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UNPRECEDENTED FROST IN THE UNITED STATES IN
FEBRUARY, 1899.

IN February, 1899, the contrast in temperature between the two sides of the Atlantic was probably greater than had occurred since the invention of the thermometer.

On February 10th, 1899, the shade temperature at Camden Square, London, rose to $64^{\circ}8$, and there is no record of the heat in London in February exceeding $62^{\circ}5$ during 104 previous years.

On February 12th-13th, 1899, the intensity of frost in the S. and S.E. of the United States was equally unprecedented; e.g., 7° (25° below freezing) at New Orleans, on the Gulf of Mexico.

We have recently received the *Monthly Weather Review* for February, 1899, it is crammed with interesting facts, and the following extracts are but types of the mass which we have not space to reproduce.

FORECASTS AND WARNINGS.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

During the first half of February the most remarkable cold wave, or series of cold waves, in the history of the Weather Bureau traversed the United States from the north Pacific to the south Atlantic coasts, damaging crops and fruits in the Southern States to the extent of millions of dollars. During the first eight days of the month the lowest temperatures on record were reported at points in the north Pacific coast States; from the 9th to the 12th many places in the Central, Western, and North-Western States reported the coldest weather on record. During the 13th and 14th the cold wave overspread the Southern and Eastern States, attended (on the 13th) by the lowest temperatures on record from the southern Rocky Mountain slope to the south Atlantic coast, by zero temperatures to the Gulf coast of Alabama, and by a snowstorm of unprecedented severity in the Middle Atlantic States.

The visible cause of this period of intense cold is found in a series of barometric depressions in the South, combined with an area of high barometer of great magnitude which persistently occupied the British North-West Territory until the 11th, inclusive, when the highest sea-level pressure ever reported within the region of observation covered by the Weather Bureau and Canadian services (31.42 inches) was telegraphed from Swift Current, Assiniboia. After the 11th, this area of high barometer settled southward over the eastern Rocky Mountain slope and the central valleys, causing the severest winter weather ever experienced generally over the southern half of the country east of the Rocky Mountains. Ample and timely warning of the advance of the the cold wave was given to all interests that were likely to be injuriously affected by intense cold. It will also be noted that special reports and newspaper comments made in connection with the cold-wave visitation give unquestionable evidence that the warnings prompted protective measures, whereby crops, live stock, and perishable goods and merchandise to the value of hundreds of thousands of dollars were saved.

* * * * *

During the night of Sunday the 12-13th, the cold wave swept southward to the Gulf of Mexico, breaking all previous low-temperature records in the South and South-West, as shown in the following table:—

Station.	Lowest previous temperature recorded.	Minimum temperature February 13, 1899.	Departure below lowest previous temperature.
Concordia, Kans.	—25	—26	1
Dodge, Kans.	—20	—24	4
Wichita, Kans.	—14	—22	8
Oklahoma, Okla.	—11	—18	7
Amarillo, Tex.	—14	—16	2
Abilene, Tex.	— 5	— 6	1
Palestine, Tex.	— 1	— 4	3
San Antonio, Tex.	6	4	2
Galveston, Tex.	11	6	5
Springfield, Mo.	—17	—28	11
Little Rock, Ark.	— 5	—12	7
Nashville, Tenn.	—10	—12	2
Chattanooga, Tenn.	— 7	—10	3
Shreveport, La.	1	— 4	5
Vicksburg, Miss.	3	zero	3
New Orleans, La.	15	7	8
Mobile, Ala.	12	— 1	13
Montgomery, Ala.	5*	— 4*	8*
Atlanta, Ga.	— 2	— 6	4
Savannah, Ga.	12	8	4
Jacksonville, Fla.	14	10	4

* One of these figures must be erroneous. —En. M. M.

From Jacksonville, Florida, A. J. Mitchell, Local Forecast Official, Weather Bureau reported as under :—

Freezing conditions covered the territory set forth in the warnings, and ample time was given all interested to take the necessary precautions. The warning was telegraphed to 118 points, and every possible avenue was utilized to apprise the public of the expected severe weather. Railroads notified fruit and vegetable growers along their lines, cold-wave and frost signals were sounded by locomotives and river steamers, and along the 400 miles of the Florida Coast Line every section was promptly served. In the night of the 12th heavy sleet and snow prostrated telegraph lines north, and cut off communication with Washington, and on the 13th reports were not received in time to be of use. With a temperature of 10° at Jacksonville on the 13th, the official in charge sent the following warning throughout the central and southern portions of the State, the sections most vitally affected by a freeze at this time of the year : “ *Severe freeze to-night throughout the Peninsula. Give widest possible distribution.* ” The warning was lodged not only with every station and settlement, but special messengers were sent out by the Florida East Coast Line Railway notifying individuals throughout the extent of their lines. The action of this road was such that every point south of St. Augustine, except Key West, was notified. Other roads showed the same activity. The saving to fruit and vegetable growers was enormous. The methods of protection used, varied with the object to be protected. Orange trees were wrapped, banked, and some groves were covered. Additional protection was given by building fires. Pineapple fields were protected by a covering of lattice work under which fires were distributed. In every case through the north and north-central parts of the State the most heroic measures were necessary to save anything. The cold was so severe over the western, and parts of the northern, districts that cattle, horses and sheep died from exposure. The lowest temperature reported was 4° below zero over the western district. The temperature fell to 29° in the southern part of Dade County. The vegetable crop over central, northern and western portions of the State has been destroyed ; oats, peaches and pears damaged, and probably the greater portion of young citrus trees over the north-central counties has been seriously damaged. Citrus trees between latitudes 29° and 28° are thought not to be severely damaged, excepting young growth. Those south of the twenty-eighth parallel will escape with no serious consequences.

The total value of fruit, vegetables and property saved in Florida, as given by those who were benefited by the warnings, amounts to nearly \$60,000. The figures are, however, necessarily incomplete, as many groves were saved whose values are not included in the above estimate.

It is a matter of sincere congratulation that, with the severest freeze in the history of the State, and with more property subject to loss or serious damage, the Weather Bureau so met the demands and expectations of the public that not one complaint has been received regarding the accuracy of the forecasts.

CHICAGO.

On account of the absence of snow the ground in the vicinity of Chicago was frozen in many places to the depth of five and one-half feet, causing great damage by the freezing up of the water and gas mains and service pipes. Plumbers have been unable to meet the demands for their services, and the

exigency has brought forth the novel method of thawing out frozen pipes by the use of an electric current. Great suffering was caused by the severe cold among the poorer classes, and many people were frozen to death. Several steamboats which maintain winter service on Lake Michigan were blocked by the thick ice and unable to reach port for three or four days.

