

# SYMONS'S MONTHLY METEOROLOGICAL MAGAZINE.

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CCCXIV.]

MARCH, 1892.

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

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## THE SEVERE FROST OF FEBRUARY, 1892.

There is usually considerable difficulty in dealing with an intense frost. It is generally very local, not extending more than perhaps 20 miles by 20 miles—say 400 square miles, and in such an area the probability is that there will not be more than one station provided with verified instruments mounted in a proper screen; very often there is no such station, and then the question arises, is it possible to utilize the miscellaneous records of which plenty are usually forthcoming, but as to which there is uncertainty: (1) if the thermometers ever were accurate; (2) if they have remained so, or have sunk  $5^{\circ}$  or  $10^{\circ}$  by spirit evaporating to the top of the tube, if they are of Rutherford's pattern; or, if the mercury has been shaken out of place, if they are of Six's; (3) if their situation is such as to give even approximately correct results.

In dealing with the recent severe frost we have had these difficulties to meet, and we have divided our summaries, giving first in the table on the following page the actual minimum for the four cold days at all the stations from which we have heard, and at which verified instruments are duly mounted in Stevenson screens. Unfortunately there is yet another source of confusion, in that apparently some observers either read their minimum thermometers at 9 p.m. instead of at 9 a.m., or else they reset them at the latter hour. However, this table contains some of the best observations obtainable, and the results agree in showing that there were two days of very low temperature, and that the locality on the two days differed.

On the morning of February 17th the greatest cold was near the centre of England, the reading in the Stevenson screen at Loughborough going slightly below zero ( $-0^{\circ}5$  F.) On the morning of the 19th it was even colder, but in another part of the country viz.: in the N. of England and the S. of Scotland; readings below zero in Stevenson's stands were recorded as follows: Hurworth Grange, Darlington  $-1^{\circ}0$  F.; Newton Reigny, Penrith  $-2^{\circ}0$  F.; and Norton, Malton  $-6^{\circ}2$  F. ( $-21^{\circ}2$  C.)

*Minima in Stevenson Screens of 20° and below.*

STATION.	OBSERVER.	FEBRUARY.			
		17th.	18th.	19th.	20th.
Manchester (Oldham Road) ...	Dr. Tatham .....	20·9	23·4	20·0	25·2
London (Camden Square) .....	G. J. Symons .....	19·4	23·6	21·1	28·4
Yarmouth .....	Met. Office .....	23	23	19	28
Oxford .....	" .....	17	17	19	25
Winchfield (Strathfield Turgiss) ..	Rev. C. H. Griffith ..	18·4	19·0	22·8	27·4
Doncaster (Wadworth Hall) ...	Rev. J. C. Ross ...	20	25	17	28·5
Ardrossan .....	Met. Office .....	29	25	16	19
Worksop (Hodsock Priory) .....	H. Mellish .....	15·2	25·3	14·7	19·1
Durham (Ushaw Coll.) .....	Rev. J. Corbishley.	16·0	19·0	14·0	21·0
Belper .....	J. Hunter .....	12·2	16·8	12·1	19·5
Shields .....	Met. Office .....	19	24	12	14
Cambridge ...	" .....	13	15	12	21
Winslow (Addington) .....	J. Mathison .....	11	18	11	25
Nottingham (Strelley) ...	T. L. K. Edge .....	12·1	16·2	10·1	20·3
" (Castle) .....	A. Brown .....	9·7	14·7	13·0	21·0
Southwell (Grant Ho.) .....	T. L. K. Edge .....	12·4	21·6	9·3	20·4
Cheltenham (Southam Villa) ...	R. Tyrer .....	14·0	9·0	22·8	29·0
Bedale (Aysgarth) .....	Rev. F. W. Stow... ..	12·2	18·0	7·7	25·4
York .....	Met. Office .....	17	20	7	10
Driffield ...	J. Lovel .....	19·7	24·4	6·2	19·9
Keswick (The Beeches) .....	T. Paulin .....	16·3	17·0	6·0	18·5
Ketton [Stamford] .....	F. Coventry .....	0	9	0	19
Loughborough (Forest Road) ...	W. Berridge . .....	-0·5	2·0	4·4	11·0
Darlington (Hurworth Grange).	J. E. Backhouse ...	8·0	17·0	-1·0	4·0
Penrith (Newton Reigny) .....	T. G. Benn .....	13·0	14·9	-2·0	4·8
Malton (Norton) .....	E. K. Spiegelhalter ..	13·0	25·0	-6·2	25·0

We next proceed to collect some miscellaneous notes from the vicinity of these two centres, in order to see how far they are corroborated, but it must be distinctly understood that as to the accuracy or otherwise of these supplementary readings, we cannot speak. Some we know to be good, though not complying with the conditions requisite for insertion in the previous table. For example, the Rev. G. H. Mullins, of Uppingham, is a very careful observer, but has not a Stevenson screen; Uppingham is on a hill 485 ft. above sea. The nearest stations to Uppingham are Ketton, 130 ft. above sea, and 8 miles E.N.E.; and Loughborough, 169 ft. above sea and 24 miles N.W. The figures are very remarkable.

	17th.	18th.	19th.	20th.	Mean.
Uppingham ..	11·4	19·1	16·3	27·7	—
Ketton .....	0·0	9·0	0·0	19·0	—
Loughborough .....	-0·5	2·0	4·4	11·0	—
Uppingham + Ketton...	11·4	10·1	16·3	8·7	11·6
Uppingham + Loughborough.	11·9	17·1	11·9	16·7	14·4

We neither suggest nor believe that there is anything wrong with

the Uppingham record ; it could not go in the general table because Mr. Mullins says that the stand "is not a Stevenson, but a Glaisher, enclosed front and sides with louvres." From this description we doubt whether the records differ  $0^{\circ} 2$  from what they would have been in a Stevenson. Wherefore then this excess of about  $13^{\circ} 0$  above the other two stations ? Because Uppingham is on a hill, off which the heavy cold air would flow like so much water, and Ketton and Loughborough are nearly 350 ft. lower. This, however, is rather a digression.

*Low Temperatures in and around Loughborough on Feb. 17th.*

(S = Stevenson Screen).

