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In Memoriam.

H. F. BLANFORD, F.R.S., F.R.Met.Soc.

G. M. WHIPPLE, B.Sc., F.R.Met.Soc.

L. REDIER.

PROF. F. VAN RYSSELBERGHE.

It is rare for four meteorologists, each of such eminence as to claim notice in these pages, to pass away in one month; but that being the case, our notes upon their work must be very brief.

Mr. Blanford had won a distinguished position as a geologist before he took up meteorology, which he did in 1862, and rapidly obtained important promotion, so that when in 1874 the Indian Government established a central meteorological office for the whole of India, Mr. Blanford was placed at its head. How excellently he performed the duties of his office, and how thoroughly he justified his selection for it, is known to every meteorologist. No better proof of the wisdom of putting one man in absolute control of a Meteorological Department could be quoted than that afforded by the publications issued under Mr. Blanford's *régime*. He retired in 1888 and settled at Folkestone, but in spite of broken health, continued to render valuable service to meteorology almost to the last, when he has passed away at the age of 58.

With respect to Mr. Whipple, we reprint from one of our early numbers a paragraph, merely adding that we are sure that all will agree that Mr. Whipple's work during the sixteen subsequent years has far more than justified the position which we took in 1876:—

KEW OBSERVATORY.

“We are extremely glad to announce that the appointment of Director of Kew Observatory, held in the past by Francis Ronalds, John Welsh, and Balfour Stewart, has, at last, been conferred on the proper person. In so designating Mr. Whipple, we take an unusual position, but one which we believe to be impregnable. He has spent almost all his life in the Observatory; since Prof. Balfour Stewart's resignation he has practically borne much of the responsibility of the management, and there is certainly no living man who better understands the establishment and the work to which it is at present devoted.”—*Met. Mag.*, vol. xi. (1876), p. 164.

M. Redier, of Paris, who had received the distinction of *Officier de la Légion d'Honneur* for his skill as an inventor and maker of scientific instruments, was best known in this country for his very ingenious self-recording barometer,* with which results of almost marvellous accuracy have been obtained by Mr. E. T. Dowson, of Beccles.†

Prof. Van Rysselberghe was also an inventor. His great achievement, his Meteorograph, was fully described by him before the Meteorological Society on February 17th, 1875, and the account is published in the *Quarterly Journal*; its leading and unique feature is that the indications of the instruments can not merely be read off at any distance to which a telegraph wire can be carried, but that at the termination of the wire the readings of the instruments, pressure, temperature, wind, &c., are automatically engraved on a metal plate which, when transferred to a printing press, will give any requisite number of complete diagrams. At one of the International Exhibitions at Paris the Van Rysselberghe Meteorograph at Brussels was connected with a recording apparatus at Paris, and every change in the weather at Brussels was automatically engraved upon the plate in the Paris Exhibition.

DISTRIBUTION OF RAIN IN MAURITIUS DURING THE DECADE 1881-90.

By Prof. V. RAULIN.

IN the *Meteorological Magazine* for March, 1885 (Vol. XX., p. 19), was inserted an analysis which I had made of the rainfall of Mauritius during the decade 1871 to 1880, and also a map of the Island. I have now the pleasure of sending a similar analysis (but based upon many more records) for the decade 1881-90.

It will save trouble to reprint the paragraph describing the general physical features of the Island :—

“Mauritius is approximately semi-circular in shape, its longer axis lying S.S.W.—N.N.E., and its centre in lat. 20° 15' S. Like Réunion (or Bourbon) it is a volcanic island, but without any crater in activity; there is a tolerably marked mountainous plateau, but none of the peaks are high, the principal being Piton de Milieu, 1,931 ft., and the Piton of the Black River Mountains in the S.W., which reaches 2,911 ft.”

For the data used in this analysis, as was the case with the previous one, I am indebted to Dr. C. Meldrum, F.R.S., Director of the Royal Alfred Observatory, who publishes annually the “Results of the Meteorological Observations” made in the colony, and has been kind enough to furnish me with copies.

* *Met. Mag.*, vol. x. (1875), p. 33.

† *Quar. Jour. Met. Soc.*, vol. ix. (1883), p. 180.

Observations, during the above decade, have been made at ninety-three stations ; but there are only 56 available for the determination of seasonal rainfall—42 extending over from eight to ten years, and 14 from four to seven years.

The *yearly totals* generally range from 60 to 100 in. The amount is less at 10 stations, and falls to 29·66 in. at Wolmar (Black River). The rain is much heavier in the centre of the island, and 15 stations have falls exceeding 100 in., the highest being 142·53 in., at St. Hubert (Grand Port).

Seasonal distribution.—As a rule, stations in the N., E., and S.E. (Pamplemousses Rivière du Rempart, Flacq and Grand Port) have the intermediate System VII. (winter and summer wet), and those in the W. and S. (Moka, Plaines Wilhelms, and Savanne) have the marine System V. (winter and autumn wet, spring and summer rather dry). On the west coast, now that records are available, we find in the Black River District the normal System I. (dry winter, wet summer).

Compared with the previous decade, the general distribution remains much the same, excepting a few changes at individual stations, and the substitution in Moka and Plaines Wilhelms of System VII. by System V. This may be due to the fact that the fall in the second decade has been less than in 1871-80.

RÉGIME VII. (As at BAR-LE-DUC.)—Winter and Summer wet.

Stations.	Height above Sea.	Years.	Summ'r	Aut'mn	Winter.	Spring.	Year.
<i>A. East and South Coast—</i>							
	ft.		in.	in.	in.	in.	in.
St. Antoine	90	1881-90 (10)	18·94	19·18	6·67	4·43	49·22
Poudre d'Or	60	1881-90 (10)	19·07	20·73	8·25	5·42	53·47
Schœnfeld.....	?	1883-90 (8)	19·00	22·83	8·10	5·38	55·31
Mon Songe	620	1883-90 (8)	26·20	29·04	11·81	8·16	75·21
Union	500	1881-90 (8½)	26·26	29·16	13·39	7·04	75·85
Unité.....	?	1882-90 (9)	28·78	33·66	13·48	9·89	85·81
Sébastopol	870	1882-90 (9)	37·24	40·77	20·18	13·70	111·89
Sans-Souci	860	1881-90 (9)	42·50	46·69	26·11	17·38	132·68
Etoile	790	1881-90 (10)	32·31	38·45	18·59	12·58	101·93
Ansejonchée.....	70	1881-90 (10)	33·90	36·03	14·37	9·40	93·70
St. Hubert	800	1881-90 (10)	47·12	53·73	24·01	17·67	142·53
Cluny	1000	1881-90 (10)	45·95	51·62	24·36	17·69	139·62
Riche-en-Eau	800	1881-90 (10)	34·48	35·52	15·51	10·25	95·76
Astræa.....	700	1882-90 (10)	38·15	39·11	19·59	12·12	108·97
Deux-Bras	650	1881-90 (10)	37·01	40·10	18·32	11·88	107·31
Gros Bois	500	1881-90 (10)	33·73	37·18	16·19	10·35	97·45
<i>B. West Coast & Inland—</i>							
St. André	175	1881-90 (10)	15·91	16·37	5·00	4·12	41·40
Royal Alfred Observatory.	179	1881-90 (10)	17·88	18·62	6·29	4·61	47·40
Botanical Gardens.....	225	1881-90 (10)	24·54	25·88	10·34	7·35	68·11
Constance.....	626	1881-89 (8½)	24·67	27·43	11·40	7·57	71·07
La Grande Rosalie.....	643	1881-90 (10)	26·34	26·41	11·82	8·36	72·93
Fontenelle	360	1881-87 (6)	21·40	24·37	13·72	9·57	69·06

