

SYMONS'S MONTHLY METEOROLOGICAL MAGAZINE.

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THE MAY FROST OF 1894.

MAY frosts are usual, but the later they are, the more serious are their effects, and still more so if the spring has been mild and vegetation is forward. It is, we think to this, rather than to the intensity of the frost, that the great damage at the end of last month is due.

When travelling in the East Riding of Yorkshire we heard farmers talk of reploughing the fields, which a few days before had promised excellent crops of potatoes; shortly afterwards we received the box of ruined vegetation referred to on a subsequent page by Mr. C. L. Brook, and then the newspapers and especially the agricultural ones, began to describe the frost as unprecedented. We thereupon began to collect the facts, and although we are by no means sure of their meteorological importance, they are certainly of interest in connection with the agricultural disaster. We give (1) Typical letters from some of our regular correspondents; (2) reports as to damage extracted from the *Journal of Horticulture*. [Our readers must remember that many gardeners put their thermometers in positions by no means conformable to the rules of the Royal Meteorological Society, and that we reprint their figures without in any way adopting them]; (4) the lowest temperature in the air in the early morning of the three days May 20th, 21st, and 22nd; (5) the lowest on grass on the same days—(4) and (5) are chiefly from stations of unquestionable excellence, with proper stands and verified instruments—(6) a brief epitome.

To the Editor of the Meteorological Magazine.

SIR,—The frost of Sunday night, May 21st, or Monday morning (22nd), did great havoc to vegetation. Potatoes were blackened, yews, laurels and holly shoots “burnt off” by it, and an acacia tree was turned yellow and shed part of its foliage, as in October. Two-thirds of a magnificent prospect of roses were destroyed; the buds were in very forward and vigorous condition. The blossom (very luxuriant) of outdoor azaleas and rhododendrons blackened and utterly destroyed in that one terrible frost.

Slough.

GEORGE BENTLEY.

SIR,—Last May was the coldest May for at least 13 years, as the following table shows :—

MEAN TEMP. OF MONTH. Thermometer in Stevenson Screen.			
1882	51°4	1888	51°3
1883	51·9	1889	54·2
1884	54·1	1890	52·6
1885	48·0	1891	48·7
1886	51·1	1892	51·6
1887	49·0	1893	54·5
Mean of 12 years			51·5
Mean of May, 1894			46·9

Deficiency on average of previous 12 years 4·6

The cold spell was more prolonged than I have ever registered, the minimum temperatures being :—

DATE. 1894.	Shade Temp. 4 ft. from Ground.	On Grass.	
May 20	30	28	Snowed a little.
„ 21	29	24	
„ 22	30	26	
„ 23	32	24	
„ 24	35	28	
„ 25	30	24	{ Snow on Long Mountain in early morning.
„ 28	34	27	
„ 30	34	30	
„ 31	33	29	
June 1	33	29	

so that it froze on each night but three from the 20th May to June 1st. Potatoes terribly cut down. Ash leaves cut, and I fancy in many cases the budding leaves destroyed, as the trees look as though more than half their branches were dead. Sycamore leaves and fern fronds also suffered, while the gooseberries and currants are dropping off the trees, killed by the frost, which I fancy has also destroyed our apple crop, though some of Miss Ormerod's friends may have something to say to this last.

The rainfall for May was 3·55 in., with a maximum fall (on 15th) of 1·24 in., the heaviest rain since November 8th, 1890, when the same amount (1·24 in.) fell in the 24 hours.—Yours faithfully,

R. J. ROBERTS.

Pool Quay Vicarage, Welshpool, June 6th, 1894.

SIR,—Some details of the disastrous May frosts may be acceptable. The cool showery weather of May 1st—18th gave place on Saturday, May 19th, to a spell of severe cold, with strongish and

very piercing N.N.E. winds. On Sunday, May 20th, some hail fell, with rain in the afternoon, and when in the evening the sky cleared and the wind dropped, it was evident that mischief was impending. I covered up delicate plants with flower pots, matting both thick and thin, and newspapers, which last often give quite sufficient protection from a summer frost; put out a soup-plate full of water on the lawn, then set an alarum for 3.15 a.m., so that I was in my garden at 3.20 on Monday morning, just when the cold was at its worst. The air was wonderfully bright, keen, and still; the lawn as white as in any winter frost; hoar frost was on tops of gates close to my house; and the plate of water was solid ice. I saw the thermometer on the grass at 22° , and that in the shed at 25° . I tried watering some of the rows of potatoes, but the frost held till so long after sunrise that this could do no good. The frost had gone unchecked through the newspaper, and even through the matting so far that upper leaves were blackened; and a few days later, looking at a potato bed opposite my thermometer shed, I could not see where the rows had been!

The following night the minima were 26° in shed and $21\frac{1}{2}^{\circ}$ on grass, and the cold continued, with much wind and frequent hail, and on 21st and 26th unmistakeable snow, heavy, wet snow, so that till the end of the month gardens had a bad time of it.

It is worthy of remark that my maxima for the last 13 days of May averaged $8^{\circ}\cdot6$ lower than those of the first 12 days of April and for the whole of May $2^{\circ}\cdot3$ lower than for the whole of April!

Not to speak of garden plants, the severity of the frost was shown by its blackening, to entire destruction, all the foliage of the ash in low-lying places to 20 ft. from the ground, and even some of the lower branches of oaks. Young shoots of ivy and of male fern were also cut off. Winter beans were in many cases unable to lift themselves again after the frost. The flourishing potato crop, so unusually forward, was cut back to the very ground, and the damage to fruit will only be known in the autumn.

As I do not read of the frost being worse elsewhere, I venture to trouble you with these minute details.

H. A. BOYS.

Easton Mauduit Vicarage, Northampton, June 4th, 1894.

P.S.—The cold seems to have had no effect on the wasps, which have been about in abnormal numbers till now, but may possibly be affected by to-day's heavy rain.

SIR,—I enclose a few specimens of the results of the recent frosts; the effects of it are simply disastrous, exceeding those of May 18th, 1891, owing to the fact that though the actual minimum has not been so low, the season of 1894 is some three weeks in advance of that year. Referring to the specimens, I cannot find a single strawberry blossom without a black centre; about three-fourths of the gooseberries are in the condition of the enclosed sample; a great

number of young beech leaves are shrivelled up, and at least half the oaks have *every leaf* in the condition of those I send, and hardly a single oak has entirely escaped; besides these every rhododendron flower that was open is absolutely destroyed, and every potato cut down to the ground; even common ferns have suffered to a large extent.

