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The Hon. Ralph Abercromby,

1842-1897.

WE should have mentioned in an earlier number the loss which meteorology sustained by the death in Sydney, N.S.W., of Mr. Abercromby, but that the first news came only by telegraph, and we clung to the hope that it might not be true; but unhappily it is, and we shall no more hear the calm, clear voice, always gentle, always instructive.

It is impossible within ordinary limits to enumerate the works and papers issued by Mr. Abercromby between 1874 and 1894—there must be 50 or 60. Some of the important ones, "Weather," "Seas and Skies in many Latitudes," "Instructions for observing Clouds," and "Principles of Forecasting by means of Weather Charts," have been noticed in these pages. Had his physique been equal to his brain power, Abercromby would have taken quite an exceptional position, for, in spite of ill-health, he was a leader who turned out much, and valuable, work. Even when too ill to write himself, Mr. Abercromby manifested his lifelong interest in meteorology by offering prizes for meteorological essays, and by freely distributing copies of the papers which he enabled others to write.

Although he died in Australia, far from his relatives, it is a comfort to think that while fading away, he had the sympathy and care of a brother meteorologist, Mr. H. C. Russell, F.R.S., of Sydney Observatory.

FROMONDUS.

To the Editor of the Meteorological Magazine.

SIR,—I am obliged by your notice in the *Meteorological Magazine* of the article upon Fromondus, by M. l'Abbé Monchamp, which appeared recently in *Ciel et Terre*.

There is one passage in the article which you have not correctly translated. You say "Prof. Monchamp regards the record of the weather kept by Froimont in 1614 and 1625 as 'the earliest kept

in Belgium if not in the world.'” If M. Monchamp had used those words, I certainly should not have allowed them to appear, for every one familiar with meteorological work knows of Tyge Brahe's *Meteorologiske Dagbog* and of Merle's *MS*. M. Monchamp wrote, “Trouverait on *beaucoup de séries* d'observations météorologiques antérieures à cette époque, même faites sans le secours d'instruments?” This is very different from what you printed in the *Meteorological Magazine*, and far from suggesting that the author considered Froidmont's observations as the oldest known. (1)

With respect to the remark concerning the zodiacal light, it seems to me more plausible than to attribute the phenomenon to a bolide. But we must not forget that in ancient times exaggeration was frequent. (2)

I can add to your list of editions of Fromondus one more—Anvers, 1634—on the authority of the *Biographie Nationale*, published by the *Académie des Sciences*. (3)

Yours very truly,

A. LANCASTER.

Observatoire Royal de Belgique.

[No one likes to have made a mistake, but we really think that it was fortunate that we did, because it has elicited M. Lancaster's letter and will perhaps bear further fruit. We have added numerals to the paragraphs of M. Lancaster's letter, and employ the same in the following comments:—

- (1) Our fault; we overlooked the words which we have now printed in italics, “*beaucoup de*.” While upon this subject, we think it well to inquire, whether it would not be desirable to compile a list of journals of the weather prior to 1650, after which date they became common.
- (2) We cannot accept the idea of a zodiacal light strong enough to dim the midnight brightness of the moon. Our readers have now M. Lancaster's opinion and our own, and there we must leave the matter. The passage in the original is—“Et à fido teste nuper audivi, autumno anni 1625, ingentem trabis molem, intempestâ nocte, ab Occasu exortam, paullatimque ad cæli culmen evectam, Lunam clarissimè splendentem infuscasse.”
- (3) We are very glad to add to the list of editions that mentioned by M. Lancaster. We had consulted his very valuable *Catalogue des ouvrages d'Astronomie, &c.*, but it is not mentioned there; perhaps there is now no copy in existence.

Mr. Prince, of Crowborough, has a copy of edition E, and points out that according to the signatures it is a 4to, and that therefore the entry under F is superfluous. We object to a page 5·4 in. by 3·2 in. being called a 4to; but as it is evident from the signatures that

it was printed in 8's, we suppose that the paper was *half sheets*. However that may have been, this is a capital illustration of the muddle as to sizes of which we complained on p. 102, and it could not have been cleared up had not Mr. Prince sent us the precise space on each page occupied by type.—ED.]

BUYS-BALLOT.

WE do not often reprint what we have written, but it is seven years since the following note appeared, and we think that no stronger appeal could be made than by this brief narrative of facts.

Buy's=Ballot.

One by one, with saddening frequency, those whose names are known to Meteorologists of all countries are leaving us. On Sunday night, February 2nd, 1890, from his well-loved home at Utrecht, passed away the spirit which gave to the world the useful "Buys-Ballot's Law," by which the author will be remembered long after his many personal friends have themselves been removed. Prof. Buys-Ballot was often in this country; he was a corresponding member of the British Association, and attended its meetings, and he was one of the nineteen honorary members of the Royal Meteorological Society. He was 72 years of age, was an honorary member of the Society of Arts, of the German and of the Austrian Meteorological Societies, and Knight or Commander of Orders in Austria, Netherlands, Portugal and Prussia.

Besides discharging the duties of his Professorship from 1847 to 1887, Dr. Ballot was director, indeed almost creator, of the Royal Meteorological Institute of the Netherlands. In 1883 a new island, discovered by the Dutch Meteorological Expedition, in $70^{\circ} 25' 28''$ N., was named after him as Buys-Ballot's Island, and in 1887, on giving up his professional duties, a sort of International banquet was given in his honour, and he was presented with a gold medal specially struck to commemorate the event. Dr. Ballot's earliest scientific papers were upon chemistry and physics, but for forty years nearly all his time and thought has been devoted to meteorology, and his contributions have appeared not only in Dutch, but in German, French, and English.

The old buildings in which Buys-Ballot worked for 40 years have had to be pulled down. A new Royal Dutch Meteorological Institute has been erected at De Bilt, near Utrecht, and his countrymen, successors and co-labourers desire to place at it a monumental bust to his memory. Nearly all the leading meteorologists in both hemispheres have formed an international committee to co-operate with Buys-Ballot's own countrymen in raising the necessary funds, and we gladly comply with their request to lay the matter before our readers, and shall be happy to acknowledge and forward any donations which any of them may feel inclined to send. Our own personal view of the matter is that no very large sum is required, but that the greater the number of contributors, the more would it be evidence of the esteem in which the deceased was held.