THE MISSISSIPPI.

On February 6th, there was $\frac{1}{2}$ inch of ice at Memphis, Tennessee; by the 13th this had increased to 1 inch, and had extended to New Orleans, where there were 2 inches, a record unparalleled in the history of the city, as far as is known.

ON A RECENT RECURRENCE IN WEATHER—A LUNAR OR 30-DAY PERIOD.

To the Editor of the Meteorological Magazine.

SIR,—I notice an article by Mr. Alexander MacDowall "On a Recent Recurrence in Weather," published in the March number of this Magazine (Vol. XXXIV., p. 20). For the purpose of comparison, I treated the temperatures observed at the Blue Hill Meteorological Observatory (near Boston, Mass., U.S.A.) exactly in the same manner as Mr. MacDowall treated the temperatures observed at Greenwich. That is, from July, 1898, to February, 1899, I took the average of the departures from normal temperature of each seven days having a new moon central, and the same for full moon. I next subtracted from the temperatures at new moon the temperatures at full moon in order to obtain the differences. The results are given in the following table:—

NEW MOON.	TEMPERATURE.		FULL MOON.	TEMPERATURE.		NEW MOON MINUS FULL MOON.	
	Green- wich.	Blue Hill		Green- wich.	Blue. Hill.	Green- wich.	Blue Hill.
Days.			Days.				
July 18.....	+ 1 ^o .2	+ 3 ^o .3	July 3.....	-0 ^o .7	+ 6 ^o .1	+ 1 ^o .9	- 2 ^o .8
Aug. 17.....	+ 7.7	+ 3.1	Aug. 2....	+0.4	+ 4.3	+ 7.3	- 1.2
Sept. 16.....	+ 7.1	+ 4.4	,, 31.....	+1.1	+ 9.0	+ 6.0	- 4.6
Oct. 15.....	+ 1.2	- 2.7	Sept. 29.....	-1.8	+ 6.3	+ 3.0	- 9.0
Nov. 14.....	+ 6.3	+ 1.6	Oct. 29.....	+5.9	+ 0.1	+ 0.4	+ 1.5
Dec. 13.....	+ 7.9	- 9.9	Nov. 28.....	+0.6	+ 7.7	+ 7.3	-17.6
Jan. 11.....	+ 7.0	- 5.7	Dec. 27.....	+4.8	+ 1.1	+ 5.2	- 6.8
Feb. 10.....	+11.9	-18.0	Jan. 26.....	-2.2	+11.4	+14.1	-29.4

The figures show that both at Greenwich and at Blue Hill the temperatures were generally above the normal until about November,

after which they were considerably below normal at Blue Hill at the time of new moon. But in the columns of temperature differences headed "New Moon minus Full Moon" a remarkable contrast is found between the temperatures at Greenwich and Blue Hill. At Greenwich the temperatures at new moon are steadily higher than at full moon, but at Blue Hill, with one exception, they were all lower. Furthermore, it is notable that the greatest plus departure at Greenwich (+14°·1) coincides with the greatest minus departure at Blue Hill (−29°·4); the next to the greatest plus departure at Greenwich (+7°·3) coincides with the next to the greatest minus departure at Blue Hill (−17°·6);* and the smallest plus departure at Greenwich (+0°·4) coincides with the only case in which there was no minus departure at Blue Hill. In other words, the reversal of phase was complete in almost every sense.

Another curious fact is, that the largest departures occurred in alternate months. Thus the alternate months August, October, December and February contain every case in which the departures exceeded seven degrees.

The mean departures from the normal temperatures at Blue Hill for each day of the weeks about new moon, first quarter, full moon and last quarter, from July, 1898, to February, 1899, are given in the following table:—

Mean Departures from Normal Temperature at Blue Hill, July, 1898, to February, 1899.

	New Moon.	First Quarter.	FULL MOON.	Last Quarter.
	° F.	° F.	° F.	° F.
3 Days before	−0·5	+1 5	+4·1	+0·7
2 Days before	−0·9	+3·1	+2·7	+0·9
Day before	−4·8	+4·2	+0·1	+3·5
Day of	−6·8	+5·2	+4·2	+0·7
Day after	−5·9	+4·2	+3·4	+1·5
2 Days after.....	−2·3	+2·6	+0·9	−2·1
3 Days after.....	−0·6	+4·2	+3·1	−2·9

These figures show a well-marked period of about 30 days. The interval is too short to determine whether the period had the exact length of the lunar period or had any relation of cause and effect, although the presumption favors it. I showed in the *American Meteorological Journal* for June, 1895, that these thirty-day oscillations in temperature reversed in phase at any given place and oscillated in different phases at widely separated places, as shown above for Greenwich and Blue Hill (see *American Meteorological Journal*, Vol. II., p. 87; see also Vol. I., p. 528, for discussion of the same phenome-

[* But the other case of +7°·3 does not support the argument so well.—ED.]

non in a two-year period). The reversal of phase at the same place is a curious phenomenon which at present completely blocks the way to forecasting. In some cases it appears to be due to a movement of the centres of oscillation, the laws of which will undoubtedly yield to further research. I have maintained for twenty years the paramount importance of a study of these periodic phenomena in order to advance in weather forecasting, but so far, I regret to say, I have not made many converts in America. I am glad that Mr. MacDowall is taking up the subject in England.

H. HELM CLAYTON.

Boston, Mass.

REVIEWS.

The Hereford Earthquake of December 17th, 1896, by CHARLES DAVISON, Sc.D., F.G.S. Birmingham, Cornish Brothers, 1899, 8vo., XIV.—304 pages, 22 maps and diagrams.

WE congratulate Dr. Davison upon having collected data respecting the above from 3,092 stations, and we think that perhaps he is still more to be congratulated upon having thoroughly digested this enormous mass of facts and impressions.

The record occupies the first 200 pages of the work. It is, a remarkable specimen of compact statement, is indispensable as the foundation for the second part, and (when one has thoroughly mastered the classification and the code of abbreviations) is easily followed, but at first sight the 3,092 entries (of which we take No. 1,000 as a type), are rather puzzling:—

1000. *Publow*.—Miss H. T. Bellamy.† 3. 5.32. 4. bed raised and shaken.
5. ab. 20 secs. 6. 5. 7. no.

These two lines contain the following information from observer No. 1,000 at Publow, in Somersetshire. Miss H. T. Bellamy was awakened by the shock at 5.32 a.m., she felt her bed raised and shaken, she considered that the shock lasted about 20 seconds, that the intensity of the shock was 5 on the Rossi-Forel scale, but she heard no noise.

