

# SYMONS'S METEOROLOGICAL MAGAZINE.

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## THE GOVERNMENT AND METEOROLOGY.

*The Times* of December 15th, 1902, published amongst its political notes the following paragraph, which is of interest in connection with our article on the Ben Nevis Observatories, on p. 101 of this volume :—

“The First Lord of the Treasury has appointed a Committee to inquire and report as to the administration by the Meteorological Council of the existing Parliamentary grant, and as to whether any changes in its apportionment are desirable in the interests of meteorological science, and to make any further recommendations which may occur to them, with a view to increasing the utility of that grant. The committee will consist of :—

The Rt. Hon. Sir Herbert E. Maxwell, Bart., M.P. (Chairman).

Mr. J. Dewar, M.P.

Sir W. de W. Abney, K.C.B., F.R.S.

Sir F. Hopwood, K.C.B., Board of Trade.

Sir T. H. Elliott, K.C.B., Board of Agriculture.

Mr. R. T. Glazebrook, F.R.S.

Mr. T. L. Heath, Treasury.

Mr. Joseph Larmor, F.R.S.

Mr. G. L. Barstow, of the Treasury, will act as Secretary to the Committee.”

It will be observed that, although there is no meteorologist on the Committee, three out of the eight members are distinguished men of science, including the Secretary of the Royal Society.

## THE RAINFALL OF 1902.

| Stations.             | Diff.<br>from<br>Aver. | Per<br>cent.<br>of<br>Aver. | Stations.         | Diff.<br>from<br>Aver. | Per<br>cent.<br>of<br>Aver. | Station.        | Diff.<br>from<br>Aver. | Per<br>cent.<br>of<br>Aver. |
|-----------------------|------------------------|-----------------------------|-------------------|------------------------|-----------------------------|-----------------|------------------------|-----------------------------|
|                       | in.                    |                             |                   | in.                    |                             |                 | in.                    |                             |
| London .....          | -1·94                  | 91                          | Arnccliffe .....  | -18·99                 | 69                          | Aberdeen .....  | -2·06                  | 94                          |
| Tenterden .....       | -5·23                  | 80                          | Hull .....        | -3·51                  | 86                          | Cawdor .....    | -3·50                  | 88                          |
| Hartley Wintney ..... | -3·27                  | 87                          | Newcastle.....    | -3·92                  | 85                          | Strathconan ... | -11·80                 | 78                          |
| Hitchin .....         | -1·54                  | 93                          | Seathwaite ..     | -39·97                 | 70                          | Glencarron ...  | -11·46                 | 88                          |
| Winslow .....         | -5·77                  | 76                          | Cardiff .....     | -4·36                  | 89                          | Dunrobin .....  | -5·45                  | 82                          |
| Westley .....         | -3·63                  | 86                          | Haverfordwest     | -2·47                  | 94                          | Darrynane ...   | -10·10                 | 80                          |
| Brundall.....         | -2·69                  | 89                          | Gogerddan ...     | -8·59                  | 81                          | Waterford ...   | +1·69                  | 104                         |
| Blandford .....       | ...                    | ...                         | Llandudno ...     | -5·49                  | 82                          | Broadford ..... | -3·87                  | 88                          |
| Polapit Tamar ...     | -1·83                  | 95                          | Dumfries .....    | -7·34                  | 83                          | Carlow .....    | +·85                   | 103                         |
| Stroud .....          | -2·06                  | 92                          | Lilliesleaf ..... | -2·60                  | 91                          | Dublin .....    | +2·08                  | 108                         |
| Woolstaston .....     | +1·55                  | 105                         | Colmonell .....   | ...                    | ...                         | Mullingar.....  | -5·82                  | 84                          |
| Worcester .....       | +1·85                  | 104                         | Glasgow .....     | -5·62                  | 85                          | Ballinasloe ... | -6·31                  | 83                          |
| Boston .....          | +1·60                  | 108                         | Islay .....       | -3·14                  | 93                          | Clifden .....   | -17·99                 | 77                          |
| Hesley Hall .....     | -·70                   | 97                          | Mull .....        | -3·69                  | 93                          | Crossmolina ... | -6·33                  | 88                          |
| Derby.....            | +·68                   | 103                         | Loch Leven ...    | -8·28                  | 77                          | Seaforde .....  | +6·41                  | 118                         |
| Manchester .....      | ...                    | ...                         | Dundee .....      | -4·40                  | 84                          | Londonderry..   | -4·86                  | 88                          |
| Wetherby .....        | -1·48                  | 94                          | Braemar .....     | -2·67                  | 92                          | Omagh .....     | -·37                   | 99                          |

The table given above summarizes the relation of the rainfall of the year 1902 to the average of the ten years, 1890-99, the first column giving the difference of the year's fall from the ten years' average in inches, and the second the ratio of that fall to the ten years' average taken as 100. It shows that out of the 47 stations quoted no less than 39 had a rainfall below that average, and only 8 above it. The wetter stations are all contained in the extreme south and east of Ireland, and in a small area in the centre of England. Practically all the rest of the country suffered from a deficiency of rain, this deficiency being most conspicuous in the north-west of England, where the fall of rain was 30 per cent. less than the average of ten years. Taking the British Isles as a whole, the total rainfall of 1902 has been rather more than 10 per cent. less than the average for the ten years 1890-99. But it has been shown in *British Rainfall*, 1901, p. 23, that this decade had a rainfall 4 per cent. less than the average for the 30 years 1870-99, which there is reason to believe may be taken as a true average, that is, as practically equal to the average of a century. Hence, in 1902 there was over the whole British Isles a deficiency of about 15 per cent. as compared with a true average year. The same result was obtained by a different method, using different stations and calculating the ratios directly in terms of the 30 years' average, hence it may be accepted with confidence. It so happened that during the 10 years 1890-99 the centre of England was remarkably dry and the north-west of England unusually wet, a fact which accounts for the more uniform distribution of rain in 1902 giving an

excess above the average of the ten years in the former area and a large deficit in the latter. As pointed out in a discussion of the rainfall of the year by Mr. H. Sowerby Wallis and Dr. H. R. Mill in *The Times* of January 10th, the percentage of the true average annual rainfall which was measured in 1902 may be taken as for England 82 per cent., for Wales 85 per cent., for Scotland 87 per cent., and for Ireland 90 per cent. So far as regards England, a drier year than 1902 has not been recorded since 1893.

## AN OLD SCOTTISH WEATHER RECORD.

CALENDAR OF WEATHER FROM DIARY OF ANDREW HAY,  
OF CRAIGNETHAN, LANARK.

(concluded from p. 172.)

SEPTEMBER, 1659.

- 1 September, Thursday, 7 a'clock.—Fair befor, & very foule afternoone.
- 2 Fryday, 7 a'clock.—A rainie day and cold.
- 3, Saturday, 7 a'clock.—Ane east wind, but faire.
- 4 Septembr, The Lord's day, 7 hors.—A foule rainie day.
- 5, Munday, 7 a'clock.—A most fearfull constant raine all day.
- 6 Sept<sup>r</sup>, Twysday, 7 a'clock.—A warme, louring, close day.
- 7, Wednesday, 7 a'clock.—A fair, seasonable day.
- 8 Sept<sup>r</sup>, Thursday, 7 a'clock.—A great raine and east wind.
- 9, Fryday, 8 a'clock.—East wind and raine all day.
- 10 Sept<sup>r</sup>, Saturday, 7—8 a'clock.—A very seasonable harvest day.
- 11, The Lord's day, 7 a'clock.—A very cold day, but faire & east wind.
- 12 Sept<sup>r</sup>, Munday, 6—7 a'clock.—A prettie good harvest day.
- 13, Twysday, 7 a'clock.—“About 3 a'clock . . . rode to Humbie, but found the waters and wayes so broken by the late storm as no man ever saw it in his life.” A faire seasonable day.
- 14 Sept<sup>r</sup>, Wednesday, 7 o'clock.—“I find the late rain had filled all the low rounes of Humbie, so as they brok the wall.” A fair day for the most pt.
- 15, Thursday, 7 a'clock.—A very seasonable day & the wind west.
- 16 Sept<sup>r</sup>, Fryday, 7 a'clock.—Two hours raine about noone.
- 17, Saturday, 8 a'clock.—Windie in the morning and raine afternoone.
- 18 Sept<sup>r</sup>, The Lord's day, 5—6 a'clock.—A faire day but very cold.
- 19, Munday, 7 a'clock.—Frost in the morning, then cold and faire.
- 20 Sept<sup>r</sup>, Twysday, 7 a'clock.—Very rainie till nonne, thereafter fair.
- 21, Wednesday, 7 a'clock.—A very rainie night and morning, faire afternoone.
- 22 Sept<sup>r</sup>, Thursday, 7 a'clock.—Very rainie till neer night.
- 23, Fryday, 7 a'clock.—A louring grey day, rainie at nyt.
- 24, Saturday, 7 a'clock.—Foule in the forenoon, & faire afternoone.
- 25, The Lord's Day, 7 a'clock.—A goulng, windie, faire day.
- 26 Sept<sup>r</sup>, Munday, 7 a'clock.—A louring morning, raine afternoone.
- 27, Twysday, 7 a'clock.—A rainie day w<sup>t</sup> wind.
- 28 Sept<sup>r</sup>, Wednesday, 7 a'clock.—A very great raine all day.
- 29, Thursday, 7 a'clock.—A very windie & rainie afternoone.
- 30 Sept<sup>r</sup>, Fryday, 6 a'clock.—Rainie most part all day.