CLIMATOLOGICAL RECORDS FOR THE BRITISH EMPIRE IN 1896.

It will, perhaps, be conducive to the convenience of our readers if we arrange our remarks on the annual summary of our monthly climatological tables under the various headings as set out, while it will not make them much more fragmentary than would be the case under any other arrangement.

Max. shade temp. Adelaide, as is the case in about three years out of four, recorded the highest shade temp., but the reading, though above the average, is not remarkable. The value of $104^{\circ}8$ at Malta appears to be unprecedented; the temp. having risen above 100° in only six out of thirteen years. At Calcutta, 1896 was apparently remarkably warm, as the mean temp. and the mean max. are the highest from 1877 onwards, while the absolute max. ($106^{\circ}8$) was exceeded only in 1895. On the other hand, the absolute min. ($45^{\circ}5$) is the lowest in any year of the same period.

Min. shade temp. and mean min. Greatest total range and greatest daily range. No other station has ever approached Winnipeg in these elements, but the 1896 values are normal, and call for no special comment.

Least total range and least daily range. Grenada, which records these two extremes, has only recently been added to the tables, but the values appear to be normal, and are very similar to those which in former years were obtained at Barbados.

Highest mean temp. Ceylon has every year yielded the highest mean temp., though the average of fifteen years at Bombay is less than a degree lower. The 1896 record of $81^{\circ}5$ has been exceeded only twice in seventeen years, namely, by $81^{\circ}9$ in 1878, and $81^{\circ}7$ in 1895.

Driest and dampest stations. Adelaide has for many years recorded the lowest relative humidity, and Esquimalt, since its inclusion in the tables in 1891, the opposite extreme. The 1896 records, 59 and 87 respectively, are not remarkable.

Max. in sun and min. on grass. These records are, perhaps, so much dependent on the instruments and their exposure, as to be incapable of strict comparison, but Trinidad always yields very high values. In the absence of a grass minimum at Winnipeg, Toronto has always given the lowest radiation temp.

Greatest and least rainfall. The variation in the amounts of rainfall at the stations included in our tables has always been less than the variation between different parts of England in an ordinary year, and the 1896 extremes are not unprecedented, though the Adelaide total (15.17 in.) is much below the average. The Mauritius fall of 68.17 in. is the greatest in any year from 1877 onwards, that, with a total of 60.36 in., being the only other year with more than 60 inches. Curiously, the number of rainy days is the smallest, with two exceptions, in the same period.

Most and least cloud. Esquimalt has for some years recorded the greatest amount of cloud, but does not show a great excess over London. Grenada, apparently, rivals Malta in the clearness of its skies, though some years back the latter station gave a yearly mean of 2·9. The average for the five years, 1884-88, is 3·4, while for the five years 1892-96, the average is 4·5. Is it possible that there has been a change of observer and also of personal equation ?

We received some time since from a gentleman (whose name we could not read, and therefore to whom we could not reply) a criticism of a reprint of one of these articles. The reprint implied that we stated some temperature to be the highest in the world (!) Of course, it is obvious that the extremes refer only to the 18 stations enumerated on p. 122.

SUMMARY.

<i>Highest temp. in shade</i>	111°·2 at Adelaide on January 23rd.
<i>Lowest</i> " "	-45°·2 at Winnipeg on January 4th.
<i>Greatest range in year</i>	135°·7 at Winnipeg.
<i>Least</i> " "	21°·2 at Grenada.
<i>Greatest mean daily range</i> ...	22°·5 at Winnipeg.
<i>Least</i> " " " " ..	9°·3 at Grenada.
<i>Highest mean temp.</i>	81°·5 at Colombo, Ceylon.
<i>Lowest</i> " "	33°·4 at Winnipeg.
<i>Driest station</i>	Adelaide, mean humidity 59.
<i>Dampest station</i>	Esquimalt, " " 87.
<i>Highest temp. in sun</i>	177°·0 Trinidad.
<i>Lowest temp. on grass</i>	-23°·5 at Toronto*.
<i>Greatest rainfall</i>	101·06 in. at Colombo, Ceylon.
<i>Least</i> " " ..	15·17 in. at Adelaide.
<i>Most cloudy station</i>	Esquimalt, average amount 6·9.
<i>Least</i> " " ..	Grenada, average amount 3·6.

* The min. on grass is not recorded at Winnipeg.

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE FOR 1896.

STATIONS.	ABSOLUTE.				AVERAGE.				ABSOLUTE.		TOTAL RAIN.		AVER- AGE. Cloud.	
	Maximum.		Minimum.		Max.	Min.	Mean.	Dew Point.	Humidity.	Max. in Sun.	Min. on Grass.	Depth.		Days.
	Temp.	Date.	Temp.	Date.										
<i>Those in Italics are South of the Equator.</i>														
England, London	88·7	July 14	23·2	February 26	58·5	43·3	50·9	43·7	80	135·9	19·1	23·52	159	0-10
Malta	104·8	August 11	40·1	{ January 21 February 18 July 5	71·9	59·2	65·5	56·1	77	152·0	33·0	21·96	79	6·3
<i>Mauritius</i>	86·6	Dec. 19, 21	57·0	July 5	79·0	68·7	73·8	64·5	76	138·2	46·6	68·17	175	5·3
Calcutta	106·8	April 15	45·5	December 22	88·1	70·6	79·4	67·4	70	159·5	35·3	53·22	76	5·6
Bombay	95·0	October 29	63·2	December 31	86·7	76·0	81·4	72·5	75	143·7	51·9	87·65	102	4·1
Ceylon, Colombo	93·4	February 27	67·5	February 2	87·1	75·8	81·5	73·0	80	162·0	60·0	101·06	193	...
<i>Melbourne</i>	108·0	January 23	32·9	July 31	67·0	49·5	58·2	48·8	72	155·0	23·0	24·89	124	5·9
<i>Adelaide</i>	111·2	January 23	34·4	July 10	73·8	53·0	63·4	47·4	59	172·0	26·4	15·17	121	4·8
<i>Sydney</i>	108·5	January 13	39·8	July 2	69·6	56·6	63·1	56·5	76	160·9	27·9	42·42	157	4·7
<i>Wellington</i>	79·0	February 22	34·0	{ Aug. 5, 6, 10 October 1	61·5	49·5	55·5	46·6	73	141·0	21·0	57·54	179	4·5
<i>Auckland</i>	84·0	February 8	38·0	August 11	65·9	53·1	59·5	50·1	72	147·0	32·0	37·79	...	5·3
Jamaica, Kingston.	93·9	July 13	62·7	January 15	87·8	71·9	79·9	69·1	72	...	...	19·01	81	5·0
Trinidad	94·0	{ May 19, 20 June 6	61·0	March 15	88·3	70·3	79·3	72·0	80	177·0	60·0	66·45	178	..
Grenada	88·4	October 19	67·2	November 30	82·9	73·6	78·3	70·4	76	161·8	...	99·94	243	3·6
Toronto	91·3	July 12	-17·2	February 17	54·1	36·8	45·4	38·7	75	107·0	-23·5	29·14	144	5·9
New Brunswick, Fredericton	92·7	August 11	-20·0	February 18	50·2	29·0	39·6	32·3	69	...	...	39·17	128	5·2
Manitoba, Winnipeg.	90·5	July 1	-45·2	January 4	44·7	22·2	33·4	...	...	...	...	26·29	143	5·7
British Columbia, Esquimalt	86·4	June 26	16·7	November 27	55·3	41·4	48·4	43·6	87	...	...	46·47	157	6·9