RÉGIME V. (As at LIMOGES.)—Winter and Autumn wet, Spring and Summer rather dry.

Stations.	Height above Sea.	Years.	Summ'r	Aut'mn	Winter.	Spring.	Year.
<i>B. West Coast and Inland</i> (continued)—							
	ft		in.	in.	in.	in.	in.
Labourdonnais.....	290	1881-90 (10)	24·80	24·65	9·46	6·42	65·33
Rigny.....	575	1881-90 (10)	29·72	29·71	14·73	10·50	84·66
Beau Vallon.....	60	1881-90 (10)	25·62	23·66	10·51	6·45	66·24
Joli Bois.....	600	1881-89 (7½)	42·19	42·14	20·01	14·06	118·40
Solitude.....	90	1885-90 (6)	16·15	13·18	4·47	2·84	36·64
Gentilly.....	1150	1881-90 (6½)	37·80	29·42	12·02	8·28	87·52
The Bower.....	1080	1883-90 (6½)	26·04	22·11	8·07	6·30	62·52
Lynnwood.....	1100	1881-90 (9½)	32·31	23·44	9·76	7·48	72·99
Alma.....	1500	1881-90 (10)	47·46	42·46	23·03	16·51	129·46
Bon Air.....	1050	1886-90 (4½)	29·91	21·47	7·60	5·44	64·42
Minissy.....	1150	1881-90 (9½)	31·40	24·04	8·76	6·67	70·87
Beau Séjour.....	970	1881-90 (10)	27·17	22·66	7·60	5·90	63·33
Westra.....	1300	1881-85 (5)	28·24	23·76	12·23	8·39	72·62
Tranon.....	950	1881-90 (10)	24·61	20·12	7·34	5·54	57·61
Phoenix.....	1300	1881-90 (10)	28·86	23·69	10·90	7·57	71·02
Highlands.....	1400	1885-90 (6)	27·80	19·63	9·98	6·27	63·68
Réunion.....	1420	1881-90 (10)	30·88	26·22	14·67	10·02	81·79
Curepipe, Nursery Gardens	1840	1882-90 (8½)	42·40	40·62	24·24	16·80	124·06
Villa le Bain.....	?	1886-90 (5)	43·37	40·06	24·68	17·57	125·68
Henrietta.....	1549	1881-90 (9½)	28·88	25·16	15·61	10·55	80·20
The Glen.....	1580	1886-90 (4½)	30·00	24·59	14·38	10·76	79·73
La Marie.....	1715	1881-90 (8½)	34·30	31·60	19·24	13·45	98·59
Tamarind Falls.....	1629	1886-90 (4½)	28·67	23·61	13·71	10·06	76·05
Chamarel.....	850	1881-90 (9½)	27·18	24·46	15·81	9·41	76·86
Colmar.....	400	1881-89 (8½)	36·74	36·18	16·24	12·02	101·18
St. Avoird.....	840	1886-90 (4½)	45·34	45·33	21·14	14·71	126·52
Riche Bois.....	700	1881-90 (10)	37·29	37·21	20·13	12·68	107·31
Caledonia.....	1380	1881-90 (9½)	45·82	44·34	25·44	18·80	134·40
Bénarès.....	300	1883-89 (6)	24·94	23·85	10·97	7·08	66·84
St. Aubin.....	300	1881-90 (10)	31·18	26·76	14·39	10·25	82·58
L'Union.....	90	1881-90 (10)	27·04	25·82	13·71	9·41	75·98

RÉGIME I. (As at MOULINS.)—Dry Winter and wet Summer.

Wolmar.....	50	1883-90 (8)	14·25	11·78	1·44	2·19	29·66
Casela.....	250	1888-90 (3)	31·23	14·01	2·60	6·06	53·90
Tamarin.....	150	1882-90 (9)	17·61	11·94	2·16	4·05	35·76
Bambous.....	180	1883-89 (5½)	19·16	9·50	3·41	3·82	35·89

Montfaucon d'Argonne (Meuse), France.

V. RAULIN.

[With reference to Prof. Raulin's last remark, and with the view to obtaining some averages not likely to undergo material correction, we have taken out all the records perfect for the twenty years 1871-90, and give the results—

	Mean. 1871-80. in.	Mean. 1881-90. in.	Difference. in.	Mean. 1871-90. in.
Gros Bois.....	99·04	97·45	— 1·59	98·25
Roy. Alfred Obs...	52·05	47·40	— 4·65	49·73
Botanical Gardens	59·77	68·11	+ 8·34	63·94
Labourdonnais ...	70·01	65·33	— 4·68	67·67
Beau Vallon	60·48	66·24	+ 5·76	63·36
Beau Séjour	68·16	63·33	— 4·83	65·75
St. Aubin	83·90	82·58	— 1·32	83·24
L'Union	79·63	75·98	— 3·65	77·80

The differences between the Royal Alfred Obs. and the Botanical Gardens seem improbable, in—

1871-80 the excess at the Gardens was 7.72 in.

1881-90 „ „ „ „ „ „ „ 20.71 „

All the evidence points to some error or change at the Botanical Gardens.

The + difference at Beau Vallon is quite possibly correct, there is no station near, by which to check it.—ED.]

REVIEWS.

Investigations of the New England Meteorological Society for the year 1890.

Reprint from the Annals of the Astronomical Observatory of Harvard College, EDWARD C. PICKERING, Director. Vol. xxxi.

Part 1. Cambridge, Mass., 1892, 4to, 155 pages, 5 plates.