The readings were :—

	Stevenson Screen.	Old stand.	Grass.
1894.			
May 21	26° 3	26° 2	22° 0
„ 22	27° 3	27° 3	22° 3
„ 23	30° 7	30° 8	25° 9
„ 24	no frost	no frost	31° 9
„ 25	28° 7	28° 8	24° 5
1891.			
May 18	—	23° 8*	19° 8

Yours very truly, CHARLES L. BROOK.

Harewood Lodge, Meltham.

“As no report appears to have reached you from the Vale of Evesham, regarding the recent severe weather, a few remarks may be of interest to some of your readers in market gardening and fruit-growing districts. No previous spring frosts ever wrought such destruction as those of May the 20th and 21st. Runner beans and potatoes were cut down, marrows were killed under hand-lights, and almost everything in a growing state was more or less damaged. The worst blow was to the fruit. On all the flat land the plums and currants were killed, and the gooseberries, of which there was promise of an abundant crop, were quite three parts taken, but those under trees did not suffer so severely as those in the open. In a few very high parts of the district no damage was done. I noticed on the same piece of land the variety Keepsake are almost all killed, while Whinham's Industry is carrying a heavy crop, thus proving the hardiness of the latter variety. Strawberries are also seriously injured, some crops ruined. Early peas are crippled, and the main crop, Telegraph and Leicester Defiance, will be found very light at picking time. Apples and pears are not grown much in the market gardens, but I have noticed some dwarf trees of Lord Suffield, Lord Grosvenor, and Stirling Castle, and the apples appear stunted, so I am afraid that they will fall.

“I do not know whether the trees in other localities are damaged like they are here. The leaves (especially of the Pershore Plum) are all singed as if a fire had been lighted under them, and it also seems to have penetrated to the pith. Those branches carrying the most fruit appear to have suffered worst. Growers are at a loss to know what to do for the best with the trees.”
—MARKET GROWER.

As some of your readers may like to compare notes of the results of the frost on Sunday night, the 20th ult., and Monday morning, I send a few particulars. In south-east Somerset I find the temp. fell to from 22° to 25°,

* This is not from a Stevenson stand, but is from a verified thermometer in the old stand, and I find by comparison of the last six months between my old stand and the Stevenson that the difference is very small, probably not exceeding 2 or 3-tenths.

but it was accompanied with a cutting north-east wind. I have known several severe frosts in May and June during the last 30 years in this neighbourhood, but have not known one so disastrous, and attended with such serious results, as the one last week. The most mysterious thing is that these early and late severe frosts generally come on a Saturday or Sunday night.

The following is a summary of the result of the frost:—Walnut trees cut fearfully, also planes, oak and ash, from seedlings up to 12 and 15 feet. Beech (copper), and some other hardy trees are injured more or less. Of hardy shrubs, the following have the new growth entirely destroyed:—*Abies Nordmanniana*; yews, both English and golden; *aucuba japonica*; *osmanthus*; laurels, common, Caucasian, and *rotundifolia*, also the Portugal. Fruit appears very much injured, especially gooseberries. I fear apples and pears will also suffer very much. Of course potatoes, French beans and marrow, where above ground, are in many places quite destroyed.—B. R. D., *Yeovil*.

Since Monday, the 21st, we have had frosts more or less, varying from 2° to 8° , i.e., down to 24° , with very cold winds and dull weather. Words almost fail to describe the havoc caused by the frost. Acres of potatoes are laid level with the ground, one farmer a short distance from here having lost a crop which he valued at £1,000. Shrubs which had been pruned in and have made two or three inches of growth, are quite blackened. In some places currants and gooseberries look as if they had been boiled, the ground underneath the trees being literally strewn with such fruit. All the early strawberry blooms are quite destroyed, as are also dwarf and runner beans. The oldest inhabitants in this neighbourhood say that they cannot remember a more destructive May frost.—R. P. R., *Liverpool*.

“With our thermometer hanging on the open espalier nearly 4 feet from the ground and about 100 yards from the river Wear, the frost on Monday, 21st ult., was 20° ; 22nd, 20° ; 23rd, $19\frac{1}{2}^{\circ}$; 24th, 25° ; 25th, $21\frac{1}{2}^{\circ}$; thus making a mean of 21° for the consecutive five nights, and as even the grass is seriously damaged—in fact, I never saw anything like it—one may judge what are our fruit prospects hereabouts. The week previous was cold—bitterly cold—and what we may have left I think will be largely attributable to this cold, as all vegetation was thoroughly hardened, which perhaps reduced the damage to what might have been expected from a third less frost with softer conditions. I may say that I notice quite a scourge of green fly, and strange to say the insects do not seem to have been much affected.—JOSEPH WITHERSPOON, *Red Rose Vineries, Chester-le-Street, Durham*.

“Few persons perhaps remember so destructive and disastrous a May frost as that which occurred on the 21st of May in this year. Following upon a week of abnormally cold weather, we had a slight frost on Saturday night and Sunday morning, but it was left to the night of the latter day, and yesterday, to complete the work of destruction. A frost of any sort in May is always dangerous, and often destructive; but when it comes to 10° of frost—or 22° Fahrenheit—then, indeed, is the disaster complete, and the hopes of the year are absolutely and entirely destroyed.

“The morning of the 21st broke bright and sunny after the overnight frost, and disclosed a sorrowful sight. Ice a quarter of an inch in thickness was plentiful, and on the north side of walls and buildings the ground remained frost-bound far into the forenoon. In most gardens, and in many fields, potatoes were well above the ground; by noon there was nothing but the

blackened remains of the haulms above the ground level, so effectually are they killed. Seeding turnips, instead of being green, are turned to a sickly purple hue. According to Mr. W. Thompson, the thermometer at the Deanery Gardens registered 22° or 10° of frost."

The above cutting from the *Newcastle Daily Chronicle* will give you an idea of what the weather has been in the north. We registered 5° of frost here this morning, but our garden is sheltered.—W. A. JENKINS, *Aldine Grange Gardens, Durham.*

Minima in Shade in May, 1894.