## OCTOBER.

- 1 October, Saturday, 7 a'clock.—A fair day, w<sup>t</sup> some easterly wind.
- 2 October, The Lord's day, 7 a'clock.—A great drying winde all day.
- 3 October, Munday, 7—8 a'clock.—A prettie fair cold day.
- 4 October, Twysday, 7 a'clock.—A prettie dry day.
- 5, Wednesday, 6 a'clock.—A very windie day with some raine.
- 6 Octobr, Thursday, 6—7 a'clock.—Great raine till noone y<sup>r</sup>after mixed.
- 7, Fryday, 6 a'clock.—A windie day w<sup>t</sup> some raine.
- 8 Octobr, Saturnday, 7 a'clock.—A very fair day and frostie.
- 9, The Lord's day, 7 a'clock.—A very stormie rainie day.
- 10, Munday, 7 a'clock.—Foule till noone thereafter fair.
- 11, Twysday, 7 a'clock.—A very great raine all day.
- 12 October, Wednesday, 7 a'clock.—A prettie fair, louring day.
- 13, Thursday, 6 a'clock.—A very fair, seasonable day.
- 14 October, Fryday, 7 a'clock.—A very fair seasonable day.
- 15, Saturday, 7 a'clock.—A very fair day after 9 hours.
- 16 October, The Lord's day, 7 a'clock.—Fair in the morning, very rainie afternoone.
- 17, Munday, 6—7 a'clock.—A very vehement raine all day.
- 18 Octobr, Twysday, 7 a'clock.—A soft day and raine at nyt.
- 19, Wednesday, 7 a'clock.—Most pairt raine, especially at nyt.
- 20 October, Thursday, 7 a'clock.—Frost in the morning, thereafter faire.
- 21, Fryday, 7 a'clock.—A very warme louring day.
- 22 Octobr, Saturday, 7 a'clock.—Thick rouk\* in the morning, y<sup>r</sup>after warme & fair.
- 23, The Lord's day, 7 o'clock.—A great frost & very faire all day.
- 24 Octobr, Munday, 7 a'clock.—A prettie faire cold day.
- 25, Twysday, 7 a'clock.—A terrible rainie nyt & a faire day.
- 26, Wednesday, 7 a'clock.—A great wind all day after nyt's raine.
- 27, Thursday, 7 a'clock.—A very fair seasonable day.
- 28 October, Fryday, 7 a'clock.—A fair windie day and dry.
- 29 Octobr, Saturday, 7 a'clock.—A fair seasonable day.
- 30 October, The Lord's day, a'clock.—A seasonable, fair, louring day.
- 31, Munday, 6—7 a'clock.—A very faire seasonable day.

## NOVEMBER.

- 1 Novembr, Twysday, 4 a'clock.—Raine till noone thereafter fair.
- 2, Wednesday, 7 a'clock.—Fair and dry all day.
- 3 Novembr, Thursday, 7 a'clock.—Fair till noone thereafter rainie.
- 4, Fryday, 7 a'clock.—Fair and windy all day.
- 5 Novembr, Saturday, 7 a'clock.—A fair, cold, dry day.
- 6, The Lord's day, 4 a'clock.—Cold and raine afternoone.
- 7 Novembr, Munday, 7 a'clock.—Cold and haill afternoone.
- 8, Twysday, 7 a'clock.—Raine and haill most p<sup>t</sup>.
- 9 Novembr, Wednesday, 7 a'clock.—A very foule day of raine and haill.
- 10, Thursday, 7 a'clock.—A very rainie day.
- 11 Novembr, Fryday, 6 a'clock.—Frost all day and snow at night.
- 12, Saturday, 7 a'clock.—Snow all nyt and frost all day. "Much snow being fallen in the night durst not venture home."

\* Rouk, Mist.

- 13 Novr, The Lord's day, 7 a'clock.—Frost in the morning thereafter raine.
- 14, Munday, 7 a'clock.—A fair louring day.
- 15 Novembr, Twysday, 7 a'clock.—A sore day of raine and wind.
- 16, Wednesday, 8 a'clock.—A great raine till neer night.
- 17 Novembr, Thursday, 7 a'clock.—Fair and somqt. frostie.
- 18, Fryday, 1 a'clock.—A great frost till neer night.
- 19 Novembr, Saturday, 8 a'clock.—A louring soft day.
- 20, The Lord's day, 7 a'clock.—A fair, gray, louring day.
- 21 Novr, Munday, 7 a'clock.—A fair cold day.
- 22, Twysday, 7 a'clock.—A very fair warme day.
- 23 Novr, Wednesday, 7 a'clock.—A very windie louring day.
- 24, Thursday, 7 a'clock.—A very rainie foule day.
- 25 Novembr, Fryday, 7 a'clock.—A faire day, hard frost.
- 26, Saturday, 7 a'clock.—A faire day and hard frost.
- 27 Novr, The Lord's day, 7 a'clock.—A fair day and hard frost.
- 28, Munday, 7 a'clock.—A soft day and louring.
- 29 Nov., Twysday, 6—7 a'clock.—A soft, cold, windie day.
- 30, Wednesday, 3—4 a'clock.—A bitter cold day, and slete.

DECEMBER.

- 1 December, Thursday, 7 a'clock.—A raw, louring, soft day.
- 2, Fryday, 7 a'clock.—A fair day and hard frost.
- 3 Decr, Saturday, 6 a'clock.—Hard frost all day & snow drift at night.
- 4 Decr, The Lord's day, 7 a'clock.—A strong frost and very cold.
- 5 Decr, Munday, 7 a'clock.—A very hard frost and cold.
- 6 Decr, Twysday, 7 a'clock.—A very hard frost, and fair.
- 7 December, Wednesday, 7 a'clock.—A louring day, somqt soft and thaw.
- 8, Thursday, 8 a'clock.—A very hard frost all day.
- 9 December, Fryday, 7 a'clock.—A hard frost all day.
- 10, Saturday, 6—7 a'clock.—A frost ryme all day.
- 11 Decembr, the Lord's day, 6—7 a'clock.—A thaw and misty day.
- 12, Munday, 7 a'clock.—Partlie thaw and partly snow & frost.
- 13 December, Twysday, 7 a'clock.—A hard frost and some snow.
- 14, Wednesday, 10 a'clock.—A very hard frost.
- 15 December, Thursday, 7 a'clock.—A very hard frost.
- 16, Fryday, 8 a'clock.—A very hard frost & thick rouk.
- 17 December, Saturday, 9 a'clock.—A very vehement frost.
- 18, The Lord's day, 7 a'clock.—A very hard frost and cold.
- 19 Decr, Munday, 7 a'clock.—A very hard frost and cold.
- 20, Twysday, 7 a'clock.—A very hard frost.
- 21 Decr, Wednesday, 7 a'clock.—A very hard frost all day.
- 22, Thursday, 7 a'clock.—A very hard frost all day.
- 23 Decr, Fryday, 8 a'clock.—A very hard frost and mistie.
- 24, Saturday, 8 a'clock.—A very hard frost and cold.
- 25 Decr, 7 a'clock.—Snow in the night and soft all day.
- 26, Munday, 8 a'clock.—A misty, softening frost.
- 27 Decr, Twysday, 7 a'clock.—A continued frost, except one hour at midday.
- 28, Wednesday, 7 a'clock.—Hard frost & a great snow at nt.
- 29 Decr, Thursday, 6—7 a'clock.—A hard frost and some snow.
- 30, Fryday, 7 a'clock.—A hard frost all day.
- 31 Decr, Saturday, 6—7 a'clock.—A hard frost all day.