HARVARD College must be a wonderful institution; it does an enormous amount of educational work, maintains a splendid observatory, with a branch one up in the high and pure air on the mountains of South America, and as the New England Meteorological Society is not very rich, has now undertaken to print its papers as appendices to its own annals. Some day perhaps Oxford or Cambridge may show similar vigour in similar directions, but we have no remembrance of seeing a single page of meteorology printed at the expense of any of the colleges or of the University of Cambridge. And with the exception of the annual pamphlet issued from the Radcliffe Observatory, the same may be said of Oxford.

The first 31 pages are devoted to a letterpress description and series of tables of data, of the year 1890, at the stations of the Society. This is followed by a paper by Mr. Warren Smith, giving lustrum tables of temperature and rain for all known and trustworthy stations in New England. It seems very strange to find in a modern table of the high standard aimed at in this paper, results based on one of Hawksbee's thermometers; but the following is the note to the earliest of the Cambridge (Mass.) registers:—

16. Observations taken "morning and evening," the hours averaging about 7 a.m., and from 3 to 4 p.m. No description of the gauge used is given in the original records, which are in the possession of the American Academy of Arts and Sciences, Boston, Massachusetts, neither is its exposure mentioned. The temperature observations from 1759 to 1763 were taken from a Fahrenheit thermometer made in London, and exposed on the north side of the house. It may be considered accurate, as the observer's notes show that he tested it by placing it in snow, and found that the mercury stood at the freezing point. The observer's description of the thermometer used for the rest of the observations is as follows: "My thermometer was of Mr. Hawksbee's make, filled with spirit of wine. Ye scale is divided into 100 parts, beginning from a certain point above marked 0 and ye 100th degree falls just above ye bulb of ye thermometer. Ye freezing point is numbered 65° Ye divisions are upward to 8°

above zero. Ye observations are expressed in the degrees with their decimal parts The instrument shows the highest temperature but not the lowest for it goes into the bulb. How it was adjusted in London I know not but it appears to me yt ye freezing point is marked considerably too high, for having plunged ye bulb into a vessel of snow I found yt ye spirit fell down to 76.5° , and then rested." During several years, readings were taken from both thermometers and the record kept, and a table of corrections was obtained from these records, for changing the record by the Hawksbee thermometer to its equivalent in Fahrenheit readings.

The following are the yearly means for the various lustra for the various stations at Cambridge :—

1746-50.....	46.4	}	1841-45.....	46.6	}
1751-55.....	46.2		1846-50.....	47.7	
1756-60.....	46.0		1851-55.....	47.4	
1761-65.....	46.2		1856-60.....	47.1	
1766-70.....	46.1		1861-65.....	48.1	
			1866-70.....	47.1	
1791-1795...	50.4	}	1871-75.....	46.4	
1796-1800...	48.0		1876-80.....	48.5	
1801-1805...	49.4		1881-85.....	48.5	
1806-1810...	47.4		1886-90.....	49.0	

It is worth notice *en passant* that the first 45 years give a mean of $47^{\circ}.5$ and the last fifty years of $47^{\circ}.6$, which seems to indicate that the computed value of Hawksbee's thermometer cannot have been far out, and that there is no very great change in the temperature of the last 150 years. And, although there are no other records in these tables so old as the Cambridge ones, those at Salem, Andover and Newhaven for the end of the 18th century and the early years of the 19th, harmonize well with the curve indicated by the Cambridge ones.

The rainfall tables are less satisfactory. In the first place there is very little information as to the patterns of gauge or their size or height above ground. Secondly, five year periods are of course much too short to give comparable means, and for all questions of secular change we must have the total for every year, *not* means. Thirdly, even for the same town, two records which agree for three or four lustra suddenly differ; this must be due to changes in the instrument or its position, and should be carefully examined. Perhaps we had better give one or two illustrations :—

	1826-30.	1831-35.	1841-45.
	in.	in.	in.
Boston, Station 562	42.45	41.14	34.63*
„ „ 563	42.76	42.69	43.33
Difference	+ .31	+ 1.55	+ 8.70

	1871-5.	1876-80.	1881-5.	1886-90.
	in.	in.	in.	in.
Boston, Station 107	50·69	49·81	46·20	49·59
„ „ 106	48·24	49·76	45·37	40·16*
Difference	—2·45	—·05	—·83	—9·43

The values to which we have attached * obviously need scrutiny.

The last portion of the volume may be described as a general review of theories respecting tornadoes, illustrated by an intensely interesting account of one which passed over Lawrence (Mass.) July 26th, 1890. The paper, details, photographs and maps, are of the highest excellence.

The Geographical Distribution of Disease in Great Britain, by ALFRED HAVILAND, M.R.C.S., &c. Second Edition, London, Swan Sonnenschein, & Co., 1892, large 8vo., xvi.—406 pages, 4 coloured maps.

THE title of this work does not indicate it as coming within our province for review, and we shall certainly leave the medical portion to be dealt with by statisticians and medical men. But the author is one of those happy, facile writers, who (in a way beyond the imitation of ordinary mortals), glide off into all kinds of bye-paths, and leave flowers of language, scraps of mythology, geology, biology, anthropology, &c., &c., scattered throughout their works. This gives lightness and relief to books which would otherwise be very heavy reading; but then sometimes it leads to the author's forgetting what he was going to say—*e.g.*, in the contents of chapter ix., the last three subjects as stated on p. xiv., are “Deaths by Lightning—Barometer—The Climate of the Microphyte;” but we cannot find a word about either the first or the last of these items.

We have, however, found a paragraph about Microphytes in chapter x., section 2, and we quote it as a fair specimen of the author's style:—

The Habitats of Microphytes. (Bacteria, etc).—At present we are not in a position to discuss the habits of those organisms that are associated with floods, simply because we know nothing of their relation to the malignant diseases under discussion; we do know, however, that many of these fungi rejoice in moist death, whether of vegetable or animal, or both combined, and that dead putrid organic matter is the soil in which such plants mostly thrive. Flügge tells us that in addition to ground water, which is chiefly employed in drinking and household purposes, the water which flows on the surface of the ground often serves as a means of transport of *saprophytes*, and at times of *pathogenic bacteria*. In fact the water in gutters, streams and rivers is particularly dangerous, because it not infrequently serves the double purpose

of taking up and removing waste water of the most various kinds, and at the same time supplying water for household purposes.