HIGH TEMPERATURE ON THE NIGHT OF AUGUST 4TH.

To the Editor of the Meteorological Magazine.

SIR,—The minimum temperature as registered in my Stevenson screen on the night of Wednesday, August 4th [*i.e.*, the min. of August 5th.—ED.] was 65°. This is the highest minimum I have recorded during 11 years; the nearest approach to it being 63°·7 on July 1st, 1894. The maximum during the previous day had been 82°·8, with a strong S.E. wind. It came over partially cloudy during the evening, and about 7 o'clock there was a slight shower, yielding ·01 in.; notwithstanding this shower the temperature at 10 p.m. was 70°. The above readings are certainly very unusual in North Lancashire. The screen is situate about 74 ft. above sea level. The thermometers are by Negretti and Zambra, and have Kew certificates.

Yours faithfully,

SYDNEY WILSON.

Bruna Croft, Garstang, August 5th, 1897.

We confess to having a feeling of ignorance on the subject of high minimum temperatures, and, therefore, on receipt of the above referred to our own records. The minimum at Camden Square on the 5th was 59°·4, a value exceeded by 61°·1 on 6th, and by 60°·4 on 11th.

Looking back over the 40 years, 1858 to 1897, over which the record extends, we find no fewer than 85 instances of min. temp. of 60°, or upwards, in August, an average of rather more than two per annum, while the years in which the August minima were invariably below 60° are 1860, 1862, 1866, 1869, 1872, 1874, 1879, 1881, 1885, 1889, and 1894; in all eleven, or about one year in four. Taking now the highest record in 1897 (61°·1) we find 36 instances, or rather less than one per annum, in which it was exceeded, the most remarkable August being that of 1893, when for nine consecutive days the shade temp. did not fall below 60°.

Min. in shade August, 1893.

9th	60°·0	12th	63°·3	15th	64°·1
10th	63°·9	13th	60°·2	16th	63°·8
11th	61°·8	14th	61°·3	17th	63°·7

In six Augusts there were five or more days on which the temp. did not fall below 60°, namely :—

1868	5 days.	1876	5 days.	1884	6 days.
1875	6 „	1877	5 „	1893	9 „

On fifteen days in the 40 Augusts the min. did not fall below 63°, the records of 64°, or upwards, being :—

Aug. 18th, 1858	67°·0.	Aug. 18th, 1876	65°·8.
„ 7th. 1868	64°·0.	„ 18th, 1893	64°·1

From this it is obvious that the Camden Square minima on August 5th and 6th, 1897, were in no way remarkable, but it must not be for-

gotten (I.) that the reading at Garstang was nearly 4° higher, and (II.) that what is an average reading at London may be a very exceptional one in North Lancashire.

The following table, extracted from the Daily Weather Reports, shows clearly that the nights of August 5th and 6th were very warm over the whole of England, and that the 5th was the warmer. The reading at Liverpool, the nearest station to Garstang, on 6th (64°) is very accordant with the 65° at Bruna Croft, and proves the accuracy of Mr. Wilson's instruments and observations.

The temperatures for the warmer night are given in Roman, for the cooler in italic, type.

Minimum Temperatures in England and Wales, August 5th & 6th, 1897.

	5th.	6th.		5th.	6th.
North Shields	59	58	Oxford	57	59
York	59	60	London, Brixton.....	62	61
Spurn Head	61	61	North Foreland	64	66
Liverpool, Bidston	64	59	Dungeness	63	60
Holyhead	61	59	Hurst Castle	67	64
Loughborough	59	58	Prawle Point	60	60
Yarmouth	62	62		---	---
Cambridge	58	58	Mean.....	61.1	60.3
Pembroke, St. Ann's Head..	60	60			

NOTES OF DAMAGE BY RAIN AND THUNDERSTORMS,
EXTRACTED FROM THE NEWSPAPER PRESS.

MONDAY, AUGUST 2ND.

Aberdeenshire.—Severe H storm, doing damage in the parishes of Premnay, Leslie, Keig, Tullynessle and Forbes, comparable to that of the storm in Essex on June 24th, the damage being estimated at more than £2,000. Almost every window facing N. or W. was broken.

THURSDAY, AUGUST 5TH.

Herts.—At Tring Agricultural Society's Show a young man and woman sheltering under a tree were killed by L.

Royston.—Cellars were flooded and poultry drowned, and H stones fell, breaking glass in greenhouses.

Northamptonshire.—The thatched roof of Horspool Farm, Draughton, was fired by L, and the building was destroyed all but the walls.

At Raunds a tree was struck, and at Hargrave trees were struck and a cow was killed.

Hayricks were ignited at Draughton, and heavy H fell.

Huntingdon.—A labourer working in a field at Godmanchester had his left arm struck by L, and had to be removed in a cart.

Rutland.—L struck a house in Braunston Road, Oakham, passed down a chimney, and moved the fire-grate to the centre of the room.

Leicestershire.—At Market Harborough the basements of several houses were flooded.

Derbyshire.—Fletcher's Lace Factory, Osmaston Road, Derby, was struck by L, and the roof much damaged.

