SYMONS'S

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THE BLOOD-RAIN PLANT AT CAMDEN SQUARE.

BY a curious coincidence, while the red rains of African dust are exciting attention and alarm in the south of Italy, the head quarters of the British Rainfall Organization have been invaded by the microscopic water-plant which was responsible for many of the "rains of blood" recorded in history. Speaking accurately, the coincidence is less curious than it appears, for it was the report of the occurrence of red rain in Italy that led us to look more critically into the phenomenon at Camden Square, which had been noticed before, although not investigated. It has nothing in common with the red sand-rains of the Continent except the colour.

About the beginning of March the water in the large evaporation-tank (6 feet square and 2 feet deep) assumed a chocolate colour, which might have been due to the accumulation of ordinary London dust, and attracted little attention; but when the last ice disappeared from the surface, and the long spell of cloudy weather gave place to sunshine, the red colour of the water was intensified to a rich deep crimson, offering a most effective contrast to the green of the surrounding grass. On stirring the water the presence of clouds of a deep red floating substance became apparent, and a glass dipped into the thickest part of one of these clouds and held up to the light was seen to be full of minute bright red points just visible to the eye. Believing that these were due to some sort of living organism, we reported the matter to the Botanical Department of the British Museum, and on April 3rd Mr. V. H. Blackman kindly visited Camden Square and took away specimens of the water. On subjecting them to microscopical examination, he at once found that the red colour was due to the presence of swarms of a minute moving water-plant—in technical language a motile alga—now called *Sphaerella pluvialis*, but formerly known as *Haematococcus pluvialis*, literally "the blood-plant of rain." It is closely allied to the better known *Sphaerella nivalis*, the microscopic plant which gives its colour to red snow. This organism is usually found in small pools, where it makes its home; its occurrence in rain is a

rarity, and the showers coloured red from its presence are probably produced by the same process as the familiar showers of frogs and fish.

The tank at Camden Square has not caught any red rain: the various raingauges emptied daily, weekly and monthly all contained water of the usual dusky tint of London rain without a trace of redness, and there is no reason to suppose that any red rain has fallen recently in this country; but if a little whirlwind were to pass over the tank, spots very like blood would be found where the drops fell along its subsequent track.

If any of our readers who are interested in microscopic work would care to examine this organism, the name of which is so closely linked with rain, we shall be happy to forward specimens of the water containing it.

Correspondence.

WIND AND WAVES.

To the Editor of Symons's Meteorological Magazine.

In reference to a report in the newspapers of March 1st of the ss. "Teutonic" having encountered a huge tidal wave on February 24th in the Atlantic, and being momentarily submerged, I venture to surmise it might have been what is called an *acuminative wave.*

This is believed to be induced by two storm swells meeting each other at an onset perpendicularly, or nearly so, and producing a wave of almost double the height of each of the swells combining to produce it. The trough, in consequence, will be nearly double the depth of the storm trough of either separate wave. There have been some violent storms reported lately in the Atlantic, which have probably created these storm swells, which have encountered each other from different directions in the open ocean.

The term Tidal Wave would seem to be inapplicable, as the occurrence is far removed from any shore lines likely to cause concentration of sea rollers.

W. G. BLACK, F.R.Met.Soc.

Edinburgh, March 4th, 1901.

[The term "Tidal Wave" is as dear to the journalist as its inspiring congener the "Electric Fluid," and is to be taken in a literary rather than a literal sense. In course of time it will become a curiosity of literature and vanish. We hope to publish next month a short article on storm waves by Mr. Vaughan Cornish.

ED. *S.M.M.*]

CLIMATE OF PEMBA.

WE are indebted to Mr. T. P. Newman, of Haslemere, for what we believe to be the first tables of the climate of Pemba ever published. Pemba is one of the most out-of-the-world places on the coast of Africa, forming, together with the larger island of Zanzibar, that portion of the British East Africa Protectorate still nominally under the rule of the Sultan of Zanzibar. It lies near the equator; the position of Banani being approximately 5° 15′ S., 39° 43′ E., and its altitude apparently less than 50 feet above sea-level.