When one reflects upon the hundreds of pages which three thousand similar entries printed *in extenso* would have occupied, one sees that, though the first 200 pages may not look very inviting, no other course was practicable.

Having this enormous mass of information, Dr. Davison had to classify and to study it. He gives the results in chapters V. to XIII., but we think that it would be unfair to an author who has worked so hard, as in the present instance, for us to set out all the results at which he has arrived, or to say more than that those who are interested in the study of earthquakes ought to obtain a copy of this handsome and (as far as we have tested it), remarkably accur-

ately printed volume. We have not noticed a single misprint. The only part which seems to us rather weak is the artistic; the diagrams and maps, though no doubt correct, are not so explicit and clear as they might have been. We also think that the section upon previous shocks in Herefordshire might have been strengthened.

As regards the *time* of the shock, Dr. Davison has arrived at conclusions very closely accordant with those expressed in this Magazine (Jan. 1897, p. 181), where we said

TIME.

“Here, as in every previous earthquake, there is ample proof of the carelessness of most persons as to keeping accurate time, and of the tendency to quote round figures (*e.g.* 5.30 or 5.40), rather than accurate ones.

It will be for Dr. Davison, if he can, to bring order out of chaos; meanwhile we offer the following as our impression of what was the initial time of the disturbance—viz., 5.32 a.m.—and the rate of progress 30 miles per minute, from Hereford as a centre.”

Dr. Davison seems to fix the centre as about 1 mile S.W. of Hereford (p. 225), the time as 5.31.45 a.m. (p. 275), and the mean surface velocity as 2,955 ft. per second (p. 274), which equals 34 miles per minute.

We are very glad to see how closely Dr. Davison's final results agree with our own very rough ones, determined from such information as we could collect within three weeks after the event; viz.: within 1 mile as to the centre, within 15 seconds as to time, and within 10 per cent. as to velocity of transmission.

It is satisfactory to find that the two important English earthquakes of recent years have been thoroughly investigated, and the results for each published. The former by Prof. Meldola, F.R.S., and Mr. White, in *The Essex Earthquake*, issued by The Essex Field Club, and the later in the work now before us.

One other monograph remains to be written: an exhaustive “List of British Earthquakes.” All honour to the late Mr. Roper for his efforts in that direction; we drew attention to it when, after his death, his son showed filial affection and respect, by privately printing the MS. which his father did not live to complete. That work is an excellent foundation, but for such a book as we desire, it will be necessary to enlist the help of antiquarians, of the readers of *Notes and Queries*, of Parochial Clergy—especially of those of parishes with old Parish Registers,—it will need a seismologist, a geologist, and a draughtsman.

Such a work would not “pay;” the mere printing and publishing would probably cost £200 or £300, and therefore it could be done only as a “labour of love,” but it would also be one of honour, and as regards the cost we believe that for a really useful object the funds can generally be obtained—as witnesses the work we are now reviewing.

Neudrucke von Schriften und Karten über Meteorologie und Erdmagnetismus, herausgegeben von Prof. Dr. G. HELLMANN. No. 12. Wetterprognosen u. Wetterberichte des xv. und xvi. Jahrhunderts. Berlin, A. Asher & Co., 4to., 1899, 34—184 pages, and seven folding sheets.

ENGLISH meteorologists who are unacquainted with the German language miss a great treat in not being able to follow the extremely learned and interesting series of publications of which No. 12 is now before us.

It deals with early weather almanacs, and with what we should call meteorological broad-sheets, *i.e.*, a sheet of paper of no uniform size but generally about 20 inches by 12 inches, printed on only one side, and usually with a large, coarse, wood-block representing "three sunnes," or an aurora, or other unusual appearance.

In the present volume we have reproductions (with an accuracy of which nothing but inspection can convey an idea) of a series containing 14 typical specimens of the weather almanacs (ranging from 1486 to 1899) and 12 of weather reports or broad-sheets.

These old publications were extremely numerous, at least 1,000 are known, so, possibly, the aggregate issue amounted to a million copies; but they were so rarely preserved that they are now nearly unobtainable, except at prices almost fabulous. Twenty years back, before Dr. Hellmann's work had directed attention to them, two were sold, one for 1,380 francs (£55) and the other for 680 francs (£27). This will give some idea of the money-value of the twenty-six reproduced in this volume. Added to which is the fact that many of the originals are in public libraries, whence no money could extract them, such as the National Museum, Nürnberg; the K. Library, München; the Bibliothèque National, Paris; and the British Museum.

We leave this question of money value, pointing out while so doing, that it at once puts out of the question all attempts at forming a *complete* meteorological library, and the hundreds of such publications of which every copy has perished, render it evidently equally impossible to form a *perfect* Bibliography of Meteorology.

These "Prognostica," as they are generally called, appear to have been among the early productions of the printing press; for Dr. Hellmann says that they appeared soon after 1470; but he does not give the title of any very early one, and the earliest which he reproduces is of 1486; this in no way contradicts his statement, for the probability of such a flimsy paper having been preserved for more than four centuries is not great. We wish, however, that he had stated the date and title of the earliest printed one known to him, and where it is.

We think that it would have been well that the Index should have stated in tabular form where the original of each of the 26 documents is preserved, For many of them this information is

given in the text, but for some we have not found it, and it would have saved time had all this information been given together.

As regards "Bauern Practica," which may be best rendered "Weather Almanacs," England was singularly behind the rest of Europe. Dr. Hellmann, with his unique knowledge and perseverance, has in this handsome—we might almost say priceless—volume given only one of English origin, viz., one issued for 1555 by A. Askham.*

BLACK RAIN.

To the Editor of the Meteorological Magazine.

SIR,—On Thursday, the 11th instant, we had a very heavy thunderstorm round Gloucester, but I think the storm was heaviest at Churchdown, between Gloucester and Cheltenham. There I have seldom seen so much rain fall within a limited time. The roads and ditches were watercourses in comparatively few minutes. What, however, I wish to mention to you is the fact that the rain seemed to be black. The ditches were quite inky in colour, and the puddles which remained in the road afterwards were also black. This was observed over a considerable district, and a number of people who caught water for household purposes were also struck with this peculiarity. The puddles which were left remained black for some days afterwards. Can you explain the phenomenon? The clouds were very black before the storm, but neither Gloucester nor Cheltenham produce any great amount of smoke. The course of the storm was from North-East to South-West., *i.e.*, from Cheltenham towards Gloucester. Perhaps you would reply to this in your Monthly Magazine, and this might save you the trouble of writing a reply.

