globular masses or rolls of dark cloud, frequently covering the whole sky, especially in winter.*

7. NIMBUS (N.) RAIN-CLOUD. *A thick layer of dark clouds, without shape, and with ragged edge.*

8. CUMULUS (Cu.) WOOLPACK CLOUDS. *Thick clouds, of which the upper surface is dome-shaped and exhibits protuberances, while the base is horizontal.*

9. CUMULO-NIMBUS (Cu.-N.). THE THUNDER-CLOUD; SHOWER-CLOUD. *Heavy masses of cloud, rising in the form of mountains, turrets, or anvils, generally having a sheet or screen of fibrous appearance above ("false Cirrus"), and underneath a mass of cloud similar to Nimbus.*

10. STRATUS (S.). *A horizontal sheet of lifted fog.*

Each definition was supplemented by a few lines of explanation

giving additional characteristics and variations, and the paper concluded with the instructions for observing clouds, in which the observer is instructed to estimate the density of Cirrus on a scale of 0 to 4.

Before the discussion of the paper Mr. Gaster exhibited and explained some very beautiful lantern photographs of typical cloud-forms, and expressed general concurrence with the recommendations of the Committee.

Captain Wilson Barker asked if the altitudes given for the different clouds referred to all latitudes, or only to Europe, and suggested that there would be some difficulty in judging the density of Cirrus. From his own observation he thought that some clouds developed upwards and some downwards, and the classification of the International Committee made no reference to this. He also considered it too limited, and preferred that given by the Rev. Clement Ley in his recent work.

The Hon. Rollo Russell asked whether the altitudes given indicated the extreme maxima and minima, or gave the range commonly observed.

Mr. Jackson spoke of the varied forms which clouds assume in different localities, and asked for an explanation of the variation of form between, say, the Highlands of Scotland and the Isle of Thanet.

Mr. Charles Harding spoke in appreciative terms of the classification, and thought it would be very helpful to sailors in cloud observations. One reason for which he valued it was that it did not introduce a great increase in Luke Howard's nomenclature. He was sorry to hear that Captain Wilson Barker preferred Mr. Ley's classification. The International Committee were men who spoke with great authority, and he would like their names to appear at the head of the paper.

Mr. J. G. Wood referred to the difficulty of taking photographs of cloud, and said that he thought that it would be very useful if instruction were given as to the best methods.

Mr. Gate Acres spoke on photographic details, and Mr. R. H. Scott briefly replied to the discussion.

Mr. H. Southall, F.R.Met.Soc., read a paper on "Floods in the West Midlands," in which he gave an interesting account of the great floods which have occurred in the rivers Severn, Wye, Usk, and Avon. He has collected a valuable record of the floods on the Wye at Ross, which he arranges in three classes, viz.: Primary, or highest of all, those of 14 ft. 6 in. and above; Secondary, those of 12 to 14½ ft.; and Tertiary, those of 10 to 12 ft. The dates of the floods above 14 ft. 6 in. are as follows: 1770, Nov. 16th and 18th; 1795, Feb. 11th and 12th; 1809, Jan. 27th; 1824, Nov. 24th; 1831, Feb. 10th; 1852, Feb. 8th and Nov. 12th. The height of the recent flood on Nov. 15th, 1894, was 14 ft. 3 in., which was higher than any flood since Nov., 1852. The flood on the Avon, at Bath, on Nov. 15th, 1894, is believed to have been the highest on record.

Mr. Symons urged the importance of permanently recording the height of floods, but owing to the late hour no discussion followed.

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, JUNE, 1894.