## JANUARY, 1660.

1 Januarii, 1660, The Lord's day, 7 a'clock.—A very cold day and strong frost.

2 Jan'y, Munday, 7 a'clock.—A great frost and snowie afternoone.

3, Twysday, 7 a'clock.—A very hard frost and cold.

4 Jan'y, Wednesday, 7 a'clock.—A hard frost & some drift & snow.

5, Thursday, 7 a'clock.—A hard frost and some snow.

6 Jan<sup>r</sup>, Fryday, 6—7 a'clock.—A hard frost and snowie.

7 Saturday a'clock.—A very great snow & drift & frost.

8 Januar, The Lord's day, 7 a'clock.—A very cold, sharp, frostie day.

9, Munday, 7 a'clock.—A very hard frost, but fair.

10 January, Twysday, 7 a'clock.—A very thorough thaw this day.

11, Wednesday, a'clock.—A very fair day and raw frost.

12 January, Thursday, 7 a'clock.—A fair day and hard frost.

13, Fryday, 7 a'clock.—A fair day and very hard frost.

14 January, Saturday, 8 a'clock.—A fair day but hard frost.

15, The Lord's day, 7 a'clock.—A very bitter frosty day, & some snow.

16 January, Munday, 7 a'clock.—A very cold day and frost.

17, Twysday, 7 a'clock.—A fair day but a hard frost.

18 January, Wednesday, 7 a'clock.—A very fair frostie day.

19, Thursday, 7 a'clock.—A hard frost, and fair.

20 Januar, Fryday, 7 a'clock.—A fair day but softer nor ordinary.

21, Saturnday, 7 a'clock.—A thick rousk and frost.

22 Januarie, The Lord's day, a'clock.—A cold and frostie day.

23, Munday, 7 a'clock.—A very cold day & strong frost.

24 January, Twysday, a'clock.—A thaw and west wind all day.

25, Wednesday, 7 a'clock.—A frost and strong east wind againe.

26 January, Thursday, 7 a'clock.—A very hard frost and cold.

27, Fryday, 7 a'clock.—A fair frostie day.

28 January, Saturnday, 7 a'clock.—A through thaw all day.

29, The Lord's Day, a'clock.—A cold day and some little frost.

30 Jan<sup>r</sup>, Munday, 6 a'clock.—A good soft day.

31 Jan<sup>r</sup>, Twysday, 8 a'clock.—A good soft day, but cold.

*Diarius quintus finitus,*

*Jan'y. 31, 1660.*

LAUS DEO.

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## MAP OF THE CLIMATOLOGICAL STATIONS.

THE frontispiece to the present volume shows the position of all the stations from which reports have been received during the year for the Climatological Table of the British Empire. The boundaries of the larger portions of the empire are shown in a bolder outline than the rest of the land, and the situation of each station is represented by a star. The range in latitude is from Dawson, close to the Arctic circle, to Colombo, close to the Equator. In the Antarctic area the regions now being explored by the two expeditions under the British flag in the "Discovery" and the "Scotia," and that in which the German expedition on board the "Gauss" is believed to be at work, are also marked.

## THE THUNDERSTORM OF JANUARY 3RD, 1903.

*To the Editor of Symons's Meteorological Magazine.*

ON Saturday last (January 3rd) a thunderstorm of singular abruptness and of considerable intensity swept over the Thames Valley about mid-day, and for half-an-hour strikingly illustrated the variability of our English weather.

Save for a few flashes of distant lightning, noticed about 9 p.m. on the previous day, there was nothing in the early morning of Saturday to presage what was coming. The air was fresh, the birds were singing and there was a blue sky overhead. As late as a quarter past eleven an almost summer's day prevailed and the powerful sun—now at its nearest to the Earth—brought out, the different colours and objects with a distinctness pleasant to the eye, the air being still limpid after the rain of several previous days. I was arranging the remainder of the day's work with the gardener for carting, returfing and transplanting some shrubs, when a quarter of an hour later a dark high bank of cloud came up over Taplow, rising very fast, and speedily enveloping the western half of the skyscape in an ominous gloom. The effect at this moment was very remarkable. The grass after the mild damp winter was refreshingly green. The blazing sun caught the snow white stems of the silver birch trees, contrasting them against their inky background with a vividness that was absolutely startling. Some tall cotoneasters robbed by winter of their green leaves still retained high aloft great clusters of scarlet or crimson berries and these, their surfaces perhaps a little moist, shone like electric lights in front of an almost end-of-the-world-like darkness, while some ordinary sombre hued dark green spruces stood out from the devilish blackness behind them a brilliant apple green as if new arrivals from the tropics. The concentrated rays of the sun gave a lime-light intensity to all the objects within its range, now rapidly contracting, that was almost theatrical.

A few minutes later a superb vertical flash of lightning, the greatest and the first, with hardly a deviation from the upright in its whole length, rent the sable cloud from top to bottom, accompanied rather than followed by a grand series of reverberations; and the sunlight disappeared. Instinctively one called out "stand firm" and a few seconds later a mighty blast of wind suddenly swept over the ground lifting the stalwart gardener several steps backwards before he could adjust himself to its violence, and then a smiting hail loudly descended which whitened the lawns in a few seconds. The stones were nearly as large as pigeon's eggs, and being very sharp angled cut one painfully and compelled a hasty retreat into shelter. Another very beautiful flash followed—there were no intervening or "minor flashes" in this storm—an almost horizontal one, apparently so close to the ground that in the swiftness and beauty of its undulations it seemed to skip from cloud to cloud with all the grace of movement of a hare at full speed. This was succeeded by a partial rainbow in the

north-west, and a few minutes later a cessation of the storm occurred, and the sun once more asserted itself. Though again a fine and placid day, in the interval the ground had been changed to pulp and the grass become sodden by the melting of the hailstones, so our garden programme had to be entirely recast by this episode of half-an-hour. The amount measured in the rain gauge was '18 in.

At Windsor considerable damage was done to glass by the hail, and business at the Guildhall was temporarily suspended until the noise of it had ceased.

*Upton, Slough, January 8th, 1903.*

RICHARD BENTLEY.

THE storm so pictorially described by Mr. Bentley was experienced with considerable severity at Camden Square, where the first brilliant flash of lightning was noted at 12.5 p.m.

By the reports in the press we learn that the high spire of St. Michael's Church, Highgate, was struck by lightning, but not much damaged. At Colchester a lady was struck by lightning in her garden and seriously injured, while a tree was set on fire.—ED. S.M.M.

A SMART thunderstorm passed over this place on Saturday, 3rd January, about 11 a.m., coming from the west. There were several claps of thunder, but only one flash of lightning was seen, which struck a cottage about a mile-and-a-half from here, destroying the roof but not injuring the people.

ROSE E. STANTON.

*Upfield, Stroud, January 5th, 1903.*

ON January 3rd a sharp thunderstorm occurred shortly after noon. Loud thunder and occasional lightning were noted from 12.4 to 12.15 p.m. From that time to 12.30 rain and hail descended heavily, with violent squalls from W.N.W., but no damage was done in this neighbourhood. The rain measured at the end of the storm was '10 in.

D. W. HORNER.

*Clapham Park, S. W.*

## LONDON SMOKE IN THE COUNTRY.

*To the Editor of Symons's Meteorological Magazine.*

THE following letter appeared in a recent issue of the *Standard* :—

"SIR,—It would be interesting to know how far London smoke travels. The north-east wind has brought it here this morning (half-past twelve) so thickly that it is impossible to read without lights.