I dare say you will allow me to insert it in the local papers, as a number of people in this locality would like to know your views about it.

Yours faithfully,

J. H. JONES.

Eldon Chambers, Gloucester, May 17th, 1899.

[We see that letters respecting the blackness of the rain on the above date appeared in the *Birmingham Daily Gazette* from correspondents at Upton-on-Severn, Staunton, Bromyard and Cheltenham. From this it is evident that the area affected included a triangle with Monmouth, Cheltenham and Bromyard for its three angles, say, an area of 500 square miles.

Many records of "black rain" have appeared in these pages, and we presume that until vigorous action is taken towards smoke abatement they will become more and more frequent. We cannot

* Wonderful to relate, the printer has put "Aksham" in the contents, and the Editor has not noticed it! A misprint in Dr. Hellmann's work is so rare that it has to be chronicled.

believe that it commercially "pays" to blow unconsumed carbon into the air, and we are certain that it is a nuisance.

There is no doubt whatever that smoke clouds from the manufacturing districts had been driven over Gloucester and Hereford, and the rain falling through, or from, them carried down the soot which they contained.—ED.]

OZONE.

To the Editor of the Meteorological Magazine.

SIR,—As I find that I am the only one reporting ozone to your *Met. Mag.*, I was pleased to read, and cannot forbear thanking you for, your interesting and instructive remarks on ozone on p. 50. Since you sent me "Hints to Meteorological Observers"—where I read that "the determination of ozone is not now included by the Royal Meteorological Society"—I have taken more notice of it myself, and wonder why others do not do so, for if not purely scientific from the mode of observation (*i.e.*, ozone papers), I can fully corroborate M. van Bastelaer's report, and have long since found out, that it is merely necessary to substitute the word "ozone" for the words "fresh air" to make the statements scientifically accurate.

I had for some time an ozonometer hanging up in a disused room, but never could find in it any indication of ozone, bearing out the statement that there is no "fresh"-ness in rooms.

When there is a period of a week or so without any ozone present here in the atmosphere, many people complain of want of energy and lassitude, but I myself know that the cause arises from a want of ozone to make the air "fresh."—I am, yours faithfully,

W. G. MACHIN.

Winchfield, May 17th, 1899.

WHIRLWIND AT WORSTEAD, MARCH 20TH, 1899.

To the Editor of the Meteorological Magazine.

SIR,—I have just seen the note in the May *Met. Mag.* *re* Whirlwind at Worstead.

I recorded T and L at 1.3 p.m., which confirms Mr. Preston—March 20th was a "funny" day. I found $7\frac{1}{2}$ inches of snow on the level on measuring at 9 a.m. (and a neighbour's measurement agrees closely), but only 0.26 in. of water was recorded. All but a very little fell in the night. The snow plough visited us. A slight jump occurred in the barograph at 1.10 p.m., and the curve previously was slightly unsteady for some hours.—Yours faithfully,

E. T. DOWSON.

Geldeston, June 2nd, 1899.

RESULTS OF METEOROLOGICAL OBSERVATIONS
AT
CAMDEN SQUARE FOR 40 YEARS, 1858-97.

MAY.

YEAR.	RAINFALL.				TEMPERATURE.										CLOUD. Aver
	Total.		Max. Fall.	Falls of 1 in. or +	Dry. Mean, 9a.&9p.	Wet. Mean, 9a.&9p.	ShadeMax		Shade Min		Sun Max. Black.		Grass Min.		
	Depth	Days					Abs.	Aver	Abs.	Aver	Abs.	Aver	Abs.	Aver	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14		15
1858..	2.76	14	.94	0	52.2	48.5	80.6	63.1	34.8	43.4	..	..	..	..	0-10 5.7
1859..	2.13	12	.53	0	53.5	50.3	78.4	66.8	34.0	43.8	..	..	..	..	5.5
1860..	3.57	18	1.10	1	54.6	50.1	76.1	65.4	33.6	45.3	..	..	28.3	41.2	5.9
1861..	1.39	11	.58	0	52.8	49.0	80.8	64.9	30.0	43.6	..	..	..	38.8	6.2
1862..	3.06	16	.82	0	55.5	52.5	81.1	67.1	38.2	48.2	..	..	..	45.4	6.6
1863..	1.27	9	.27	0	52.1	48.9	79.4	65.1	32.2	42.9	..	..	27.4	39.7	4.7
1864..	1.86	10	.47	0	56.4	51.6	84.5	66.9	34.2	45.8	..	..	..	42.2	5.6
1865..	3.40	17	.75	0	56.5	52.6	81.0	69.2	31.9	46.4	..	..	28.6	42.9	5.0
1866..	2.03	10	.76	0	50.9	46.4	72.2	62.6	33.0	41.6	..	..	25.5	36.2	4.4
1867..	2.45	9	1.03	1	54.6	50.4	84.0	64.8	31.8	45.1	..	..	25.1	39.8	4.9
1868..	1.58	6	.93	0	58.6	54.4	87.6	70.4	35.6	47.9	..	..	32.2	42.5	5.2
1869..	3.27	17	.61	0	51.6	48.3	71.2	61.8	33.0	44.5	..	..	31.5	41.7	7.2
1870..	.70	6	.32	0	54.1	49.8	85.1	67.3	30.8	43.3	126.9	112.0	24.4	38.9	4.7
1871..	.92	7	.36	0	52.7	48.6	79.0	65.5	35.0	42.5	124.0	109.5	33.2	41.3	4.8
1872..	3.05	18	.73	0	52.1	48.6	75.9	62.9	33.2	43.6	127.8	107.6	29.0	40.5	6.1
1873..	1.56	14	.52	0	51.0	47.1	72.9	63.1	32.9	43.2	123.1	108.7	29.6	39.8	6.2
1874..	1.14	7	.66	0	51.5	47.3	73.9	63.2	33.3	42.5	120.8	107.0	28.0	39.3	5.9
1875..	1.61	13	.41	0	55.8	51.4	82.0	67.2	39.8	46.7	131.3	109.8	36.8	43.8	4.8
1876..	.94	6	.43	0	49.7	45.9	71.1	62.0	32.8	40.5	119.8	107.5	27.7	35.7	5.1
1877..	1.91	15	.28	0	50.2	46.3	68.0	59.8	29.2	42.1	121.0	101.0	25.7	39.2	6.6
1878..	3.89	19	1.71	1	55.0	52.0	74.9	65.8	36.7	48.4	122.4	107.6	36.6	46.2	6.7
1879..	3.46	19	1.30	1	49.2	45.6	69.0	59.3	30.6	41.4	122.4	105.3	25.4	37.6	6.2
1880..	.26	5	.21	0	52.6	47.7	85.0	65.2	33.8	43.4	131.5	110.8	30.0	39.0	5.6
1881..	1.52	11	.57	0	54.6	50.3	80.7	66.7	31.2	44.9	123.6	112.5	23.8	40.1	4.6
1882..	1.20	11	.41	0	54.9	50.0	74.2	66.9	37.3	45.5	129.7	114.0	32.8	40.5	4.8
1883..	1.97	11	.60	0	53.1	49.0	79.6	64.8	31.0	44.5	121.6	100.2	26.3	40.7	5.5
1884..	.78	11	.15	0	54.6	49.8	81.3	66.3	35.0	44.7	121.4	102.2	31.3	40.9	5.1
1885..	2.63	19	.39	0	49.9	46.1	73.8	59.7	31.1	42.2	119.3	101.8	26.9	37.5	5.8
1886..	4.79	19	1.27	2.	53.0	48.9	75.3	62.9	31.6	44.6	115.8	94.8	23.7	39.5	5.8
1887..	1.45	21	.28	0	50.2	47.2	71.2	59.8	32.8	43.4	118.8	95.2	24.9	39.5	7.1
1888..	1.18	7	.33	0	53.1	48.2	77.2	64.0	35.3	44.1	125.3	105.8	29.3	38.8	4.9
1889..	3.22	14	1.08	1	56.1	53.0	81.2	66.2	42.7	49.3	125.9	101.2	32.8	46.9	6.2
1890..	1.25	13	.41	0	54.6	49.8	77.6	65.5	39.1	45.8	120.2	106.6	34.0	40.6	4.7
1891..	2.72	19	.66	0	50.3	46.7	80.2	60.5	30.7	43.0	122.7	98.7	28.0	38.9	6.8
1892..	1.51	11	.74	0	55.6	49.9	84.7	66.4	28.4	45.4	130.2	106.0	23.1	39.2	4.9
1893..	.80	8	.35	0	57.1	51.8	78.6	70.2	38.2	47.4	127.9	112.0	34.0	42.5	4.3
1894..	1.85	16	.41	0	50.7	46.4	71.5	61.0	33.0	42.4	116.9	105.0	25.0	37.2	5.7
1895..	.34	5	.12	0	55.6	50.5	86.2	63.3	35.7	46.0	128.9	109.3	30.2	41.5	3.8
1896..	.14	3	.12	0	54.5	49.1	78.9	67.2	36.1	45.2	122.9	110.2	25.6	38.9	4.3
1897..	1.08	9	.41	0	52.0	47.1	78.0	63.7	33.9	43.2	124.7	107.7	27.1	37.7	4.7
Mean ...	1.92	12	.60	0.2	53.3	49.2	78.1	64.7	33.8	44.4	124.0	106.1	28.8	40.3	5.5
Ex- tremes	4.79	21	1.71	2	58.6	54.4	87.6	70.4	42.7	49.3	131.5	114.0	36.8	46.9	7.2
	.14	3	.12	0	49.2	45.6	68.0	59.3	28.4	40.5	115.8	94.8	23.1	35.7	3.8