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.	TotalRain. Depth.	TotalRain. Days.	Aver. Cloud.
	°		°		°	°	°	0-100	°	°	inches		
England, London	83·8	30	43·7	12	68·9	50·6	50·0	74	125·9	36·6	1·84	12	5·9
Malta	89·3	27	55·8	18	79·6	62·7	60·4	71	141·5	50·0	·00	0	2·0
Cape of Good Hope	...	...	...	...	...	...	...	...	...	...	...	...	...
Mauritius	76·3	15	56·8	11	74·4	61·8	57·6	71	126·6	44·6	·76	10	4·3
Calcutta	96·9	2	72·4	8	90·1	78·2	78·6	84	156·6	72·1	10·23	18	7·1
Bombay	93·0	1	74·5	11	87·4	79·7	77·4	82	142·5	73·4	16·87	21	8·2
Ceylon, Colombo	86·7	9	73·8	...	85·0	77·0	75·5	80	152·0	70·0	11·32	24	8·0
Melbourne	...	...	...	...	...	...	...	...	...	...	...	...	...
Adelaide	64·3	19	40·3	29	60·5	46·4	47·4	84	122·0	33·4	2·23	14	5·2
Sydney	65·9	2	42·3	30	61·3	48·2	44·4	83	111·0	29·8	1·42	10	3·8
Wellington	60·1	14	36·5	26	55·3	46·4	44·1	79	101·0	24·0	5·93	20	5·6
Auckland	65·0	4	37·5	26	60·0	48·9	47·0	75	119·0	30·0	4·12	21	6·1
Jamaica, Kingston	92·9	22	71·1	8	88·3	73·1	71·6	75	...	...	·70	6	3·9
Grenada	86·5	29	72·0	18*a*	83·7	74·4	68·9	73	151·0	...	4·30	22	4·0
Trinidad	94·0	16	66·0	25	89·5	69·6	69·6	73	166·0	61·0	3·26	12	...
Toronto	90·7	26	57·9	7	76·4	56·9	57·6	75	...	31·0	1·08	15	5·1
New Brunswick, Fredericton	...	...	...	...	...	...	...	...	...	...	...	...	...
Manitoba, Winnipeg	92·2	14	32·0	5	82·2	54·2	...	...	...	...	2·40	11	4·8
British Columbia, Esquimalt	77·2	2	44·2	1	63·6	48·7	49·2	80	...	...	2·37	14	5·6

a And 20, 24.

REMARKS.

MALTA.—Adopted mean temp. 70°·5; mean hourly velocity of wind 7·9 miles per hour. Temp. of sea rose to 74°·7. A passing shower gave a few drops of rain on 13th, but not enough to measure. J. F. DOBSON.

Mauritius.—Mean temp. of air 2°·2, of dew point 2°·9, and rainfall 1·24 in. below, their respective averages. Mean hourly velocity of wind 9·6 miles, or 1·8 miles below average; extremes, 27·6 on 28th, and 0·0 4th; prevailing direction, S.E. by S. to E.S.E. C. MELDRUM, F.R.S.

Adelaide.—Mean temp. above, and mean pressure slightly below, the average of 37 years. Rainfall over half-an-inch less than the average. Fair rains in the south, but still dry all over the north, especially over the interior. C. TODD, F.R.S.

Sydney.—Temp. 0°·4 above, humidity 4·7 above, and rainfall 4·07 in. below, their respective averages. Winter unusually fine, dry and mild. H. C. RUSSELL, F.R.S.

Wellington.—On the whole a wet month, with only a few fine days in the middle. Prevailing winds S.E. and N.W. Stormy on three days from the former, and two days from the latter, quarter. Mean temp. 1°·8 above the average. R. B. GORE.

Auckland.—A showery and unpleasant month, but with no storms of exceptional violence, or unusually heavy rainfall. Mean temp. slightly above the average; rainfall slightly below. T. F. CHEESEMAN.

JAMAICA.—Mean hourly velocity of wind 5·1 miles. Weather fair in Kingston, with only a sixth of the average rainfall. In every division the fall was deficient, the mean being less than one-half the average. For the half-year, however, the island rainfall was two inches in excess of the average, the deficiencies in January and June being more than counterbalanced by the excess in May. R. JOHNSTONE.

TRINIDAD.—Rainfall 4·78 in. below the average of 30 years. J. H. HART.

SUPPLEMENTARY TABLE OF RAINFALL, DECEMBER, 1894.

