

SYMONS'S MONTHLY METEOROLOGICAL MAGAZINE.

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THE JANUARY FROST.

THE very highest compliment which readers can pay to a book or periodical, is to show that they read it. We are very glad to say that that compliment seems to be always paid to the *Meteorological Magazine*, because when the Editor makes a mistake—as everyone does more or less frequently—he hears of it instantler. We had not studied exhaustively the frost of January 5th to 7th, in fact the majority of the records had not reached us, but we did what time permitted, and gave various facts, which are not contested; but we concluded with an opinion which was incorrect; we said, “we do not think that the air temperature fell to zero in any part of England.” The excellence of the instruments employed by Mr. Mellish, of Hodsock Priory, Worksop, and his careful reading of them are beyond all question, and he had $-4^{\circ}4$, and several other indisputable records below zero have now been received.

However, our error and the criticism of it, have perhaps done good: they have induced us to go thoroughly into the subject, to tabulate several hundred records, and to epitomize them in the following pages.

Before dealing with them, or allowing our readers to draw conclusions from them, we wish to say a few words as to low temperatures and why we always doubt them—yes, doubt even our own readings so much that we take them in duplicate.

Unfortunately the only really workable mercurial minimum thermometer (Casella's) is extremely difficult to make, and therefore costly; consequently even at the best equipped stations, Rutherford's, or as it is generally called, a “spirit minimum” is used. This, no matter how much may have been paid for it, or what certificate it may have, can indicate wrongly from two causes (1) some of the spirit may evaporate from the column and condense at the top of the tube; and unfortunately, even though the spirit in the bulb and stem may be coloured, that which will evaporate and condense may be nearly colourless. Spirit thermometers vary in their liability to this error, but they should always be suspected of it and two or three precautions should be taken to ensure its detection; it is an excellent plan to have duplicate instruments, as the two are not likely to go simultaneously wrong to an equal extent; it is well to see that at

9 a.m. the reading (not the index) of the minimum, is nearly the same as that of the dry bulb thermometer; it is well to look at the top of the tube and see that no spirit is there. This error, when it exists, always makes the minima too low. It is easily cured by swinging the thermometer at arm's length, bulb downwards, and then standing it for an hour, bulb down, to drain.

Another error also tends to produce too low a reading. It is usual, and probably right, to advise that the bulb end of a minimum should be rather ($\frac{1}{2}$ inch or so) lower than the other end; provided that the thermometer and the screen be firmly fixed, no harm occurs. If, however, the thermometer hangs very freely, or the thermometer screen vibrates much, the repeated slight vibrations will sometimes cause the index to move several degrees towards the bulb.

These are dangers incident to high class stations—these *and others* may occur to ordinary observers. Uninspected stations may have incorrect thermometers; as the errors are equally likely to be in excess or in defect, we can say only that the sooner persons realize that their time and thought are worth more than the few shillings they keep—not *save*—by buying rubbish, the better.

Worse than this is the confusion which arises from the endless variety of positions in which thermometers are placed. At a first-class station, there are at least two minimum thermometers, one (for recording the lowest temperature of the air) is in a Stevenson screen, the other (for recording the lowest temperature produced by radiation) is laid upon grass—and this will read on a cloudy night much the same as the one in the screen, and on a clear night 10° or more degrees below it. The non-inspected stations rarely have a proper screen; the thermometers are against a window or a wall, or on a post, 1, 2, 3, or perhaps 4 feet above the ground, and very rarely screened from radiation to the sky, therefore, as a rule, they in times of severe frost, read too low; read in fact as their positions necessitate *between* the true minimum in air and the true minimum on grass.

It was consciousness of these facts, coupled with our not having seen zero recorded at any inspected station which led us into error.

In the following table we give all the minima below 10° which we have been able to collect, and as a rule they are sufficiently accordant to show that our criticisms are far from being universally applicable—the stations are grouped in counties approximately in the order adopted in *British Rainfall*. All stations at which we believe that the thermometers are in a Stevenson screen have an S prefixed, and returns quoted from the publications of the Meteorological Office, have a † in addition.

Records of a Temperature (in shade) below 10° between Jan. 5th & 8th, 1894.

COUNTY.	STATION.	Min.	Date.
Surrey	Woodhatch, Reigate.....	$8^{\circ}0$...	5
„	S Upper Gatton, Merstham	8.1 ...	5
„	S Asylum, Caterham	9.0 ...	5
„	S Wallington	7.7 ...	7

COUNTY.	STATION.	Min. °	Date.
Kent	Cranbrook	6.0	5
"	Dover	9.0	5
"	Camden Park, Tunbridge Wells.....	9.0	5
"	River Hill, Sevenoaks	8.0	5
"	Foxwold, Brasted	4.0	5
"	8 Keston	8.0	7
Sussex	Bramber	7.0	6
"	8 Ditchling	9.0	7
"	Hayward's Heath	8.0	7
Hants.....	Newport, I. of Wight	9.5	7
"	Swanmore, Bishop's Waltham.....	8.0	6
Berks	Portland Place, Reading	9.5	6
"	Welford Park, Newbury	9.0	6
Herts	Broxbourne (Stafford Ho.)	5.0	7
Oxon	Henley on-Thames	5.0	5
"	Bloxham, Banbury	9.0	6
Northampton ..	8 Sedgebrook	9.0	6
Essex	8 Chelmsford	1.9	6
"	Sheering, Harlow	8.0	6 & 8
"	Old House, Dedham	-2.0	6
"	8 Halstead	-1.5	6
Suffolk	Ipswich	6.0	6
"	" (Thornham Hall)	3.0	6
"	Rendlesham Hall	9.0	8
"	8 Great Thurlow, Haverhill	-0.5	6
"	Framlingham	8.0	5
"	8 Somerleyton, Lowestoft	9.1	8
Norfolk	Scole.....	-1.5	—
"	Diss	1.0	5 & 6
"	8† Geldeston [Beccles]	9.0	—
Wilts	Devizes	9.0	5
"	Pickwick, Corshan	9.0	5
Dorset	Whatcombe	7.0	5
Devon	8 Buckfastleigh	8.0	7
"	8 Cullompton.....	8.2	7
Gloucester.....	Highlands, Minchinhampton	8.0	5
"	8† Cirencester	9.0	—
Hereford	8 Burghill, Hereford.....	9.8	6
Shropshire.....	Ludlow	5.0	6
"	Woolstaston	8.0	6
"	Clive Vicarage	5.0	5
Stafford	8 Wrottesley, Wolverhampton	8.3	6
"	Weston Park [Shifnal]	6.0	7
"	Hoar Cross, Burton	5.0	5
"	8 The Heath House, Cheadle	9.9	6
Worcester.....	8 Diglis, Worcester	8.0	6
"	Orleton, Tenbury	5.5	6
"	Kings Norton [Birmingham]	0.0	6
Warwick	8 Kenilworth.....	8.2	6
"	Chadwick Manor, Knowle	1.0	6
"	Springfield,	-4.0	6
"	8 Olton, Solihull	-0.5	5
"	Priory Row, Coventry ..	4.0	6
"	Stoke,	-3.0	6
"	Wellington Rd., Birmingham.....	9.0	6
Leicester	Barkby	7.0	5
"	8† Loughborough	5.0	5
Rutland... ..	8 Ketton Hall	6.0	6
Lincoln	Branston Hall	4.0	6