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, DECEMBER, 1898.

STATIONS. <i>(Those in italics are South of the Equator.)</i>	Absolute.				Average.				Absolute.		Total Rain.		Aver.
	Maximum.		Minimum.		Max.	Min.	Dew Point.	Humidity.	Max. in Sun.	Min. on Grass.	Depth.	Days.	Cloud.
	Temp.	Date.	Temp.	Date.									
England, London	57·1	4	27·1	24	49·8	40·8	41·1	84	68·9	22·9	2·54	12	7·1
Malta.....	66·4	7	41·4	23	61·3	51·5	49·1	79	120·8	37·1	8·14	18	5·2
<i>Cape of Good Hope</i> ...	81·0	28	49·3	16	74·0	56·5	52·9	64	...	...	·44	4	2·8
<i>Mauritius</i>	86·6	6	68·3	14	83·8	72·5	68·1	74	137·4	60·1	5·70	12	5·8
Calcutta.....	81·6	14	51·4	5	77·5	56·7	55·2	67	138·4	41·8	·00	0	1·0
Bombay.....	89·3	18	64·0	29	85·6	72·4	67·6	69	137·3	55·9	·00	0	1·5
Ceylon, Colombo	92·4	18	70·8	10	88·7	72·8	71·8	81	154·0	68·6	3·05	17	5·7
<i>Melbourne</i>	109·4	5	44·0	1	78·7	54·5	49·5	57	158·2	36·9	·97	5	3·8
<i>Adelaide</i>	108·5	30	50·0	17	89·7	63·2	48·4	38	165·0	42·4	·53	2	2·3
<i>Sydney</i>	86·1	3	51·5	11	74·6	61·3	56·9	65	145·8	46·1	1·22	10	4·6
<i>Wellington</i>	77·3	11	47·0	25	69·4	55·1	50·8	67	138·0	37·0	2·71	14	4·2
<i>Auckland</i>	77·0	16a	53·0	3c	71·1	58·3	56·2	73	146·0	47·0	3·76	13	4·9
Jamaica, Kingston.....	89·9	1	65·9	20	87·0	68·8	66·0	76	...	...	·14	3	3·6
Trinidad	89·0	1,5	60·0	4	86·7	68·3	70·5	82	161·0	60·0	3·57	11	...
Grenada.....	84·0	13b	71·0	15d	82·0	72·7	66·1	70	152·0	...	6·55	24	2·6
Toronto	44·8	30	-5·2	13	32·9	19·8	23·7	83	57·8	-8·0	2·55	13	7·8
New Brunswick, Fredericton	43·1	30	-17·5	16	28·4	9·8	11·3	75	...	...	2·29	17	6·6
Manitoba, Winnipeg	36·2	17	-34·6	31	15·1	-6·6	...	...	...	...	·61	6	3·6
British Columbia, Esquimalt.....	53·0	27	26·0	30	44·0	35·3	...	...	...	...	4·11	17	6·8

a—and 30. b—and 19. c—and 25. d—and 27.

REMARKS.

MALTA.—Adopted mean temp. 55°·9, or 0°·4 below, mean hourly velocity of wind 11·3 miles, or 0·2 above, average. Mean temp. of sea 65°·0. TSS on seven days; L on three days and H on 23rd. J. F. DOBSON.