Lancashire.—At Liverpool H as large as marbles fell, and at Herculaneum graving dock a man was killed.

St. Helen's.—In 45 minutes 2·28 in. of R fell.

Ramsbottom, near Bury.—A young man named Booth was struck and killed.

Large H fell at Heywood, and a farm house and dwelling were struck by L. A telegraph pole also was struck, and a passing horse bolted, the two occupants of the carriage being thrown out and injured.

Rochdale.—Many buildings flooded, and much damage at Horse Carrs Mills, Shawclough.

At Ashworth a farmer was injured, and at Whitworth a quarryman was killed.

Fenisowles, near Blackburn.—A farmer of Leyland was found dead in the road, having been struck by L while driving a trap.

At Chatburn a farmer was struck while in a field and killed instantly. A barn in the same neighbourhood was fired.

SUNDAY, AUGUST 8TH.

Norfolk, Lynn.—A tremendous, and most acceptable, downpour of rain occurred, falling in torrents for two hours in the afternoon, and houses in some parts of the town, especially in the neighbourhood of Windsor Road and Lower Canada, became flooded, some of them to a depth of two feet, in consequence of the sewers being unable to carry off the surplus waters. The tide in the river Ouse, into which the sewers discharge, was high at the time, and consequently the outlets were blocked, hence the mischief.

The rain gauge at the Manure works in Wisbeach Road, recorded 3·48 in. between 9 a.m. on Saturday and 9 a.m. on Monday.

Worcestershire.—At the Waterworks, Worcester, 1·46 in. of R fell, and the cellars of several houses in the low lying parts of the city were flooded.

Droitwich.—A heavy downpour of rain commenced at 8.30 a.m., and continued without intermission till mid-day. High Street was flooded for a length of 50 yards, and many persons had to take refuge in the upper floors of their dwellings. The steam fire engine was employed from 1.30 p.m. to 7.30 p.m., pumping the water from the roadway.

A portion of the embankment of the L. & N.W.R. between Spon Lane and Smethwick was washed away. The G.W.R. at West Bromwich was flooded, the water being three feet deep between the Trinity Road and Spon Lane bridges.

WEDNESDAY, AUGUST 11TH.

Dumfriesshire.—A shepherd was killed by L between Holmshaw and Earls-haugh, in Upper Annandale.

Edinburgh.—About midday, an electric lamp was struck by L at North Bridge, Edinburgh.

Lanark.—Between 4 p.m. and 5 p.m. a house in Barrfield Terrace, Uddingston, was struck, and a tree had its bark stripped off.

Ayrshire.—At Bogside, near Ayr, a brood mare was killed, the tail and hind quarters being scorched.

Saltcoats.—In Quay Street, at the Braes, in Green Street and Vernon Street, houses were flooded.

Dumbartonshire.—The cutting at Dalmuir on the North British Railway, was flooded, and traffic had to be stopped. All the low lying lands were flooded, and much damage was done to the crops. At Dumbarton East Station the water inundated the booking office, and at Burnside and in Bruce Street several houses were flooded.

Vale of Leven.—L struck a gas pipe at Renton Church, ignited the gas and set fire to the flooring.

Stirlingshire.—Water ran down the streets from the higher parts of Stirling like so many streams. At the foot of King Street serious flooding took place.

Kinrossshire.—Three cows were killed at Goudierannet, and twenty sheep at Thomanean. Three ricks were fired in the county. The rain was mixed with H and large pieces of ice, and much damage was done by flooding. Kinross High Street was covered in parts to a depth of several feet, and houses were flooded.

Fife.—Dunfermline. Great darkness, some H and torrents of R for half an hour. At the junction of Bridge Street and Chalmers Street the sewer was unable to carry off the water, which found its way into cellars and shops. At Low Beveridgewell a culvert burst, flooding Harrierae Mills. At Pilmuir Street houses were flooded to a depth of two feet. At Townhill a house and several trees were struck by L.

Perth.—A cow was killed at Kippenross Park, Dunblane ; a tree was struck and telephone wires were broken.

SUNDAY, AUGUST 15TH.

Banff.—The house 30, Market Street, Macduff, was struck by L, the current passed down a vent, and the grate was torn out and dashed six feet across the room.

TUESDAY, AUGUST 17TH.

Selkirk.—In the Yarrow valley and St. Mary's Loch district the rainstorm was exceptionally heavy. The hill burns in the valley and in Moffatdale came down like cataracts, and between St. Mary's Loch and Moffat the coaches had to traverse stretches of water, at some places three feet deep. The Yarrow and Ettrick were in heavy flood, and a bridge over Summerhope Burn, near Rodono Cottage, was swept away, rendering the road to Tibbie Shiel's impassable. Flooding took place at Chapelhope farm, and the road between this place and Oxcleuch was blocked, the burn bringing down with it tons of gravel and refuse. A bridge near the Grey Mare's Tail is also reported to have been swept away. In Moffat district about four o'clock there was an abnormal downpour, which resembled the bursting of a waterspout, and which lasted about twenty minutes. The river Annan rose rapidly, submerging holms below the town, and at the bridge near the railway station the volume of water filled the arch, and fears were entertained for the safety of the structure.

WEDNESDAY, AUGUST 18TH.

Bucks.—A bullock grazing in a field at Taplow was struck by L.

Warwick.—A chimney at 52, Darwin Street, Birmingham, was struck and fell through the roof, causing considerable injury. A building on Alcester Road, also was struck.

Glamorgan.—At Gendros, near Cockett, Swansea, five persons were assembled in a house, when it was struck by L ; they were all thrown to the ground, a young woman had her face scorched, and a youth was burnt about the body.

THURSDAY, AUGUST 19TH.

Essex.—At Great Braxted, near Witham, a man named Crisp, was ploughing with two horses, when both man and team were struck dead by the L.

Kent.—Two cottages at Borden were struck by L and burnt down, and the inmates had to escape in their nightclothes. At Sittingbourne three houses were wrecked by L, and at Murston a barn was destroyed and a horse killed.

The steam trawler *Strathisla*, off Wick, had the foremast repeatedly struck by L, and splintered in several places. One compass was rendered useless and the other seriously affected. The mate was stunned by the L.

ELECTRICAL MANIFESTATIONS (?)