COUNTY.	STATION.	DATE.		
		20th.	21st.	22nd.
<i>Surrey</i>	Farnham (Great Down, Seale) ...	...	30·0	...
"	Reigate (Woodhatch Lodge) .....	...	...	31·0
"	Merstham	S *	30·5	30·9
"	Addington Hills	S *	31·7	*
"	Wallington	S ...	29·3	...
<i>Kent</i>	Keston Tower .....	...	27·0	...
<i>Sussex</i>	Ditchling	S ...	30·5	...
<i>Hants</i>	Strathfield Turgiss	S *	29·4	29·9
<i>Berks</i>	Reading	S *	31·0	*
"	Yattendon .....	...	30·0	30·0
<i>Herts</i>	Broxbourne	28·0	...	...
"	Berkhamstead (Rose Bank)	S ...	30·1	...
"	Hitchin (Wratten) .....	...	29·0	29·0
<i>Bucks</i>	Winslow (Addington)	S ...	29·0	...
<i>Oxford</i>	Henley-on-Thames .....	...	29·0	...
"	Oxford (Radcliffe Observatory) ...	S *	31·0	*
"	" (St. Giles's) .....	...	30·0	...
<i>Northampton</i>	Easton Mauduit .....	...	25·0	26·0
"	Castle Ashby .....	...	30·0	...
"	Pitsford (Sedgbrook) .....	...	...	28·6
<i>Cambridge</i>	Cambridge Observatory	S *	29·0	30·0
<i>Essex</i>	Chelmsford	S *	29·2	*
"	Harlow (Sheering) .....	...	30·0	...
"	Halstead	S *	29·4	31·8
"	Saffron Walden (Newport)	24·0	...	...
<i>Suffolk</i>	Rendlesham Hall .....	...	27·0	...
"	Haverhill (Great Thurlow)	S *	28·3	30·5
"	Bury St. Edmunds (Orchard St.)	28·0	...	...
"	" " (Westley) ...	...	31·0	...
<i>Norfolk</i>	Diss	29·0	...	...
"	Hillington	S *	31·9	31·9
<i>Wilts</i>	Salisbury (Alderbury)	30·0	30·0	...
"	Marlborough (Mildenhall)	S ...	26·0	...
<i>Dorset</i>	Blandford (Whatecombe)	29·0	29·0	...
<i>Devon</i>	Buckfastleigh	S *	31·0	31·5
"	Brampford Speke	S *	31·6	*
"	Castle Hill	S *	31·8	31·9
<i>Gloucester</i>	Cheltenham (Southam Villa)	S *	29·2	*
<i>Hereford</i>	Burghill	S *	31·8	*
<i>Shropshire</i>	Church Stretton (Woolstaston) ...	31·0	...	...
"	Wem (Clive Vicarage)	30·0	...	...
<i>Stafford</i>	Burton (Hoar Cross)	25·0	...	...
"	Cheadle (Heath House)	S *	31·9	*
"	" (Tean Vicarage)	S ...	26·2	...
<i>Warwick</i>	Kenilworth	S *	30·2	31·6
"	Sutton Coldfield	S *	30·1	*

Minima in Shade in May, 1894—(continued).

COUNTY.	STATION.	DATE.		
		20th.	21st.	22nd.
<i>Leicester</i>	Barkby .....	...	24·0	...
"	Loughboro' (Forest Road)	S *	28·0	26·0
"	Belvoir Castle .....	...	29·0	...
<i>Rutland</i>	Ketton Hall [Stamford]	S *	31·0	31·0
<i>Lincoln</i>	Boston .....	...	30·0	30·0
"	Horncastle (Bucknall) .....	...	29·0	...
"	" (Hemingby) .....	...	30·0	...
<i>Notts</i>	Hesley Hall [Tickhill] .....	...	27·0	...
<i>Derby</i>	Buxton	S 29·8	24·5	25·7
<i>Lancashire</i>	Manchester (Plymouth Grove) ..	30·0	30·0	...
"	Bolton	S *	30·4	*
"	Hawkshead (Esthwaite Lodge) ...	...	...	28·2
<i>York</i> W.R.	Meltham (Harewood Lodge)	S ...	26·3	27·3
"	Wakefield Prison .....	...	31·0	...
"	Halifax (Bermerside Observatory) S ...	...	25·5	25·7
"	York	S *	29·0	30·0
"	Hull (Pearson Park)	S ...	29·0	...
"	Driffield (York Road)	S *	28·6	31·8
"	East Layton [Darlington] .....	...	28·0	...
<i>Durham</i>	Barnard Castle (Whorlton) .....	...	...	29·0
"	Durham (Ushaw)	S 29·7	30·6	30·7
<i>Northumberland</i> ..	Haltwhistle .....	...	27·0	...
"	Rothbury	S 30·0	28·0	26·0
<i>Cumberland</i>	Seathwaite	S *	31·5	29·3
"	Keswick	S ...	...	27·0
<i>Westmoreland</i> ..	Windermere	S *	28·8	28·0
"	Appleby	S 31·0	30·0	28·8
<i>Monmouth</i>	Monmouth (The Hendre) .....	...	30·0	...
"	Llanvihangel Court .....	...	30·0	30·0
<i>Carmarthen</i>	Llandovery .....	...	27·0	...
<i>Pembroke</i>	Haverfordwest .....	...	...	29·4
"	Castle Malgwyn [Llechryd] .....	...	24·0	...
<i>Montgomery</i>	Churchstoke (Mellington Hall) ...	S 30·1	29·0	30·4
"	Welsh Pool (Pool Quay)	S 30·0	29·0	30·0

Minima on Grass. (Below 25°).

<i>Hampshire</i>	Strathfield Turgiss .....	...	24·9	...
<i>Northampton</i>	Easton Mauduit .....	...	22·0	21·5
<i>Gloucester</i>	Cheltenham .....	...	24·5	...
<i>Stafford</i>	Cheadle (Teau Vicarage) .....	...	19·0	...
<i>Leicester</i>	Loughboro' (Forest Road) .....	...	24·0	23·0
"	Belvoir Castle .....	...	23·0	23·0
<i>Rutland</i>	Ketton Hall [Stamford] .....	...	...	23·0
<i>Nottingham</i>	Hodsock Priory .....	...	18·0	...
<i>Lancashire</i>	Southport (Hesketh Park) .....	...	24·3	...
"	Bolton .....	...	21·2	22·0
<i>York</i> W.R.	Meltham (Harewood Lodge) .....	...	22·0	22·3
"	Driffield .....	...	22·0	...
<i>Montgomery</i>	Welshpool (Pool Quay) .....	...	24·0	...

S = Stevenson's Stand.

* = Not below 32°.

... = No information.

We need not occupy much space with comment upon the foregoing, for incidentally nearly all the leading features have been touched upon:—

(1). It does not seem to us that the temperature can be described

as excessively low for May, but of course it makes a great difference whether a low reading occurs on the 1st or 31st, or as in this case on the 21st—23rd.

(2). No one has referred to the "Icy Saints" of May 11th to 13th, to the French proverb quoted by Mr. Inwards: "In the middle of May comes the tail of the winter," or to the well known fact of a cold period being usual in the middle or latter part of May.