We give three other extracts, whence our readers can judge for themselves as to the interesting matter between the boards of this handsome volume :—

No wonder those ancient nature-watchers, the early inhabitants of Greece, drew a broad distinction between the *upper* and the *lower* strata of our atmosphere; the former of which they considered pure and fit for their Olympian gods, calling it *Ether*, (*αιθήρ*), and Zeus, the dweller in ether (*αιθεριναίων*) according to Homer (Il. ii. 412; Od. xv. 523); whilst to the lower stratum in which floated vapour, fogs, clouds, dust, motes and haze, they applied the term air (*ἀήρ*). Mountain ether to these quick-witted, sensitive lovers of natural beauty was a delight, which stimulated their active brains, whilst it invigorated their limbs, and sent a thrill of enjoyment throughout their systems, that made life, health, vigour worth living for; no wonder then that their ideas of physical and mental perfection were associated with the medium in which they supposed their gods to live; and thus when they represented their deities in sculpture, they strove to give them the most perfect forms that men and women could be conceived to possess.

* * * * *

Such was the glorious mountain view that stood out clear, distinct and purple against the ruddy golden sky of a setting sun on the 21st of September, 1885, the date of my first visit to Orrest Head; the purple of the peaks merging into the dark green of the foliage of the lower heights of *Hawk's Head* and *Claipe Heights*, which seemed to lie humbly at their feet, whilst the broad waters of the lake, like an inland sea of molten silver, reflected their solemn beauty, and thus enhanced the glory of one of nature's grandest displays of brilliant colour and perfect form, never to be forgotten.

* * * * *

When the earliest neolithic men appeared in this region, Britain may have still been united to the Continent. But the connection was eventually broken. It is obvious that no event in the geological history of Britain can have had a more powerful influence on its human history than the separation of the country as a group of islands cut off by a considerable channel from direct communication with the mainland of Europe. Let us consider for a moment how the disconnection was probably brought about.

For the two pages describing the process, we must refer our readers to the book itself.

ROYAL METEOROLOGICAL SOCIETY.

THE annual meeting of this Society was held on Wednesday evening, January 18th, at the Institution of Civil Engineers, 25, Great George-street, Westminster; Dr. C. Theodore Williams, President, in the chair. After the report had been read, and the Officers and Council for the ensuing year had been elected, the President delivered an address on "The High Altitudes of Colorado and their Climates," which was illustrated by a number of lantern photographs.

Dr. Williams first noticed the geography of the plateaux of these regions, step by step, culminating in the heights of the Rocky Mountains; and described the lofty peaks, the great parks, the rugged and grand cañons, and the rolling prairie; dividing them into four classes of elevations between 5,000 and 14,500 ft. above sea-level. He then dwelt on the meteorology of each of these divisions, giving the rainfall and relative humidity, and accounting for its very small percentage by the moisture being condensed on the mountain ranges of the Sierras lying to the west of the Rockies; also noticing the amount of sunshine and of cloudless weather, the maximum and minimum temperatures, the wind force and the barometric pressure. Dr. Williams quoted some striking examples of electrical phenomena witnessed on Pike's Peak (14,147 ft.) by the observer of the U.S. Weather Bureau, when, during a violent thunderstorm, flashes of lightning and loud reports of thunder, with heavy showers of sleet, surrounded the summit, and brilliant glow-discharges, like jets of rose-white flame, jumped from point to point on the electric wire, while the cups of the anemometer, which were revolving rapidly, appeared as one solid ring of flame, from which issued a loud rushing and hissing sound. The climate of the parks is, however, Dr. Williams considered, of more practical interest; and in these, magnificent basins of park-like country, interspersed with pines, and backed by gigantic mountains, are resorts replete with interest for the artist, the sportsman, the man of science, and the seeker for health. Most of them lie at heights at from 7,000 to 9,000 ft., but snow does not usually remain long on the ground, while Herefordshire cattle in excellent condition are able to fatten on the good herbage, and to lie out all the winter without shed or stable. Dr. Williams predicted for these parks a great future, as high-altitude sanitarium for the American continent, especially as several of them have been brought within easy distance of Denver, the Queen City of the Plains, by various lines of railway. The resorts on the foot-hills and on the prairie-plains, at elevations of 5,000 to 7,000 ft., include, besides Denver, Colorado Springs, Manitou, Boulder, Golden, and other health stations, which can be inhabited all the year round, and where most of the comforts and luxuries of American civilisation are attainable in a climate where not more than half a day a week in winter is clouded over, where the rainfall is only about 14 inches annually, most of which falls during summer thunderstorms, where the sun shines brightly

for 330 days each year, and where the air is so transparent that objects 20 miles off appear close at hand, and high peaks are calculated to be visible at a distance of 120 miles. Dr. Williams summed up thus:—The chief features of the climate of Colorado appear to be—(1) Diminished barometric pressure, owing to altitude, which throughout the greater part of the State is not less than 5,000 ft.; (2) Great atmospheric dryness, especially in winter and autumn, as shown by the small rainfall and low percentage of humidity; (3) Clearness of atmosphere and absence of fog or cloud; (4) Abundant sunshine all the year round, but especially in winter and autumn; (5) Marked diathermancy of atmosphere, producing an increase in the difference of sun and shade temperatures varying with the elevation in the proportion of 1° for every rise of 235 ft.; (6) Considerable air movement, even in the middle of summer, which promotes evaporation and tempers the solar heat; (7) The presence of a large amount of atmospheric electricity. Thus the climate of this State is dry and sunny, with bracing and energizing qualities, permitting outdoor exercise all the year round, the favourable results of which may be seen in the large number of former consumptives whom it has rescued from the life of invalidism and converted into healthy, active workers; and its stimulating and exhilarating influence may also be traced in the wonderful enterprise and unceasing labour which the Colorado people have shown in developing the riches, agricultural and mineral, of their country.

The annual meeting was preceded by an ordinary meeting, at which the following gentlemen were elected Fellows of the Society:—Dr. M. H. C. Atkinson, Dr. J. Chapman, Dr. W. Ewart, Dr. C. Gibson, Mr. W. Hanmer, Mr. H. H. Harding, Dr. A. Hardwick, Dr. E. Norton, Dr. D. A. Reid, Mr. A. L. B. Tindall, B.A., Mr. C. J. Wood, M.Inst.C.E.

THE RECENT FROST.

(Continued from p. 177 of Vol. XXVII).

In pursuance of the line of thought suggested in our previous note, we have extracted from the Daily Weather Reports the 8 a.m. temperatures, during the fortnight December 25th to January 7th, at 36 stations, and append a summary of the results. The stations are arranged according to their mean temperature at 8 a.m. during that fortnight, and the result is to bring again into marked prominence the mildness of the S. and W. of Ireland and of the Scilly Isles. On five, out of the fourteen days dealt with, Valentia was, at 8 a.m., the warmest place in Western Europe from whence reports were published. We are startled by the discrepancy between Scilly and Jersey, the latter being returned as scarcely warmer than Aberdeen; but Jersey is a Meteorological Office station, and as that office spends large sums in inspecting its stations, we accept the values; still, it seems very strange that on the average of a fortnight, Jersey was $11^{\circ}8$ colder than Scilly. It will be seen that Scilly

was nearly 6° warmer than Nice; no wonder that we hear that a Syndicate has endeavoured to secure all the available land in Scilly for horticultural purposes. But why not do the same in the S.W. of Ireland—Valentia, for instance, which is even warmer?