The following letter, extracted from the *English Mechanic* of August 20th, 1897, which differs in several particulars from the usual descriptions of ball lightning, at once recalled to our memory a very similar phenomenon, described by Mr. H. S. Eaton, at the meeting of the Royal Meteorological Society, on June 15th, 1887, of which we append an abstract. Other accounts of somewhat similar phenomena will be found in the *Quar. Jour. Roy. Met. Soc.*, XIII. (1887), p. 306.

Lightning Phenomena.—[40200.]—A few days since we had a very heavy thunderstorm. Immediately following one of the earliest flashes of lightning three people in my house saw, at the distance apparently of some 400 yards, a number of globes of fire (about twenty or so) rolling down a precipitous scar on the other side of this valley. These balls or globes appeared to follow each other at very brief intervals; probably several seconds passed from the first to last. Ball lightning has been observed about here during severe storms from time to time, though seldom: but I have never witnessed during a long sojourn, nor do I hear of anyone having seen before, anything at all approaching the phenomenon described. I shall be glad if any of your readers can explain, or to hear if anyone has seen a similar thing.

Aug. 14.

C. F. R.

Note on a Display of Globular Lightning at Ringstead Bay, Dorset, on August 17th, 1876. By Mr. H. S. EATON, M. A., F.R. Met. Soc. Between 4 and 5 p.m. two ladies who were out on the cliff, saw, surrounding them on all sides, and extending from a few inches above the surface to two or three feet overhead, numerous globes of light, the size of billiard balls, which were moving independently and vertically up and down, sometimes within a few inches of the observers, but always eluding the grasp; now gliding slowly upwards two or three feet, and as slowly falling again, resembling in their movements soap bubbles floating in the air. The balls were all aglow, but not dazzling, with a soft, superb iridescence, rich and warm of hue, and each of variable tints, their charming colours heightening the extreme beauty of the scene. The subdued magnificence of this fascinating spectacle is described as baffling description. Their numbers were continually fluctuating; at times thousands of them enveloped the observers, and a few minutes afterwards the numbers would dwindle to perhaps as few as twenty, but soon they would be swarming again, as numerous as ever. Not the slightest noise accompanied the display.

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, MARCH, 1897.

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	61·7	23	26·8	30	52·3	39·2	39·6	81	101·9	20·5	3·42	17	6·6	
Malta.....	79·2	29	44·1	9	64·1	51·5	49·3	79	155·2	41·0	·75	7	4·5	
<i>Mauritius</i>	86·0	5, 8	66·1	17	83·9	72·3	67·9	74	135·0	59·6	·88	10	6·0	
Calcutta.....	98·9	10	63·9	13	89·9	70·6	64·2	61	154·0	56·9	1·37	3	2·9	
Bombay.....	86·0	28	66·1	1	84·3	71·2	68·2	73	135·5	58·1	·00	0	1·0	
Ceylon, Colombo.....	93·2	2	73·6	15	90·0	76·5	73·3	76	147·0	68·0	3·66	13	3·2	
<i>Melbourne</i>	89·6	13	38·9	20	69·9	51·2	48·8	67	139·9	28·9	1·49	10	6·3	
<i>Adelaide</i>	95·5	28	47·9	25	76·8	57·8	50·1	56	156·8	36·7	·58	10	5·8	
<i>Sydney</i>	92·9	14	51·8	11	74·6	61·0	57·6	72	145·3	44·8	3·34	17	4·3	
<i>Wellington</i>	75·5	15	41·7	31	66·2	53·5	49·4	69	133·0	33·0	2·06	16	4·5	
<i>Auckland</i>	79·0	20	49·0	27	71·4	57·0	55·1	72	145·0	45·0	3·29	12	4·8	
Jamaica, Kingston.....	91·3	17	65·1	12	86·4	69·6	66·5	70	...	...	·13	1	3·3
Trinidad.....	89·0	10 ^a	64·0	23	86·7	68·8	75·2	77	164·0	63·0	3·96	13	...	
Grenada.....	89·8	28	70·0	2	86·3	72·8	77·7	75	155·0	...	6·04	15	5·8	
Toronto.....	53·0	30	1·8	1	38·5	24·6	25·7	74	71·0	—2·2	2·97	15	6·0	
New Brunswick, Fredericton.....	46·9	31	—14·3	1	34·3	15·4	18·8	63	...	...	4·53	17	6·1
Manitoba, Winnipeg.....	51·9	31	—33·7	15	23·8	—1·5	...	...	...	...	1·58	9	...
British Columbia, Esquimalt.....	53·1	25	27·7	10	44·5	32·5	34·0	86	...	...	4·64	20	7·2

a—and 16, 21.

REMARKS.

MALTA.—Adopted mean temp. 56°·6, or 0°·9 above the average. Mean hourly velocity of wind 11·8 miles. TS on 8th. L on 4 days. Average temp. of sea 60°·8.

J. F. DOBSON.

Mauritius.—Mean temp. of air 0°·1, of dew point 1°·9, and rainfall 7·28 in. below, their respective averages. Mean hourly velocity of wind 10·1 miles, or 0·1 above the average; extremes 23·1 on 22nd and 1·8 on 11th; prevailing direction E.S.E. T on 2nd, L on 3rd, and T and L on 4th. Rainfall ·88 in., against an average for 23 years of 8·16 in., being the least in March during the period 1875-97. T. F. CLAXTON.

CEYLON, COLOMBO.—TSS occurred on the 27th, 29th, and 30th. L was seen on 8 days.

H. O'HARNARD.

Adelaide.—Mean temp. 3°·2 below the average for 40 years. The coldest March, with one exception (1885), in the 40 years. Rainfall ·50 in. below average.

C. TODD, F.R.S.

Sydney.—Temp. 1°·5 below, rainfall 2·04 in. below, and humidity 4·5 below, their respective averages. Severe drought over fully half of New South Wales, the other part having good rains.

H. C. RUSSELL, F.R.S.

Wellington.—Up to the 20th generally fine with occasional showers, wind chiefly S.E. and N.W.; the latter part of the month showery. Five days of strong N.W. wind. Slight earthquake on 20th. Temp. 2°·3 below, and R 1·48 in. below, their respective averages.

R. B. GORE.

Auckland.—Rather wet and stormy during most of the month. The rainfall being almost an inch above the average. Mean temp. close to the average; barometric pressure much below.