(3). As usual, the frost was most severe in low lands, near streams, and none was recorded at any station on the English coast.

(4). Several remarks show that it was not the lowness of the temperature of the air which did the mischief, but the radiation of the heat into space, which was facilitated by a clear sky, and is proved by the grass temperatures.

(5). Judging from what we have heard, it seems by no means improbable that some large weed fires would have saved many an acre of potatoes by creating a smoke cloud adequate to lessen radiation.

(9). We wish that our readers would refer to the *Meteor. Mag.* for June 1891, and to the beautiful engraving of the snow storm of May 18th of that year, it will tend to show them that in rather minimizing the intensity of the recent frost, we had substantial ground for our argument; and if they will compare the minima in the general table for May 1891 with those on page 78 of this number, they will find that at the majority of English and Welsh stations, the frost of 1891 was more severe by about 1° .

(7). The facts in (1) and (2) being admitted, they have to be reconciled with widespread disaster—and nothing is more easy; a mild damp spring made vegetation forward and fuller of sap than usual, deficient sun had neither dried up the moisture nor hardened the vegetation, the plants were full of water, by the rapid cooling on a clear night the sap froze, the cells were broken by the expansion of the freezing sap, and the plant life was gone.

FIREBALL OF 1894—APRIL 22ND.

To the Editor of the Meteorological Magazine.

I have compared the interesting accounts of the brilliant fireball seen in the strong twilight of Sunday evening, April 22nd at 7.36. The descriptions though pretty numerous, are rather conflicting and in some instances too vague and incomplete to be serviceable in computing its real path in the atmosphere. There are several reports from Surrey, such as Haslemere, Kenley, Guildford, Redhill, &c., where the object appears to have descended in a vertical path towards the S.E. horizon, though the diagram in the *Meteorological Magazine* (May 1894) p. 49, represents the direction of flight to have been very different at Chiddingfold, Surrey. Any attempt to harmonize the various reports would be futile; the only course possible is to derive an approximate result that will satisfy in a general way, the majority of the observations. I have received one good determination of the end point from Mr. I. Evershed, of Ken-

ley, Surrey, who measured it as in azimuth $44^{\circ} 30'$ E. of S. and altitude $5^{\circ} 45'$. Mr. A. F. Parbury, at Chiddingfold, gives the altitude as 5° in S.S.E. Mr. R. W. Christy, of Chelmsford, describes the path as from near α Leonis (Regulus), to a little short of Corvus, while the Rev. F. T. Wardale, of Knebworth, Herts, says that the direction was from between α and β Leonis to between Orater and Corvus. At Bristol the meteor offered a fine spectacle, and was described to me as being a well defined ball of fire, of bluish colour, falling in the S.E. or E.S.E., and with a slight inclination from the vertical.

The meteor seems to have descended from a height of about 80 miles above the region of Hastings to a height of 17 miles over Amiens in France. It therefore passed above the Strait of Dover, and probably had a real path of more than 120 miles, traversed in about 4 seconds (average of 6 estimates) so that the velocity would be about 30 miles per second, but this is probably in excess of the actual speed. The direction of the meteor's flight was from N.W. to S.E., but the precise position of the radiant point cannot be given, though it is indicated in the neighbourhood of α Persei.

It is to be regretted that the results are open to question from the indefiniteness and contradictory character of the materials employed. This is, however, commonly the case in regard to casual observations of large fireballs. They are seen by all sorts of persons, few of whom are aware of the really necessary points to be noted, and of course the suddenness and unexpected nature of the spectacle is often so bewildering, that it becomes impossible for inexperienced eyes to retain a correct impression as to the most salient points. Even when scientific observers supply descriptions of this kind, it is not always they are found to be accordant and there is sometimes a pretty wide margin of error.

Large fireballs of similar type to that which appeared on April 22nd last, contain, apart from the attractions afforded by their striking aspect, some significant features likely to contribute to our knowledge of this branch of astronomy. But it is a most regrettable circumstance that they are nearly all allowed to escape that exact observation which alone can enable us to gain the instruction offered by their apparitions. It is to be hoped that future observers will recognise the utility of recording these bodies with greater precision. In all such cases the most important features are : the positions of the beginning and end point amongst the stars and the duration of flight. Other details, such as the brilliant effects of a meteor, its bursting, its train of sparks or phospheric streak, its coruscations, peculiarities of shape, &c., are of far less consequence, though deserving record after the position and duration have been carefully noted. When observers generally endeavour to supply accurate data concerning apparitions of fireballs not a year will pass but will add its quota of useful knowledge in regard to a very important and often beautiful class of phenomena.

W. F. DENNING.

Bristol, 1894, May 21st.

BOLIS, BOLIDE OR BOLID ?

To the Editor of the Meteorological Magazine.

SIR,—On page 55 you have raised the question whether “Bolis” or “Bolide” is the correct form. May I suggest that neither is correct, and that we ought to use the term “Bolid” ?

The rule is that in adopting words from the Greek which end in “s” in the nominative and form the genitive in —ados. —idos or —odos, the stem letter “δ” is made the terminal of the English form. It is enough to cite *Æneid*, *Iliad*, *mænad*, *nomad*, *tetrad*, *tetrapod* and *Troad*. In every case the vowel of the final syllable is short, while the addition of a final “e” would necessarily make it long.

Dr. Murray (*New English Dict.*, 1888) does not recognise “Bolis” at all. He gives “Bolide,” citing as authorities Ross (1852), Proctor (1870) and Jefferies (1884). If the word cannot claim a longer prescription here, it is not, I hope, too late to adopt the more regular form. He marks the “i” long, which is no doubt the accepted, though inaccurate, pronunciation.

Webster, I observe, gives both “Bolis” and “Bolide,” but cites no authority for the former, while he marks the quantity of the “i” as uncertain.

I agree that as against this rule we have “ephemeris” and “tripos,” both naturalized in a less critical age—and for the latter we find “tripode” in Holland’s *Plutarch* (1603). These do not seem to be sufficient authorities to induce us to depart from the rule.

May I now ask a little space to reply to Mr. Denning’s letter on page 18 in answer to my communication on “*Meteors*” on page 8. I had not done so before, as I expected further discussion would have followed. I hope Mr. Coventry’s letter is a proof that the subject is attracting attention.