Although the numbers of frosts run in fair accordance with the mean 8 a.m. temperatures, they do not do so absolutely; and the lowest minima are still more irregular; they are apparently affected by (1) proximity to sea, and (2) by the severe cold on the 6th. By the bye, it will be seen from p. 16 that our interpretation of the Braemar telegram was strictly accurate.

Temperatures from December 25th, 1892, to January 7th, 1893.

COUNTRY.	STATION.	Average Temp. at 8 a.m.	Number of Days below 32° at 8 a.m.	Min. during the period.	
				Temp.	Date.
<i>Portugal</i>	<i>Lisbon</i>	45·3	0	37	Dec. 29th & 30th.
Ireland.....	Valentia	43·3	0	29	Jan. 4th.
England.....	Scilly	43·1	0	30	„ 3rd.
Ireland.....	Roches Point..	42·0	1	26	„ 3rd.
<i>France</i>	<i>Nice</i>	37·3	1	27	„ 3rd.
Ireland.....	Belmullet.....	36·9	2	25	„ 3rd.
Scotland	Shetland	36·2	3	24	„ 5th.
Ireland.....	Mullaghmore.	35·7	4	24	„ 3rd.
„	Malin Head...	35·4	1	30	„ 2nd.
Wales.....	Pembroke.....	34·9	3	24	„ 2nd.
Scotland	Stornoway.....	34·7	5	22	„ 5th.
<i>France</i>	<i>Perpignan</i> ..	34·7	6	25	„ 6th & 7th.
Ireland.....	Donaghadee...	34·1	4	25	Dec. 26th.
<i>France</i>	<i> Biarritz</i>	33·9	8	18	Jan. 4th.
Wales.....	Holyhead	33·3	6	29	Several days.
Scotland	Wick	32·7	3	12	Jan. 6th.
England	Ramsgate.....	31·9	6	19	„ 4th.
Ireland.....	Parsonstown..	31·6	5	15	„ 3rd & 4th.
England	Jersey	31·3	5	20	„ 2nd & 3rd.
Scotland	Aberdeen	30·3	6	12	„ 6th.
„	Ardrossan	30·1	10	21	„ 6th.
England	Yarmouth.....	29·7	10	20	„ 3rd & 4th.
Scotland	Leith	29·6	8	13	„ 6th.
England	Shields	28·4	11	18	„ 6th.
Scotland	Nairn	26·7	11	8	„ 6th.
England	London	24·7	14	15	„ 5th.
„	York	23·8	12	8	„ 5th.
„	Cambridge	22·8	13	10	„ 5th.
„	Oxford	22·5	14	14	Dec. 27th & 28th.
„	Loughboro'....	21·3	13	9	„ 27th.
<i>France</i>	<i>Lyons</i>	20·0	14	11	Jan. 2nd & 3rd.
<i>Germany</i>	<i>Berlin</i>	19·3	12	3	„ 7th.
<i>Belgium</i>	<i>Brussels</i>	19·3	14	10	„ 5th.
<i>France</i>	<i>Paris</i>	18·5	14	10	Dec 30th&Jan.2nd
<i>Sweden</i>	<i>Stockholm</i> ..	17·8	14	1	Dec. 26th.
<i>Germany</i>	<i>Munich</i>	10·4	14	—4	Jan. 2nd.
MEAN...		30·1			

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, JULY, 1892.

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	81·7	3	46·3	19	70·5	52·2	50·4	71	129·0	41·6	1·62	9	6·5
Malta.....	95·4	12	66·3	22	86·4	70·8	66·0	69	146·5	61·7	·41	1	0·9
Cape of Good Hope	70·9	29a	39·6	12	60·7	46·4	...	...	...	...	6·18	16	5·7
Mauritius.....	76·0	1, 4b	58·8	27	74·6	64·7	59·7	73	121·9	50·1	3·10	19	4·5
Calcutta.....	92·5	3	75·9	25	87·4	78·0	78·8	88	158·3	74·4	10·55	20	8·3
Bombay.....	89·0	6	75·0	29	84·6	78·5	76·8	85	142·2	72·2	23·86	29	9·1
Ceylon, Colombo	87·2	20	74·3	22	85·0	77·7	73·5	81	151·5	70·0	1·10	15	6·8
Melbourne.....	62·5	31	34·3	30	54·8	40·6	42·3	82	112·2	28·2	1·44	14	6·4
Adelaide	63·6	4	36·5	29	58·0	43·3	42·0	76	127·9	28·1	2·61	13	6·1
Tasmania, Hobart.....	...	...	...	...	...	...	...	...	...	...	...	...	...
Wellington	60·0	19	32·5	31	51·8	42·9	41·6	79	99·0	25·0	12·17	21	5·8
Auckland	62·0	22	39·0	14	57·3	47·0	47·4	84	114·0	30·0	5·01	17	6·0
Jamaica, Kingston.....	94·8	11	71·0	2c	89·4	73·5	70·6	74	...	...	·20	3	5·2
Trinidad	92·0	1	67·0	29	86·3	73·8	72·0	87	152·0	...	15·35	25	...
Toronto	93·5	28	44·0	1	78·8	57·6	59·7	73	...	40·5	2·50	14	4·0
New Brunswick, Fredericton	87·7	12	45·5	7	78·2	53·7	57·1	67	...	...	3·91	13	4·0
Manitoba, Winnipeg British Columbia, Esquimalt	85·8	5	41·9	28	76·5	53·2	...	...	...	...	3·57	16	4·0
	74·2	27	45·7	20	65·2	50·5	51·4	82	...	...	·87	9	5·0

a And 30. b And 28. c And 21, 29.

REMARKS.

MALTA.—Mean temp. 77°·4. Mean hourly velocity of wind 8·9 miles. The sea temp. rose from 77°·0 to 80°·0. Thunderstorm on 21st. J. SCOLES.

Mauritius.—Mean temp. of air 0°·7 above, dew point 0°·4 above, and rainfall ·77 in. above, their respective averages. Mean hourly velocity of wind 12·9 miles, or 1·0 above average; extremes 26·4 on 16th and 20th and 1·9 on 22nd; prevailing direction, E.S.E. C. MELDRUM, F.R.S.