Station.	Authority.	Distance from Loughborough.	Recorded Min.
Loughborough (Forest Road) ..	W. Berridge .....	0	-0.5 S
"    (Southfield) ...	W. B. Paget .....	0 miles S.	4.0 S
"    (NanPantanHill)	E. H. Warner .....	2 " S.	11.0 S
Quorndon .....	A. Hamshere .....	3 " S.S.E.	-7.0
Beau Manor Park Gardens.....	" " .....	3 " S.	-5.0
Swithland .....	" " .....	4 " S.	-6.0
Thurcaston .....	Rev. T. A. Preston..	6 " S.S.E.	6.4
Barkby .....	Rev. N. Pochin .....	8 " S.E.	-11.0
Rotherby Hall .....	J. Hames .....	8 " E.S.E.	0.0
Melton (Egerton Lodge).....	A. V. Pryor .....	12 " E.	-6.0
Nottingham .....	A. Brown.....	12 " N.E.	9.7 S
Melton .....	A. V. Pryor .....	13 " E.	-9.0
Strelley .....	T. L. K. Edge... ..	14 " N.	12.1 S
Willington .....	Rev. G. A. Smallwood	15 " N.W.	4.0
Grantham (Denton Ho.) .....	W. E. Welby-Gregory	20 " E.N.E.	-4.0
Hoar Cross .....	F. W. Lycett .....	22 " W.	6.0
Uppingham .....	Rev. G. H. Mullins..	24 " S.E.	11.4
Ketton .....	F. Coventry.....	30 miles E.S.E.	0.0 S

*Other Low Temperatures on Feb. 17th.*

Essex.....	Harlow (Sheering).....	Rev. Canon Hill.....	10.0
Durham .....	Whorlton .....	Miss Dodgson.....	7.0
Northampton .....	Easton Maudit .....	Rev. H. A. Boys .. ..	7.5
Stafford .....	Tean .....	Rev. G. T. Ryves .....	6.0

Correspondence with the observer at Barkby as to the extremely low reading of  $-11^{\circ}$  elicited the following facts:—The thermometer is a Rutherford minimum by Casella, and had a Kew certificate, which is mislaid, but in melting snow for one hour on March 10th stood at  $32^{\circ} 1$  ; there was not a particle of spirit detached from the main column ; it was mounted on a screen nearly resembling a Glaisher stand, but was only 2 ft. 3 in. above ground. The station is close to a brook, and therefore at the bottom of a valley.

The Nottingham observations are not only influenced by the proximity of the town, but also by being made on the precipitous hill on which the castle stands, about 100 feet above the river. With the Uppingham ones we have already dealt ; therefore, from the foregoing, it is probable that a temperature below zero prevailed in the valleys of Rutland, of North Leicestershire and South Nottinghamshire.

*Minima below 8° on February 19th.*

S = Stevenson Screen.

County.	Station.	Observer.	Min.
York N.R. ...	Bedale, (Aysgarth) .....	Rev. F. W. Stow...	7·7 S
" .....	York .....	Met. Office.....	7·0 S
Northampton	Easton Maudit .....	Rev. H. A. Boys ...	7·0
Suffolk .....	Bury (Westley) .....	R. Burrell .....	7·0
Cambridge ...	Fulbourne Asylum .....	Dr. Crallan .....	7·0
York E.R. ...	Driffeld .....	J. Lovel .....	6·2 S
Cumberland...	Keswick (The Beeches) .....	T. Paulin .....	6·0 S
Northumber'd	Unthank .....	Rev. D. Brown.....	6·0
Lincoln.....	Bucknall .....	W. Carter .....	6·0
" .....	Hemingby .....	Rev. E. S. Bengough	5·2
Lancashire ...	Esthwaite .....	Maj. Alcock Beck...	5·1
Staffordshire	Teau .....	Rev. G. T. Ryves...	5·0
Leicester .....	Loughborough .....	W. Berridge .....	4·4 S
Derby .....	Willington .....	Rev G. A. Smallwood	4·0
Rutland .....	Ketton [Stamford] .....	F. Coventry .....	0·0 S
Durham .....	Darlington (Hurworth Grange)	J. E. Backhouse ...	-1·0 S
Cumberland...	Penrith (Newton Reigny) .....	T. G. Benn .....	-2·0
Durham .....	Sunderland (Haswell).....	C. Portsmouth .....	-3·0
York N.R. ...	Malton (On the Hill) .....	Messrs. Slater .....	-4·0
" .....	" (Norton) .....	E. K. Spiegelhalter	-6·2 S
" .....	" (The Brows) .....	Yorkshire Post .....	-9·0

Here, as in the previous case, there can be no question as to the minimum having been below zero over a large extent of the country.

The frost on this day was also very severe in the South of Scotland; the following are temperatures of 5° or less :—

Selkirk ...	The Hangingshaw .....	Miss Johnstone.....	5·0
Renfrew .....	Glasgow (Queen's Park).....	D. McLellan .....	5·0
Peebles.....	N. Esk Reservoir .....	W. Tod .....	4·0
Roxburgh ..	Melrose (Abbey Gate) .....	A. B. Dodds .....	-5·5
" .....	Jedburgh (Sunnyside) .....	G. Hilson .....	-15·0

There are other points of interest—*e.g.*, the rarity of such intense frost so late in the year. At Camden-square, London, a Glaisher stand has been in continuous use since 1858; the following are the only February minima below 20° in the 33 years :—

Year .....	1864 .....	1865 .....	1886 .....	1888 .....	1892
Date .....	10th .....	15th .....	10th .....	2nd .....	17th
Temp. ...	18·9 .....	15·4 .....	19·4 .....	19·1 .....	17·5

Similarly at Brighton the min. was reported by Mr. Phillips as 20°·5 on the 17th, and on searching the tables (compiled by the late Mr. Sawyer), of Brighton temperatures for 43 years, he finds only three cases of 19°, one of 18°, and one (Feb. 17th, 1855) of 16°.

The other point was the excessive amount of terrestrial radiation, where the grass minimum thermometers were kept clear of snow. At Newton Reigny, where Mr. Benn's min. in the Stevenson went down to -2°·0, that on the grass fell to -11°·2. That, difference of

9°·2 was, however, nothing compared with the 17°·9, 21°·5 and 22°·0, reported in the following letters:—

*To the Editor of the Meteorological Magazine.*

SIR,—The following readings may be of interest, both in regard to the unusual amount of terrestrial radiation, and the evident importance of discriminating between the results from sensitive and non-sensitive minimum thermometers, the difference between which is found to become chiefly apparent in severe frosts. Both our instruments were constructed by Mr. Hicks, were verified at Kew Observatory, and have recently been examined for change of zero.