The object of my remarks was not to formulate a theory—as I have said before, in the same connexion, it is much too early to do that—nor did I suggest a necessary coincidence of phenomena, but rather a possible connexion between different phenomena not coincident. That Mr. Denning has observed many meteors without *simultaneous* evidences of electrical action, is therefore not to the purpose. On the other hand, I have known many instances of electrical action clearly evidenced in the path of meteors within a few hours. These may very well be accidents. All I say is, let us observe and note. It is surely unscientific to shut the door to enquiry because it is not “promising,” or to suggest that it is going back to theories of our forefathers. I should be obliged by a reference to any work where the co-relation of these phenomena has been proposed.

Mr. Denning has, in his last paragraph, quite misunderstood me. I did not suggest the slightest doubt of the accuracy of his computation. The point of my remark, which I hoped was sufficiently obvious, was to emphasize the statement in the beginning of my paper, that there was not one meteor, but that there were several.

Yours truly, JAMES G. WOOD, M.A.

115, Sutherland Avenue, W., June 4th, 1894.

To the Editor of the Meteorological Magazine.

SIR,—Referring to your inquiry on page 55 of the *Met. Mag.*, concerning the above, the following definition, accompanied by a quotation from Musschenbroek, appears in the Encyclopædic Dictionary (Cassell and Company, Limited) page 615, where it is classed amongst *obsolete* words :—

Bolis (pl. *bolides*). [Lat. *bolis*, from Gr. *βολῖς* (*bolis*)—anything thrown, a missile, a javelin . . . a flash of lightning.]

Meteorology : A fire-ball dashing through the air, followed by a train of light.

“*Bolis* is a great fiery ball, swiftly hurried through the air, and generally drawing a tail after it. Aristotle calls it *capra*. There have often been immense balls of this kind.”
—*Musschenbroek*.

I am, yours faithfully,

GEORGE REDPATH.

16, Primrose-street, Leith, June 1st, 1894.

ROYAL METEOROLOGICAL SOCIETY.

The monthly meeting of this society was held on Wednesday evening, the 16th instant, at the Institution of Civil Engineers, Westminster ; Mr. R. Inwards, F.R.A.S., President, in the chair.

Mr. W. Ellis, F.R.S., read a paper “On the relative frequency of different velocities of Wind,” in which he discussed the anemometer records of the Greenwich Observatory for the five years 1888—1892, with the view of ascertaining the number of hours during which the wind blew with each of the different hourly velocities experienced during the period. The results of this discussion show that the wind blew for the greatest number of hours with the hourly velocities of 10 and 11 miles.

Mr. W. Marriott, F.R.Met.Soc., gave an account of a series of observations on the “Audibility of ‘Big Ben’ at West Norwood,” which he had carried on for a period of five years. The Clock Tower at Westminster is $5\frac{1}{2}$ miles distant from the point of observation, in a north-by-west direction. The large bell “Big Ben” was designed by Lord Grimthorpe, and cast in 1858 ; its weight is about 14 tons ; it is 9 ft. $5\frac{1}{2}$ in. in diameter, and $9\frac{3}{4}$ in. in thickness ; its tone being E. The observations were 976 in number, and were made at the hours of 9 a.m. and 9 p.m. The bell could be heard more frequently in the evening than in the morning, and on Sundays it was more frequently audible than on week-days. The direction of the wind most favourable for hearing “Big Ben,” was between West and North. The observations were also discussed in relation to temperature, moisture, cloud and barometric pressure.

A paper by Mr. A. W. Moore was also read on “Earth Temperatures at Cronkbourne, Isle of Man, 1880—1889.”

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, DECEMBER, 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.									
England, London	57·8	13	20·1	3	45·8	34·4	36·9	86	68·9	20·5	2·23	14	5·3
Malta.....	69·9	1	41·1	30	61·0	52·8	48·1	76	126·2	37·5	7·37	22	7·1
Cape of Good Hope ...	91·6	12	48·5	6	77·2	59·0	56·4	66	...	...	·04	2	2·4
Mauritius.....	85·6	30	69·0	1a	83·2	71·4	66·7	73	138·5	62·2	1·40	16	5·4
Calcutta.....	78·0	27	51·5	13	75·9	55·8	57·0	76	135·5	43·8	·00	0	5·9
Bombay.....	87·6	1	67·9	22	85·0	70·7	64·8	66	135·7	50·0	·00	0	2·2
Ceylon, Colombo	89·2	...	70·8	...	86·9	72·0	69·3	75	148·0	60·0	6·13	8	3·0
Melbourne.....	99·8	10	43·8	3	74·7	54·7	52·9	68	147·5	37·2	2·55	9	5·7
Adelaide	107·8	10	47·4	19	84·1	58·8	50·0	46	165·3	43·2	·63	4	3·8
Sydney	93·6	6	54·2	4	76·6	62·8	58·5	66	148·1	44·9	1·47	...	5·0
Wellington	77·5	31	43·0	7	65·5	53·9	50·9	75	147·0	30·0	2·90	18	4·8
Auckland	76·0	23	52·0	16	70·7	57·7	56·6	76	146·0	50·0	4·65	17	5·5
Jamaica, Kingston.....	90·3	1	63·8	7	84·5	68·4	68·2	84	...	...	3·29	8	4·4
Trinidad	89·0	3, 4	65·0	23	86·7	69·0	70·0	79	168·0	65·0	7·23	23	...
Toronto	51·5	25	— 4·6	13	22·1	15·1	23·2	84	...	— 9·0	4·60	24	7·4
New Brunswick, Fredericton	39·9	1	—26·0	15	24·0	2·7	13·3	84	...	...	6·09	20	6·2
Manitoba, Winnipeg...	34·0	22	—39·1	10	5·6	—18·6	...	...	...	...	·62	12	4·6
British Columbia, Esquimalt	52·6	3, 15	29·2	27	46·4	38·5	41·6	95	...	...	9·75	28	8·6

a And 12, 22.

REMARKS.

MALTA.—Adopted mean temp. 56°·3; mean hourly velocity of wind 9·3 miles. Thunderstorms on 6 days, and lightning on 6 other days; hail on 3 days. Rainfall double the average. The month was unusually cloudy, with less than the average amount of wind. J. F. DOBSON.

Mauritius.—Mean temp. of air 0°·5 below, of dew point 1°·2 below, and rainfall 3·67 in. below, their respective averages. Mean hourly velocity of wind 8·8 miles, or 2·0 below average; extremes, 21·4 on 14th, and 0·0 on 27th and 30th; prevailing direction, E.S.E. to E. by N. Thunder on 22nd, and lightning on 24th. C. MELDRUM, F.R.S.

CEYLON, COLOMBO.—Lightning was seen on the 1st and 24th; thunderstorms occurred on 6 days. D. G. MANTELL.

Melbourne.—Hail on the 15th; lightning on the 5th and 11th; thunderstorms on the 25th. R. L. J. ELLERY, F.R.S.