CEYLON, COLOMBO.—Thunderstorms occurred on the 1st, 21st, 22nd, and 23rd, and lightning alone was seen on the 14th and 24th. F. C. H. CLARKE, Lt.-Col. R.E.

Melbourne.—Mean temp. of air 0°·2, and rainfall ·31 in., below their respective averages. Mean temp. of dew point 0°·9, humidity 2, and amount of cloud 0·1 above their averages. Squally on 3 days; heavy dew on 11 days; hoar frost on 6 days; fog on 4 days; hail on the 8th. Linnar halos on 5 days. R. L. J. ELLERY, F.R.S.

Adelaide.—Mean temp. 0°·1 below the average of 35 years. The nights were colder than usual, the mean min. being 1°·2 below the average. The temp. on grass fell below 32° on 8 nights, the lowest reading being 28° 1 on the 29th. The rainfall was ·02 in. below the average. Moderate to heavy rains fell generally in the southern parts of the colony, but in the far north extremely dry weather continued. C. TODD, F.R.S.

Wellington.—A very wet, unpleasant month; almost constant rain, except for a few days in the middle; heavy rain 11th and 12th. 3·51 in.; snow on the hills round the harbour on 5 days; hail on 3 days; fog on 3 days; lightning on 26th. Rainfall nearly twice the average, and with one exception the greatest in any month during 28 years. Mean temp. 0°·3 below the average. R. B. GORE.

Auckland.—On the whole a wet and stormy month, but with several spells of fine weather. Mean temp. precisely the same as the average. Rainfall half an inch in excess. T. F. CHEESEMAN.

KINGSTON, JAMAICA.—Rainfall only one-tenth of the average. R. JOHNSTONE.

SUPPLEMENTARY TABLE OF RAINFALL, JANUARY, 1893.

[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.	2·32	XI.	Builth, Abergwessin Vic.	3·91
„	Birchington, Thor	2·04	„	Rhayader, Nantgwillt..	4·00
„	Brighton, Prestonville Rd.	1·87	„	Corwen, Rhug	1·95
„	Hailsham	2·15	„	Carnarvon, Cocksidia ...	2·04
„	Ryde, Thornbrough	2·28	„	I. of Man, Douglas	2·44
„	Alton, Ashdell	2·36	XII.	Stoneykirk, Ardwell Ho.	2·09
III.	Oxford, Magdalen Col...	1·81	„	New Galloway, Glenlee	2·63
„	Banbury, Bloxham	2·11	„	Melrose, Abbey Gate ...	1·36
„	Northampton, Sedgebrook	1·59	XIII.	N. Esk Res. [Penicuik]	1·30
„	Alconbury	1·50	„	Edinburgh, Blacket Pl..	·71
„	Wisbech, Bank House..	1·68	XIV.	Glasgow, Queen's Park..	1·14
IV.	Southend	1·69	XV.	Islay, Gruinart School..	4·08
„	Harlow, Sheering	1·62	XVI.	Dollar	2·05
„	Colchester, Lexden	1·37	„	Balquhider, Stronvar..	5·68
„	Rendlesham Hall	2·20	„	Coupar Angus Station..	1·18
„	Diss	3·11	„	Dunkeld, Inver Braan..	1·91
„	Swaffham	2·15	„	Dalnaspidal H.R.S. ...	4·12
V.	Salisbury, Alderbury ...	1·59	XVII.	Keith H.R.S.	2·28
„	Bishop's Cannings	2·38	„	Forres H.R.S.	1·87
„	Blandford, Whatcombe .	2·72	XVIII.	Fearn, Lower Pitkerrie.	1·71
„	Ashburton, Holne Vic....	5·30	„	Loch Shiel, Glenaladale	11·67
„	Okehampton, Oaklands..	3·83	„	N. Uist. Loch Maddy ...	3·46
„	Hartland Abbey	3·06	„	Invergarry	4·58
„	Lynmouth, Glenthorne..	3·11	„	Aviemore H.R.S.	2·89
„	Probus, Lamellyn	3·10	„	Loch Ness, Drumnadrochit	2·16
„	Wincanton, Stowell Rec.	2·60	XIX.	Invershin	2·04
„	Weston-super-Mare	2·43	„	Scourie	2·54
VI.	Clifton, Pembroke Road	2·22	„	Watten H.R.S.	2·27
„	Ross, The Graig	2·30	XX.	Dunmanway, Coolkelure	6·62
„	Wem, Clive Vicarage ...	1·43	„	Fermoy, Gas Works ...	3·91
„	Cheadle, The Heath Ho.	2·35	„	Killarney, Woodlawn ...	...
„	Worcester, Diglis Lock	1·69	„	Tipperary, Henry Street	2·98
„	Coventry, Coundon	1·83	„	Limerick, Kilcornan ...	2·36
VII.	Ketton Hall [Stamford]	1·45	„	Ennis	2·29
„	Grantham, Stainby	2·01	„	Miltown Malbay	3·39
„	Horncastle, Bucknall ...	1·47	XXI.	Gorey, Courtown House	3·58
„	Workshop, Hodsek Priory	1·37	„	Mullingar, Belvedere ...	2·25
VIII.	Neston, Hinderton	1·04	„	Athlone, Twyford	2·42
„	Knutsford, Heathside ...	1·24	„	Longford, Currygrane ...	2·07
„	Lancaster, Rose Bank..	1·33	XXII.	Galway, Queen's Coll...	2·35
„	Broughton-in-Furness..	2·93	„	Crossmolina, Enniscoe..	3·36
IX.	Ripon, Mickley	1·60	„	Collooney, Markree Obs.	2·77
„	Scarborough, South Cliff	1·81	„	Ballinamore, Lawderdale	2·60
„	East Layton [Darlington]	1·81	XXIII.	Lough Sheelin, Arley ..	2·12
„	Middleton, Mickleton..	1·46	„	Warrenpoint	3·63
X.	Haltwhistle, Unthank..	1·31	„	Seaforde	2·94
„	Bamburgh	1·24	„	Belfast, Springfield	2·94
„	Newton Reigny	1·44	„	Bushmills, Dundarave...	2·02
XI.	Llanfrechfa Grange ...	2·59	„	Stewartstown	2·85
„	Llandovery	2·34	„	Buncrana	2·85
„	Castle Malgwyn	2·57	„	Lough Swilly, Carrablagh	2·82

JANUARY, 1893.