I am, Sir, your obedient servant, H. C. MALDEN."

*Godalming, December 3rd.*

On December 3rd the morning here was very gloomy but not unseasonable; at a little before noon it became so dark that I had to light a lamp to write by, although the room was well lighted with two windows. Could this have been due to London smoke? It lasted till about 1 p.m., and the oldest inhabitant had never seen it so dark at noon.

J. P. MACLEAR.

*Beaconscroft, Chiddingfold.*



# ROYAL METEOROLOGICAL SOCIETY.

THE monthly meeting of this Society was held on Wednesday evening, December 17th, at the Institution of Civil Engineers, Great George Street, Mr. W. H. Dines, B.A., President, in the chair.

The following were elected Fellows of the Society :—Mr. A. C. Allen, Miss E. Aston, B.Sc., Dr. A. Buchan, F.R.S., Prof. G. H. Darwin, F.R.S., Mr. A. E. Eastwood, Mr. G. T. W. Olver, Mr. F. E. Phillips, Mr. T. A. Routh, and Sir W. Willcocks, K.C.M.G.

M. Alfred Angot, of the Bureau Central Météorologique de France, Paris, and Prof. Willis L. Moore, Chief of the U.S. Weather Bureau, Washington, were elected Honorary Members of the Society.

A paper by Mr. C. V. Bellamy, M.Inst.C.E., on the "Climate of Cyprus," was read by the Secretary. This island, which lies towards the extreme eastern end of the Mediterranean Sea, corresponds in area to the three counties of Sussex, Kent and Surrey together. It is divided by the Central Plains, which run east and west, and are bounded on the north by the Kyrenia Mountains and on the south and south-west by the Troödos Mountains. These mountain ranges have a considerable influence upon the temperature of the Central Plains, and especially upon the climate of the capital city, Nicosia, which has a population of about 14,000 inhabitants. The mean temperature for the year at Nicosia (calculated from a few years' observations) is  $67^{\circ}2$ , the extreme highest temperature noted had been  $108^{\circ}$  and the extreme lowest  $28^{\circ}$ . The annual rainfall of about 14 inches falls mostly in the winter months. Owing to the position of the mountain ranges the wind is deflected across the central plain, and blows usually in a north-westerly or south-easterly direction. The author gave particulars as to the meteorological conditions at Troödos, the sanatorium and summer resort of Cyprus, which is situated in the mountains, at an altitude of over 5,000 feet.

Mr. J. A. Curtis said the paper was interesting and informing, but he thought the author should have availed himself of the very full observations taken at six Government stations in Cyprus since 1881. Mr. Bellamy's observations, however, appeared to agree with those at the Government station in Nicosia.

Mr. E. Atkin said that he had resided for  $4\frac{1}{2}$  years in Cyprus, chiefly at Nicosia, and he agreed with the author as to the prevalence of the west-north-west winds. While living in the island he had been struck by the variation of the rivers fed from the mountains, and this not only in spring. Upon one occasion he had crossed the dry bed of the Pedias at 4.30, and on returning at 5.30 found six feet of water in the river, caused by the rapid melting of the snow on Troödos. The clearness and non-corrosive quality of the air was most remarkable, and he had seen in the chapel of a castle of the fifteenth century, of which the roof had long fallen in, paintings and figures upon the walls in excellent preservation.

Mr. F. C. Bayard, Mr. E. Mawley, Dr. R. H. Scott, Mr. Baldwin Latham, and Mr. R. H. Curtis also took part in the discussion.

A paper by Mr. H. Helm Clayton, of the Blue Hill Observatory, U.S., on "The Eclipse Cyclone of 1900," was also communicated by the Secretary. The author, in a former paper, discussed the meteorological observations made along the path of the total solar eclipse in the United States, on May 28th, 1900, and stated that he found that a cyclone followed in the wake of the eclipse—though the changes were very minute and feeble—the fall of temperature developing a cold air cyclone in an astonishingly short time. This theory was not readily accepted by meteorologists, and was criticised by Prof. Bigelow, who has discussed all the observations received by the U.S. Weather Bureau. The author now examines Prof. Bigelow's discussion, and points out that the observations really confirm the conclusions at which he had arrived concerning the meteorological effects of eclipses.

Mr. W. H. Dines said the subject was in his opinion one of great interest, and from the theoretical side, one of extreme importance. The eclipse provided an external source of cooling to the air, passing over the lighted portion of the hemisphere at a definite rate, and afforded the only means available of determining the changes of pressure that may be produced by a change of temperature over a rapidly shifting area. Probably the cooling produced by the shadow only extended to a few hundred feet in elevation; taking it as 500 feet, and supposing that the air temperature to this height fell  $5^{\circ}$ , the corresponding rise of the barometer should be .005 inch. The air being cooled would occupy less space, and the rise of the barometer could only be produced by there being time for the surrounding air to flow in above and fill this space. It appeared from Mr. Clayton's diagrams that notwithstanding the speed with which the shadow moved, there was ample time to set up the motion and characteristics of a cyclone. He was inclined to think that the author had established his case.

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## REVIEW.

*Elementi di Geografia Fisica, Fisica Terrestre e Meteorologia.* FRANCESCO PORRO. Rome, &c. G. B. Paravia & Co. 1902. Size  $8\frac{1}{2} \times 5\frac{1}{2}$ . Pp. viii. + 280. *Illustrations.*

THIS little book is written for the secondary schools of Italy, and it may be said to present an epitome of physical geography from the point of view of the atmosphere. Of the eleven chapters, five are purely meteorological, one is devoted to glaciers, one to the waters of the land, and one to the sea.

The book is brightly written, and lightened by several happy quotations from Dante, and a few illustrations of unusual merit. A particularly clear diagram illustrates the föhn wind, and the fascinating subject of the forms of snow crystals receives considerable attention. But while the author keeps the attractive side of his subject to the front as befits a book for young students, he has read widely, and gives the latest results of many workers in all countries.

## Heinrich von Wild.

ZURICH, 17 DECEMBER, 1833—5 SEPTEMBER, 1902.

THOUGH he died in his native republic of Switzerland, the name of Professor Wild will always be associated with the empire of Russia, where for more than thirty years he presided at the Central Physical Observatory of St. Petersburg. Wild's first published paper on cosmical physics was concerned with terrestrial magnetism, and appeared in 1859, immediately after his appointment as Professor of Physics in the University of Bern. In 1868 he accepted the post of Director of the Central Physical Observatory in St. Petersburg, where his career as a man of science and as an official earned him world-wide fame and many honours.

Professor von Wild was an indefatigable experimenter and a most prolific writer. He will be long remembered for his investigation of the effects of various exposures on meteorological instruments, a research leading to the adoption in Russia of his thermometer screen, which combined the principles of a current of air driven over the thermometers and a louver-boarded shelter. His name is associated with many other improvements in instrumental methods. Amongst his writings there were many papers on the climate of the Russian empire, including a very important treatise on the temperature, published in 1881. Wild's *Repertorium für Meteorologie*, founded in 1869, acquired high distinction as a meteorological journal.

## Robert Rubenson.

STOCKHOLM, 10 APRIL, 1829—14 OCTOBER, 1902.

PROFESSOR ROBERT RUBENSON, studied at the University of Upsala, and after some years spent in travelling through southern Europe, he returned to the Observatory in that city. During the years 1865 to 1869 he arranged for hourly meteorological observations being carried on by a voluntary association of students, and this work was not relinquished until self-recording instruments had been introduced. Dr. Rubenson discussed and published the results, and was appointed Lecturer on Meteorology in the University. In 1873 the Swedish Meteorological Institute was founded, under the auspices of the Academy of Sciences, and Professor Rubenson was called to Stockholm to be its first chief, a post he retained until very shortly before his death.

## METEOROLOGICAL NEWS AND NOTES.

THE MEMORY OF FATHER SECCHI, the illustrious Italian astronomer and physicist, is to be celebrated in Rome on the occasion of the twenty-fifth anniversary of his death, on February 26th, 1903. A special committee is arranging the details of the celebration.