COUNTY.		STATION.	Min.	Date.
Lincoln	S	The Close, Lincoln	9.8	6
"		Hemingby	6.4	6
Nottingham	S	Hodsock Priory, Worksop	-4.4	6
"		Hesley Hall [Tickhill]	-0.2	6
Derby	S	Buxton	9.2	8
"		Norton Hall [Sheffield]	2.0	6
Cheshire		Kelsall, Chester	8.0	6
Lancashire		Esthwaite, Hawkshead	8.1	6
Yorkshire, W.R.		Parliament St., Sheffield	1.0	6
"		Weston Park	8.0	7
"		Beckett Hospital, Barnsley	4.0	6
"		Wentworth Castle, "	4.0	6
"		St. George's Gardens, Barnsley	0.5	6
"	S	Harewood Lodge, Meltham	6.7	6
"		Huddersfield	7.0	6
"	S	Prison, Wakefield	1.0	6
"		Bermerside, Halifax	3.0	6
"		The Stray, Harrogate	1.8	6
"	S	Knaresboro'	5.0	6
"		Burton House, Masham	-5.0	6
"	E.R.	Driffield	-0.8	6
"	N.R.	E. Layton [Darlington]	4.0	6
Durham		Whorlton, Barnard Castle	5.0	6
"	S†	Durham	6.0	7
"	S	Ushaw	5.0	6
"		Hermitage, Chester-le-Street	5.0	6
"		Deanery Gardens, "	3.0	6
"		Houghton-le-Spring	5.0	6
"		New Herrington, Houghton-le-Spring	4.5	6
"		Mowbray Park, Sunderland	7.0	6
Northumberland.		Newcastle-on-Tyne	6.0	6
"		Royal Nurseries, Hexham	-6.0	7
"		South Park, "	-6.0	7
"		Hackwood, "	-5.0	7
"		Dilston, "	-1.0	7
"		Unthank Hall, Haltwhistle	4.0	6
"	S	Craggside, Rothbury	5.0	7
Westmoreland ..	S	Windermere	8.0	6
"		Appleby	7.0	7
Monmouth		The Hendre	9.0	5
"		Llanvihangel Court	8.0	6
Radnor		Downton	5.0	6
"		Llandrindod	2.0	5
Montgomery		Pool Quay, Welshpool	8.0	6
Kirkcudbright ...	S	Cargen [Dumfries]	6.8	6
Dumfries		Langholm	4.0	6
Roxburgh		Hawick	0.0	6
"		Jedburgh	1.0	7
"		Abbeygate, Melrose	-6.0	7
Selkirk		Galashiels	2.0	6
"		Stow	-2.0	6
Peebles		N. Esk Reservoir	6.0	6
Berwick		Berwick	8.0	6
"	S†	Marchmont	6.0	7
"		Sisterpath, Greenlaw	-2.0	6
"		Duns	0.0	6
"		" (Whitsomelaws)	-3.0	6
"		" (Langton)	-1.0	6
Edinburgh		Royal Botanic Gardens, Edinburgh ..	9.0	7

COUNTY.	STATION.	Min.	Date
Stirling	Denny	2°0	7
„	Bridge of Allan	—6°0	7
Fife	Markinch	1°0	7
„	Ladybank	—8°0	7
Perth	Dunblane	0°0	7
„	Muthill	—6°0	7
„	„ (Pitkellony)	—3°0	7
„	Bridge of Earn	—8°0	7
„	Seggiedan, Kinfauns	—3°0	7
„	Stronvar	—1°0	7
„	S† Ochertyre	2°0	6
„	Dunkeld	—8°0	7
„	Aberfeldy	—5°0	7
„	Alyth	9°0	7
„	„ (Drumnacree)	—5°0	7
„	Ballinluig	—2°5	7
„	Pitlochry	—3°0	7
Forfar	E. Necropolis, Dundee	6°2	7
„	Invergowrie, „	8°0	6
„	Broughty Ferry	0°0	6
„	Asylum, Dundee	3°0	7
„	S Cupar Angus	—11°0	6
Aberdeen	S Braemar	—4°0	6
„	Cranford, Aberdeen	6°0	6
Elgin	Mossbrae, Elgin	8°0	7
Sutherland	S† Lairg	8°0	—
Cork	S Douglas, Cork	8°0	7
„	Crawford Observatory, Cork	9°4	7
Waterford	Brook Lodge	2°0	7
Kilkenny	S† Kilkenny	7°0	—
King's County	S† Parsonstown	6°0	6
Longford	S† Edgeworthstown	5°0	—
Armagh	Observatory, Armagh	6°3	6
Down	Seaforde	7°0	5
„	Waringstown	0°0	5
Tyrone	Edenfel, Omagh	8°0	6

On plotting the above entries on a map, their general agreement is very striking. In South Wales, Devon, Cornwall, Somerset, and all along the coast from the Isle of Wight, round to the Land's End, and thence to Carlisle, there is but one record of a minimum of 10°, although few other portions of England and Wales are without considerably lower values; and there are five widely separated localities at which there can be little doubt that the shade minimum fell below zero. It has been stated that zero was reached at Tunbridge Wells and at Dover, but we can see no reason for believing, it any more than the fiction of 10° below zero at Fowey in Cornwall.* We have heard that zero and below it, were recorded in parts of Essex; and looking at the —1°·5 at Scole and —2°·0 at Old House, Dedham, it seems probable. The next area with very low temperatures, was the high land in Warwickshire, where there are several records below zero, one being in a Stevenson screen. N.E. of this area, we find North Nottinghamshire with the best obtainable instruments in a proper screen, giving an air minimum of —4°·4 at Hodsock Priory, backed by a record of —0°·2

* Really 10° below freezing—i.e. 22°.

at the nearest station, Hesley Hall. Finally—as regards England—we have a group of very low readings in the South of Northumberland. We have no information respecting these thermometers or their mounting, but the records agree so well that it seems hypercritical to assume that all are wrong.