Adelaide.—Mean temp. 0°·4 above the average of 36 years. Rainfall 21 in. below the average. C. TODD, F.R.S.

Sydney.—Temperature the same as the average of 35 years; humidity 3°·8 less than the average; rainfall 1·14 in. less than the average. H. C. RUSSELL, F.R.S.

Wellington.—Rather showery weather during the month, though the total rainfall was 1°·04 in. below the average. Prevailing winds S.E. and N.W.; generally moderate. Mean temp. 1°·1 below average. Slight earthquake on 9th. R. B. GORE.

Auckland.—A warm, moist month, the rainfall being nearly twice the average; otherwise there were no exceptional features to record. T. F. CHEESEMAN.

JAMAICA.—Mean hourly velocity of wind 2·4 miles; prevailing direction S.S.E.; greatest number of miles per day, 119; least, 21. Rainfall considerably above the average both in Kingston and the Island generally. R. JOHNSTONE.

TRINIDAD.—Rainfall 2·42 in. above the average of 30 years. J. H. HART.

SUPPLEMENTARY TABLE OF RAINFALL,
MAY, 1894.

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

Div.	STATION.	Total Rain. in.	Div.	STATION.	Total Rain.
II.	Dorking, Abinger Hall.	2.21	XI.	Rhayader, Nantgwillt..	4.73
„	Birchington, Thor	3.17	„	Lake Vyrnwy	3.86
„	Hailsham	1.61	„	Corwen, Rhug .....	...
„	Ryde, Thornbrough	1.18	„	Carnarvon, Cocksidia ...	3.55
„	Emsworth, Redlands ...	1.05	„	I. of Man, Douglas	4.19
„	Alton, Ashdell	2.21	XII.	Stoneykirk, Ardwell Ho.	2.90
III.	Oxford, Magdalen Col...	1.35	„	New Galloway, Glenlee	3.26
„	Banbury, Bloxham	1.48	„	Melrose, Abbey Gate ...	4.63
„	Northampton, Sedgebrook	1.40	XIII.	N. Esk Res. [Penicuik]	4.35
„	Alconbury	1.27	„	Edinburgh, Blacket Pl.	3.20
„	Wisbech, Bank House..	1.66	XIV.	Glasgow, Queen's Park.	2.28
IV.	Southend	1.53	XV.	Inverary, Newtown	3.65
„	Harlow, Sheering ...	1.74	„	Islay, Gruinart School..	.84
„	Colchester, Lexden.....	1.74	XVI.	Dollar.....	2.37
„	Rendlesham Hall	2.11	„	Balquhider, Stronvar..	3.08
„	Diss	2.86	„	Ballinluig	2.07
„	Swaffham	2.41	„	Dalnaspidal H.R.S.	3.81
V.	Salisbury, Alderbury ...	1.67	XVII.	Keith H.R.S.	6.63
„	Bishop's Cannings	1.60	„	Forres H.R.S.	3.22
„	Blandford, Whatcombe.	2.82	XVIII.	Fearn, Lower Pitkerrie.	3.52
„	Ashburton, Holne Vic....	2.96	„	Loch Shiel, Glenaladale	6.33
„	Okehampton, Oaklands.	3.85	„	N. Uist. Loch Maddy ...	2.44
„	Hartland Abbey	3.03	„	Invergarry	2.54
„	Lynmouth, Glenthorne.	2.29	„	Aviemore H.R.S.	3.03
„	Probus, Lamellyn	2.46	„	Loch Ness, Drumnadrochit	3.65
„	Wellington, Sunnyside..	2.04	XIX.	Invershin	2.11
„	Wincanton, Stowell Rec.	2.13	„	Scourie	3.95
VI.	Clifton, Pembroke Road	1.94	„	Watten H.R.S.	4.16
„	Ross, The Graig	2.96	XX.	Dunmanway, Coolkelure	2.66
„	Wem, Clive Vicarage ...	2.66	„	Fermoy, Gas Works ...	1.36
„	Cheadle, The Heath Ho.	2.89	„	Killarney, Woodlawn ...	2.77
„	Worcester, Diglis Lock	2.89	„	Tipperary, Henry Street	2.31
„	Coventry, Coundon	2.31	„	Limerick, Kilcornan ...	2.06
VII.	Ketton Hall [Stamford]	1.27	„	Ennis	3.90
„	Grantham, Stainby	1.69	„	Miltown Malbay.....	3.80
„	Horncastle, Bucknall ...	1.32	XXI.	Gorey, Courtown House	3.05
„	Worksop, Hodsck Priory	1.34	„	Athlone, Twyford	3.51
VIII.	Neston, Hinderton	1.99	„	Mullingar, Belvedere ...	3.35
„	Lancaster, Rose Bank...	2.85	„	Longford, Currygrane...	2.78
„	Broughton-in-Furness..	3.94	XXII.	Galway, Queen's Coll...	3.90
IX.	Ripon, Mickley	1.87	„	Crossmolina, Enniscoe..	4.46
„	Scarborough, South Cliff	1.73	„	Collooney, Markree Obs.	2.81
„	East Layton [Darlington]	2.39	„	Ballinamore, Lawderdale	...
„	Middleton, Mickleton..	2.24	XXIII.	Lough Sheelin, Arley ..	2.46
X.	Haltwhistle, Unthank..	3.29	„	Warrenpoint	2.76
„	Bamburgh	2.04	„	Seaforde	2.91
„	Keswick, The Beeches...	4.73	„	Belfast, Springfield	3.30
XI.	Llanfrehfa Grange	2.71	„	Bushmills, Dundarave...	2.05
„	Llandoverly	3.26	„	Stewartstown	2.45
„	Castle Malgwyn	3.67	„	Buncrana	2.95
„	Builth, Abergweissin Vic.	4.81	„	Lough Swilly, Carrablagh	2.37

MAY, 1894.