Mauritius.—Mean temp. of air 0°·4, of dew point 0°·1. and rainfall 70 in., above their respective averages. Mean hourly velocity of wind 10·4 miles or 0·5 mile below average; extremes, 23·5 on 20th and 1·9 on 14th; prevailing direction E.S.E. to E. by N. L and T on 6th and 29th, and L on 16th and 28th. During heavy local rain on December 5th to 7th the seismograph was powerfully affected, the boom on the first two days going clean out of range to E., and on the third moving gradually to W. The rain on the two first days was generally from westward. T. F. CLAXTON.

CEYLON, COLOMBO.—Mean temp. of air 79°·5, or 0°·4 above, of dew point 0°·9 above, and rainfall 3·52 in. below, the average. Mean hourly velocity of wind 7·6 miles; prevailing direction N.W. and N.E. TSS on 6 days and L on 6 other days. H. O. BARNARD.

Adelaide.—A hot, dry month, the mean temp. being 5°·2 above the average of 41 years. Rainfall 30 in. below average. C. TODD, F.R.S.

Sydney.—Temp. of air 1°·9 below, humidity 4°·5 below, and rainfall 1·42 in. below, the average. H. C. RUSSELL, F.R.S.

Wellington.—Generally fine and pleasant, though showery during the middle and latter part of the month. Distant T on 18th. Prevailing wind from N.W., strong at times. Slight earth shock on 30th. R. B. GORE.

Auckland.—Rainfall rather more than an inch above the average of 30 years. Mean temp. slightly above the average. T. F. CHEESEMAN.

JAMAICA, KINGSTON.—Rainfall only 7 per cent. of the average. Island rainfall 47 per cent. of the average. Mean hourly velocity of wind 1·6 miles. R. JOHNSTONE.

TRINIDAD.—Rainfall 1·24 in. below the average of 30 years. J. H. HART

SUPPLEMENTARY TABLE OF RAINFALL,
MAY, 1899.

[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.
I.	Uxbridge, Harefield Pk..	1·81	XI.	Builth, Abergwesyn Vic.	5·26
II.	Dorking, Abinger Hall.	1·31	„	Rhayader, Nantgwilt ...	3·82
„	Birchington, Thor	2·48	„	Lake Vyrnwy	3·68
„	Hailsham	1·54	„	Corwen, Rhug	2·02
„	Ryde, Thornbrough	1·06	„	Criccieth, Talarvor	3·77
„	Emsworth, Redlands ...	·92	„	I. of Man, Douglas	3·72
„	Alton, Ashdell	1·20	XII.	Stoneykirk, Ardwell Ho.	3·90
III.	Oxford, Magdalen Col..	1·28	„	New Galloway, Glenlee	5·07
„	Banbury, Bloxham	1·45	„	Moniaive, Maxwellton Ho.	4·80
„	Northampton, Sedgebrook	1·41	„	Lilliesleaf, Riddell	3·00
„	Stamford, Duddington..	2·16	XIII.	N. Esk Res. [Penicuick]	3·75
„	Alconbury	2·02	XIV.	Glasgow, Queen's Park..	4·45
„	Wisbech, Bank House...	2·15	XV.	Inverary, Newtown	2·65
IV.	Southend	1·75	„	Ballachulish, Ardsheal...	2·17
„	Harlow, Sheering.....	3·00	„	Islay, Gruinart School ...	1·48
„	Colchester, Lexden	1·49	XVI.	Dollar	4·65
„	Rendlesham Hall	2·05	„	Balquhidder, Stronvar...	4·20
„	Scole Rectory	2·15	„	Coupar Angus Station...	3·78
„	Swaffham	1·57	„	Dalnaspidal H.R.S. ....	...
V.	Salisbury, Alderbury ...	1·81	XVII.	Keith H.R.S.	1·79
„	Bishop's Cannings	2·64	„	Forres H.R.S. ...	2·65
„	Blandford, Whatcombe .	1·34	XVIII.	Fearn, Lower Pitkerrie..	1·96
„	Ashburton, Holne Vic...	3·18	„	S. Uist, Askernish	1·51
„	Okehampton, Oaklands.	3·72	„	Invergarry	1·91
„	Hartland Abbey	2·47	„	Aviemore H.R.S.	2·95
„	Lynton, Glenthorne ...	3·43	„	Loch Ness, Drumnadrochit	1·75
„	Probus, Lamellyn	2·45	XIX.	Invershin	2·40
„	Wellington, The Avenue	1·65	„	Durness .....	...
„	North Cadbury Rectory	1·22	„	Watten H.R.S.	2·18
VI.	Clifton, Pembroke Road	2·27	XX.	Dunmanway, Coolkelure	5·51
„	Ross, The Graig	2·23	„	Cork, Wellesley Terrace	3·95
„	Wem, Clive Vicarage ...	2·50	„	Killarney, Woodlawn ..	3·66
„	Wolverhampton, Tettenhall	2·06	„	Caher, Duneske	3·13
„	Cheadle, The Heath Ho.	2·64	„	Ballingarry, Hazelfort...	2·96
„	Coventry, Priory Row ..	2·37	„	Limerick, Kilcornan ...	1·42
VII.	Grantham, Stainby	2·36	„	Milton Malbay	2·78
„	Horncastle, Bucknall ...	...	„	Gorey, Courtown House	2·87
„	Worksop, Hodsck Priory	2·82	XXI.	Moynalty, Westland ...	3·80
VIII.	Neston, Hinderton	2·09	„	Athlone, Twyford	3·32
„	Southport, Hesketh Park	2·39	„	Mullingar, Belvedere ...	3·75
„	Chatburn, Middlewood.	2·85	„	Woodlawn	3·78
„	Duddon Val., Seathwaite Vic.	6·34	XXII.	Crossmolina, Enniscoe ..	3·10
IX.	Melmerby, Baldersby ...	3·83	„	Collooney, Markree Obs.	2·57
„	Scarborough, Observat'y	3·33	„	Ballinamore, Lawderdale	...
„	Middleton, Mickleton ...	4·30	„	Warrenpoint.....	3·49
X.	Haltwhistle, Unthank...	2·39	XXIII.	Seaforde.....	3·93
„	Bamburgh	3·16	„	Belfast, Springfield	3·53
„	Keswick, The Bank	4·37	„	Bushmills, Dundarave..	3·04
XI.	Llanfrehfa Grange	3·29	„	Stewartstown	3·96
„	Llandoverly	2·82	„	Killybegs	2·46
„	Castle Malgwyn	3·25	„	Horn Head	2·72
„	Brecknock, The Barracks	2·24	„		

MAY, 1899.