In Scotland the South Eastern district around Melrose was as usual very cold, there being five reports of below zero; but this was surpassed in Perthshire and the west of Forfarsire, where the majority of the returns were below zero, eight of them were 5° or more below zero, and one, Cupar Angus, was $-11^{\circ}0$.

Probably the Irish returns, though not nearly so cold, were more remarkable. We do not think that any precedent can be found for nine records spread from Cork to Tyrone all below 10° .

The following notes may be of interest and help to complete the account :—

London.—The shade temperature did not fall below $13^{\circ}1$, whereas $6^{\circ}7$ was touched on Dec. 25th, 1860, and on January 4th, 1867, but the max. was almost unprecedentedly low.

Devon & Cornwall.—The cold of the past few days has been very severe in N. Cornwall and N. Devon. A correspondent from Stratton writes that a day or two ago he went to Newland, Bradworthy—between eight and nine miles. He says :—“ When we reached the farmstead we found icicles, each three to four inches long, hanging from the horse's nostrils, whilst the outside parts of the bit were encased with ice from the breathing of the animal. My pipe was encircled with ice as thick as a penny just beyond where the lips came, and a drop of water falling on a gun barrel was converted into ice before one could stoop to brush it away. On the return journey, in the absence of a muffler, a handkerchief was used as a respirator, and then my breathing caused my coat collar on one side to be covered with ice. — *Western Morning News*, Jan. 9th.

Mowbray Park, Sunderland.—Min. on 6th $7^{\circ}0$, the lowest for at least 20 years; the nearest was 9° on Dec. 4th, 1879.

THE RECENT COLD IN GUERNSEY.

To the Editor of the Times.

SIR,—Systematical meteorological observations have been taken in Guernsey during the last 50 years with standard certified instruments, and last Friday's readings broke the record for low temperatures. The mean temperature of that day was $21^{\circ}9$, which is (excepting Thursday's, the 4th, mean) $5^{\circ}9$ lower than the lowest daily mean previously recorded.

The air temperature at 8 a.m. on Friday, January 5th last, was $18^{\circ}1$, the *maximum* for the day $26^{\circ}5$, the 9 p.m. reading $24^{\circ}8$, and the *minimum* for the day $16^{\circ}2$. The mean, as above stated, was $21^{\circ}9$ —that is, no less than 20° too cold for that day of the year. The coldest day on record previous to this cold snap occurred on February 11th, 1870, the *minimum* for that day being 26° and the daily mean $27^{\circ}8$.

These local observations were commenced 51 years ago by the late Dr. Hoskins, F.R.S., and are now carried on by Mr. A. Collenette, F.R. Met. Soc.

The still lower air reading of $16^{\circ}2$ was taken by myself, with a certified instrument in a Stevenson screen at 8 a.m. on the 5th inst., while the *minimum* air

reading recorded during that night in the same screen was $15^{\circ} \cdot 5$. This reading is therefore $0^{\circ} \cdot 7$ lower than Mr. Collenette's observation. My station, however, is somewhat more exposed than Mr. Collenette's, and some 100 feet higher above the sea.

These unprecedented low temperatures, in an island with a climate generally so mild, are, I think, worthy of record in your columns.

Your obedient servant,

BASIL T. ROWSWELL.

St. Martin's, Guernsey, Jan. 9th.

Bridge of Earn, Perth.—Min. $8^{\circ} \cdot 0$; hen's eggs in the nest were split by the cold.

Finally, to sum up the whole matter, we have prepared the following table of the relative intensity of the frosts of December, 1879, January, 1881, and January, 1894, the facts as to the first two being taken from two excellent papers by Mr. Marriott in the *Quar. Jour. Roy. Met. Soc.* :—

YEAR.	Sheering, Essex.	Somerleyton, Suffolk.	Golleston, Suffolk.	Cirencester, Gloucester.	Heath House, Stafford.	Coventry, Warwick.	Loughborough, Leicester.	Hodsock, Notts.	Buxton, Derby.	Wakefield, Yorks.	Durham, Durham.	Braemar, Aberdeen.	Parsonstown, King's Co.	Armagh, Armagh.	Waringstown, Down.	Mean
1879	1 ⁰ 0	10 ⁰ 0	11 ⁰ 0	14 ⁰ 0	17 ⁰ 6	5 ⁰ 0	1 ⁵ 5	-5 ⁰ 8	-3 ⁰ 8	0 ⁰ 0	4 ⁰ 4	-0 ⁰ 8	9 ⁰ 8	17 ⁰ 6	12 ⁰ 0	6 ⁰ 2
1881	9 ⁰ 0	4 ⁰ 9	3 ⁰ 5	-0 ⁰ 3	9 ⁰ 9	3 ⁰ 0	1 ⁰ 9	1 ⁰ 6	1 ⁰ 2	12 ⁰ 1	0 ⁰ 2	-4 ⁰ 0	6 ⁰ 0	9 ⁰ 8	-1 ⁰ 0	3 ⁰ 9
1894	8 ⁰ 0	9 ⁰ 1	9 ⁰ 0	9 ⁰ 0	9 ⁰ 9	4 ⁰ 0	5 ⁰ 0	-4 ⁰ 4	9 ⁰ 2	1 ⁰ 0	5 ⁰ 0	-4 ⁰ 0	6 ⁰ 0	6 ⁰ 3	0 ⁰ 0	4 ⁰ 7
Mean	6 ⁰ 0	8 ⁰ 0	7 ⁰ 8	7 ⁰ 6	12 ⁰ 5	4 ⁰ 0	2 ⁰ 8	-2 ⁰ 9	2 ⁰ 2	4 ⁰ 3	3 ⁰ 2	-2 ⁰ 0	7 ⁰ 3	11 ⁰ 2	3 ⁰ 7	5 ⁰ 0

The lowest temperature at each station is in heavy type, and this shows at once that the cold of 1881 was much more remarkable than that of 1894 or of 1879. The means for the three periods are interesting. Heath House, Cheadle, *looks* too high, but the explanation is that it is 650 feet above sea level, and the cold air can flow away from it. Hodsock Priory comes out lowest, and about equally so with Braemar, the reason probably being its low altitude (56 feet) and its rather central position, but it is not easy to see why it should be so much colder than Loughborough.

THE METEORIC PHENOMENA OF JANUARY 25TH.

I was induced by notices which appeared in the *Times* of January 29th, of a brilliant meteor observed on the above date, to ask for further information to be sent me on the subject. I have been favoured by a large number of reports, some sent direct, others collected by Mr. Symons, and others forwarded by Mr. H. C. Moore, the Secretary of the Woolhope Field Club.