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.				No. of Nights below 32°.	
		Total Fall.	Differ- ence from average 1880-9.	Greatest Fall in 24 hours		Max.		Min.					
				Dpth	Date				Deg.	Date	Deg.			Date.
		inches.	inches.	in.				Deg.	Date	Deg.	Date.	In shade.	On grass.
I.	London (Camden Square) ...	1.85	— .05	.41	10	16	71.5	15	33.0	21	0	6	
II.	Maidstone (Hunton Court)...	1.71	+ .33	.44	26	14	...	...	...	...	...	...	...
III.	Strathfield Turgiss	1.66	— .21	.25	29	17	68.2	25	29.4	21	2	11	
IV.	Hitchin	2.09	+ .14	.65	31	15	66.0	15a	29.0	20c	2	...	
V.	Winslow (Addington)	1.55	— .55	.50	11	16	64.0	15b	29.0	21	3	9	
VI.	Bury St. Edmunds (Westley)	2.68	+ .93	.90	26	15	72.0	16	31.0	21	...	...
VII.	Norwich (Brundall)	2.73	...	.72	26	22	70.0	16	34.0	21	0	8	
VIII.	Weymouth (Langton Herring)	1.45	— .16	.27	16	15	66.0	18	35.0	21d	0	...	
IX.	Torquay (Cary Green) ...	2.43	...	.64	17	15	66.6	25	35.5	21	0	1	
X.	Polapit Tamar [Launceston]..	2.69	+ .86	.56	8	19	67.0	18	37.0	22	0	3	
XI.	Stroud (Upfield)	2.01	— .03	.56	15	20	67.0	24	36.0	20	0	...	
XII.	Church Stretton (Woolstaston)	3.68	+ .81	.73	11	21	61.5	25	31.0	20	2	10	
XIII.	Tenbury (Orleton)	3.13	+ .58	.52	11	19	69.0	25	30.0	28	2	9	
XIV.	Leicester (Barkby)	1.99	+ .02	.61	30	13	69.0	25	24.0	21	6	11	
XV.	Boston	2.15	+ .43	.35	31	17	72.0	25	30.0	21d	2	...	
XVI.	Hesley Hall (Tickhill).....	1.09	— .95	.26	9	17	64.0	13	27.0	21	4	...	
XVII.	Manchester (Plymouth Grove)	2.61	+ .26	.52	30	19	67.0	24a	30.0	20c	2	7	
XVIII.	Wetherby (Ribston Hall) ...	1.88	— .07	.42	10	14	...	...	...	...	...	...
XIX.	Skipton (Arnccliffe)	2.91	— .81	.47	13	20	...	...	...	...	...	...
XX.	Hull (Pearson Park)	1.99	+ .11	.34	25	18	63.0	14	29.0	21	2	9	
XXI.	Newcastle (Town Moor)	2.36	+ .61	.43	2	21	...	...	...	...	...	...
XXII.	Borrowdale (Seathwaite).....	8.17	— .44	1.73	13	21	...	...	...	...	...	...
XXIII.	Cardiff (Ely)	2.45	— .40	.50	15	15	...	...	...	...	...	...
XXIV.	Haverfordwest	4.23	+ 1.87	1.20	15	18	71.2	19	29.4	22	3	7	
XXV.	Aberystwith, Gogerddan	4.37	...	.91	8	14	72.0	18	22.0	20	10	...	
XXVI.	Llandudno	2.42	+ .49	.60	14	19	60.4	15	34.2	22	0	...	
XXVII.	Cargen [Dumfries]	4.29	+ 1.77	1.14	14	21	65.4	24	29.0	21d	4	...	
XXVIII.	Jedburgh (Sunnyside).....	3.10	+ 1.20	.76	14	19	65.0	24	27.0	22b	5	...	
XXIX.	Colmonell	2.61	...	.47	13	14	71.0	18	27.0	21	6	...	
XXX.	Lochgilthead (Kilmory)	3.48	+ .13	.56	7	18	...	...	26.0	19	6	...	
XXXI.	Mull (Quinish)	4.20	+ 1.25	1.11	8	18	...	...	...	...	...	...
XXXII.	Loch Leven Sluices	2.50	— .06	.50	15	13	...	...	...	...	...	...
XXXIII.	Dundee (Eastern Necropolis)	3.20	+ 1.54	1.00	14	21	65.8	25	29.5	20	4	...	
XXXIV.	Braemar	3.90	+ 1.49	.59	25	25	62.0	24	24.2	22	7	18	
XXXV.	Aberdeen (Cranford) ...	4.03	...	.73	27	22	59.0	11	31.0	21	2	...	
XXXVI.	Strathconan [Beaul]	4.74	+ 1.65	.95	16	14	...	...	...	...	...	...
XXXVII.	Glencarron Lodge	6.20	...	.74	6	24	61.7	23	28.5	21d	...	...
XXXVIII.	Cawdor [Nairn]	4.20	+ 2.45	1.07	15	22	...	...	...	...	...	...
XXXIX.	Dunrobin	3.55	+ 1.45	.73	28	18	63.0	24	32.0	13	1	...	
XL.	S. Ronaldsay (Roeberry).....	2.22	+ .50	.34	14	18	59.0	24	30.0	19	2	...	
XLI.	Darrynane Abbey	3.02	...	.56	12	22	...	...	...	...	...	...
XLII.	Waterford (Brook Lodge) ...	1.98	— .25	.45	29	14	68.5	25	33.0	21d	0	...	
XLIII.	O'Briensbridge (Ross)	3.16	...	.58	15	12	...	...	...	...	...	...
XLIV.	Carlow (Browne's Hill)	4.65	+ 2.31	.76	30	20	...	...	...	...	...	...
XLV.	Dublin (Fitz William Square)	3.56	+ 1.63	1.33	15	17	64.5	25	33.0	21	0	4	
XLVI.	Ballinasloe	3.21	+ .52	.42	13	18	62.0	25	32.0	21	1	...	
XLVII.	Clifden (Kylemore)	6.05	...	.99	7	19	...	...	...	...	...	...
XLVIII.	Waringstown	2.08	— .36	.67	30	14	69.0	31	28.0	21	3	5	
XLIX.	Londonderry (Creggan Res.)..	2.91	+ .39	.61	8	21	...	...	...	...	...	...
L.	Omagh (Edenfel)	2.94	+ .47	.49	13	20	68.0	24	29.0	21	3	9	

a And 25. b And 24. c And 21. d And 22.

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

METEOROLOGICAL NOTES ON MAY, 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.—The month of May retained its fickle character, with a temp. rather below the average. The severe paroxysm of cold on the 21st and 22nd was most disastrous to vegetation, cutting down everything to the ground, and killing all the young shoots of ash and laurel; the potatoes also suffered greatly. T on 15th, 28th and 29th; L and T on 30th.

ADDINGTON.—A rather cold month, with a moderate R. Up to the 20th there was the prospect of abundant crops of fruit of all kinds, but a sharp frost on the morning of the 21st changed the appearance of things. Currants and gooseberries (the latter quite large) were much injured. All the first blossom on strawberries was destroyed, and young shoots on many trees were cut quite back. Plums, pears and apricots escaped. Distant T on the last three days of the month.