[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.			
II.	Dorking, Abinger Hall.	2·43	XI.	Rhayader, Nantgwillt..	6·56
,,	Birchington, Thor	1·43	,,	Lake Vyrnwy	7·51
,,	Hailsham	2·40	,,	Corwen, Rhug	2·14
,,	Ryde, Thornbrough	2·51	,,	Carnarvon, Cocksidia ...	3·91
,,	Emsworth, Redlands ...	2·34	,,	I. of Man, Douglas	5·75
,,	Alton, Ashdell.....	3·29	XII.	Stoneykirk, Ardwell Ho.	2·88
III.	Oxford, Magdalen Col...	1·95	,,	New Galloway, Glenlee	6·59
,,	Banbury, Bloxham	2·41	,,	Melrose, Abbey Gate ..	2 65
,,	Northampton, Sedgebrook	1·92	XIII.	N. Esk Res. [Penicuick]	3·45
,,	Alconbury	1·27	,,	Edinburgh, Blacket Pl..	2·25
,,	Wisbech, Bank House..	1·56	XIV.	Glasgow, Queen's Park.	2·97
IV.	Southend	1·75	XV.	Inverary, Newtown	6 35
,,	Harlow, Sheering	2·70	,,	Islay, Gruinart School..	1·56
,,	Colchester, Lexden.....	1·55	XVI.	Dollar.....	3·39
,.	Rendlesham Hall	2·44	,,	Balquhidder, Stronvar..	8·62
,,	Diss	2·80	,,	Ballinluig	3·18
,,	Swaffham	3·05	,,	Dalnaspidal H.R.S. ...	7·16
V.	Salisbury, Alderbury...	2·68	XVII.	Keith H.R.S.	1·68
,,	Bishop's Cannings	2·73	,,	Forres H.R.S.	1·36
,,	Blandford, Whatcombe.	3·74	XVIII.	Fearn, Lower Pitkerrie.	2·04
,,	Ashburton, Holne Vic....	3·36	,,	Loch Shiel, Glenaladale	11·57
,,	Okehampton, Oaklands.	4·12	,,	N. Uist. Loch Maddy ...	5·58
,,	Hartland Abbey	4·31	,,	Invergarry	8·21
,,	Lynmouth, Glenthorne.	3·65	,,	Aviemore H.R.S.	3·25
,,	Probus, Lamellyn	4·29	,,	Loch Ness, Drumnadrochit	4·97
,,	Wellington, Sunnyside..	2·78	XIX.	Invershin	2·64
,,	Wincanton, Stowell Rec.	3·16	,,	Scourie	5·85
VI.	Clifton, Pembroke Road	2·97	,,	Watten H.R.S.	2·14
,,	Ross, The Graig	1·84	XX.	Dunmanway, Coolkelure	6·86
,,	Wem, Clive Vicarage ...	2·49	,,	Fermoy, Gas Works ...	2·76
,,	Cheadle, The Heath Ho.	2·56	,,	Killarney, Woodlawn ...	6·06
,,	Worcester, Diglis Lock	1·85	,,	Tipperary, Henry Street	3·38
,,	Coventry, Coundon	2·68	,,	Limerick, Kilcornan ...	2·16
VII.	Ketton Hall [Stamford]	1·97	,,	Ennis	...
,,	Grantham, Stainby	1·42	,,	Miltown Malbay.....	3·90
,,	Horncastle, Bucknall ...	1·94	XXI.	Gorey, Courtown House	3·01
,,	Worksop, Hodsck Priory	1·39	,,	Athlone, Twyford	3·28
VIII.	Neston, Hinderton	2·07	,,	Mullingar, Belvedere ...	3·58
,,	Lancaster, Rose Bank...	...	,,	Longford, Currygrane...	3·09
,,	Broughton-in-Furness..	6·77	XXII.	Galway, Queen's Coll...	...
IX.	Ripon, Mickley	2·58	,,	Crossmolina, Enniscoe..	6·72
,,	Scarborough, South Cliff	...	,,	Collooney, Markree Obs.	4·86
,,	East Layton [Darlington]	1·88	,,	Ballinamore, Lawderdale	4·01
,,	Middleton, Mickleton..	3·03	XXIII.	Lough Sheelin, Arley ..	2·76
X.	Haltwhistle, Unthank..	2·87	,,	Warrenpoint	4·02
,,	Bamburgh.....	1·39	,,	Seaforde	3·65
,,	Keswick, The Beeches...	7·10	,,	Belfast, Springfield	3·88
XI.	Llanfrechfa Grange	4·03	,,	Bushmills, Dundarave...	4·68
,,	Llandovery	5·34	,,	Stewartstown	3·01
,,	Castle Malgwyn	3·63	,,	Buncrana	4·18
,,	Builth, Abergwessin Vic.	7·14	,,	Lough Swilly, Carrablagh	4·80

DECEMBER, 1894.