The result of a comparison of these reports, is to shew that instead of one meteor on the night in question, there were several, while the attendant phenomena were remarkably similar.

I proceed to state, as briefly as the case will admit, the facts as reported in chronological order:—

6.45 p.m.—At *Whitecliff, near Seaton, Dorset*, a meteor brighter than Jupiter passed from E. to W.; light of trail lasted 3 to 4 seconds. Two other meteors crossed S. to N. later in the evening; time not stated.

8.10 p.m., “*about.*”—The Vicar of *Pool Quay, near Welshpool*, saw a meteor pass from N.W. to S.E., from 45° down to 25° above horizon, giving sufficient light to cause the observer to turn round to see it. It shone through a haze.

I am inclined to think that this is the same as the one next to be noticed.

8.30 p.m.—At *Wallasey Hill, near Liverpool*, observer looking S.E. by S., saw a very large meteor fall in a nearly vertical line (slightly inclining W.) right ahead of him; no explosion occurred; sky covered with fleecy clouds; heavy bank on southern horizon, into which meteor passed from sight.

Time not named.—Possibly the same as the last two. From near *Flint* a meteor was seen passing from Zenith to S.E., between two dense black clouds, and disappearing into another bank. Quivering light as of aurora visible from 10 to 11 seconds after disappearance.

9.30 p.m.—At *Llanthomas, near Hay*, a working man walking along the road, was “startled by the sudden appearance of a very brilliant light in the dark sky; it seemed to be right overhead, and, as he looked up the sky seemed to open, and the light spread out gradually so bright, that you might pick up a pin in the road. The whole lasted quite a minute, and was accompanied by a rumbling sound towards the mountain E.S.E.”

At the same place a woman described the light as coming through the window blind and lighting up the whole room for quite a minute if not more, and followed by a “rumbling, bumping noise.”

Both these persons are positive that the time was 9.30 and not 10 p.m.

From the same place my correspondent reports that it was noticed to be remarkably warm just before the concussion occurred, and that several flashes of lightning were seen during the night.

At *Clifford* (2 miles from *Hay*) a low rumbling noise was heard, followed by a slight shake of the earth at 9.30 p.m. “About the

same time a comet [!] was seen flying in a southerly direction."—*Hereford Times*, Feb. 3rd.

10 p.m.—At this hour occurred the most remarkable event of the series. The observers agree very well as to the time. Some say the clocks were striking; most put it at 10.1 and only one as late as 10.4. It will be best to take the places in order from N. to S.

Chester.—Meteor emerged from behind a dense mass of black cloud in N.N.W., 46° above horizon; passed slowly across sky until hidden by another bank of cloud in S.S.E., about 30° above horizon. Sky between covered with filmy clouds. Visible for barely a minute; bluish green hue; brilliancy of a half-moon.

Stokesay Vicarage, Shropshire.—Sky covered with dense clouds; no meteor seen; but suddenly the whole landscape illuminated with a light so bright that objects were nearly as visible as in ordinary daylight. This lasted certainly more than half a minute. The light flickered and died out rapidly, not suddenly.

Bodenham, near Leominster.—Brilliant reflection, but meteor itself not seen. Explosion as of a cannon firing, apparently in the neighbouring valley. Further east, noise as of tiles falling. Concussion felt in houses.

Worcester.—Light as of an extremely vivid flash of lightning. The meteor appeared to burst to the southward, and after an interval, variously estimated at from 30 seconds (the most approximate) to 2 minutes, this was followed by a rushing, hissing sound, ending in an explosion like a tremendous peal of thunder.

Another correspondent from the same place, states that a ball of fire with a long tail was seen; doors and windows rattled and china was overturned.

Hereford.—Mr. H. C. Moore did not see the meteor or light, but heard a "report as of a well charged fowling piece in an enclosed space." There was no rumbling echo or vibration.

King's Pyon, near Hereford.—The Rev. H. A. Barker writes:—"Very overcast and dark; meteor resembling an incandescent lamp, having that peculiar luminosity which recalls the electric light, apparently half the size of the moon, rushing from N.E. to S. or S.W., followed by train of wavy bluish light; seemed to have a zig-zag irregular motion; lasted 5 or 6 seconds; from 3 to 5 minutes afterwards loud report as of cannon."

Ross.—At the Graig (2 miles N.W.) a light was seen as "an appearance as of fireworks through the clouds," and an explosion was heard, accompanied by a distinct tremor with a wavy motion. At *Parkfields* (3 miles S.E.), two explosions were heard, with a rumbling between, which lasted until the second explosion occurred. Two shocks felt in upper floors of the house with undulating motion.

At midnight a violent squall of wind and rain burst half a mile west of *Ross*, felling a large tree and partially unroofing a gentleman's house.

Ashchurch, Tewkesbury.—I have no reports from the place, but

Mr. W. F. Denning, F.R.A.S., in *The Times* of January 31st, locates the meteor's disappearance at a point four miles north of this village. I do not venture to criticize his letter, as I do not know on what observations his conclusion is based, but I find it difficult to make it fit in with some of the reports noted in this paper.

But all the reports tend to show that the explosion (whatever that term in fact represents) did occur somewhere in the neighbourhood of *Ashchurch*.

Cheltenham.—Mr. Walker (*Times* of January 29th) saw the meteor pass over the town, travelling from N. to S., and exploding with a sound like distant thunder.

Brimscombe Vic., Stroud.—Mr. Lloyd looking N., saw a ball of fire passing from N. to S. Its sudden disappearance was followed in 1 or $1\frac{1}{2}$ minutes by a series of explosions apparently from N.E., "like a number of field pieces fired in rapid succession, followed by a volley of musketry." There had been heavy rain and the meteor, which gave from 4 to 6 times the light of Venus, shone through clouds.

Sarsden, near Chipping Norton.—A lady writes that she and four others were walking at 10 p.m. and were "surprised to find that very gradually from having been very dark, we seemed to be in daylight for a space of what I should judge to be about two whole minutes. We looked to see whether there was any change in the sky to warrant it, but it seemed to be still quite dark up there."

Brixworth, Northampton.—"The firmament blazed out in all directions, N., S., E. and W. This lasted 7 or 8 seconds." No explosion reported.

Correspondents also mention brilliant meteors seen from *Streatham* and *Mersham* at 6.20 p.m. on January 26th, and from *Southwold* at 8.15 p.m. on January 28th, and from *Bodenham* on February 8th, at 0.31 p.m., in bright sunshine.

I certainly do not intend to theorize upon the foregoing facts, but there are some points to which it is well to direct attention.