THE SCOTTISH ANTARCTIC EXPEDITION on board the *Scotia*, reached Port Stanley, Falkland Islands, on January 6th, all well.

## DECEMBER, 1902.

| Div.     | STATIONS.<br>[The Roman numerals denote the<br>division of the Annual Tables to<br>which each station belongs.] | RAINFALL.      |   |                                  |      |       | Days on which<br>-01 or more fell. | TEMPERATURE. |      |      |      | No. of<br>Nights<br>below<br>32° |           |
|----------|---|----------------|---|----------------------------------|------|-------|------------------------------------|--------------|------|------|------|----------------------------------|-----------|
|          |   | Total<br>Fall. | Differ-<br>ence<br>from<br>average<br>1890-9. | Greatest<br>Fall in<br>24 hours. |      | Max.  |                                    | Min.         |      |      |      |                                  |           |
|          |   |                |   | Dpth                             | Date |       |                                    | Deg.         | Date | Deg. | Date |                                  |           |
|          |   | inches.        | inches.                                       | in.                              |      |       |                                    |              |      |      |      | In shade.                        | On grass. |
| I.       | London (Camden Square) ...  | 1.51           | —   | .42                              | .50  | 17    | 12                                 | 56.8         | 17   | 22.5 | 7    | 6                                | 15        |
| II.      | Tenterden .....   | 2.27           | —   | .04                              | .69  | 1     | 18                                 | 54.0         | 17   | 21.0 | 7    | 11                               | 17        |
| III.     | Hartley Wintney .....   | 1.60           | —   | .54                              | .39  | 17    | 12                                 | 55.0         | 25   | 14.0 | 5    | 15                               | 17        |
| IV.      | Hitchin .....   | 1.35           | —   | .59                              | .27  | 17    | 15                                 | 55.0         | 17   | 16.0 | 6    | 11                               | ...       |
| V.       | Winslow (Addington) .....   | 1.24           | —   | .77                              | .28  | 28    | 14                                 | 55.0         | 17   | 19.0 | 7    | 13                               | 17        |
| VI.      | Bury St. Edmunds (Westley) ..   | 1.29           | —   | .82                              | .31  | 17    | 12                                 | 56.0         | 17   | 17.0 | 7    | ...                              | ...       |
| VII.     | Norwich (Brundall) .....  | 1.62           | —   | .46                              | .37  | 1     | 19                                 | 56.0         | 16   | 26.0 | 4    | 6                                | 15        |
| VIII.    | Winterborne Steepleton .....  | 2.39           | ...   | ...                              | .98  | 1     | 13                                 | 53.9         | 16   | 22.0 | 5, 7 | 11                               | 17        |
| IX.      | Torquay .....   | 2.81           | ...   | ...                              | .77  | 1     | 14                                 | ...          | ...  | ...  | ...  | ...                              | ...       |
| X.       | Polapit Tamar [Launceston]..  | 4.55           | +   | .89                              | .83  | 28    | 18                                 | 54.1         | 16   | 16.9 | 7    | 13                               | 15        |
| XI.      | Stroud (Upfield) .....  | 2.13           | —   | .10                              | .50  | 17    | 12                                 | 53.0         | 17   | 21.0 | 4, 6 | 13                               | ...       |
| XII.     | Church Stretton (Woolstaston) ..  | 2.14           | —   | .41                              | .49  | 14    | 15                                 | 54.0         | 16   | 18.0 | 7    | 12                               | ...       |
| XIII.    | Worcester (Diglis Lock) .....   | 1.49           | —   | .43                              | .46  | 1     | 16                                 | ...          | ...  | ...  | ...  | ...                              | ...       |
| XIV.     | Boston .....  | 1.39           | —   | .16                              | .35  | 1, 17 | 9                                  | 56.0         | 16   | 28.0 | 4    | ...                              | ...       |
| XV.      | Hesley Hall [Tickhill] .....  | 1.66           | —   | .20                              | .68  | 1     | 11                                 | 57.0         | 16   | 18.0 | 7    | 11                               | ...       |
| XVI.     | Derby (Midland Railway) .....   | 1.69           | —   | .17                              | .67  | 1     | 15                                 | 57.0         | 17   | 22.0 | 7    | 10                               | ...       |
| XVII.    | Manchester (Plymouth Grove) ..  | ...            | ...   | ...                              | ...  | ...   | ...                                | ...          | ...  | ...  | ...  | ...                              | ...       |
| XVIII.   | Wetherby (Ribston Hall) ...   | 2.57           | +   | .65                              | .79  | 1     | 17                                 | ...          | ...  | ...  | ...  | ...                              | ...       |
| XIX.     | Skipton (Arncliffe) .....   | 6.56           | +   | .10                              | 1.00 | 15    | 18                                 | ...          | ...  | ...  | ...  | ...                              | ...       |
| XX.      | Hull (Pearson Park) .....   | 2.13           | —   | .07                              | .83  | 1     | 16                                 | 56.0         | 16a  | 28.0 | 4    | 9                                | 16        |
| XXI.     | Newcastle (Town Moor) .....   | 3.01           | +   | .58                              | .63  | 1     | 18                                 | ...          | ...  | ...  | ...  | ...                              | ...       |
| XXII.    | Borrowdale (Seathwaite) .....   | 15.06          | +   | .13                              | 3.29 | 14    | 18                                 | 53.5         | 15   | 24.4 | 4    | 9                                | ...       |
| XXIII.   | Cardiff (Ely) .....   | 4.01           | —   | .08                              | .73  | 28    | 20                                 | ...          | ...  | ...  | ...  | ...                              | ...       |
| XXIV.    | Haverfordwest .....   | 3.77           | —   | .94                              | .77  | 14    | 14                                 | 54.4         | 17   | 22.0 | 7    | 6                                | 18        |
| XXV.     | Aberystwith (Gogerddan) ...   | 4.60           | +   | .05                              | 1.16 | 16    | 14                                 | 49.0         | 13b  | 14.0 | 4    | 15                               | ...       |
| XXVI.    | Llandudno .....   | 2.65           | —   | .25                              | .63  | 14    | 15                                 | 59.0         | 14   | 23.2 | 5    | 5                                | ...       |
| XXVII.   | Cargen [Dumfries] .....   | 5.66           | +   | .94                              | 1.34 | 14    | 16                                 | 53.0         | 16   | 19.0 | 7    | 9                                | ...       |
| XXVIII.  | Edinburgh (Royal Observatory) ..  | 1.63           | ...   | ...                              | .63  | 14    | 14                                 | 53.4         | 14   | 24.0 | 8    | 10                               | 15        |
| XXIX.    | Colmonell .....   | ...            | ...   | ...                              | ...  | ...   | ...                                | ...          | ...  | ...  | ...  | ...                              | ...       |
| XXX.     | Tighnabruaich .....   | 6.45           | ...   | ...                              | 1.01 | 1     | 20                                 | ...          | ...  | 22.0 | 7    | 13                               | ...       |
| XXXI.    | Mull (Quinish) .....  | 6.02           | —   | .23                              | .95  | 15    | 22                                 | ...          | ...  | ...  | ...  | ...                              | ...       |
| XXXII.   | Loch Leven Sluices .....  | 4.48           | +   | .83                              | .77  | 3     | 18                                 | ...          | ...  | ...  | ...  | ...                              | ...       |
| XXXIII.  | Dundee (Eastern Necropolis) ..  | 3.00           | +   | .19                              | .85  | 1     | 18                                 | 54.5         | 21   | 19.9 | 7    | 8                                | ...       |
| XXXIV.   | Braemar .....   | 5.30           | +   | 2.29                             | 1.42 | 14    | 19                                 | 50.2         | 21   | 14.0 | 7    | 14                               | 25        |
| XXXV.    | Aberdeen (Cranford) .....   | 3.32           | +   | .34                              | .63  | 1     | 20                                 | 54.0         | 24d  | 22.0 | 31   | 12                               | ...       |
| XXXVI.   | Cawdor (Budgate) .....  | 3.91           | +   | 1.30                             | .70  | 29    | 16                                 | ...          | ...  | ...  | ...  | ...                              | ...       |
| XXXVII.  | Strathconan [Beaul] .....   | 5.03           | —   | .92                              | 1.03 | 29    | 12                                 | ...          | ...  | ...  | ...  | ...                              | ...       |
| XXXVIII. | Glencarron Lodge .....  | 12.43          | +   | 2.00                             | 2.52 | 24    | 22                                 | ...          | ...  | ...  | ...  | ...                              | ...       |
| XXXIX.   | Dunrobin .....  | 3.64           | +   | .18                              | .87  | 25    | 14                                 | 57.0         | 1    | 26.5 | 17   | 18                               | ...       |
| XL.      | S. Ronaldshay (Roeberry) ...  | 2.83           | —   | 1.15                             | .41  | 15    | 22                                 | 50.0         | 26e  | 29.0 | 31   | 5                                | ...       |
| XLI.     | Darrynane Abbey .....   | 3.23           | —   | 2.10                             | .46  | 1     | 26                                 | ...          | ...  | ...  | ...  | ...                              | ...       |
| XLII.    | Waterford (Brook Lodge) ...   | 2.72           | —   | 1.15                             | .84  | 14    | 14                                 | 56.0         | 13   | 28.5 | 29   | 4                                | ...       |
| XLIII.   | Broadford (Hurdlestown) ...   | 2.62           | —   | .64                              | .38  | 15    | 19                                 | 56.0         | 18   | 26.0 | 7    | 9                                | ...       |
| XLIV.    | Carlow (Browne's Hill) .....  | 2.92           | —   | .46                              | .70  | 15    | 16                                 | ...          | ...  | ...  | ...  | ...                              | ...       |
| XLV.     | Dublin (Fitz William Square) ..   | 1.56           | —   | .79                              | .27  | 14    | 13                                 | 58.0         | 17   | 29.6 | 7    | 3                                | ...       |
| XLVI.    | Ballinasloe .....   | 2.98           | —   | .61                              | .50  | 16    | 21                                 | 52.5         | 20   | 19.0 | 8    | 14                               | ...       |
| XLVII.   | Clifden (Kylemore) .....  | 6.23           | —   | 1.99                             | 1.55 | 15    | 21                                 | ...          | ...  | ...  | ...  | ...                              | ...       |
| XLVIII.  | Seaforde .....  | 4.19           | +   | .76                              | 1.32 | 1     | 15                                 | 55.0         | 15   | 34.0 | 28f  | 7                                | ...       |
| XLIX.    | Londonderry (Creggan Res.) ..   | 4.43           | +   | .31                              | 1.10 | 29    | 20                                 | ...          | ...  | ...  | ...  | ...                              | ...       |
| L.       | Omagh (Edenfel) .....   | 3.39           | —   | .55                              | .60  | 29    | 16                                 | 54.0         | 15   | 24.0 | 6    | 12                               | 1         |