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 ≥ 0.1 or more fell.	Max.		Min.		In shade.	On grass.	
				Dpth	Date		Deg.	Date	Deg.	Date.			
I.	London (Camden Square) ...	1.38	— .52	.40	14	12	74.2	31	34.4	5	0	5	
II.	Tenterden	1.72	+ .16	.69	22	11	71.5	31	32.0	26	1	8	
	Hartley Wintney	1.49	...	.37	16	13	74.0	31	28.0	5	2	10	
III.	Hitchin	1.73	— .22	.35	14	11	72.0	31	29.0	4	6	...	
	Winslow (Addington)	2.28	+ .18	.59	12	14	72.0	31	31.0	4, 5	3	8	
IV.	Bury St. Edmunds (Westley)	2.38	+ .63	.74	12	12	67.0	18	31.0	5	...	...
	Norwich (Brundall)	1.97	...	.40	24	16	69.0	18a	30.6	1	1	5	
V.	Winterbourne Steepleton ...	1.44	...	.45	19	12	66.4	31	30.2	5	2	10	
"	Torquay (Cary Green) ...	2.07	...	.46	19	12	65.4	8	41.9	4	0	0	
"	Polapit Tamar [Launceston]..	3.62	+ 1.79	1.09	23	13	67.9	31	31.2	6	...	6	
VI.	Stroud (Upfield)	2.75	+ .71	.91	19	12	69.0	31	36.0	5	0	...	
"	ChurchStretton (Woolstaston)	2.01	— .86	.39	24	15	70.0	31	31.0	4	2	7	
"	Worcester (Diglis Lock)	2.13	— .15	.37	16	16	...	...	...	...	...	...
VII.	Boston	2.52	+ .80	.47	8	13	75.0	31	30.0	5, 6	2	...	
"	Hesley Hall [Tickhill].....	2.18	+ .14	.50	15	16	75.0	31	29.0	5, 6	7	...	
"	Breadsall Priory	2.92	...	.50	22	14	71.0	31	32.0	4c	4	10	
VIII.	Manchester (Plymouth Grove)	...	...	...	...	...	...	...	...	...	...	...
IX.	Wetherby (Ribston Hall) ...	4.23	+ 2.28	1.69	11	16	...	...	...	...	...	...
"	Skipton (Arneliffe)	4.46	+ .74	1.17	11	15	...	...	...	...	...	...
"	Hull (Pearson Park)	3.33	+ 1.45	.79	15	18	70.0	30	30.0	5	3	10	
X.	Newcastle (Town Moor)	3.59	+ 1.84	.85	11	17	...	...	...	...	...	...
"	Borrowdale (Seathwaite).....	8.78	+ .17	2.47	19	16	...	...	...	...	...	...
XI.	Cardiff (Ely)	2.84	— .01	.80	19	15	...	...	...	...	...	...
"	Haverfordwest	2.43	+ .07	1.01	19	15	68.9	30	33.3	27	0	7	
"	Aberystwith (Gogerddan) ...	4.26	...	.95	21	16	73.0	31	...	...	...	...
"	Llandudno	2.26	+ .33	.45	23	14	66.0	31	36.0	5	0	...	
XII.	Cargen [Dumfries]	4.11	+ 1.59	.98	18	9	69.0	31	30.0	4, 5	3	...	
XIII.	Edinburgh (Blacket Place)...	3.80	...	1.25	19	15	70.8	31	33.2	6	0	3	
XIV.	Colmonell	3.09	...	.96	18	9	71.0	29	28.0	3	...	...
XV.	Tighnabruich	2.81	...	.75	19	12	66.0	31	32.0	3	1	...	
"	Mull (Quinish)	2.39	— .56	.48	19	13	...	...	...	...	...	...
XVI.	Loch Leven Sluices	4.60	+ 2.04	1.50	20	12	...	...	...	...	...	...
"	Dundee (Eastern Necropolis)	4.00	+ 2.34	.95	18	16	73.0	31	32.7	8	0	...	
XVII.	Braemar	3.05	+ .64	.77	19	15	67.0	31	24.8	4	14	22	
"	Aberdeen (Cranford)	3.26	...	.94	19	14	71.0	31	29.0	4e	8	...	
"	Cawdor (Budgate)	2.57	+ .82	.70	15	13	...	...	...	...	...	...
XVIII.	Strathconan [Beaul]	2.64	— .45	1.02	17	6	...	...	...	...	...	...
"	Glencarron Lodge	4.55	...	1.51	16	14	65.9	8	30.1	3	5	...	
XIX.	Dunrobin	2.53	+ .49	1.13	15	7	65.0	31	33.0	4	0	...	
"	S. Ronaldshay (Roeberry) ...	3.09	+ 1.37	1.23	15	11	62.0	29	35.0	3f	0	...	
XX.	Darrynane Abbey	2.55	...	1.34	17	13	...	...	...	...	...	...
"	Waterford (Brook Lodge) ...	3.74	+ 1.51	.58	9	16	66.0	30	33.0	15d	0	...	
"	Broadford (Hurdlestown) ...	3.15	...	1.16	17	15	...	...	...	...	...	...
XXI.	Carlow (Browne's Hill)	2.66	+ .32	.59	19	13	...	...	...	...	...	...
"	Dublin (FitzWilliam Square)	2.09	+ .16	.36	17	16	69.6	31	38.0	27	0	0	
XXII.	Ballinasloe	2.90	+ .21	1.03	17	14	71.0	31	38.0	6g	0	...	
"	Clifden (Kylemore)	2.65	...	.63	19	11	...	...	...	...	...	...
XXIII.	Waringstown	5.03	+ 2.59	.85	19	17	68.0	10b	29.0	6	5	6	
"	Londonderry (Creggan Res.)	3.80	+ 1.28	.79	23	17	...	...	...	...	...	...
"	Omagh (Edenfel)	3.40	+ .93	.84	23	16	69.0	31	32.0	3	1	7	

+ Shows that the fall was above the average ; — that it was below it.
a—and 31. b—and 11, 12. c—and 5, 27, 28. d—and 27. e—and 5, 26.
f—and 24. g—and 7, 8.

METEOROLOGICAL NOTES ON MAY, 1899.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; TS for Thunderstorm; R for Rain; H for Hail; S for Snow.

ENGLAND.

TENTERDEN.—The first and last weeks were cold and dry. Showery from 13th to 16th, and from 19th to 24th. Heavy R on Whit Monday, 22nd, but very partial, 1·13 in. falling at Benenden, but none further S. Duration of sunshine 233 hours 40 mins. Bamboo and blue gum recovered from the March frost.