The evening and night appear to have been generally stormy and electrical, ending with the violent squall at *Ross*. The light is described in many places, and as to more than one of the meteors, as coming on gradually, dying out gradually and flickering. One observer noticed a zig zag motion, while almost all agree that there was not a single sound but a continued series of sounds, which most compared to thunder.

These points suggest for consideration whether in this class of meteor we are dealing with aerolites at all, and not rather with electrical phenomena arising within the limits of our own atmosphere.

In this connection I may relate that in August, 1890, I was at *Tunbridge Wells*, and about 8 p.m. from *Mount Ephraim*, saw a "meteor" very brilliant in the early twilight, shoot right across the sky from N. to S., and disappear low down in the horizon over *Hastings*. Two hours later, at that spot in the horizon, sheet lightning

was visible. By the next morning the storm had crossed the Channel from France, and by the succeeding evening had burst on *Tunbridge Wells*, thus directly following up the path of the meteor in the reverse direction.

At the same time (for I do not suggest that "November meteors" are other than aerolites) I must add that my observance of the coincidence of meteors and electrical phenomena, dates from the November meteor shower of 1866, which I observed from Cambridge with an aurora lighting up the northern sky, and sheet lightning lighting up the southern.

I have enquired of Mr. W. H. Preece, F.R.S. whether any electrical disturbances of the telegraph and telephones in Worcester and adjoining counties were reported on the night of January 25th. He has been good enough to inform me that he has made inquiries and finds there are no records of such disturbances on that night, but all the telegraph offices in those counties would, with one or two exceptions, be closed at the hour I named (10 p.m.), and so if any disturbance actually occurred there would be no record.

JAMES G. WOOD.

A WET TIME IN THE WEST OF SCOTLAND.

To the Editor of the Meteorological Magazine.

SIR,—The rainfall at this station between October 1st, 1893, and January 31st, 1894, is perhaps worthy of a special record. I append a summary of it :—

		RAINFALL.
		in.
1893.	October	10·63
	„ November	13·25
	„ December ...	7·65
1894.	January	11·38
Total in four months ...		<u>42·91</u>
Average monthly fall		<u>10·73</u>

Yours truly,

W. D. ANDERSON.

Ardsheal, Ballachulish, Argyleshire, Feb. 1st, 1894.

EXCEPTIONAL FROST FORMATION.

To the Editor of the Meteorological Magazine.

SIR,—Your correspondent, Mr. White Wallis, will find in *Nature*, vol. xxxi. (Nov. 1884 to April 1885) pp. 5, 81, 193, 264, 480, letters referring to the ice formation which he describes. The last letter gives reference to other letters in preceding volumes. See also vol. xxxiii., p. 461.

Yours faithfully,

B. WOODE-SMITH.

Branch Hill Lodge, Hampstead Heath, N.W., Feb. 6th, 1894.

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, AUGUST, 1893.

STATIONS. (Those in italics are South of the Equator.)	Absolute.				Average.				Absolute.		Total Rain.		Aver.
	Maximum.		Minimum.		Max.	Min.	Dew Point.	Humidity.	Max. in Sun.	Min. on Grass.	Depth.	Days.	
	Temp.	Date.	Temp.	Date.									
	°		°		°	°	°	0-100	°	°	inches		°
England, London	93·6	18	44·8	29	77·1	56·4	53·5	66	131·9	39·0	1·61	11	5·0
Malta.....	95·1	2	66·2	11	86·9	70·1	67·5	71	148·8	60·8	·03	1	1·4
<i>Cape of Good Hope</i> ...	...	...	...	...	...	...	...	...	...	...	...	...	...
<i>Mauritius</i>	74·7	4	57·4	16	73·3	62·8	58·4	74	126·8	48·2	2·06	26	6·0
Calcutta.....	91·6	14	76·4	9	87·7	78·7	78·8	87	154·8	75·1	8·37	18	8·1
Bombay.....	86·2	1	74·8	16	84·2	76·8	75·1	84	140·5	72·3	13·55	28	8·8
Ceylon, Colombo ...	86·2	30	73·1	5	84·7	76·9	70·6	75	150·5	70·0	1·01	13	4·4
<i>Melbourne</i>	65·5	12	33·5	1	58·8	43·9	44·4	77	121·2	27·9	1·71	16	6·3
<i>Adelaide</i>	72·4	28	36·6	20	61·8	46·0	45·2	72	128·6	27·7	2·74	14	5·4
<i>Sydney</i>	72·4	15	42·8	4	61·9	48·5	43·0	82	120·9	29·1	2·08	14	3·7
<i>Wellington</i>	62·3	14	35·0	12	58·0	46·5	44·4	75	119·0	24·0	8·23	15	4·7
<i>Auckland</i>	64·0	24 ^a	38·5	12	60·4	50·0	48·5	79	132·0	34·0	5·04	21	5·8
Jamaica, Kingston.....	91·5	25	68·2	28	89·1	73·7	72·3	80	...	...	2·21	9	6·1
Trinidad	93·0	29	68·0	21 ^b	88·4	69·8	75·8	87	...	...	16·32	21	...
Toronto	88·8	11	48·7	14	76·7	56·6	57·3	74	...	44·0	5·76	12	3·7
New Brunswick, Fredericton	94·7	11	47·1	31	76·8	55·4	57·1	71	...	...	6·70	13	5·3
Manitoba, Winnipeg ...	89·8	7	35·0	28	75·7	50·1	...	...	...	...	1·52	12	4·5
British Columbia, Esquimalt.....	75·7	1	42·2	31	68·4	49·4	52·3	83	...	...	·06	3	2·5

a And 27. b And 22, 24, 30.

REMARKS.

MALTA.—Mean temp. 77°·7; mean hourly velocity of wind 6·0 miles. Lightning on 6th. J. SCOLES.

Mauritius.—Mean temp. of air 1°·2 below, of dew point 0°·7 below, and rainfall 0·10 in. below, their respective averages. Mean hourly velocity of wind 12·0 miles, or 0·2 mile below average; extremes, 32·1 on 29th, and 0·0 on 18th; prevailing direction, E.S.E. C. MELDRUM, F.R.S.

Melbourne.—Dense fog on the 11th; frost on 6 days; hail, thunder and lightning on the 24th. R. L. J. ELLERY, F.R.S.

Adelaide.—Mean temp. 0°·3 below the average of 36 years. Rainfall 0·40 in. above the average. A splendid season, fine winter rains being general over the pastoral and agricultural districts. C. TODD, F.R.S.

Sydney.—Temperature 0°·2 above, humidity 8°·7 above, and rainfall ·89 in. below, the average of 35 years. H. C. RUSSELL, F.R.S.