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

a—and 17. b—and 15, 20. d—and 25, 27. e—and 27. f—and 29.

SUPPLEMENTARY TABLE OF RAINFALL,  
 DECEMBER, 1902.

| Div.  | STATION.                     | Total<br>Rain. | Div.   | STATION.                    | Total<br>Rain. |
|-------|------------------------------|----------------|--------|-----------------------------|----------------|
|       |                              | in.            |        |                             | in.            |
| I.    | Uxbridge, Harefield Pk..     | 1.61           | XI.    | Castle Malgwyn .....        | 4.50           |
| II.   | Dorking, Abinger Hall .      | 1.44           | „      | Builth, Abergwesyn Vic. ... | ...            |
| „     | Sheppey, Leysdown .....      | 1.20           | „      | Rhayader, Nantgwillt ...    | 6.64           |
| „     | Hailsham .....               | 1.83           | „      | Lake Vyrnwy .....           | 6.04           |
| „     | Crowborough.....             | 2.84           | „      | Ruthin, Plâs Drâw .....     | 3.02           |
| „     | Ryde, Beldornie Tower..      | 1.67           | „      | Criccieth, Talarvor .....   | 2.85           |
| „     | Emsworth, Redlands ...       | 1.66           | „      | I. of Anglesey, Lligwy..    | 4.66           |
| „     | Alton, Ashdell .....         | 2.13           | „      | Douglas, Woodville.....     | 4.41           |
| „     | Newbury, Welford Park        | 2.19           | XII.   | Stoneykirk, Ardwell Ho.     | 3.47           |
| III.  | Oxford, Magdalen Coll..      | 1.28           | „      | Dalry, Old Garroch .....    | 8.08           |
| „     | Banbury, Bloxham .....       | 1.68           | „      | Moniaive, Maxwellton Ho.    | 6.43           |
| „     | Pitsford, Sedgebrook ...     | 1.18           | „      | Lilliesleaf, Riddell .....  | 4.55           |
| „     | Huntingdon, Brampton ..      | 1.18           | XIII.  | N. Esk Res. [Penicuik]      | 3.45           |
| „     | Wisbech, Bank House...       | 1.19           | XIV.   | Glasgow, Queen's Park...    | 4.84           |
| IV.   | Southend .....               | 1.15           | XV.    | Inveraray, Newtown ...      | 7.51           |
| „     | Colchester, Lexden .....     | 1.28           | „      | Ballachulish, Ardsheal...   | 8.81           |
| „     | Saffron Waldon, Newport      | 1.26           | „      | Islay, Eallabus.....        | 4.57           |
| „     | Rendlesham Hall .....        | 1.44           | XVI.   | Dollar .....                | 4.15           |
| „     | Swaffham .....               | 1.42           | „      | Balquhider, Stronvar...     | 9.87           |
| V.    | Salisbury, Alderbury ...     | 1.56           | „      | Coupar Angus Station...     | 4.60           |
| „     | Bishop's Cannings .....      | 1.76           | „      | Blair Atholl ...            | 4.41           |
| „     | Blandford, Whatcombe .       | ...            | „      | Montrose, Sunnyside ...     | 2.78           |
| „     | Ashburton, Druid House       | 4.99           | XVII.  | Keith H.R.S.....            | 4.61           |
| „     | Okehampton, Oaklands.        | 4.62           | XVIII. | Fearn, Lower Pitkerrie..    | 1.95           |
| „     | Hartland Abbey .....         | 2.70           | „      | S. Uist, Askernish .....    | 4.92           |
| „     | Lynmouth, Rock House         | 4.35           | „      | Invergarry .....            | 8.34           |
| „     | Probus, Lamellyn .....       | 3.30           | „      | Aviemore, Alvie Manse.      | 3.40           |
| „     | Wellington, The Avenue       | 2.90           | „      | Loch Ness, Drumnadrochit    | 5.28           |
| „     | North Cadbury Rectory        | 1.94           | XIX.   | Invershin .....             | 4.54           |
| VI.   | Clifton, Pembroke Road       | 3.28           | „      | Bettyhill .....             | 2.87           |
| „     | Ross, The Graig .....        | 1.57           | „      | Watten H.R.S.....           | 3.04           |
| „     | Shifnal, Hatton Grange       | 1.63           | XX.    | Dunmanway, Coolkelure ...   | ...            |
| „     | Wem, Clive Vicarage ...      | 1.92           | „      | Cork, Wellesley Terrace     | 3.06           |
| „     | Cheadle, The Heath Ho.       | 2.45           | „      | Killarney, District Asyl.   | 6.97           |
| „     | Coventry, Priory Row ..      | 1.73           | „      | Caher, Duneske .....        | ...            |
| VII.  | Market Overton .....         | 1.54           | „      | Ballingarry, Hazelfort...   | 2.77           |
| „     | Grantham, Stainby .....      | 1.55           | „      | Miltown Malbay .....        | 4.40           |
| „     | Horncastle, Bucknall ...     | 1.46           | XXI.   | Gorey, Courtown House       | 2.66           |
| „     | Workshop, Hodsck Priory      | 1.77           | „      | Moynalty, Westland ...      | 2.93           |
| VIII. | Neston, Hinderton .....      | 2.37           | „      | Athlone, Twyford .....      | 2.88           |
| „     | Southport, Hesketh Park      | 2.85           | „      | Mullingar, Belvedere ...    | 2.40           |
| „     | Chatburn, Middlewood.        | 4.53           | XXII.  | Woodlawn .....              | 3.19           |
| „     | Duddon Val., Seathwaite Vic. | 10.30          | „      | Westport, Murrisk Abbey     | 4.59           |
| IX.   | Baldersby .....              | 2.17           | „      | Crossmolina, Enniscoe ..    | 5.32           |
| „     | Scalby, Silverdale .....     | 3.10           | „      | Collooney, Markree Obs.     | 5.06           |
| „     | Ingleby Greenhow Vic..       | 2.82           | XXIII. | Enniskillen, Model Sch.     | ...            |
| „     | Middleton, Mickleton ...     | 3.80           | „      | Warrenpoint.....            | 3.26           |
| X.    | Beltingham .....             | 3.46           | „      | Banbridge, Milltown ...     | 2.35           |
| „     | Bamburgh .....               | 2.94           | „      | Belfast, Springfield .....  | 3.71           |
| „     | Keswick, The Bank .....      | 9.19           | „      | Bushmills, Dundarave..      | 3.47           |
| XI.   | Llanfrechfa Grange .....     | 4.37           | „      | Stewartstown .....          | 2.32           |
| „     | Treherbert, Tyn-y-waun       | 9.41           | „      | Killybegs .....             | 5.36           |
| „     | Llandoverly .....            | 4.16           | „      | Horn Head .....             | 3.87           |