BURY ST. EDMUNDS.—The month was chiefly remarkable for the sharp frosts of 21st and 22nd; the exposed thermometer here fell to 28° , but it was much colder in the valleys. Vegetation was greatly damaged; potatoes, beans and ash trees quite black; barley turning yellow from the frost and cold. Vegetation much retarded, and at the close about as forward as usual. T on 10th, 26th, 28th, 29th, 30th and 31st; H and S on 26th.

LANGTON HERRING.—A cold month, and the weather very unsettled. Mean temp. at 9 a.m. ($51^{\circ}6$) $2^{\circ}4$ below the average, the mean min. and mean max. being very nearly the same as those of the preceding month. From the 19th to the 23rd inclusive it was very cold, frost slightly damaging vegetation, and the weather being quite wintry. Solar halo on the 25th; T on the 26th.

TORQUAY, CARY GREEN.—Rainfall $\cdot 14$ in. greater than, and rainy days exactly, the average. Mean temp. $0^{\circ}9$ below the average. Amount of sunshine, 203 hours 50 mins., being 3 hours 30 mins. below the average.

STROUD, UFFIELD.—Frost on the 20th—potatoe tops touched, fruit destroyed, and much damage done in the valleys. T heard, and H storm in afternoon, on 29th.

WOOLSTASTON.—The earlier part of the month was genial and growing, but on the 20th it became very cold, with sharp frosts on the grass, doing great injury to the crops and the early vegetation. Violent H, with T, on the 26th, and again on the 28th, 29th and 30th. Mean temp. $47^{\circ}4$.

TENBURY, ORLETON.—A very cold, unseasonable month, with a mean temp. 3° below the average, though not so cold as in 1885 and 1887. Severe frosts at the end of the month—particularly on 20th, 21st and 28th—did much damage to potatoes, fruit, &c. T on 26th, 28th, 29th, 30th and 31st; H on 26th and 28th, and L on 26th.

LEICESTER, BARKBY.—A cold month, with heavy T during the last week. Mean temp. ($49^{\circ}5$) lower than that of April. The frosts of 21st and 22nd were very destructive, $\cdot 02$ in. of R. which had fallen just before, being turned into a coating of ice.

BOSTON.—Sharp frosts on the 21st and 22nd, which did a great deal of harm to the early potatoes, strawberries and fruit trees.

MANCHESTER, PLYMOUTH GROVE.—The coldest May experienced since observation commenced 27 years ago, with the one exception of May, 1885, when the mean temp. was $49^{\circ}0$. The temp. on grass fell to 25° on the 20th and 21st, and to 28° on the 24th, and considerable damage was done to fruit and vegetation. T and L on the 29th; TS and H shower on the 30th. Mean temp. $49^{\circ}1$.

WALES.

HAVERFORDWEST.—May commenced fine, but with a much reduced temperature from the preceding month. The wind blew with great force on the night

of the 3rd and on the 4th. It was generally dry, cool and fine up till the 9th, when an exceedingly wet period set in, and between that date and the 15th more R fell than in the months of April, May and June, 1893. This stimulated vegetation amazingly in conjunction with fine sunlight and warm temp., but a severe check set in on the 20th, after a day of unusual warmth, and N.E. winds, with clear sky, and low night temperatures prevailed to the 27th. The last four days were wet.

GOGERDDAN.—Very cold throughout the month, with S and H storms and sharp frosts, doing much damage to all vegetation.

SCOTLAND.

CARGEN.—The mean temp. of the month ($46^{\circ}\cdot9$) is $3^{\circ}\cdot9$ below the average for May. Rather severe frosts occurred on the 21st, 22nd, 23rd, and 24th, and great damage was done to vegetation. All early potatoes were frosted down, and much damage done to grass lands, young shoots of trees, flowering shrubs, &c. With the exception of 1885, when the mean temp. was 46° , this is the coldest May since observations commenced 34 years since. The total R for the first five months of the year is $8\cdot07$ in. above the average. N. and E. winds prevailed for 23 days. TSS occurred on 17th, 21st, 29th, 30th, and 31st. S and H fell on the 20th, 21st, and 27th. In every respect it was the worst May for many years. Slight earthquake shock on 16th. Very brilliant meteor at 8.15 p.m. on 18th, travelling from N.W. to S.; it separated into two parts, leaving a long train of light distinctly seen, though it was bright daylight.

JEDBURGH.—The weather was most ungenial. The wind after the 8th, with one exception, was either N., N.E., S.E., or E. The frost that began on the 20th injured potatoes, bush and tree fruit, and beech, sycamore, spruce, and pine shoots. Vegetation made little progress during the month.

MULL, QUINISH.—Frost on night of 19th blackened potatoes and young growth of trees, &c. T, L, and H on 30th.

BRAEMAR.—A very cold month, and night frosts very damaging. Sunshine 135 hours 40 minutes. On the 22nd the temp. on grass fell to 17° , and icicles were seen nearly five inches long.

ROEBERRY.—A very cold and unsettled month throughout. Mean temp. $45^{\circ}\cdot3$.

IRELAND.

DARRYNANE ABBEY.—A very cold, ungenial month, with a few warm days at the beginning. Vegetation very backward.

WATERFORD, BROOK LODGE.—Frost on the 21st, 22nd, and 23rd, which blackened potatoes, mangolds, heliotropes, beans, &c. The whitethorn blossomed in the most wonderful manner this year. The ash trees were very late coming into leaf. T, L, and heavy H on 29th.

O'BRIENSBRIDGE, ROSS.—Generally, a cold and ungenial month. Hail showers frequent. Sharp frosts on 20th, 21st, and 22nd.

DUBLIN.—This was a cold, changeable month, more like an ordinary March than May. The mean temp. ($49^{\circ}\cdot2$) was actually lower than that of April by nearly one degree, and was $7^{\circ}\cdot5$ below that of May, 1893, being fourth in order of coldness in the past 30 years. A solar halo was seen on the 6th. High winds were noted on as many as 11 days, attaining the force of a gale on the 16th. T was heard on the 15th, 29th, and 30th. H fell on the 7th, 20th, and 28th. S and sleet on the 20th. Foggy on the 16th, 17th, and 23rd.

EDENFEL.—A harsh, unnatural, unsatisfactory month, with rainfall above, and temp. below, the average, destroying much of the bright promise of April. There was frost of more or less severity on nine nights in the latter half of the month, that of the night of the 21st having been more destructive in its effects than any frost in May for over 30 years. An unusually luxuriant and prolific vegetation of leaves and flowers was caught at its tenderest period, and plants of all kinds, including young hardy trees and even grass, received a check from which some will never recover, and the rest not during this year.