HARTLEY WINTNEY.—Much cold throughout the month, especially in the first and last weeks with strong N.E. winds; a sharp snap of frost from 26th to 30th damaging young shoots. The middle of the month was showery, but the total R is ·14 below the average. Distant T on 11th. 13 hours sunshine on 31st. Ozone on 14 days. Oak in leaf on 20th and ash on 31st.

WINSLOW, ADDINGTON.—A rather cold May with a good deal of R between the 8th and 24th, then very fine and bright to the end with slight morning frosts, but sharp enough to cut down potatoes and French beans. Heavy TS on 12th with heavy R, and H within a few miles; several accidents to sheep and cattle caused by the L.

WESTLEY, BURY ST. EDMUNDS.—A dull and unpleasant month and vegetation backward. Very cold from 4th to 6th. T on 8th, 19th, 22nd, and 23rd. TS on 15th. H on 8th.

NORWICH, BRUNDALL.—An ungenial month with much cold, harsh weather, rendering vegetation unusually late. R slightly over the average, and mean temp. about 2° deficient. The second May in succession with no max. temp. as high as 70°. Fine, dry, and much warmer towards the end. T and L from 5 to 6 p.m. on 15th, T at 4 p.m. on 16th, distant T on 20th, TS and heavy R at 3 p.m. on 24th.

WINTERBOURNE STEEPLTON.—Very cold and dull, the mean temp. being only 48°·9, or the lowest for May, except 1894, in seven years, and 2°·2 below the average.

TORQUAY, CARY GREEN.—R ·05 in. above the average. Mean temp. 52°·8, or 0°·4 below the average. Duration of sunshine 210 hours 50 min., being 14 hours 10 mins. below the average. No sunless day, the least duration being 10 mins. on 3rd, 19th, and 24th, and the greatest 14 hours 20 mins. on 31st, or 90 per cent. of the possible.

POLAPIT TAMAR [LAUNCESTON].—The early part of the month was fine and dry with cold nights and easterly winds. From 11th to 26th the weather was rough and cold with strong wind, heavy R and H. From 27th to the end finer with E. wind again.

STROUD, UPFIELD.—Heavy TS to the N. on 11th, but only a few drops of R here. S.W. gale on 18th.

WOOLSTASTON.—A very cold and backward month. Violent storms of H on 16th; mean temp. 50°·4.

BREADSALL PRIORY.—A very cold, sunless, and wet month.

HULL, PEARSON PARK.—TSS on 16th, 20th, and 23rd, with H on the latter day.

SEATHWAITE.—S on the mountains on 22nd.

WALES.

HAVERFORDWEST.—May was cold to the 7th, with ground frosts. From 7th to 26th R fell in small quantities nearly every day. From 26th to the end fine,

bright days, with low night temp., prevailed. Wind mostly N., N.E., and S.E. In 5 mins. at 1.30 a.m. on 17th \cdot 10 in. of R fell, and at 3.15 a.m. on the same day there were violent squalls lasting from 10 to 15 mins. The oak was in leaf more than 15 days in advance of the ash.

GOGERDDAN.—The second and third weeks were very wet, but the last week was very hot, with bright sunshine.

SCOTLAND.

CARGEN [DUMFRIES].—Except the last five days, when fine, warm weather prevailed, there was a continuance of the cold unsettled weather of April. Excessive R, low temp., and absence of sunshine having been the unusual concomitants of a bar. pressure somewhat above the average. The mean temp. was lower only in 1869, 1885, and 1894 during 40 years, and in only seven Mays was there a heavier R or less sunshine. Of the $4\cdot$ 11 in. of R $3\cdot$ 13 in. fell in the seven days, 17th to 23rd. E. winds prevailed on 21 days. The R for the first five months of the year is $24\cdot$ 47 in., exceeding the mean by upwards of 8 in., the fall in each month being in excess. Vegetation fully three weeks later than in 1898. T in afternoon on 1st. H showers on 16th.

EDINBURGH, BLACKET PLACE.—Very cold and wet. Mean temp. 3° ·1 below, and R nearly double, the average. The fall on 19th, $1\cdot$ 25 in., is the greatest daily amount in May since 1865, and in 54 hours on 18th, 19th, and 20th, $2\cdot$ 09 in. fell. Fog on 10th.

COLMONELL.—R \cdot 66 in. above, and mean temp. 2° ·3 below, the average of 23 years. T on 1st and 15th. T and L on 16th.

TIGHNABRUAICH.—A cold, backward month, with small R. Prevailing winds E. and S.E., N. and N.W.

ABERDEEN CRANFORD.—Cold and wet, with N. and N.E. wind, and little sunshine.

S. RONALDSHAY, ROEBERRY.—The first half of the month was dry, the middle very wet and cold, the latter part drier and warmer. Mean temp. 45° ·8, or 1° ·6 below the average of 9 years.

IRELAND.

DARRYNANE ABBEY.—Fine on the whole, but heavy R on 17th and 18th. Heavy T with L on 10th, and T on 26th. The last few days very fine and warm. Total R for the first 5 months \cdot 15 in. more than in 1898, but on 30 fewer days.

WATERFORD, BROOK LODGE.—T on 9th and 11th, H on 16th, fog on 21st.

BROADFORD, HURDLESTOWN.—A favourable month on the whole. The R of 17th, $1\cdot$ 16 in., is the greatest in 24 hours since July 24th, 1896, when $2\cdot$ 10 in. fell. R \cdot 60 in. above, and rainy days 1 below, the average of 14 years.

DUBLIN, FITZWILLIAM SQUARE.—Both at the beginning and at the close fair, calm, anti-cyclonic weather prevailed; cold nights, and sunny, and sometimes warm, days. During the middle fortnight conditions were cyclonic, and the weather very disturbed, rainy and cold, R falling daily from 11th to 24th. Mean temp. 51° ·4, or 0° ·2 below the average. High winds on 6 days, never reaching the force of a gale. Fog on 10th, 12th, and 29th. H on 16th. T on 15th. Lunar corona on 20th. Solar halos on 1st, 17th and 29th.

WARINGSTOWN.—The wettest May since 1886.

OMAGH, EDENFEL.—The first week was fine and generally bright, with somewhat arid days and cold nights. In the fortnight that followed a R 50 per cent. above the average for the whole month fell, accompanied by a generally dark, raw, saturated atmosphere. The last week was brilliant, but without any real warmth till the last day.