Wellington.—Heavy showers up to the 7th, 1·26 in. being recorded on 3rd, and 1·65 in. on 5th; showery on 10th and 11th, then fine weather for the remainder of the month, with showers at intervals. Prevailing winds N.W., frequently strong; snow on the hills on the 11th; hail on 11th; fog on 3rd and 4th; earthquakes on 4th and on 23rd; lunar rainbow on 25th. Mean temp. 4°·2, and rainfall 3·03 in., above the average. R. B. GORE.

Auckland.—From the 1st to the 19th wet, stormy and disagreeable; from thence to the end of the month much finer, excepting a heavy fall of rain on the 26th. Total rainfall much in excess of the average. T. F. CHEESEMAN.

JAMAICA, KINGSTON.—Fair, with afternoon showers and thunder; Rainfall half the average. Globular lightning seen near Kingston on 26th, and a shock of earthquake felt on 22nd. Mean hourly velocity of wind 3·7 miles. The first half of the month was free of depressions, but in the latter half three cyclones occurred within barometric range, but far to the N.E. and N. ROBT. JOHNSTONE.

TRINIDAD.—Rainfall 6·00 in. above the 30 years' average, and only exceeded by the all for 1880, which was 17·39 in. J. H. HART.

SUPPLEMENTARY TABLE OF RAINFALL,
 JANUARY, 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.	4.26	XI.	Rhayader, Nantgwillt..	7.77
„	Birchington, Thor	1.96	„	Lake Vyrnwy	8.36
„	Hailsham	4.07	„	Corwen, Rhug	3.70
„	Ryde, Thornbrough	4.82	„	Carnarvon, Cocksidia ...	4.69
„	Emsworth, Redlands ...	5.25	„	I. of Man, Douglas	4.11
„	Alton, Ashdell	4.31	XII.	Stoneykirk, Ardwell Ho.	5.06
III.	Oxford, Magdalen Col...	1.64	„	New Galloway, Glenlee	8.23
„	Banbury, Bloxham	1.64	„	Melrose, Abbey Gate ..	3.44
„	Northampton, Sedgebrook	1.16	XIII.	N. Esk Res. [Penicuick]	5.35
„	Alconbury	1.53	„	Edinburgh, Blacket Pl..	2.47
„	Wisbech, Bank House..	1.88	XIV.	Glasgow, Queen's Park.	4.87
IV.	Southend	1.93	„	Inverary, Newtown	12.07
„	Harlow, Sheering ...	2.19	XV.	Islay, Gruinart School..	3.28
„	Colchester, Lexden	1.80	XVI.	Dollar	4.49
„	Rendlesham Hall	2.01	„	Balquhiddier, Stronvar..	14.92
„	Diss	2.33	„	Dunkeld, Inver Braan..	...
„	Swaffham	1.82	„	Dalnaspidal H.R.S. ...	11.92
V.	Salisbury, Alderbury ...	2.81	XVII.	Keith H.R.S.	1.71
„	Bishop's Cannings	2.25	„	Forres H.R.S.	1.61
„	Blandford, Whatcombe ..	4.47	XVIII.	Fearn, Lower Pitkerrie.	1.22
„	Ashburton, Holne Vic....	7.22	„	Loch Shiel, Glenaladale	15.91
„	Okehampton, Oaklands.	5.40	„	N. Uist. Loch Maddy ...	7.49
„	Hartland Abbey	4.03	„	Invergarry	9.69
„	Lynmouth, Glenthorne.	4.91	„	Aviemore H.R.S.	4.49
„	Probus, Lamellyn	4.99	„	Loch Ness, Drumnadrochit	3.75
„	Wellington, Sunnyside..	3.23	XIX.	Invershin	2.88
„	Wincanton, Stowell Rec.	3.01	„	Scourie	4.47
VI.	Clifton, Pembroke Road	3.17	„	Watten H.R.S.	2.12
„	Ross, The Graig	2.73	XX.	Dunmanway, Coolkelure	9.52
„	Wem, Clive Vicarage ...	2.30	„	Fermoy, Gas Works ...	5.95
„	Cheadle, The Heath Ho.	2.45	„	Killarney, Woodlawn ...	9.34
„	Worcester, Diglis Lock	1.92	„	Tipperary, Henry's Street	5.39
„	Coventry, Coundon	1.61	„	Limerick, Kilcornan ...	4.03
VII.	Ketton Hall [Stamford]	1.61	„	Ennis	4.72
„	Grantham, Stainby	1.66	„	Miltown Malbay	4.73
„	Horncastle, Bucknall ...	1.94	XXI.	Gorey, Courtown House	3.94
„	Worksop, Hodsck Priory	1.37	„	Athlone, Twyford	3.96
VIII.	Neston, Hinderton	1.38	„	Mullingar, Belvedere ...	4.50
„	Lancaster, Rose Bank...	3.56	„	Longford, Currygrane...	4.03
„	Broughton-in-Furness..	6.33	XXII.	Galway, Queen's Coll..	4.90
„	Ripon, Mickley	4.32	„	Crossmolina, Enniscoe..	8.94
IX.	Scarborough, South Cliff	...	„	Collooney, Markree Obs.	5.92
„	East Layton [Darlington]	1.79	„	Ballinamore, Lawderdale	5.15
„	Middleton, Mickleton...	3.72	XXIII.	Lough Sheelin, Arley ..	4.43
„	Haltwhistle, Unthank..	3.16	„	Warrenpoint	3.50
X.	Bainburgh	1.33	„	Seaforde	4.56
„	Newton Reigny .....	...	„	Belfast, Springfield	4.81
XI.	Llanfrehfa Grange	4.05	„	Bushmills, Dundarave...	4.57
„	Llandovery	5.87	„	Stewartstown	4.51
„	Castle Malgwyn	6.75	„	Buncrana	5.46
„	Builth, Abergwessin Vic.	...	„	Lough Swilly, Carrablagh	5.57

JANUARY, 1894.