Div.		STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL. Total Fall.	Difference from average 1880-9.	Greatest Fall in 24 hours. Dpth	Greatest Fall in 24 hours. Date	Days on which ·01 or more fell.	TEMPERATURE. Max. Deg.	Max. Date	Min. Deg.	Min. Date.	No. of Nights below 32°. In shade.	No. of Nights below 32°. On grass.
			inches.	inches.	in.								
I.	ENGLAND.	London (Camden Square) ...	2·28	+ ·21	·93	14	16	52·1	17*c*	26·3	31	7	14
II.		Maidstone (Hunton Court)...	1·36	— ·88	·27	7	14	...	...	...	...	...	...
,,		Strathfield Turgiss	2·61	+ ·60	·97	14	19	53·8	12	26·1	31	10	24
III.		Hitchin	1·52	— ·51	·60	14	16	51·0	17	26·0	30*i*	13	...
,,		Winslow (Addington)	2·09	— ·36	·48	14	18	53·0	13	25·0	1	11	17
IV.		Bury St. Edmunds (Westley)	2·29	+ ·05	·63	14	17	51·0	24	26·0	31	...	...
,,		Norwich (Brundall)	3·03	...	·58	14	19	51·2	18	28·4	6	7	23
V.		Weymouth(LangtonHerring)	2·14	— ·96	·43	11	19	53·0	14	28·0	31	6	...
,,		Torquay (Cary Green)	2·21	...	·51	14	20	54·1	14*d*	29·3	31	1	6
,,		Polapit Tamar [Launceston]..	3·61	— ·62	·47	14	23	55·0	2	31·5	31	1	8
VI.		Stroud (Upfield)	2·64	+ ·19	·50	14	18	57·0	13	27·0	5*j*	11	...
,,		ChurchStretton(Woolstaston)	2·47	— ·58	·45	23	16	52·0	13	25·0	31	4	20
,,		Tenbury (Orleton)	1·89	— ·48	·34	14	15	55·0	17	25·7	1	10	14
VII.		Leicester (Barkby)	2·26	+ ·12	·67	14	17	54·0	13	23·0	31	12	23
,,		Boston	1·16	— ·69	·42	14	13	50·0	16	27·0	31	9	...
,,		Hesley Hall [Tickhill].....	1·29	— ·69	·27	14	13	53·0	13	25·0	2	12	...
VIII.		Manchester(PlymouthGrove)	2·79	— ·65	·40	17	20	53·0	13	26·0	31	9	10
IX.		Wetherby (Ribston Hall) ...	1·47	— ·97	·36	22*a*	11	...	...	...	...	...	...
,,		Skipton (Arncliffe)	7·90	+ 1·09	1·42	17	18	...	...	...	...	...	...
,,		Hull (PearsonPark)	2·58	+ ·31	·38	11*i*	14	53·0	13*e*	26·0	2*i*	11	15
X.		Newcastle (Town Moor)	1·29	— 1·01	·28	14*b*	11	...	...	...	...	...	...
,,		Borrowdale (Seathwaite).....	13·42	— 1·39	2·32	21	20	...	...	...	...	...	...
XI.	WALES.	Cardiff (Ely).....	...	...	...	...	...	...	...	...	...	...	...
,,		Haverfordwest	5·16	+ ·17	·70	30	25	54·0	12*f*	22·9	4	5	7
,,		Aberystwith (Gogerddan) ...	4·57	— ·31	·86	14	17	52·0	11*g*	18·0	3*i*	11	...
,,		Llandudno.....	2·64	— ·32	·48	17	21	58·5	18	30·6	4	...	...
XII.	SCOTLAND.	Cargen [Dumfries]	4·50	+ ·48	1·24	21	15	53·4	14	26·4	31	8	...
,,		Jedburgh (Sunnyside).....	1·90	— ·30	·52	21	15	53·0	13	23·0	3	13	...
XIV.		Colmonell	5·09	...	·81	21	18	54·0	13	20·0	3	5	...
XV.		Lochgilphead (Kilmory).....	6·49	— ·88	·73	21	23	...	...	24·0	30*i*	9	...
,,		Mull (Quinish).....	5·80	— 1·77	·80	22	21	...	...	...	...	...	...
XVI.		Loch Leven Sluices	3·10	— ·21	·70	22	13	...	...	...	...	...	...
,,		Dundee (Eastern Necropolis)	1·90	— ·18	·45	21	20	55·0	13	28·0	30*i*	10	...
XVII.		Braemar	4·21	+ 1·74	·80	21	17	50·0	13	15·8	4	18	30
,,		Aberdeen (Cranford)	2·68	...	·52	30	20	54·0	12	25·0	1, 2	18	...
XVIII		Strathconan [Beauly]	7·99	+ 2·22	1·95	13	15	...	...	...	...	...	...
,,		Glencarron Lodge.....	12·99	...	1·59	21	25	57·0	11	24·1	12	...	...
,,		Cawdor [Nairn]	2·47	+ ·01	·65	28	19	...	...	...	...	...	...
XIX.		Dunrobin	2·91	— ·46	·43	21	16	56·0	13	28·5	17*i*	7	...
,,		S. Ronaldsay (Roeberry).....	2·68	— ·98	·49	21	29	52·0	13	28·0	31	6	...
XX.	IRELAND.	Darrynane Abbey.....	5·29	...	·89	9	26	...	...	...	...	...	...
,,		Waterford (Brook Lodge) ...	3·35	— ·29	·68	9	16	53·5	13*h*	27·0	31	3	...
,,		O'Briensbridge (Ross)	5·48	...	·69	6	22	...	...	...	...	...	...
XXI.		Carlow (Browne's Hill)	2·50	— ·62	·48	21	16	...	...	...	...	...	...
,,		Dublin (FitzWilliam Square)	1·51	— ·65	·22	23	18	56·8	13	27·9	31	3	15
XXII.		Ballinasloe	3·56	+ ·14	·52	21	22	53·0	13	21·0	2*i*	15	...
,,		Clifden (Kylemore)	10·58	...	2·14	9	26	...	...	...	...	...	...
XXIII		Waringstown	2·66	— ·38	·36	21	21	55·0	13*k*	22·0	3	15	21
,,		Londonderry (Creggan Res.).	4·82	+ ·61	·77	29	28	...	...	...	...	..	...
,,		Omagh (Edenfel)	3·95	+ ·27	·53	9	24	53·0	10	25·0	30	10	12