*Minima registered on surface of snow, which covered the ground to a depth of about 2·5 inches. (Snow firm, bulbs lying well upon it.)*

Night.	"Cylinder Jacket."	Spherical Bulb.	In Stevenson Screen.
February 17-18	..... 3·2	..... 4·6	..... 21·1
„ 18-19	..... -0·6	..... 4·8	..... 12·5

Similar differences between the two grass thers. (in fact up to 4°) were recorded in January.

The index in the tube of the spherical bulb thermometer runs freely, and is not left by the spirit, even if the bulb end be elevated considerably, and the instrument then placed in a low temperature. No condensed spirit exists in the upper part of the tube of the "cylinder jacket." Hence the observed differences may be accepted as *bona-fide* ones.—Yours very truly,

JOSEPH BAXENDELL.

*The Observatory, Birkdale, Southport, Feb. 22nd, 1892.*

*To the Editor of the Meteorological Magazine.*

SIR,—It may interest you to know that an exceedingly low temperature was registered in this neighbourhood on the night of Thursday, February 18th. My own observations are corroborated by those of a neighbour, Dr. Parker, of Bennington Lodge. I enclose the temp. values.

Yours truly,

C. WIGAN HARVEY.

*Throcking Rectory, Buntingford, 23rd Feb., 1892.*

*Night of Thursday, February, 18th, 1892.*

Throcking Rectory (484 ft.) .....	In shade..	16°·5	...	On grass...	-5°·0
Bennington Lodge (408 ft.) .....	„	20°·5	...	„	-1°·5

## TOWN FOGS.

*To the Editor of the Meteorological Magazine.*

SIR,—The results of your enquiry into the prevalence of fog at Camden Square during the 20 years 1871-90, supply ample confirmation of the facts given in my paper of December last, in so far as they relate to the growth of fog in London within recent years. On another point, however, they reveal a state of things widely differing from that shown by the official record, the average annual number of days of fog at Camden Square being considerably less than half the number set down in the Daily Weather Report. This discrepancy is so enormous, that I have been induced to look a little more closely into the matter, with a view to discovering some possible solution of the difficulty.

A portion of the discrepancy may doubtless be attributed to differences in the hours of observation at the two stations. The morning observation at Brixton is taken an hour earlier than that at Camden Square; and in the spring and autumn seasons, when a foggy morning often gives place to a fine day, it is quite certain that this difference, slight though it may appear, is one of no little importance. The addition of a number of morning fogs to the Camden Square record would doubtless be counterbalanced to some extent by the lateness of the evening observation at your own station as compared with that made in the south-west of London. It is, however, quite certain that fogs are more common in the early morning than they are in the evening, so that the balance would be largely in favour of the official reports. Another point of some importance has quite escaped your notice. In the discussion which followed the reading of my paper, it was distinctly stated that the 2 p.m. observations given in the Daily Weather Report had been used, in addition to those for 8 a.m. and 6 p.m. The inclusion of afternoon fogs of course serves to increase the number given in my paper as compared with that recorded at Camden Square. In the year 1890 alone, there were six instances in which fog was prevalent at 2 p.m., and not at 8 a.m. or 6 p.m., a number which should without doubt, be added to your own record. Making every allowance, however, for the fact of the earlier morning observation, and including the fogs recorded at 2 p.m., it is quite evident that a large discrepancy between the two records has still to be accounted for.

In order to see whether Camden Square enjoys any immunities from the fogs which afflict other portions of the metropolis, I have examined the records made during the year 1890 at four other stations, viz., Old Street, the Gardens of the Royal Botanic Society, the Royal Observatory, Greenwich, and the Kew Observatory. Before giving the results of the comparison, it may, perhaps, be as well to say a few words as to the nature of the observations made at the four stations.

Old Street is, as you are doubtless aware, a climatological station in connection with the Royal Meteorological Society. Observations are made at 9 a.m. only, and although the form includes a column for "remarks," there is no space allotted to the weather prevailing at the hour the instruments are read. Experience shows that where an observer is not required to make an entry he is very apt to omit it altogether, and the Old Street record is certainly not overcrowded with information.

As regards the Botanic Society's returns, there are evidences of scrupulous care in the reading of the instrumental observations. The weather remarks are, however, entered with far less regard to scientific detail, the following being a fair specimen of a day's return—"dull, fresh morning, fine warm day, dull mild night." Excellent as this method of entry may be from a popular point of view, it certainly leaves much to be desired on the score of precision, and there can be no doubt that phenomena such as fog, which often prevail for only an hour or so at a time, may pass altogether without remark.

The observations I employed for Greenwich were those given on the last page of the Registrar-General's Weekly Return. They are, of course, made with great diligence, and supply an excellent record of the weather at that place. The observatory is, however, a long way from the more central parts of the metropolis, and as it stands 150 feet high, it is pretty clear that many ground fogs fail to reach it.

Kew Observatory from its low-lying situation, and its close proximity to the river, might naturally be thought to experience a maximum amount of fog. It is, however, quite outside the metropolis, so that while exposed to fog-producing influences of a natural order, it is well removed from the smoke and dust which operate so largely in the production of the "London particular." The Kew Observations, access to which has been kindly granted to me by the Meteorological Council, are made at five hours in the day, viz. : 10 a.m., noon, 2 p.m., 4 p.m. and 10 p.m. The earliest observation is therefore two hours later than that given in the Daily Weather Report, a difference in time which should make a very perceptible reduction in the number of fogs recorded.

The results of my enquiry as to the number of days on which fog occurred at each of the four urban or suburban stations during the year 1890, is :—

Old Street .....	27		Greenwich .....	39
Botanic Society's Gardens	25		Kew .....	68

Against which we have to set Camden Square with 29 and the Daily Weather Report with 65 days.

It will be seen, therefore, that at the two stations where the records are kept with palpable incompleteness the numbers agree very well with that at Camden Square. At Greenwich, where the record is good, but where the station is exposed to a minimum amount of fog, there were in 1890 39 days of fog, or 10 more than at Camden

Square. At Kew, where, taking all things into consideration, the results should be fairly comparable with those observed in the South-west of London, the number, was 68, or more than double that at Camden Square, and three more than those given in the Daily Weather Report.