Div.	STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL.					Days on which 40 or more fell.	TEMPERATURE.				No. of Nights below 32°.	
		Total Fall.	Differ- ence from average 1880-9.	Greatest Fall in 24 hours		Max.		Min.		In shade.	On grass.		
				Dpth	Date			Deg.	Date				Deg.	Date
		inches.	inches.	in.				Deg.	Date	Deg.	Date		
I.	London (Camden Square) ...	2.87	+ 1.25	.34	22	25	52.0	11c	13.1	5	14	18	
II.	Maidstone (Hunton Court)...	2.16	+ .61	.53	25	18	...	...	...	...	...	...
III.	Strathfield Turgiss	3.13	+ 1.32	.28	21	26	51.2	11	12.8	5	13	24	
IV.	Hitchin	1.69	+ .15	.28	14	22	52.0	12	10.0	5	13	...	
V.	Winslow (Addington)	1.88	+ .07	.35	22	19	54.0	11	11.0	6	12	18	
VI.	Bury St. Edmunds (Westley) ..	1.83	+ .36	.41	14	22	52.0	17	...	...	...	...
VII.	Norwich (Brundall)	1.72	...	.36	27	22	53.4	16	11.5	8	12	21	
VIII.	Weymouth (Langton Herring) ..	3.37	+ 1.03	.57	8	26	50.0	17c	14.0	5	10	...	
IX.	Torquay (Cary Green)	4.49	...	.51	8	26	53.1	11	19.4	6, 7	9	11	
X.	Polapit Tamar [Launceston]..	4.19	+ 1.17	.60	10	22	56.5	11	16.0	7	4	13	
XI.	Stroud (Upfield)	2.55	+ .35	.29	9, 19	25	52.0	17	15.0	5	11	...	
XII.	Church Stretton (Woolstaston) ..	3.02	+ .86	.43	8	26	49.5	11d	8.0	6	13	18	
XIII.	Tenbury (Orleton)	2.86	+ .72	.35	4	18	55.0	11	5.5	6	11	16	
XIV.	Leicester (Barkby)	1.32	— .44	.15	30	23	53.0	11	7.0	5	14	23	
XV.	Boston	1.66	+ .27	.25	14	20	50.0	12e	12.0	6	...	...
XVI.	Hesley Hall [Tickhill]	1.41	— .36	.27	17	20	53.0	26	— 0.2	6	13	...	
XVII.	Manchester (Plymouth Grove) ..	2.51	+ .05	.26	28	23	54.0	11	13.0	5	12	15	
XVIII.	Wetherby (Ribston Hall) ..	2.31	+ .42	.33	10a	15	...	...	...	...	...	...
XIX.	Skipton (Arncliffe)	9.70	+ 4.06	.33	15	28	...	...	...	...	...	...
XX.	Hull (Pearson Park)	1.45	— .32	.21	17	19	52.0	27	10.0	6, 7	17	18	
XXI.	Newcastle (Town Moor)	1.47	— .34	.18	1	20	...	...	...	...	...	...
XXII.	Borrowdale (Seathwaite)	21.46	+ 9.28	.436	26	25	...	...	...	...	...	...
XXIII.	Cardiff (Ely)	3.45	+ .16	.46	15	23	...	...	...	...	...	...
XXIV.	Haverfordwest	6.48	+ 2.06	.70	12	25	51.9	11	15.0	7	11	16	
XXV.	Aberystwith, Gogerddan	3.43	— .10	.65	21	19	52.0	10	14.0	5	12	...	
XXVI.	Llandudno	3.02	+ .74	.48	10b	23	57.4	16	15.0	6	8	...	
XXVII.	Cargen [Dumfries]	6.00	+ 2.23	.84	29	22	51.2	11	6.8	6	14	...	
XXVIII.	Jedburgh (Sunnyside)	2.53	+ .81	.70	27	13	51.0	13	1.0	7	13	...	
XXIX.	Old Cumnock	4.62	+ .63	.78	27	24	...	...	...	...	...	...
XXX.	Lochgilphead (Kilmory)	9.32	+ 3.18	.90	26	26	...	...	20.0	1, 6	16	...	
XXXI.	Mull (Quinish)	6.74	+ 1.07	1.06	15	24	...	...	...	...	...	...
XXXII.	Loch Leven Sluices	6.20	+ 3.30	1.00	22	16	...	...	...	...	...	...
XXXIII.	Dundee (Eastern Necropolis) ..	3.15	+ 1.18	.50	30	22	50.0	16	6.2	7	17	...	
XXXIV.	Braemar	6.37	+ 3.68	.99	29	24	46.3	11	— 4.0	6	20	26	
XXXV.	Aberdeen (Cranford)	2.51	...	.42	29	23	48.0	16f	6.0	6	17	...	
XXXVI.	Strathconan [Beaully]	7.35	+ 2.47	1.32	27	13	...	...	...	...	...	...
XXXVII.	Glencarron Lodge	11.03	...	1.75	26	24	...	...	...	...	...	...
XXXVIII.	Cawdor [Nairn]	2.40	+ .23	.36	25	22	...	...	...	...	...	...
XXXIX.	Dunrobin	2.98	+ .52	.41	26	18	50.0	24	22.0	7	17	...	
XL.	S. Ronaldsay (Roeberry)	3.33	+ .38	.26	22	28	48.0	13	26.0	5g	15	...	
XLI.	Darrynane Abbey	6.02	...	.85	8	26	...	...	...	...	...	...
XLII.	Waterford (Brook Lodge)	5.98	+ 2.42	1.30	10	24	51.5	10	2.0	7	14	...	
XLIII.	O'Briensbridge (Ross)	4.32	...	.59	31	26	...	...	...	...	...	...
XLIV.	Carlow (Browne's Hill)	3.70	+ .80	.41	30	23	...	...	...	...	...	...
XLV.	Dublin (Fitz William Square) ..	2.84	+ .98	.33	12	23	54.7	11	18.6	7	7	17	
XLVI.	Ballinasloe	4.48	+ 1.40	.55	16	25	53.0	23	15.0	6, 7	15	...	
XLVII.	Clifden (Kylemore)	9.89	...	1.12	15	24	...	...	...	...	...	...
XLVIII.	Waringstown	3.40	+ .75	.34	27	23	54.0	10	0.0	5	20	23	
XLIX.	Londonderry (Creggan Res.) ..	5.41	+ 1.99	.48	12	24	...	...	...	...	...	...
L.	Omagh (Edenfel)	6.64	+ 3.62	.72	26	24	50.0	10	8.0	6	17	21	

a And 18. b And 30. c And 27. d And 16. e And 17. f And 21, 24, 26. g And 6, 22.

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

METEOROLOGICAL NOTES ON JANUARY, 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.—January was a wet month, with a very severe snap of cold in the early part, the thermometer indicating a lower temp. on the 5th and 6th than has been recorded at this station, with the exception of December 25th, 1860, and January 17th, 1881.

ADDINGTON.—Severe frost from 1st to 8th, but very little afterwards. The 4th was a bitterly cold day, with high wind and frost, and the 5th was remarkable for its very low max. (15°), the min. of the month (11°) really occurring on the evening of that day. S fell on the 4th and 5th, and on the evening of the 31st.

BURY ST. EDMUNDS.—R or S fell in small quantities on 22 days. A sharp spell of cold occurred from the 3rd to the 9th, the max. on the 5th being 18° , and the min. on 6th (exposed ther.) 3° . The rest of the month was comparatively mild. S daily from 2nd to 6th.