## METEOROLOGICAL NOTES ON DECEMBER, 1902.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Temp. for Temperature; 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.

LONDON, CAMDEN SQUARE.—A gloomy month though fairly dry. The first half was generally frosty with cold E. winds, but the latter part particularly mild. Mean temp.  $41^{\circ}\cdot 2$ , or  $2^{\circ}\cdot 0$  above the average.

ABINGER HALL.—Some extremely cold weather in the early part with N.E. wind, was followed by alternate rainy and fine periods; mild and showery at the end.

TENTERDEN.—Very cold from 4th to 12th, with several inches of S on 4th. T on 17th. L on 28th and 30th, Duration of sunshine 39 hours. Wells were lower, but ponds higher than in 1901.

SHEPPEY, LEYSDOWN.—A fine month; seven consecutive rainless days occurred twice. A cold spell from 3rd to 6th, and frosty again at the end.

CROWBOROUGH.—Except from 4th to 11th, the 25th and the last three days which were cold, the month was mild. A succession of gales from 14th to 17th. S from 3rd to 5th.

WINSLOW, ADDINGTON.—A very low even temp. prevailed from 3rd to 12th, giving a mean of  $33^{\circ}\cdot 4$ . Much milder from 13th to 29th, but cold on the last few days.

COLCHESTER, LEXDEN.—Dull and cold, with prevalence of E. wind and grass frosts from 2nd to 12th. The latter half was mild and remarkably dry.

NORWICH, BRUNDALL.—Mild on the whole, but very cold winds with frost and some S during the first 10 days. Magnificent weather during the Christmas holidays, more like May than December. Snow-drops in flower in the open on 23rd. L on 29th.

WINTERBOURNE STEEPLTON.—Very cold from 4th to 12th, then warmer. The smallest R in December in 10 years, being  $3\cdot 05$  in. below the average.

TORQUAY, CARY GREEN.—R  $1\cdot 09$  in. below the average. Duration of sunshine  $52\cdot 6$  hours, or  $1\cdot 4$  below the average. Mean temp.  $44^{\circ}\cdot 2$ , or  $0^{\circ}\cdot 8$  above the average. Mean amount of ozone  $5\cdot 1$ ; max.  $9\cdot 0$  on 29th, with W. wind, min.  $1\cdot 0$  on 11th and 12th, with E.N.E., and 24th, with N.N.W. wind.

WELLINGTON, THE AVENUE.—The type of weather which was at first mild completely changed on 3rd, when a very cold spell commenced, lasting until 12th. Until 28th it was unusually mild and at times very stormy. The last three or four days were colder, with some sleet or S. R about  $1\cdot 25$  in. below the normal, although fairly frequent.

NORTH CADBURY RECTORY.—Temp. on the whole rather below the average. Cloudy, with a high average of wind, but no dangerous gale.

CLIFTON, PEMBROKE ROAD.—Sharp frost from 3rd to 9th, with keen E. winds. Very wet with westerly gales from 14th to 17th. The last week was very stormy with westerly winds and gales, ending with two fine days. R slightly above the average. H storm on 28th and S shower on 29th.

ROSS, THE GRAIG.—Very dry except from 12th to 17th, and total R about an inch below the average. Mean temp.  $40^{\circ}\cdot 5$ . The day temp. was little more than  $0^{\circ}\cdot 5$  above the average, but the min., on account of the severe frost from 4th to 8th, was  $2^{\circ}\cdot 3$  below the average of 30 years. From 6th to 16th the day temp. rose  $27^{\circ}$  in 10 days.

COVENTRY, PRIORY ROW.—Generally dark and cloudy with an absence of sunshine and for the most part mild and calm.

SEATHWAITE VICARAGE.—The greatest total fall and the heaviest individual R of any month in the year. Mild throughout, except a cold dry spell from 3rd to 11th inclusive.

HULL, PEARSON PARK.—Severe wintry weather for the first few and last few days, with S, sleet and H. Very cloudy and dull throughout, with only  $7\cdot 25$  hours of sunshine.

# WALES AND THE ISLANDS.

LLANFRECHFA GRANGE.—Sharp frost from 4th to 8th, with very cold N. winds. Much milder afterwards.

HAVERFORDWEST.—A continuation of the wet weather of November. Frost from 2nd to 8th, with strong E. winds increasing in severity; afterwards overcast, gloomy and piercingly cold to 11th. Mild and wet to 20th after which dry, cloudy and mild to 26th. The month ended wet and stormy. Duration of sunshine 31·8 hours; total for the year 1302·8 hours.

ABERYSTWICH, GOGERDDAN.—Rather wet with one or two severe frosts and very little sun. A good deal of high N.W. wind, with heavy H storms and a little sleet.

DOUGLAS, WOODVILLE.—Severe S.E. gale with heavy R on 1st was succeeded by 9 rainless days, with rasping cold E. winds. A S.W. gale on 13th brought milder weather, with heavy R daily to 17th. High and increasing temp. obtained to 28th, another rainless period of 9 days, with violent W. gales. Slight S on 28th with a furious N.W. gale, and S and frost on 29th. T and L at 7 p.m. on 30th, and H on 31st. The R, 4·41 in., was the highest in any month in 1902, whilst the rainy days, 14, were the fewest.

# SCOTLAND.

LILLIESLEAF, RIDDELL.—The most remarkable feature was the prevalence of easterly winds which continued from November 14th to December 13th, with low temp., great dryness and cold. But, being dry, plants did not suffer and the apple blossom reported at the end of November formed fruit of quite an appreciable size. All agricultural work progressed favourably and the weather was bright, warm and charming. The only frost of any severity was on 31st.

TIGHNABRUACH.—A month of strong winds and heavy R. TS accompanied by heavy H and sleet on 27th.

COUPAR ANGUS.—Despite the severe but short snap of low temp. on 7th and 8th the temp. was above the average for the fourth month in succession. Mean temp. 37°·4.

WATTEN, H.R.S.—The first half was windy, dry and frosty; storms of wind and R in the latter.

S. RONALDSHAY, ROEBERRY.—The first half was fine; afterwards stormy and wet. Mean temp. 39°·7, or 0°·5 above the average of 12 years.

# IRELAND.

CORK, WELLESLEY TERRACE.—Most changeable; the first 10 days cold, then 7 with R, followed by 10 mild, dull and foggy days. The month closed with R, sleet, S and frost. R 1·48 in. below the average. Mean temp. 39°·1, or 3°·0 below the average.

DARRYNANE ABBEY.—Mild on the whole but cold snaps in the beginning and end.

MILTOWN MALBAY.—Generally very cold, without much severe frost. The last week was stormy with heavy falls of H.