The general conclusion of the whole matter seems to be that at Camden Square there is less fog than in some other parts of London. Whether the station is fairly representative of the metropolis as a whole, is of course another matter, and one which cannot be satisfactorily determined until we get the records from many other localities. For my own part, I very much question whether you would get a London jury to believe that, taking the whole year through, there are on an average only 24 days on which fog in one form or another is experienced in the metropolis.

It is very probable that among your London readers there are several who keep a systematic weather record, and as the material at my command has been all too scanty for an exhaustive discussion of the question, it is to be hoped that others will come forward and contribute to a more satisfactory solution of a difficulty you have vigorously, but very justly, described as "fairly staggering."

I am, Sir, yours faithfully,

FREDERICK J. BRODIE.

*Wandsworth Common, 2nd March, 1892.*

*To the Editor of the Meteorological Magazine.*

SIR,—I have read your article on "Town Fogs" in last month's *Meteorological Magazine* with great interest, but I must confess to being completely puzzled as to why Brixton and Westminster should be linked together in the table giving the number of foggy days. Surely the number of days on which fog occurred at those two places was not exactly the same. Any ordinary observer would suppose that fogs would be more frequent at Westminster than Brixton; how then is it possible to compare the number of foggy days at *two* places with those at *one* place?

Having resided on the north side of the Thames since 1865, I used to compare notes when there was a fog in town (to which I went nearly every day until 1883) with persons living on the south side; from these enquiries it seemed to me that the north side got much less fog than the south; as far as I could form an estimate probably *a third* less.

The reason of this I thought arose from the fact that winter fogs most often occur with a high barometer; a high barometer in the winter generally means wind somewhere between E. and N. or perhaps round to N.W.; such winds of course take the London smoke over towards the south side of the river. I am aware that with many fogs the wind may be nil, or almost nil, but it always seemed to me that it made it a difference in the density of the fog



from what point of the compass the wind *last* blew and also that a very gentle movement of the air is sufficient to clear a fog off from the windward side of London.—Yours truly,

J. W. SCOTT.

*Elleray, Etchingam Park, Finchley, March 5th.*

*To the Editor of the Meteorological Magazine.*

SIR,—In the article on “London Fogs” in your Magazine, I do not think you say anything about the prevailing wind. I have an idea, which I have not the means of verifying, that fogs prevail generally when the wind is E. or N.E. ; if so, this would account for Brixton and Westminster being more liable to them than Camden Town. I have for many years come from Richmond to the City and the fogs are usually more numerous, thicker, and worse between Clapham Junction and the Thames than on its northern side. I also think that I am much oftener delayed in my arrival at the office by fog, than one of my clerks who lives in the neighbourhood of Stamford Hill.—Yours very truly,

ARTHUR BREWIN.

*6a, Austin Friars, London. E.C., 18th February, 1892.*

[We regret a double mistake in the article in our last number. In the middle of page 5, October is printed twice in error for September.—ED.]

## REVIEWS.

*La radiation des Nuages supérieurs autour des minima barométriques.* Par H. E. HAMBERG. [*Bihang till K. Svenska vet. akad. handlingar, Band 17., Afd I.*] 8vo., Stockholm, 1891.—21 pages, 1 plate.

OUR readers may not all know what is meant by the radiation of the clouds—the word radiation having, unfortunately, two very different meanings. This memoir deals with those cases in which the clouds are *apparently* arranged like the lines of longitude on a globe, starting from one point on the horizon widening out at the zenith and converging to a point on the horizon exactly opposite to that whence they originally diverged.

There is a popular notion that these clouds are in some way related to auroræ, because they are not infrequently observed to radiate from near magnetic north ; but there is no reference to the subject in this paper, and the whole drift of the argument is opposed to the idea. Though we see from Table 1 that M. Hamberg himself quotes the direction as N.W.—S.E. (true) nearly twice as often as the average. He gives 479 instances, and groups them under eight headings N.—S., N.N.E.—S.S.W., and so on ; therefore if they were equally prevalent there should have been 60 instances for each, but for N.W.—S.E., there are 113.

However, as we have said, this point is quiet away from the drift of the paper, which is to show that by noting their direction and the clouds on the horizon, it is possible, without having any communica-

tion with any other station, to ascertain the direction in which the lowest barometric pressure is then existing—in fact, to form a rough idea of the general character of the system of isobars which prevails at the time—a great aid to weather forecasting if it can be done with certainty.

This is a study within the easy reach of anyone in this country, who would take the slight trouble of always noting the azimuth of the point of divergence; it might be merely by the compass points, N., N.N.E., N.E. and so on; but it would be still better if they were read off from an azimuth compass, corrected for variation, and entered with the precise time. On the following days, when the Daily Weather Reports were received, the line should be ruled on the map at the proper angle, and the relation of it to the baric minimum be read off.

A collection of records of this kind would, we believe, be of both interest and utility, and we do not think that anyone would be more glad of such help than M. Hamberg himself.

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*Annual Report of the Board of Regents of the Smithsonian Institution, . . . . to July, 1889.* Washington Government Printing Office, 1890. 8vo., xlvii.—815 pages.

SINCE the establishment of the U.S. Signal Office and the (later) regular issue of the *American Meteorological Journal*, the Smithsonian Institution has discontinued the issue of the excellent monographs upon meteorology, which used to appear in the "Contributions" and in the "Miscellaneous Collections."

The later issues of the Annual Reports have, however, contained some excellent papers, which we fear have hardly received the notice which they deserve, and would have obtained had they been issued separately, instead of in large volumes, in which they are nearly buried. For instance, many meteorologists are not aware that in the previous *Annual Report* for 1889 (*i.e.*, to July 1888), Prof. Cleveland Abbe gave a report upon "Recent Progress in Dynamic Meteorology," characterized by great thoroughness and as much clearness as is compatible with the rather abstruse nature of the subject—an altogether excellent paper of about 70 pages.