a And 29. *b* And 28. *c* And 18. *d* And 16. *e* And 14. *f* And 14, 25. *g* And 12, 13. *h* And 17. *i* And 31. *j* And 30, 31 *k* And 23.

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

METEOROLOGICAL NOTES ON DECEMBER, 1894.

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.—December commenced with a very cold snap, the grass min. falling to 22°·6, and after a very mild middle course, ended with another low temp, 19°·3 on the grass. Considerable disturbance on the 22nd, but not amounting to a gale. First wild primrose seen on 8th.

ADDINGTON.—A very open month, the most severe frosts (of almost equal intensity) occurring on the 1st and 31st. Very high wind on the 18th, 22nd, 28th and 29th. The first S of the season fell on the evening of the 29th, and on the morning of the 30th the north side of the Quainton Hills showed white, but little lay on the low lands. Only one foggy day—the 9th. Brook flooded on the 15th.

BURY ST. EDMUNDS.—A mild, windy month, with no winter till the 28th, then S and high winds; the S was much drifted on the morning of January 1st, 1895. Violent oscillation of the bar. from the 19th to the end of the month. Fog on 5th and 8th.

NORWICH, BRUNDALL.—Very mild, and hardly any frost. No S till 30th, on which day and the following there was a heavy fall, amounting to ·97 in. when melted. Violent S. to W. gale on 22nd, and a fresh gale on 29th. Solar halo on the morning of the 7th. The whole valley of the Yare like a vast lake on 23rd.

LANGTON HERRING.—The mean temp. at 9 a.m., 41°·8, is 2°·1 above the average. Owing to the mild weather of the last two months, the fields have quite a spring-like appearance. There was a thick fog on the 14th; a great storm on the night of the 21st and 22nd, and heavy gales on the 29th and 30th.

TORQUAY, CARY GREEN.—Rainfall 1·01 in. below the average. Mean temp. 45°·5, or 3°·9 above the average. Duration of sunshine 73 hours 10 min., being 15 hours 45 min. above the average; 10 sunless days.

POLAPIT TAMAR.—Generally a damp, unseasonable, warm month, with less than the usual amount of sunshine. S 2½ inches deep on 31st.

STROUD, UPFIELD.—T and L at 11.30 a.m. on 19th. W. to N.W. gale on 21st and 22nd.

WOOLSTASTON.—A mild and warm month till the last few days, when it became very cold; S falling on the 29th. Slight frosts on grass most nights. Mean temp. 40°·6. Gales on 21st, 22nd and 29th. A wild duck's nest with several eggs in it was found on 24th.

TENBURY, ORLETON.—An unusually warm month—in fact, with two exceptions, the warmest month of December in the last 20 years. Great gales on the 22nd and 29th. S on the 29th, covering the ground to a depth of 2½ inches on the 30th. Fog on 7 days. Temp. 2°·8 above the average.