DUBLIN, FITZWILLIAM SQUARE.—Very open, though cold periods occurred between 3rd and 8th and from 28th to the close. Mean temp. 44°·1, or 2°·4 above the average. High winds on 19 days, attaining the force of a gale on 7. S or sleet on 28th and 29th. Duration of sunshine 53·25 hours.

COLLOONEY, MARKREE OBSERVATORY.—Very frosty at first, the min. reaching 20°·5 on 8th; then mild, gloomy, dull and cloudy. Bad weather set in after 20th with frequent gales and slight showers of H and S. Last 3 or 4 days cold and stormy with sleet, H and heavy R. T and L on 29th.

OMAGH, EDENFEL.—After the drenching R of 1st, followed 10 days of uninterrupted dry and cold weather with more or less severe frosts. Thence to 27th the weather was mild, rainy and unsettled, with occasional strong winds and gales. A return to cold and considerable S terminated the month.

## CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, JULY, 1902

| STATIONS.<br><br>(Those in italics are<br>South of the Equator.) | Absolute. |       |          |       | Average. |      |               |           | Absolute.       |                   | Total Rain. |       | Aver. |
|--|-----------|-------|----------|-------|----------|------|---------------|-----------|-----------------|-------------------|-------------|-------|-------|
|  | Maximum.  |       | Minimum. |       | Max.     | Min. | Dew<br>Point. | Humidity. | Max. in<br>Sun. | Min. on<br>Grass. | Depth.      | Days. |       |
|  | Temp.     | Date. | Temp.    | Date. |          |      |               |           |                 |                   |             |       |       |
|  | °         |       | °        |       | °        | °    | °             | 0-100     | °               | °                 | inches      |       |       |
| London, Camden Square  | 85·1      | 15    | 44·9     | 12    | 73·4     | 53·1 | 51·6          | 65        | 132·1           | 40·9              | 1·40        | 11    | 5·9   |
| Malta.....   | 99·7      | 25    | 64·9     | 1, 5  | 89·9     | 70·9 | 66·8          | 67        | 147·1           | 60·1              | ·00         | 0     | 0·5   |
| Cape Town ...  | 77·0      | 2     | 38·9     | 20    | 61·7     | 47·4 | 48·6          | 79        | ...             | ...               | 4·59        | 16    | 6·0   |
| Durban, Natal .....  | 88·0      | 22    | 49·5     | 11    | 74·4     | 53·5 | ...           | ...       | 135·2           | ...               | ·27         | 4     | 2·1   |
| Mauritius.....   | 78·3      | 24    | 56·2     | 15    | 76·4     | 65·7 | 61·2          | 76        | 141·3           | 47·5              | 2·06        | 15    | 5·4   |
| Calcutta.....  | 93·4      | 12    | 74·9     | 30    | 88·5     | 78·5 | 77·7          | 85        | 154·0           | 73·8              | 15·52       | 16    | 9·2   |
| Bombay.....  | 90·3      | 1     | 76·4     | 21    | 85·7     | 79·0 | 77·4          | 85        | 142·8           | 73·7              | 16·96       | 30    | 8·9   |
| Madras .....   | 101·9     | 26    | 74·5     | 2     | 96·9     | 79·4 | 72·6          | 69        | 149·0           | 72·1              | 4·24        | 16    | 6·6   |
| Kodaikanal .....   | 67·8      | 27    | 51·2     | 22    | 62·8     | 53·1 | 55·1          | 83        | 144·4           | 42·2              | 3·73        | 21    | 8·1   |
| Colombo, Ceylon.....   | 88·2      | 27    | 74·5     | 5     | 86·0     | 76·8 | 74·1          | 83        | 154·8           | 71·8              | 4·63        | 18    | 7·2   |
| Hongkong.....  | 92·2      | 27    | 74·0     | 6     | 86·1     | 78·3 | 75·8          | 82        | 142·9           | ...               | 16·26       | 23    | 7·7   |
| Melbourne.....   | 64·4      | 5     | 31·0     | 15    | 56·8     | 42·1 | 40·9          | 75        | 119·4           | 22·4              | ·57         | 6     | 6·2   |
| Adelaide .....   | 70·0      | 3     | 36·9     | 9a    | 60·8     | 44·9 | 43·1          | 72        | 122·2           | 30·9              | 1·41        | 15    | 4·9   |
| Coolgardie .....   | 70·0      | 27    | 31·9     | 30    | 61·0     | 40·7 | 39·8          | 66        | 136·2           | 24·0              | ·64         | 7     | 4·3   |
| Sydney .....   | 71·9      | 30    | 41·4     | 18    | 59·4     | 46·1 | 42·0          | 91        | 110·0           | 35·0              | 9·24        | 15    | 4·9   |
| Wellington .....   | 62·0      | 30    | 32·0     | 17    | 53·0     | 40·0 | 37·4          | 74        | 92·0            | 24·0              | 2·34        | 14    | 4·3   |
| Auckland .....   | 60·0      | 31    | 38·5     | 17    | 54·9     | 44·5 | 40·2          | 70        | 115·0           | 33·0              | 2·14        | 17    | 4·6   |
| Jamaica, Negril Point..  | 90·2      | 1     | 69·9     | 24    | 87·7     | 73·2 | 73·9          | 79        | ...             | ...               | 7·31        | 13    | ...   |
| Trinidad .....   | 90·0      | 6     | 69·0     | 10b   | 86·8     | 71·3 | 72·7          | 82        | 165·0           | 62·0              | 5·20        | 19    | ...   |
| Grenada.....   | 84·2      | 30    | 69·2     | 11    | 82·6     | 74·3 | 71·6          | 79        | 149·0           | ...               | 12·02       | 30    | 3·6   |
| Toronto .....  | 91·0      | 8     | 50·0     | 1     | 78·7     | 59·1 | 60·9          | 79        | 107·8           | 43·9              | 4·37        | 16    | 5·3   |
| Fredericton, N.B. ....   | 83·7      | 9     | 42·5     | 6     | 74·8     | 52·4 | 52·6          | 59        | ...             | ...               | 2·94        | 11    | 4·8   |
| Winnipeg .....   | 90·2      | 23    | ...      | ...   | 80·0     | 55·7 | ...           | ...       | ...             | ...               | 1·33        | 11    | 4·7   |
| Victoria, B.C. ....  | 86·2      | 19    | 45·8     | 8     | 67·9     | 52·7 | ...           | ...       | ...             | ...               | ·37         | 5     | 4·4   |
| Dawson .....   | 81·6      | 1     | 42·4     | 20    | 73·3     | 50·5 | ...           | ...       | ...             | ...               | 3·32        | 8     | 5·3   |

a—and 10. b—and 13, 16.

## REMARKS.

MALTA.—Mean temp. of air 79°·1, or 1°·5, above, and mean hourly velocity of wind 5·8 or 1·8 below, average. Mean temp. of sea 78°·9. J. F. DOBSON.

Mauritius.—Mean temp. of air 1°·2 above, and E 19 in. and mean hourly velocity 1·4 miles below their respective averages for 28 years. T. F. CLAXTON.

MADRAS.—Sunshine 114·9 hours, or 29·1 per cent. of possible amount. L on 6 days, distant T on 7 other days, and TSS on 2 days. A. MOFFAT.

KODAIKANAL.—Cloudy month, 86·2 hours of bright sunshine. C. MICHIE SMITH.

COLOMBO.—Mean temp. of air 80°·6, of dew point 74°·1, both close to average. Mean hourly velocity of wind 9·1 miles, prevailing direction S.W. H. O. BARNARD.

HONGKONG.—Mean temp. of air 81°·8. Sunshine 158·7, or 39·0 below average. Mean hourly velocity of wind 14·3 miles, prevailing direction S.E. F. G. FIGG.

Adelaide.—Mean temp. of air 52°·9, or 0°·6 above, R 1·14 in. below their respective averages. Very dry inland. C. TODD, F.R.S.

Sydney.—Mean temp. of air 0°·5 and R 4·66 above average. H. C. RUSSELL, F.R.S.

Wellington.—Mean temp. of air 1°·1 below and R 4·00 in. below their respective averages. R. B. GORE.

Auckland.—Mean temp. of air 3° below the average. R less than one-half of the average for the previous 33 years. T. F. CHEESEMAN.