The present volume contains a very interesting report by Mr. G. E. Curtis, on the "Progress of Meteorology in 1889;" it is about the same length as Prof. Abbe's report in the previous volume, and is a very useful summary, although the multitude of subjects and papers which have to be noticed in it compels the occasional adoption of too great abbreviation. This is followed by a "Bibliography of Meteorology for 1889," by Mr. O. L. Fassig, of the Weather Bureau, which although far from perfect, contains about 500 entries. The meteorological articles in the volume close with a reprint of the capital lecture on "How Rain is Formed," delivered by Mr. H. F. Blanford, F.R.S., at the Hythe School of Musketry, Nov. 19th, 1888.

# THE MUNICH CONFERENCE.

*To the Editor of the Meteorological Magazine.*

SIR,—On p. 180 in the paragraph “Rain,” there is some confusion as to the amount of rain that should fall on any day, for that day to be counted as a day of rain. Is this amount 0·005 in., or 0·1 mm. ? For 0·1 mm. only equals 0·004 in. Or does it mean that in England and countries where the unit of length is 1 in., the amount is 0·005 in., and that in countries where the metrical system is in force the amount is 0·1 mm. ?

These remarks apply also to the numbers ·05 in. and 1 mm.

Yours truly,

T. W. BACKHOUSE.

# WHO WAS FIRMINUS?

*To the Editor of the Meteorological Magazine.*

SIR,—I enclose herewith a cutting from the *Bazaar* of February 26th, *re* Firminus.—Yours faithfully,

FRED. COVENTRY.

*Duddington, Stamford, Feb. 27th, 1892.*

OPUSCULA REPERTORII PRONOSTICON, 1415 (CELER ET AUDAX).—The title of the book runs, we think, as follows:—“*Firmini repertorium de Mutatione Æris*,” &c. The Paris edition (1539, folio) of this book was edited by Blereius, after the death of Firminus, who was an astrologer living at the end of the fifteenth century. Scarcely anything appears to be known about him.

[The information implied by the words “after the death of Firminus, who was an astrologer living at the end of the fifteenth century” is just what is wanted, but what is the evidence of these two facts—of his living at all, and of his dying before 1539. Ed.]

# A PREDICTION FULFILLED.

[On the return for February, which bears the post marks of Leicester, March 1st, and London, March 2nd, our correspondent wrote as under; heading it with the words, “Please insert this.” We should have done so, had the weather been as mild as May; we do so with ice, more than two inches thick on our evaporating tank. We are always ready to insert such notes when they are clear, definite, and signed. Ed.]

SIR,—On this day, March 1st, with no hesitation or indecision, I forecast considerable cold weather for at least a fortnight.

E. N. POCHIN.

*Barkby Vicarage, Leicester.*

## CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, AUGUST, 1891.

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 .....	75·8	14	43·2	30	68·2	52·7	53·6	79	126·2	39·3	4·75	22	7·1
Malta.....	97·8	7	67·8	23	88·5	71·1	67·5	69	150·6	59·5	·00	0	1·5
Cape of Good Hope ...	78·6	3	37·2	7	63·0	46·7	...	...	...	...	3·02	12	4·3
Mauritius.....	75·6	29	55·0	1	73·1	62·4	59·0	75	126·4	46·0	1·85	21	5·0
Calcutta .....	92·1	1	74·5	12	87·0	78·4	78·6	88	154·6	74·1	13·28	21	8·0
Bombay.....	86·9	30	74·0	5	84·7	77·6	75·6	84	139·0	71·4	6·94	29	9·0
Ceylon, Colombo .....	87·7	...	73·8	4	85·9	77·8	70·4	73	148·0	70·0	1·65	19	6·1
Melbourne.....	70·2	31	39·0	1	58·5	44·8	45·4	81	123·0	32·1	1·45	13	6·2
Adelaide .....	74·3	13	38·6	6	62·7	46·1	43·0	65	135·0	29·6	1·54	12	4·6
Tasmania, Hobart.....	65·7	15a	34·8	1	57·6	41·4	44·3	80	120·0	27·0	1·48	12	6·5
Wellington .....	...	...	...	...	...	...	...	...	...	...	...	...	...
Auckland .....	64·0	31	40·0	6	58·4	48·1	44·8	73	120·0	29·0	2·41	20	6·6
Jamaica, Kingston.....	96·7	20	70·0	29	91·2	74·5	71·8	73	...	...	3·08	...	...
Trinidad .....	92·0	4	65·0	3	89·3	71·3	72·7	76	154·0	61·0	4·26	25	...
Toronto .....	89·6	7	46·1	29	75·0	57·1	58·5	78	...	46·1	4·83	13	5·4
New Brunswick, Fredericton .....	83·5	6	40·5	20	74·3	54·2	58·6	77	...	...	3·44	14	5·5
Manitoba, Winnipeg ...	90·5	5	30·3	27	73·8	49·1	55·8	78	...	...	3·93	18	4·5
British Columbia, Esquimalt .....	78·8	30	46·0	31	68·3	51·3	56·1	91	...	...	1·47	7	3·8

" And 30.

## REMARKS.

MALTA.—Mean temp. 78°·7; mean hourly velocity of wind 7·0 miles. The temp. of the sea fell from 82°·5 to 81°·0. L seen on 23rd. J. SCOLES.

Mauritius.—Mean temp. of air 1°·2 below, dew point equal to, and rainfall ·32 in. below, their respective averages. Mean hourly velocity of wind 10·7 miles, or 1·6 below average; extremes, 26·2 on 20th and 0·0 on 30th; prevailing direction S.E. by E. T and L on 10th. C. MELDRUM, F.R.S.

Melbourne.—Mean temp. of air 1°·0, of dew point 3°·1, and humidity 7, above their respective averages. Rainfall ·38 in., and amount of cloud ·1, below their respective averages. Prevailing winds N. and S.W.; strong on 8 days. Heavy dews on 13 days. Dense fog on 7 days. H on the 19th; L on 9th and 22nd. Lunar halo on the 18th. R. L. J. ELLERY, F.R.S.

Adelaide.—Mean temp. 0°·4 above the average of 34 years. Rainfall ·82 in. below the average, making a total for the first 8 months of the year 8·05 in., or 1·33 in. below the previous lowest amount recorded for that period, and 7·08 in. below the average. The winter has been generally dry, especially over the southern districts of the Colony and to the N.W.; but the northern agricultural districts have fared much better. C. TODD, F.R.S.