T. F. CHEESEMAN.

JAMAICA, KINGSTON.—The rainfall throughout the Island gives a better result than the two preceding months, being about two-thirds of the average. J. F. BRENNAN.

TRINIDAD.—Rainfall 2·09 in. above the average of 30 years. J. H. HART.

SUPPLEMENTARY TABLE OF RAINFALL,
AUGUST, 1897.

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.)	2·34	XI.	Rhayader, Nantgwillt ...	6·04
II.	Dorking, Abinger Hall .	3·81	„	Lake Vyrnwy	6·29
„	Birchington, Thor	2·27	„	Corwen, Rhug	3·97
„	Hailsham	3·94	„	Criccieth, Talarvor	4·46
„	Ryde, Thornbrough	4·22	„	I. of Man, Douglas	3·90
„	Emsworth, Redlands ...	4·19	XII.	Stoneykirk, Ardwell Ho.	5·52
„	Alton, Ashdell	4·43	„	New Galloway, Glenlee	7·89
III.	Oxford, Magdalen Col..	3·55	„	Moniavie, Maxwelton Ho.	7·22
„	Banbury, Bloxham	3·93	„	Lilliesleaf, Riddell	3·95
„	Northampton, Sedgebrook	4·79	XIII.	N. Esk Res. [Penicuick]	4·05
„	Duddington [Stamford].	3·00	XIV.	Glasgow, Queen's Park..	5·51
„	Alconbury	2·92	XV.	Inverary, Newtown	8·14
„	Wisbech, Bank House...	3·07	„	Oban, The Corran .....	...
IV.	Southend	2·25	„	Islay, Gruinart School ...	2·63
„	Harlow, Sheering	3·98	XVI.	Dollar	6·17
„	Colchester, Lexden	2·04	„	Balquhider, Stronvar...	11·93
„	Rendlesham Hall	1·95	„	Ballinluig	6·55
„	Rushall Vicarage	3·17	„	Dalnaspidal H. R. S.	9·56
„	Swaffham	3·12	XVII.	Keith H. R. S.	3·45
V.	Salisbury, Alderbury ...	2·74	„	Forres H. R. S.	2·49
„	Bishop's Cannings	4·82	XVIII.	Fearn, Lower Pitkerrie..	2·16
„	Blandford, Whatcombe .	3·50	„	N. Uist, Loch Maddy ...	3·95
„	Ashburton, Holne Vic...	7·83	„	Invergarry	3·43
„	Okehampton, Oaklands...	7·37	„	Aviemore H. R. S.	3·03
„	Hartland Abbey	5·00	„	Loch Ness, Drumnadrochit	2·82
„	Lynmouth, Glenthorne.	4·88	XIX.	Invershin	1·84
„	Probus, Lamellyn	4·09	„	Scourie .....	...
„	Wellington, The Avenue	4·18	„	Watten H. R. S.	2·63
„	Wincanton	4·71	XX.	Dunmanway, Coolkelure	9·32
VI.	Clifton, Pembroke Road	6·37	„	Cork, Wellesley Terrace	4·33
„	Ross, The Graig	3·92	„	Killarney, Woodlawn ...	7·95
„	Wem, Clive Vicarage ...	3·08	„	Caher, Duneske	5·10
„	Cheadle, The Heath Ho.	4·52	„	Ballingarry, Hazelfort...	4·63
„	Worcester, Diglis Lock	4·55	„	Limerick, Kilcornan ...	4·51
„	Coventry, Priory Row ..	3·97	„	Broadford, Hurdlestown	5·84
VII.	Grantham, Stainby	3·72	„	Miltown Malbay	7·05
„	Horncastle, Bucknall ...	3·34	XXI.	Gorey, Courtown House	4·99
„	Worksop, Hodsck Priory	2·16	„	Athlone, Twyford	5·55
VIII.	Neston, Hinderton	2·80	„	Mullingar, B-Ivedere ...	6·51
„	Southport, Hesketh Park	3·26	„	Longford, Currygrane...	5·72
„	Broughton-in-Furness ...	7·09	XXII.	Woodlawn	7·08
IX.	Ripon, Mickley	3·31	„	Crossmolina, Enniscoe ..	7·30
„	Melmerby, Baldersby ...	...	„	Collooney, Markree Obs.	6·23
„	Scarborough, Observat'y	3·58	„	Ballinamore, Lawderdale	6·74
„	Middleton, Mickleton ...	4·43	XXIII.	Warrenpoint	5·66
X.	Haltwhistle, Unthank...	3·82	„	Seaforde	4·64
„	Bamburgh	2·27	„	Belfast, Springfield	5·44
„	Keswick, The Bank	8·92	„	Bushmills, Dunlarave..	4·73
XI.	Llanfrechfa Grange	8·22	„	Stewartstown	5·15
„	Llandovery	6·80	„	Killybegs	6·87
„	Castle Malgwyn	4·59	„	Lough Swilly, Carrablagh	4·11
„	Builth, Abergwesyn Vic.	7·57			

AUGUST, 1897.