Div.	STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL.						TEMPERATURE.				No. of Nights below 32°	
		Total Fall.	Difference from average 1880-9.	Greatest Fall in 24 hours		Days on which $\frac{1}{10}$ or more fell.	Max.		Min.		In shade.	On grass.	
				Dpth	Date		Deg.	Date	Deg.	Date.			
inches.	inches.	in.											
I.	London (Camden Square) ...	1.44	—	.18	.26	9	17	52.7	31	15.4	5	14	24
II.	Maidstone (Hunton Court)...	2.20	+	.65	.50	16	19	...	...	...	...	...	...
III.	Strathfield Turgiss	2.30	+	.49	.39	9	22	52.2	23 ^c	10.0	5	17	27
IV.	Hitchin	1.65	+	.11	.36	26	21	51.0	31	12.0	4	19	...
V.	Winslow (Addington)	2.08	+	.27	.45	26	17	53.0	31	8.0	5	18	25
VI.	Bury St. Edmunds (Westley)	1.85	+	.38	.41	26	20	50.0	31	11.0	3	...	...
VII.	Norwich (Cossey)	2.18	+	.69	.35	26	17	...	...	...	...	...	...
VIII.	Weymouth (Langton Herring)	2.04	—	.30	.42	14	18	51.0	23	18.0	3	14	...
IX.	Torquay, Babbacombe	3.40	+	.58	1.02	28	15	53.1	24	18.6	3	7	24
X.	Bodmin (Fore Street)	3.56	—	.45	.75	28	24	...	...	...	...	...	...
XI.	Stroud (Upfield)	2.13	—	.07	.38	30	19	54.0	30	16.0	4	22	...
XII.	Churchstretton (Woolstaston)	2.05	—	.11	.69	26	21	50.0	31	17.0	2	18	24
XIII.	Tenbury (Orleton)	2.28	+	.14	.46	28	16	54.0	31	15.8	5	13	20
XIV.	Leicester (Barkby)	1.52	—	.24	.44	26	19	53.0	30	7.0	3, 4	22	26
XV.	Boston	1.47	+	.08	.30	5	10	51.0	31	12.0	5	19	...
XVI.	Hesley Hall (Tickhill)	1.54	—	.23	.42	31	15	54.0	31	9.0	5	21	...
XVII.	Manchester (Plymouth Grove)	1.57	—	.89	.31	6	14	54.0	31	13.0	4	12	16
XVIII.	Wetherby (Ribston Hall) ..	.57	—	1.32	.28	7	4	...	...	...	...	...	...
XIX.	Skipton (Arnelife)	2.50	—	3.14	.42	31	17	50.0	24 ^d	9.0	5	...	...
XX.	Hull (Pearson Park)	1.22	—	.55	.18	26	18	54.0	31	10.0	5	16	25
XXI.	Newcastle (Town Moor)	1.79	—	.02	.66	31	15	...	...	...	...	...	...
XXII.	Borrowdale (Seathwaite)	6.90	—	5.28	1.21	28	19	...	...	...	...	...	...
XXIII.	Cardiff (Ely)	2.46	—	.83	.46	30	16	...	...	...	...	...	...
XXIV.	Haverfordwest	3.89	—	.53	.71	26	19	51.3	24 ^d	15.0	2	15	22
XXV.	Aberystwith, Gogerddan	2.75	—	.78	.65	26	14	...	...	...	...	...	...
XXVI.	Llandudno	1.48	—	.80	.27	31	19	...	...	...	...	...	...
XXVII.	Cargen [Dumfries]	1.80	—	1.97	.64	28	13	51.6	23	15.4	5	13	...
XXVIII.	Jedburgh (Sunnyside)	1.74	+	.02	.65	14	11	50.0	23	7.0	6	16	...
XXIX.	Old Cumnock	1.77	—	2.22	.21	22	20	...	...	...	...	...	...
XXX.	Lochgilthead (Kilmory)	3.90	—	2.24	.58	25	20	...	...	13.0	1	19	...
XXXI.	Oban (Craigvarren)	3.49	...	.55	.25	18	50.0	30	19.0	2	11	...	...
XXXII.	Mull (Quinish)	3.34	—	2.33	.87	25	21	...	...	...	...	...	...
XXXIII.	Loch Leven Sluices	1.50	—	1.40	.20	8 ^a	11	...	...	...	...	...	...
XXXIV.	Dundee (Eastern Necropolis)	1.25	—	.72	.20	6 ^b	19	52.2	23	19.7	6	15	...
XXXV.	Braemar	1.98	—	.71	.19	21	23	47.2	24	—4.0	6	17	24
XXXVI.	Aberdeen (Cranford)	2.67	...	.34	.16	26	26	52.0	23	10.0	5	13	...
XXXVII.	Strome Ferry	5.98	—	.01	.69	25	23	...	...	...	...	...	...
XXXVIII.	Cawdor [Nairn]	1.87	—	.30	.23	24	20	...	...	...	...	...	...
XXXIX.	Dunrobin	2.57	+	.11	.36	17	15	54.0	19	17.0	6	13	...
XL.	S. Ronaldsay (Roeberry)	2.41	—	.54	.38	16	26	47.0	17 ^e	25.0	4	14	...
XLI.	Darrynane Abbey	4.56	...	.72	.5	22	...	...	...	...	...	...	...
XLII.	Waterford (Brook Lodge) ...	4.11	+	.55	.94	7	18	53.0	23	17.0	3	10	...
XLIII.	O'Briensbridge (Ross)	2.16	...	.37	.15	21	52.0	20 ^f	20.0	3	9	...	...
XLIV.	Carlow (Browne's Hill)	3.07	+	.17	.81	31	18	...	...	...	...	...	...
XLV.	Dublin (Fitz William Square)	2.24	+	.38	.51	31	19	54.9	30	20.2	3	4	16
XLVI.	Ballinasloe	2.27	—	.81	.32	15	21	50.0	30	16.0	3, 4	13	...
XLVII.	Clifden (Kylemore)	7.23	...	1.40	.25	24	...	...	...	...	...	...	...
XLVIII.	Waringstown	2.29	—	.36	.43	29	16	53.0	23	15.0	3	15	20
XLIX.	Londonderry (Creggan Res.) ..	2.75	—	.67	.67	15	25	...	...	...	...	...	...
L.	Omagh (Edenfel)	2.86	—	.16	.46	15	23	50.0	23 ^g	15.0	3	10	14

^a And 9, 29, 31. ^b And 8, 16, 28. ^c And 30. ^d And 31. ^e And 18, 19, 22, 23, 24. ^f And 25.

^g And 24, 30.

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

METEOROLOGICAL NOTES ON JANUARY, 1893.

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 fair and mild month on the whole, but with two sharp snaps of frost, from 3rd to 5th, and on 16th. Grass min. on the 5th, $8^{\circ}\cdot 1$. Black Hellebore in flower on the 18th; Winter Aconite on the 22nd.