Auckland.—A mild and cool month, with frequent slight showers, but little wind, and no heavy falls of rain. Mean temp. and rainfall both considerably below the average. T. F. CHEESEMAN.

# SUPPLEMENTARY TABLE OF RAINFALL, FEBRUARY, 1892.

[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.	1.18	XI.	Builth, Abergwessin Vic.	4.42
"	Birchington, Thor .....	2.31	"	Rhayader, Nantgwillt..	3.95
"	Brighton Prestonville Rd	1.28	"	Corwen, Rhug .....	2.29
"	Hailsham .....	2.04	"	Carnarvon, Cocksidia ..	1.69
"	Ryde, Thornbrough .....	1.16	"	I. of Man, Douglas .....	1.37
"	Alton, Ashdell .....	1.16	XII.	Stoneykirk, Ardwell Ho.	1.36
III.	Oxford, Magdalen Col...	.76	"	New Galloway, Glenlee	2.75
"	Banbury, Bloxham .....	.68	"	Melrose, Abbey Gate ..	2.34
"	Northampton, Sedgebrook	1.36	XIII.	N. Esk Res. [Penicuik]	3.50
"	Cambridge, Fulbourne..	2.72	"	Edinburgh, Blacket Pl..	2.00
"	Wisbech, Bank House..	2.03	XIV.	Glasgow, Queen's Park.	2.00
IV.	Southend .....	1.80	XV.	Islay, Gruinart School..	2.42
"	Harlow, Sheering .....	1.71	XVI.	Dollar .....	1.61
"	Rendlesham Hall .....	2.59	"	Balquhider, Stronvar..	2.88
"	Diss .....	2.35	"	Coupar Angus Station..	1.80
"	Swaffham .....	2.41	"	Dunkeld, Inver Braan ..	1.56
V.	Salisbury, Alderbury ...	1.38	"	Dalnaspidal H.R.S. ....	2.65
"	Bishop's Cannings .....	1.75	XVII.	Keith H.R.S. ....	1.18
"	Blandford, Whatcombe .	1.39	"	Forres H.R.S. ....	2.27
"	Ashburton, Holne Vic....	5.10	XVIII.	Fearn, Lower Pitkerrie..	1.85
"	Okehampton, Oaklands.	4.19	"	Loch Shiel, Glenaladale	5.35
"	Hartland Abbey .....	2.47	"	N. Uist. Loch Maddy ...	2.55
"	Lynmouth, Glenthorne.	3.70	"	Invergarry .....	2.81
"	Probus, Lamellyn .....	4.88	"	Aviemore H.R.S. ....	1.53
"	Wincanton, Stowell Rec.	2.22	"	Loch Ness, Drumnadrochit	2.39
"	Clevedon, Charleville ...	...	XIX.	Lairg H.R.S. ....	...
VI.	Bristol, Clifton .....	...	"	Scourie .....	5.02
"	Ross, The Graig .....	2.17	"	Watten H.R.S. ....	2.00
"	Wem, Clive Vicarage ...	1.73	XX.	Dunmanway, Coolkelure	4.55
"	Cheadle, The Heath Ho.	1.59	"	Fermoy, Gas Works ...	4.30
"	Worcester, Diglis Lock	1.04	"	Killarney, Woodlawn ...	...
"	Coventry, Coundon .....	.90	"	Tipperary, Henry Street	4.54
VII.	Ketton Hall [Stamford]	2.44	"	Limerick, Kilcornan ...	2.71
"	Grantham, Stainby .....	1.56	"	Ennis .....	2.32
"	Horncastle, Bucknall ...	1.54	"	Miltown Malbay .....	2.97
"	Worksop, Hodseck Priory	1.95	XXI.	Gorey, Courtown House	3.39
VIII.	Neston, Hinderton .....	1.40	"	Mullingar, Belvedere ...	2.61
"	Knutsford, Heathside...	1.98	"	Athlone, Twyford .....	2.32
"	Lancaster .....	1.56	"	Longford, Currygrane...	1.74
"	Broughton-in-Furness..	2.20	XXII.	Galway, Queen's Coll...	1.92
IX.	Ripon, Mickley .....	2.92	"	Crossmolina, Enniscoe..	2.46
"	Scarborough, West Bank	2.13	"	Collooney, Markree Obs.	2.32
"	East Layton [Darlington]	2.30	"	Ballinamore, Lawderdale	2.43
"	Middleton, Mickleton..	4.15	XXIII.	Lough Sheelin, Arley ..	2.23
X.	Haltwhistle, Unthank..	2.38	"	Warrenpoint .....	1.89
"	Bamburgh .....	1.68	"	Seaforde .....	1.61
"	Newton Reigney .....	1.99	"	Belfast, New Barnsley..	1.63
XI.	Llanfrechfa Grange .....	2.57	"	Bushmills, Dundarave...	2.15
"	Llandovery .....	3.12	"	Stewartstown .....	2.01
"	Castle Malgwyn .....	2.05	"	Buncrana .....	...