Div.	STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL.					Days on which "01" or more fell.	TEMPERATURE.				No. of Nights below 32°.	
		Total Fall.	Difference from average 1880-9.	Greatest Fall in 24 hours		Max.		Min.		In shade.	On grass.		
				Dpth	Date			Deg.	Date			Deg.	Date
I.	London (Camden Square) ...	2.92	+ 1.04	.76	8	16	88.4	5	48.1	13	0	0	
II.	Tenterden	3.23	+ 1.37	.62	26	18	85.0	4	50.0	12c	0	0	
III.	Strathfieldsaye	3.54	...	.75	31	17	...	...	...	...	...	...
IV.	Hitchin	2.07	+ .25	.39	30	15	85.0	4, 5	47.0	12	0	0	
V.	Windsor (Addington)	5.68	+ 3.71	1.04	24	21	87.0	4, 5	47.0	13	0	0	
VI.	Bury St. Edmunds (Westley)	4.76	+ 2.56	1.88	25	16	79.0	5	49.0	26	0	0	
VII.	Norwich (Brundall)	1.27	...	.27	8	15	84.0	4	46.0	26	0	0
VIII.	Weymouth (Langton Herring) .....	...	...	...	...	...	...	...	...	...	...	...
IX.	Torquay (Cary Green)	3.31	...	.54	30	20	72.1	5	49.5	27	0	0
X.	Polapit Tamar [Launceston]	5.85	+ 3.37	.90	30	26	79.7	3	46.8	27	0	0	
XI.	Stroud (Upfield)	5.59	+ 3.50	.98	30	24	85.0	4	51.0	28	0	0	
XII.	Church Stretton (Woolstaston)	3.32	+ .56	.42	7, 18	20	82.0	4	46.0	27	0	0	
XIII.	Tenbury (Orleton) .....	...	...	...	...	...	...	...	...	...	...	...
XIV.	Leicester (Rotherby Hall)	3.34	...	.77	30	21	88.0	5	42.0	3d	0	0
XV.	Boston	2.27	+ .15	.80	8	15	90.0	4	42.0	26	0	0	
XVI.	Hesley Hall [Tickhill]	2.43	+ .27	.65	30	18	90.0	5	43.0	3	0	0	
XVII.	Manchester (Plymouth Grove)	4.04	+ .95	.90	6	23	89.0	4	42.0	29	0	0	
XVIII.	Wetherby (Ribston Hall)	3.52	+ 1.18	.71	24	19	...	...	...	...	...	...
XIX.	Skipton (Arncliffe)	8.78	+ 4.45	2.75	5	22	...	...	...	...	...	...
XX.	Hull (Pearson Park)	2.79	+ .15	.87	26	15	81.0	5	45.0	3	0	0	
XXI.	Newcastle (Town Moor)	2.87	+ .16	.62	24	17	...	...	...	...	...	...
XXII.	Borrowdale (Seathwaite)	17.38	+ 8.93	2.42	13	24	...	...	...	...	...	...
XXIII.	Cardiff (Ely)	7.97	+ 4.36	1.17	30	21	...	...	...	...	...	...
XXIV.	Haverfordwest	6.15	+ 2.97	.64	23	22	80.8	3	44.0	27	0	0	
XXV.	Aberystwith (Gogerddan)	3.82	...	.44	7	21	86.0	3	38.0	9e	0	0
XXVI.	Llandudno	3.03	+ .67	.70	10	21	85.0	3	51.2	29	0	0	
XXVII.	Cargen [Dumfries]	5.66	+ 2.67	.68	29	21	82.0	3, 4	42.0	19	0	0	
XXVIII.	Edinburgh (Blacket Place)	4.24	...	.99	4	19	78.1	21	48.6	19	0	0
XXIX.	Colmonell	6.21	...	1.10	29	21	87.0	3	44.0	18	0	0	
XXX.	Lochgilhead (Kilmory)	5.51	+ .95	.62	29	20	...	...	47.0	9f	0	0
XXXI.	Mull (Quinish)	4.12	...	.62	16	21	...	...	...	...	...	...
XXXII.	Loch Leven Sluices	4.60	+ 1.66	1.00	12	14	...	...	...	...	...	...
XXXIII.	Dundee (Eastern Necropolis)	3.25	+ .68	.45	13	22	79.6	7	43.8	19	0	0	
XXXIV.	Braemar	5.06	+ 1.73	.66	28	25	76.3	1	37.2	19	0	3	
XXXV.	Aberdeen (Cranford)	3.07	...	.83	11	20	74.0	4	43.0	21g	0	0
XXXVI.	Cawdor (Budgate)	2.43	+ .18	.55	11	18	...	...	...	...	...	...
XXXVII.	Strathconan [Beaulj]	2.98	...	.54	14	11	...	...	...	...	...	...
XXXVIII.	Glencarron Lodge	5.15	...	.72	17a	21	78.0	5	41.0	22	0	0
XXXIX.	Dunrobin	2.57	+ .17	.44	11	15	68.0	2, 5	44.0	23	0	0	
XL.	S. Ronaldsay (Roeberry)	2.32	...	.58	11	17	70.0	4	47.0	22h	0	0
XLI.	Darrynane Abbey	5.73	...	.60	29	27	...	...	...	...	...	...
XLII.	Waterford (Brook Lodge)	5.45	+ 2.03	.76	23	23	79.0	2	43.0	20	0	0	
XLIII.	O'Briensbridge (Ross)	5.56	...	.62	7	25	...	...	...	...	...	...
XLIV.	Carlow (Browne's Hill)	5.74	+ 2.77	.77	20	22	...	...	...	...	...	...
XLV.	Dublin (Fitz William Square)	3.79	+ 1.27	.90	7	23	76.8	4	49.2	19	0	0	
XLVI.	Ballinasloe	7.00	+ 3.82	1.13	29	24	74.0	2, 3	48.0	23	0	0	
XLVII.	Clifden (Kylemore)	14.46	...	1.90	30	25	...	...	...	...	...	...
XLVIII.	Waringstown	4.79	+ 1.68	.98	29	18	82.0	1	40.0	10	0	0	
XLIX.	Londonderry (Creggan Res.)	4.15	+ .03	.49	10	25	...	...	...	...	...	...
L.	Omagh (Edenfel)	6.11	+ 2.62	1.10	10b	21	78.0	1	45.0	9	0	0	

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

a—and 20. b—and 29. c—and 13, 16, 26. d—and 26, 29. e—and 22, 24. f—and 18, 21, 26. g—and 31. h—and 23.

METEOROLOGICAL NOTES ON AUGUST, 1897.

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.—Hot and dry at first, showers in third week were helpful to grass and hops, but prevented completion of harvest, which was still further delayed by heavier rains towards the end of the month. Sunshine 225 hours 40 mins., or more than 50 per cent. above last year. Mean max. temp. 2° higher, and min., both in screen and on grass, 5° higher. Min. on 5th 63°. TS on 8th from 4 to 5 p.m., and on 19th, 3 to 4 a.m. TSS around on 25th, sharp at 1 to 1.30 p.m.

ADDINGTON.—The greatest August rainfall during the last 27 years. The month began with a high max. temp., lasting until the 5th, on which day a heavy TS passed over us; a fine young cedar of Lebanon on the lawn and close to the Manor was split by L from top to bottom. The remainder of the month was very unsettled. On the 30th, at 5 p.m., a heavy downpour of rain gave 20 in. in ten minutes. Dense fog on the morning of the 25th.