ADDINGTON.—Intense frost during the first week, particularly on the 4th and 5th. The frost that set in on December the 22nd hardly left us until the 21st of this month, but after the 22nd much milder weather prevailed. The first day of the month had a max. temperature of 30° , the last day a max. of 53° .

BURY ST. EDMUNDS.—R or S fell on 20 days, mostly in small quantities.

LANGTON HERRING.—The severe weather which began on December 24th lasted to January 16th, and for 24 days the ther. did not rise above $40^{\circ}\cdot 0$. Only on the last day of the month did the min. temperature exceed 41° , and the mean 9 a.m. temperature ($35^{\circ}\cdot 3$) was $3^{\circ}\cdot 7$ below the average of 21 years. The last days of the month were wet and damp with fogs on the 25th and 31st. Fine lunar halos were seen on the 26th and 27th.

BABBACOMBE.—A cold, showery, variable, rather dry and fine month, with a great rise of temperature from the min. of $18^{\circ}\cdot 6$ on 3rd to the max. of $53^{\circ}\cdot 1$ on 24th. No R was measured in the 14 days ending on the 5th, but 1.02 inches fell on 28th, mostly in heavy showers, with H and L from 0.35 a.m. to 4.45 a.m. on 29th. Cold from 1st to 17th, and very cold and dry on 1st, 2nd, 3rd and 15th. Warm from 18th to 20th, 22nd to 26th, and 28th to 31st, especially on the last two days. The mean temperature rose $23^{\circ}\cdot 5$ from $25^{\circ}\cdot 8$ on 2nd, to $49^{\circ}\cdot 3$ on 31st. The shade max. rose above 50° on eight days (all occurring after the 17th), but did not reach 40° on ten days. Glazed frost on morning of the 16th. Gales on eight days. S on six days, whitening the ground on 14th. Soft H on 9th. H on 14th and 29th. Fog on 8th, 9th and 25th. Solar halos on 19th, 27th and 31st. Lunar halo on 27th.

BODMIN.—A mild month to begin with. Not much R until after the 24th. Gales of wind on the 16th and 17th, and 28th and 29th. Primroses picked on the 25th.

STROUD, UPFIELD.—Snowdrops and crocuses in flower on the last two days of the month. On the 6th about an inch of S fell, and 2 inches on the 13th. S.W. gale at night on 30th. Frost on 18 consecutive days, from 1st to 18th.

WOOLSTASTON.—The frost continued with great severity, and with repeated falls of S, till the 15th, when a very slow thaw set in, the frost frequently returning at night. Mean temperature $34^{\circ}\cdot 9$.

TENBURY, ORLETON.—The first half of the month was very cold, but from the 17th to the end of the month the weather was much warmer. Mean temperature for the month nearly 2° below the average of 32 years. A great fall of S occurred on the 5th, 6th and 7th, covering the ground, about 12 inches deep on the average. Heavy R on 29th, flooding brooks. S on five days. Fog on three days.

MANCHESTER, PLYMOUTH GROVE.—S on the 6th, 7th, 15th and 17th. Very thick fog on the 4th, with severe frost, and thick fogs on the 16th and 17th. From the 18th to the 25th the weather was mostly mild, damp and foggy, and the last 3 days were as mild as May, and birds singing. Mean temp. $36^{\circ}\cdot 3$.

WALES.

HAVERFORDWEST.—The frost of the first half of the month was one of the most intense and persistent recorded; the day temp. ranging as low as 26° , and seldom higher than 34° . During the first 12 days S fell heavily; the depth on the level varying in different localities from 7 to 9 inches, but in high places it drifted to the depth of many feet. After the second week, the weather, although cold, became stormy and wet, and the last week was very wet. The

month ended mild. During the first week the wind blew from the N.E., and E., the remainder of the month from N.W., S.W., and S.

GOGERDDAN.—A cold and sunless month throughout. S 2 inches deep on 6th, 3 inches on 7th, and 2 inches on 14th.

SCOTLAND.

CARGEN.—The severe frost experienced during the last 10 days of December, continued for 7 days in this month, and is the severest continued frost recorded here since January 1881, when the mean temp. for 20 days, was $23^{\circ}5$. The late frost, which continued for 17 days, shews a mean temp. $27^{\circ}7$. The ground was frozen to a depth of 11 inches, and on some of the lochs ice was as much as 14 to 15 inches thick. The last 16 days of the month were unusually mild, the mean temp. of the period being $43^{\circ}1$, which is only about 2° below the mean of April. Rainfall very deficient.

JEDBURGH.—The weather was cold and ungenial during the greater part of the month, with continued frosts. Root crops, especially on low lying ground, much injured. S on the 14th $6\frac{1}{2}$ inches deep.

BRAEMAR.—Observations commenced in 1856, and the lowest temperatures observed have been :—

1860	Dec. 25th	.....	Min. in air	$-11^{\circ}0$	Min. on grass	$-11^{\circ}0$
1881	Jan. 17th	.....	„ „ „	$-3^{\circ}8$	„ „ „	$-3^{\circ}8$
1882	Dec. 15th	.....	„ „ „	$-8^{\circ}0$	„ „ „	$-11^{\circ}0$
1893	Jan. 24th	.....	„ „ „	$-4^{\circ}0$	„ „ „	$-9^{\circ}0$

IRELAND.

DARRYNANE ABBEY.—A mild month ; only two or three slight night frosts ; a good deal of fog in the middle of the month ; strong winds and heavy seas in the last week. Primrose in flower on the 14th ; daffodil on the 30th.

O'BRIENSBRIDGE, ROSS.—The month began with sharp frost, the mean temp. of the 3rd, being $25^{\circ}4$; after this the temp. rose and continued high during the remainder of the month. An average number of rainy days, but the quantities small. Some squalls, but no severe storm. All spring bulbs coming into flower.

DUBLIN.—The promise of a cold month offered by very severe weather during the first ten days or a fortnight was not fulfilled. So decided was the recovery of temp. after the 15th, that the mean of the whole month scarcely fell below the average. The mean of the 1st to 14th inclusive, was $36^{\circ}0$, and that of 15th to 28th, $44^{\circ}3$. Solar halos were seen on the 15th and 25th ; a lunar halo on the 28th ; foggy on 4 days ; high winds on 18 days, reaching the force of a gale on 4 days, viz. : 7th, 8th, 16th, and 28th. ; H fell on 4 days ; S or sleet on 3 days. Temp. in screen exceeded 50° on 7 days.

EDENFEL.—The hard black frost that commencing on Christmas Day marked the exit of 1892, continued till 5th January, when a heavy fall of snow followed and afterwards light drifting S and high easterly winds till 9th, with gradually increasing temp. The remainder of the month was mild and open with considerable rainfall, but high average barometer.