## FEBRUARY, 1892.

Div.	STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL.						Days on which ".01 or more fell.	TEMPERATURE.						In shade.
		Total Fall.	Difference from average 1880-9.	Greatest Fall in 24 hours		Deg.	Date		Max.		Min.		Deg.	Date	
				Dpth	Date				Deg.	Date					
											inches.	in.			
I.	London (Camden Square) ...	1.62	— .26	.43	15	17	53.0	7	17.5	17	8				
II.	Maidstone (Hunton Court)...	1.67	— .13	.31	17	17	...	...	...	...	...				
III.	Strathfield Turgiss .....	1.28	— .72	.22	20	16	53.3	25	18.4	17	8				
III.	Hitchin .....	1.47	— .28	.29	16	17	51.0	7, 11	8.0	18	13				
IV.	Winslow (Addington) .....	1.01	— 1.15	.16	20	17	56.0	7	11.0	17	12				
IV.	Bury St. Edmunds (Westley)	2.61	+ 1.05	.58	8	15	52.0	7	7.0	19	...				
V.	Norwich (Cossey) .....	1.84	+ .25	.38	21	15	...	...	...	...	...				
V.	Weymouth (Langton Herring)	1.25	— 1.35	.47	19	15	55.0	...	20.0	17	10				
"	Torquay, Babbacombe .....	2.27	— .80	.57	18	17	53.8	8, 9	21.3	18	4				
"	Bodmin (Fore Street) .....	4.71	— .28	.97	18	22	...	...	...	...	...				
VI.	Stroud (Upfield) .....	1.27	— 1.29	.45	20	17	52.0	7	20.0	16	13				
"	Church Stretton (Woolstaston)	1.66	— .79	.30	22	20	53.0	7	11.5	17	12				
"	Tenbury (Orleton) .....	1.53	— .95	.31	20	17	55.0	7	13.5	19	11				
VII.	Leicester (Barkby) .....	2.52	+ .71	.94	15	17	56.0	7	—11.0	16	17				
"	Boston .....	1.91	+ .23	.34	7	13	58.0	11	12.0	17	15				
"	Hesley Hall [Tickhill] .....	1.95	+ .45	.65	14	17	54.0	7	17.0	19	11				
VIII.	Manchester (Plymouth Grove)	1.66	— .39	.32	2	14	52.0	25	16.0	18	8				
IX.	Wetherby (Ribston Hall) ...	.96	— .62	.41	21	5	...	...	...	...	...				
"	Skipton (Arneliffe) .....	4.61	— .08	.83	19	16	51.0	12	9.0	19	9				
"	Hull (Pearson Park) .....	1.93	+ .13	.35	14	22	54.0	12	12.0	19	10				
X.	Newcastle (Town Moor) .....	2.81	+ 1.41	.75	14	20	...	...	...	...	...				
XI.	Borrowdale (Seathwaite) .....	5.15	+ 7.49	.93	7	17	...	...	...	...	...				
XI.	Cardiff (Ely) .....	2.48	— .71	.40	7	16	...	...	...	...	...				
"	Haverfordwest .....	3.16	— .96	.42	23	23	51.0	8	18.5	17	9				
"	Aberystwith, Gogerddan .....	2.85	— .41	.51	7	15	55.0	26	14.0	16	17				
XII.	Llandudno .....	1.53	— .39	.26	7	13	53.0	26	22.6	19	6				
"	Cargen [Dumfries] .....	1.30	— 2.35	.26	20	10	53.6	12	6.8	19	13				
XIV.	Jedburgh (Sunnyside) .....	2.46	+ .95	...	...	12	53.0	9	—15.0	19	12				
XV.	Old Cumnock .....	2.27	— 1.23	.36	2	17	...	...	...	...	...				
"	Lochgilphed (Kilmory) .....	3.05	— 2.14	.84	7	11	...	...	9.0	18	13				
"	Oban (Craigvarren) .....	1.75	...	.52	7	15	48.9	23	18.2	20	8				
"	Mull (Quinish) .....	...	...	...	...	...	...	...	...	...	...				
XVI.	Loch Leven Sluices .....	2.30	— .45	.60	15	11	...	...	...	...	...				
"	Dundee (Eastern Necropolis)	2.10	— .00	.60	21	9	54.9	12	16.3	19	12				
XVII.	Braemar .....	2.38	— .98	.77	21	20	49.2	9	—2.0	19	19				
"	Aberdeen (Cranford) .....	1.92	...	.43	21	24	56.0	11	12.0	19	11				
XVIII.	Strome Ferry .....	2.72	— 3.01	.50	1	15	...	...	...	...	...				
"	Cawdor [Nairn] .....	2.32	+ .09	.45	14	18	...	...	...	...	...				
XIX.	Dunrobin .....	2.95	+ .86	.44	15	20	52.0	9	23.0	19	13				
"	S. Ronaldsay (Roeberry) .....	3.27	+ .63	.55	6	24	47.0	10	23.0	19	13				
XX.	Darrynane Abbey .....	3.18	...	.53	20	21	...	...	...	...	...				
"	Waterford (Brook Lodge) ...	3.22	— .86	.87	20	13	55.0	7	21.0	16	6				
XXI.	O'Briensbridge (Ross) .....	2.53	...	.41	20	17	54.0	11	26.0	19	7				
"	Carlow (Browne's Hill) .....	3.65	+ .57	1.10	19	20	...	...	...	...	...				
"	Dublin (Fitz William Square)	2.12	— .23	.53	20	19	54.6	7	26.1	17	5				
XXII.	Ballinasloe .....	2.17	— .61	.49	7	15	48.0	7, 9	21.0	19	13				
"	Clifden (Kylemore) .....	...	...	...	...	...	...	...	...	...	...				
XXIII.	Waringstown .....	1.91	— .54	.39	1	17	58.0	6	16.0	19	13				
"	Londonderry (Creggan Res.) ..	2.32	— .71	.44	2	21	...	...	...	...	...				
"	Omagh (Edenfel) .....	1.60	— 1.09	.37	2	21	50.0	7, 9	20.0	18	11				

a And 19.      b And 17.

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

# METEOROLOGICAL NOTES ON FEBRUARY, 1892.

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.—A dull cold month, especially about the 17th. Vegetation very backward. First wild primrose on 10th; brimstone butterfly flying on 13th; daisy in flower on 25th.

HITCHIN.—The min. temp. on 18th  $8^{\circ}0$ , is greatest cold recorded since February, 1855.

ADDINGTON.—From the 1st to the 11th moderately mild; severe frost from 16th to 20th, then much milder until the 25th, and colder again from thence until the end. R fell on a good many days, but never in large quantities.

BURY ST. EDMUNDS, WESTLEY.—The month was remarkable for the very cold period from 16th to 21st. S on 14th, 15th, 17th and 19th.

LANGTON HERRING.—The mean temp. at 9 a.m. was  $0^{\circ}4$  below the average of 20 years. The 16th was a bitterly cold day; the min. temp. on the 17th was  $20^{\circ}$ , and the same temp. occurred on February 25th, 1888, but none lower has been observed in the last 20 years. Fogs on 6th and 16th.