BURY ST. EDMUNDS, WESTLEY.—The wettest August I have recorded during the last 40 years. The nearest to it was 1881 with 4.73 in. Nevertheless most of the corn is well harvested. On the 25th we had a very heavy TS with much H, which did great damage to the mangolds and turnips, but it did not extend over a large area. The month has been hot, the max. temp. has not been below 63°. TSS on the 5th, 18th and 25th; distant T on 13th and 19th.

NORWICH, BRUNDALL.—Mean temp. 63.4, being the highest in any August since 1893, and in any month, with that exception, since July, 1887. The rainfall was, in this neighbourhood, very partial, and we still felt the effects of the drought at the end of the month. Out of the 15 days on which rain was recorded, 12 gave less than a tenth of an inch. At the Norwich Cemetery the total was 2.15 in. against our 1.27 in. T and L on 5th, 19th, 22nd and 31st. T on 8th, 18th and 28th. L on 24th. TSS on 25th at 10.30 a.m., at 2 and 4 p.m. Solar halo on 26th, p.m.

POLAPIT TAMAR—A wet month, the total exceeding double the average. The total for the first eight months of the year is 26.86 in. as against 12.92 in. for the corresponding period in 1896, *i.e.*, more than twice as much. The first few days of the month were very seasonable, hot and dry, but the last were very wet and stormy.

STROUD, UPFIELD.—TS on 6th, about 5 p.m., from S.W., .23 in. of rain fell. Small TS on 18th, from 5.30 to 6.30 p.m., .50 in. of R falling, and heavy TS to the N. and S. of us. T on 5th, 8th, 23rd, and L and T on 31st from 11 a.m. to noon.

WOOLSTASTON.—The first week was very hot and sultry, but after a heavy storm of T and L on the 6th the weather broke up, and the temp. fell considerably, R falling nearly every day for the rest of the month.

ROTHERBY HALL.—The weather during the first fortnight in August was very hot, and the rain which fell after the 18th was very acceptable, following the almost continuous dry weather of the previous eight weeks. There was T on seven days during the month, with no fewer than five TSS on the 24th. The rainfall was .88 in. above the average for 1880-9. Exactly 15 inches fell here during the first eight months of 1897, against 12.58 in. for the same period of 1896. Mean shade temp. 61°

SKIPTON, ARNCLIFFE.—A very wet month, the record of the 5th being the highest which has been recorded on one day for many years. The TS on the 5th very severe. Two cattle were killed, and three ash trees struck. Can any of your readers tell us why ash trees are more frequently struck than others?

WALES.

HAVERFORDWEST.—The first five days of August were very fine, and great heat prevailed, with a very large share of sunlight hastening the ripening of

the corn. The weather changed on the 6th, and very heavy showers fell (principally at night) and in a very short time, at 1.30 a.m. on the 8th, .33 in. fell in 35 minutes, and this was not a solitary instance. This kind of weather continued for several days. The weather improved a little after the 17th, although showery; the 19th very fine and breezy, but R fell heavily at night, three-tenths in 25 minutes. From that date to the end of the month, with an occasional fine day, the weather became worse and worse up to the end; the excessive R, coupled with the high night temp., is causing much anxiety about the harvest, which, but for this disastrous weather, would have been a very good one. In August, 1879, 7.59 in. fell, since that period we have had nothing to equal 1897.

ABERYSTWITH, GOGERDDAN.—Very showery after the first week.

SCOTLAND.

CARGEN [DUMFRIES].—The favourable weather experienced in July continued only during the first four days of this month. Upon the 3rd and 4th the thermometer reached 82°, the highest point registered during the summer; on the 5th there was a sudden fall of temp., and R was registered on every day, except six, during the remainder of the month. The readings of the bar. never exceeded 30 in. after the 4th, and the mean bar. pressure has only once been lower since observations were commenced at this station in 1860. The mean temp. 59°·8 is 1°·5 higher than the average for August, and has only once, in 1893, been higher since 1880; during the first nine days the mean reading exceeded 65°, from 10th to 31st it was only 57°·6. The rainfall is very considerably above the average, and has only been greater in six during the last 38 years. The weather has proved disastrous to the corn crop, hardly a stack having been as yet secured. Turnips are showing signs of a singular disease, taking the form of a rot in the upper portion of the bulb, no doubt occasioned by the constant wet weather following an unusually vigorous growth in the early stages of the crop. Potatoe disease is also prevalent. T and L at 7 p.m. on 4th, and all day 5th. T at 11 p.m. on 14th, and on 25th.

EDINBURGH, BLACKET PLACE.—A sunny, warm and wet month. Mean pressure .178 in. below, temp. 2°·6 above average. R .76 in. above mean. Bright sunshine 181 hours, and only one sunless day. First 12 days very hot, mean temp. 63°·6. Severe TSS on 4th, 5th, 6th, and 7th.

COLMONELL.—R 2·21 in., and mean temp. 2°·5 above, the average of 21 years. T and L on 4th, and T on 14th and 24th.

MULL, QUINISH.—The weather broke up on the 13th, and until the end of month has been very unsettled, with wind continually from S. and S.W.

BRAEMAR.—A very broken, unsettled month.

ABERDEEN, CRANFORD.—Strong winds from 12th to 20th, and little sun.

S. RONALDSAY, ROEBERRY.—Very fine, slight TSS on the 2nd and 17th.

IRELAND.

O'BRIENSBRIDGE, ROSS.—Great injury to corn, hay and potatoes by constant R.

DUBLIN, FITZ WILLIAM SQUARE.—A changeable, showery, windy month, but tolerably warm, in fact, great heat prevailed during the first week, which was in all respects summerlike. Mean temp. 60°·8, or 1·1 above the average. High winds were noted on 16 days. T on 14th. L and T on the 18th.

EDENFEL.—The warm summerlike period which commenced on the 9th of July, and was only broken during that month for a short spell in its fourth week, continued with but little intermission until the 9th of August, and it would in consequence be difficult to exaggerate the resulting abundance and luxuriance of all vegetation. But from the 10th of August to the end there was nothing but rainy, unsettled, and more or less tempestuous weather, continuing through the first week of September, so that potatoes, cereals and the ungathered hay are all in serious danger. The rainfall of the year to 31st August 33·27 in. is 10·76 in. above the average, and far in excess of the record for any similar period during the past 33 years.