NORWICH, BRUNDALL.—January was remarkable for its extreme variations of temperature, the first week giving lower readings than are sometimes recorded in our most severe winters. On each of the four nights 5th to 8th inclusive the temp. fell below 20° in the screen. The remainder of the month was mild, and the weather of the cyclonic type, the result being that the mean temp. of the month (mean of max. and min.) was $37^{\circ}\cdot3$, or in close agreement with the average. Snowdrops and winter aconites in full flower before the close of the month.

LANGTON HERRING.—A most unsettled month. The weather was very severe on the first nine days; for five days (3rd to 7th inclusive) it did not cease freezing, and the intense cold on the 5th was quite exceptional, the max. between sunrise and sunset being only 17° ; the temp. fell to 16° at 4 p.m., rose to 20° by 9 p.m., and to 23° by 9 a.m. on the 6th; the 5th was the coldest day for 22 years. From the 10th to the 22nd it was mild and very damp. From the 23rd to the end of the month the temp. was very variable. The mean for the month at 9 a.m. ($37^{\circ}\cdot9$) is just 1° below the average of 23 years. Fogs on 4 days. L on the 30th.

TORQUAY, CARY GREEN.—S on the 4th, 5th, and 6th, about 12 inches deep.

POLAPIT TAMAR.—Very cold during the first eight days, the ther. on grass on the morning of the 7th reading $4^{\circ}\cdot5$ above zero, the lowest observed here during the past eight-and-a-half years. Altogether unusually wet and stormy. T on 28th. H on 31st.

STROUD, UPFIELD.—A slight fall of S on the 2nd; on the 4th, bitter easterly gale with S at times, and S on the 5th and 6th; S.W. gales on 27th and 30th, and S. gale on 29th. The meteor of the 25th was seen by few in this neighbourhood.

WOOLSTASTON.—A rather wet month. S fell on 6 days. The first 9 days were bitterly cold, the 5th exceptionally so, the max. temp. being $18^{\circ}\cdot5$; the coldest day remembered here. This was succeeded by some days of warm spring-like weather, but the latter part of the month was again cold. Mean temp. $36^{\circ}\cdot7$. Violent H on the 29th.

LEICESTER, BARKBY.—A fine month on the whole; sharp frost in the first week. The R fell in small quantities, mostly at night, and more is needed. Very strong winds for many days. Mean temp. $36^{\circ}\cdot3$.

MANCHESTER.—The first day was spring-like, then followed bitterly cold weather, with very low temp. on the 5th. Spring-like weather prevailed from 10th to 13th. Thick fog on the 23rd up to 10 or 11 a.m. From 24th to the end of the month very unsettled. Mean temp. 38° .

HULL, PEARSON PARK.—Sleet on 1st and 24th. Showers of H and S on 2nd, 3rd and 4th. S on 5th and 6th. Fogs on 7th, 8th and 31st. Stormy on 26th, 27th and 29th.

SEATHWAITE.—Falls of R exceeding an inch occurred on 8 days. S on 5th, 9th, and 28th to 30th. H on the 26th.

WALES.

HAVERFORDWEST.—The first eight days of the month were exceptionally severe, partly owing to the dryness of the air and the severity of the furious easterly gale, which blew with exceptional violence from the 4th to the 6th, the sky all the time covered with a black pall of cloud, notwithstanding which the mercury did not rise higher than 22° during the 5th; on the 6th, at 3 p.m., a regular blizzard occurred, 4 inches of S falling in an hour. The S in several places near the coast and to the south of the county varied from 5 to 8 inches in depth. The remainder of the month was continuously wet, stormy and mild, prevailing winds S., S.W. and W.

GOGERDDAN.—Very stormy and changeable throughout the month; very little sunshine.

SCOTLAND.

CARGEN.—A very unsettled, stormy month; very marked and extreme fluctuation of pressure. A remarkable lunar halo was observed on the 20th, two distinct rings with marked prismatic colours. S on 8th.

JEDBURGH.—In the early part of the month the weather was mild and occasionally agreeable; towards the close it was cold with storms of wind and R, and low temp. and pressure.

OLD CUMNOCK.—Stormy on 11th and 12th, S on 2nd, 3rd, 5th, 25th to 28th, and 31st.

MULL QUINISH.—A wild and stormy month with continual gales from all quarters, and much S and R.

BRAEMAR.—On 6th the temp. in shade fell to $-4^{\circ}0$, and on grass to -9° . The same temp. occurred on the same date in 1893.

ROEBERRY.—A very coarse unsettled month throughout; mean temp. $37^{\circ}7$.

IRELAND.

DARRYNANE ABBEY.—Very hard frost from 4th to 7th. Aurora on 9th. The rest of the month very wild and changeable. Heavy H shower on 28th. S on 6th.

WATERFORD, BROOK LODGE.—A very wild, cold month. S on 5 days. H on 17th. Gale from S.W. on 11th, and from S. on 19th. Mean temp. $39^{\circ}8$.

O'BRIENSBIDGE, ROSS.—A decidedly wintry and unpleasant month; R every day after the first week, with gales of wind chiefly from S.E., at times violent. L on 28th and 29th. S, H, and sleet at the end of the month, with frost on the last three days.

DUBLIN.—The month opened with a spell of easterly winds and intensely cold weather, but ultimately proved wet, open, and stormy, with an almost uninterrupted prevalence of S.W. and W. winds. Mean temp. $41^{\circ}0$, slightly below the average. Lunar coronæ were seen on the 16th and 17th. Foggy on three days. High winds on 21 days, reaching the force of a gale on 9 days. H fell on 7 days, and S or sleet on 7 days. Temp. exceeded 50° in the screen on 13 days, and fell below 32° on only 7 nights. L on the 7th.

WARINGTOWN.—An intense frost was registered on the morning of the 6th; no sign of it on the previous night, which seemed to promise heavy S; the extreme cold lasted only a few hours in the early morning, but the effect on shrubs was most disastrous; herbaceous plants escaped, being covered with S. The lowest temp. previously registered were $-1^{\circ}0$ on January 21st, 1881; 6° on December 23rd, 1870; 2° on January 2nd, 1867; 7° on December 24th, 1860.

OMAGH, EDENFEL.—The month commenced in fine, dry, and frosty weather preparatory to the S which fell to an average depth of 6 inches on the 4th and 5th, accompanied and followed by temperatures falling as low as 8° at 10 a.m. on 6th (from 15° at 9 a.m. the same morning). On the 8th the frost and S disappeared in a mild spell and a rainfall that increased in persistence and amount to the end of the month, varied by sleet, S, H, and high winds and weather of extreme rawness and severity. The wettest January in 30 years except 1877.