TORQUAY, BABBACOMBE.—A rather dry, but showery month, with low bar, average temp.; more wet days and S.E. wind than usual, and large variations of temp. and pressure. Showery from 1st to 10th, and 14th to 27th. No R gauged in the 7 days, 7th to 13th or on the last 4 days. Dull on 11th, 14th and 27th; fine and sunny on 21st. Cold on 2nd and 3rd, from 16th to 20th and 27th to 29th (especially on 16th and 17th); warm from 5th to 13th and 21st to 26th. The max. in shade rose to, or above  $50^{\circ}$  on 12 days. The min. in shade ( $21^{\circ}3$ ) on 17th was the lowest ever observed in February, and the relative humidity at 9 a.m. on 17th (46) was very low. W., E. and S.E. winds each occurred on 5 days; N.W., N. and variable on 4 days each; S.W. and S. on 1 day each. Gales blew from S.W. on 1st, E.N.E. on 16th, E. on 18th, E.S.E. on 19th and 20th. TS with heavy H on 20th, the H being 4in. in diameter; T on 21st; L on 23rd and 25th. Faint white aurora borealis on night of 3rd. H on 15th, 19th, 20th, 22nd and 25th; S on 1st, 2nd, 17th, 18th, 19th and 20th, covering the ground on 17th and 19th. Solar halos on 6 days. Fog on 3 days. Glazed frost on 17th and 18th.

BODMIN.—The weather was most remarkable, some days like spring or summer, some exceedingly cold, viz.: from 16th to 19th, and on the 27th and 28th. On the 18th a N.E. gale occurred, and a fall of nearly 9 inches of S with R, H, sleet, T and L. The last 4 days of the month were fine. Prevailing winds N.E. and E.

STROUD, UPFIELD.—A S.W. gale on 1st; S and H on 2nd. N.E. gale and about an inch of S between 4 p.m. and 4.30 p.m. on 15th; about 2 inches of S in the afternoon on 17th. On the 19th very fine small snow fell all the morning with an E. Gale, about  $2\frac{1}{2}$  inches fell and there were great drifts. T heard between 3 and 4 p.m. on 25th.

WOOLSTASTON.—A very wintry month, the cold snap which commenced with a N.E. blizzard on the 15th and lasted till the 21st being exceptionally severe; S fell on 5 days; T and very vivid L on the evening of the 25th. Mean temp. of the month  $36^{\circ}7$ .

TENBURY, ORLETON.—A very cold month, although the mean temp. was only  $1^{\circ}$  below the average and higher than that of any other February since 1885, yet the mean of the maxima was but  $44^{\circ}6$  against  $50^{\circ}3$  last February. The grass minima on the 17th and 19th were the lowest recorded here in February being  $8^{\circ}8$  and  $7^{\circ}7$  respectively. Heavy T and L at 7.15 p.m. on 25th. Lunar halo on 4th; much fog at the end of the month.

LEICESTER, BARKBY.—A dull, cold, wet month. The minimum ther. registered  $11^{\circ}$  below zero on the 17th, and  $1^{\circ}$  below zero on the 19th. The S measured in several places where it was not drifted, averaged  $10\frac{1}{2}$  inches dee

HESLEY HALL [TICKHILL].—On the 2nd at 11 a.m. L and T followed by great darkness for about ten minutes; snowing hard all the time.

MANCHESTER, PLYMOUTH GROVE.—S fell on the 1st, 16th, and 17th; S and sleet on the 2nd and 15th. It was damp and foggy with drizzling R on the 9th and 14th, very wintry from 15th to 19th; a complete thaw set in on 21st and a thick fog occurred on the morning of the 22nd. The last week was fine and springlike. Mean temp.  $38^{\circ}8$ .

HULL, PEARSON PARK.—Showers of H on 7 days; S on 7 days; Fog on 6 days.

#### WALES.

HAVERFORDWEST.—A severe month. Very wet and stormy on the 2nd and 3rd; the air mild up to the 8th, when the wind got up to the N.W., the air gradually became colder, and from the 14th to the 22nd very severe weather prevailed. A heavy snowstorm and fierce gale with very low temp. occurred on the 17th, the S as dry as salt and drifting furiously. After the 21st the cold abated and the remainder of the month was wet and raw.

#### SCOTLAND.

CARGEN.—The most marked feature of the month was the extreme cold which prevailed between the 17th and 22nd, the min. temp. on the 19th being the lowest recorded in February at this station during 33 years, and on only two occasions during that period has a lower reading occurred, viz., during the memorable winter of 1860-1, when on the 24th December  $-4^{\circ}0$  was marked, and on the 14th December, 1878, when the ther. fell to  $6^{\circ}0$ . During this period of low temp. the barometric pressure was very low, ranging from 29.180 in. to 29.334 in. There were very light easterly winds on 15 days, in the latter part of the month. Temp. and R both considerably below the average. S on 1st, 17th, 20th and 21st.

JEDBURGH.—The weather of the month was very ungenial, but variable. The min. temp. on the 19th was the lowest for very many years. Spring flowers made very little progress. Fog prevailed much during the latter half of the month. S fell daily from 15th to 18th, the depth on the ground on the latter date being six inches.

OLD CUMNOCK.—H and R on the 4th. S on the 15th, 16th, 17th, 20th and 21st. Very hard frost on 18th and 19th.

S. RONALDSAY, ROEBERRY.—A very rough cold month. A snow storm lasting for a week prevailed from 15th to 21st.

#### IRELAND.

DARRYNANE ABBEY.—Moderately wet. A very strong N.E. gale and S showers on the 19th.

WATERFORD, BROOK LODGE.—Mean temp.  $41^{\circ}7$ . Very fine S commenced to fall about 11 a.m. on 18th, and continued all day and night until about 9 next morning. S fell also on 2nd and 15th. TL and H on 20th. Thick fog on the morning of 27th. Lunar halo on the 8th.

O'BRIENSBRIDGE, ROSS.—Very heavy S on 19th and 20th. Very deep drifts, and the roads and rails all blocked.

DUBLIN.—A wet, cold, stormy and cloudy month. R or S fell in measurable quantities on 19 out of 29 days, and on 10 days the wind reached the force of a gale. Mean temp.  $41^{\circ}3$  or  $1^{\circ}5$  below the average. S or sleet fell on 8 days, H on 5 days. Fog occurred 6 days, and high winds on 14 days.

EDENFEL.—The month commenced with raw, cold, unsettled weather, accompanied by strong westerly and north-westerly winds and S squalls. The second week was fine and mild, with but little R, but from the 14th cold easterly and N.E. winds set in, and continued without intermission to the end, culminating on the 21st in a S blizzard of great severity and violence, driving the S into drifts, many of which had not disappeared by the 6th of March. The last week was dry, cold, typical easterly weather, with sharp night frosts.