LEICESTER, BARKBY.—A fine month, the first and last weeks being the coldest. Mean temp. 39°·8. Very strong winds on the 21st, 28th and 29th. First S on 29th, very slight.

WALES.

HAVERFORDWEST.—December commenced cold, notably the first four days, the exposed ther. on the 4th falling to 19°; it continued cold to the 10th; a very wet and mild period then set in, which lasted to the 18th, when the air again became colder, and stormy, broken weather set in, which culminated in a fierce gale, commencing from S.W., and veering to W. and N. From the 21st until the 26th continuous R fell, and another strong gale followed on 29th, with H showers, and S fell heavily at night, the ground being covered to a depth of 2 inches on 31st.

ABERYSTWITH, GOGERDDAN.—Strong gales from the N.W. on the 22nd and 29th, with H storms and T.

SCOTLAND.

CARGEN.—A very unsettled month, corresponding very closely to December, 1893. Severe gales were experienced on the 13th, 21st–22nd, and 28th–29th. The one on the night of the 21st and forenoon of the 22nd was the most disastrous since the gales of December, 1883, and January, 1884. Great damage was done throughout the district, the greatest occurring between 10 and 11 a.m. on the 22nd, the squalls amounting to almost hurricane violence. The mean temp. of the month, 40°·6, is 2°·2 above the average, and the fluctuations of temp. were very marked. The min. temp. on the 13th was 50°·6; the nearest to this high min. in December during 35 years was 49°·2 on 7th December, 1865, and 49°·1 on 3rd December, 1873. Rhododendrons were in flower towards the end of the month. The fluctuations of the bar. were very marked, the difference between 9 a.m. and 9 p.m. on 22nd being 1·168 in. N. and N.W. winds prevailed for 22 days. Sunshine 10 hours below the average.

JEDBURGH.—The weather was mild for the season; though there were a number of frosty days, frost never continued long, and out-door work was not stayed. With the exception of the 29th, there was no S, and then only a slight shower, which hardly covered the ground. High wind on 21st and 28th.

COLMONELL.—Rainfall slightly above the average. Very strong gale at night on 21st and morning of 22nd. Strong gales on 28th and 29th.

ABERDEEN, CRANFORD.—Terrific gale of wind, doing much damage, on 22nd.

ROEBERRY.—The first part of the month was fine, the latter part cold and stormy. On the morning of the 22nd, after a coarse night of wind and rain from the S., preceded by a few hours' calm, a heavy gale broke from the northward. Mean temp. 41°·8.

IRELAND.

DARRYNANE ABBEY.—A very mild month, with some heavy gales. H, mixed with S, on 29th. Gales on 18th, 22nd, and 29th.

WATERFORD, BROOK LODGE.—A few light showers of S on the last two days of the month. Mean temp. 43°·9.

O'BRIENSBRIDGE, ROSS.—An average rainfall for the season was attended by unusually high temp. until the 28th. The storm of 21st, so destructive elsewhere, passed over here with little injury; its greatest violence did not last more than one hour. With the storm of 28th also no serious loss occurred. S on 30th and 31st.

DUBLIN.—The earlier part of the month was characterised by anticyclonic conditions, and was quiet, chiefly fine, with a good deal of fog. From the 9th onward the distribution of atmospheric pressure was cyclonic, the depressions of 22nd and 29th being especially noticeable for the suddenness of their approach, and the havoc which they wrought. As in 1893, the month closed with a cold spell, with S, sleet, and H. Mean temp. 43°·9, 2°·6 above the average. Lunar halos appeared on 3, and solar halos on 2, days. High winds were noted on 12 days, and attained the force of a gale on 8. Foggy on 9 days. L on the 30th. Faint aurora on the 22nd.

CLIFDEN, KYLEMORE.—Very wet and stormy throughout. Severe gales from W. on 21st and 28th. S on 30th.

WARINGSTOWN.—A gale, unequalled since 1839, occurred on 22nd, doing great damage to buildings and trees.

EDENFEL.—With an average rainfall, the temp. of the month was remarkably mild, and there was little frost, and no snow even on the mountain tops till 29th. In other respects the last 10 days of the month left a mark that it will take many years to efface. No storm since that of January, 1839, has wrought such widespread havoc to buildings and to plantations as that of the night of Friday, 21st, and had its period of greatest violence lasted as long as in 1839, the damage to life and property would have been appalling. On the 29th another, but less violent, gale occurred after an extraordinary barometric fluctuation, between times, of from 28·70 in. to 30·90 in. (corrected).