Mr. Newman accompanies the tables by the following remarks :—

Mr. Theodore Burtt, a missionary of the Society of Friends, engaged in teaching the emancipated slaves to earn a living on his clove plantations at Banani on the little island of Pemba, sends the records of temperature and rainfall given below. He writes, under date of 29th January, 1901 :—

"The past year has been showery, with more cloud, though the rainfall was less, as we have not had such violent storms as in May, 1899.

"On one day about last Christmas-time the black bulb thermometer (Hicks') stood at 172° in the sun, and to-day it shows 175°. I am trying to do a little botanical work, but the specimens will not dry. Two months ago I hung a creeper on my office wall in a dry airy place; just now it is sending out long roots, hoping to find the earth somewhere, but it will not dry or die."

The two rainy seasons are well marked—the greater in March, April and May, and the less in November, December and January. No other meteorological record is kept on Pemba.

Meteorological Observations at Banani, Island of Pemba.

1899.	Mean Max.	Mean Min.	Absolute Max.	Absolute Min.	Rainy Days.	Rainfall.
	°	°	°	°		in.
January	85·3	72·6	91·0	70·0	5	1·53
February	86·5	73·4	90·0	72·0	1	·01
March	86·3	72·6	91·5	69·5	16	12·36
April	84·0	72·7	87·5	67·0	19	16·09
May	77·2	68·5	82·0	68·0	26	58·16
June	78·1	67·4	81·0	66·0	22	4·77
July	77·9	66·8	80·0	65·0	21	3·70
August	79·9	67·0	80·5	66·0	11	·88
September	82·3	67·8	85·0	66·0	3	·29
October	85·3	69·2	88·0	67·5	1	·02
November	86·6	71·6	90·5	69·5	8	3·03
December	90·3	73·0	92·0	70·0	16	4·40
Year	83·3	70·2	92·0	65·0	149	105·24

Meteorological Observations at Banani, Island of Pemba.

1900.	Mean Max.	Mean Min.	Absolute.		Rainy Days.	Rainfall.
			Max.	Min.		
	°	°	°	°		in.
January	86·8	73·2	94·0	70·0	14	8·20
February	89·2	73·3	95·0	70·0	8	4·13
March	86·7	73·5	94·0	70·0	16	9·12
April	85·1	73·4	89·0	70·5	17	14·44
May	80·9	72·0	84·0	70·0	22	24·77
June	80·2	70·1	83·0	68·0	13	2·33
July	79·2	68·7	80·0	67·0	11	1·06
August	79·4	68·0	81·0	66·0	8	1·08
September	82·0	69·0	85·0	68·0	4	1·21
October	83·5	70·5	87·0	69·0	11	2·51
November	84·5	71·6	88·0	66·0	12	5·93
December	84·7	72·6	90·0	71·0	24	15·57
Year	83·5	71·3	95·0	66·0	160	90·35

THE SCOTTISH METEOROLOGICAL SOCIETY.

THE half-yearly general meeting of this Society was held in Edinburgh, on March 21st, when the report of the Council on the year's work was read. The principal work carried on in the office of the Society was the discussion of the storms recorded by the lighthouse-keepers round the coast, during the last twenty years, and the tabulating of the hourly readings at Ben Nevis and Fort William observatories. Dr. Buchan and Mr. Omond will be mainly occupied for the greater part of the present year in the study of the records of high-level observatories in Europe, in comparison with those of Ben Nevis, and in relation to weather changes.

Dr. A. Buchan, F.R.S., read a paper on the Storms of Scotland from 1881 to 1900, as recorded at the lighthouses. The curve of the frequency of storms was shown to follow the sun, December having a maximum, and June a minimum, of storms, while the equinoxes were periods of great change. A discussion followed the paper, in which Dr. Cargill G. Knott, and Mr. H. M. Cadell took part.

Mr. R. T. Omond read a paper on the Utilisation of the High Level Meteorological Observations of Europe, referring to the fact that the number of high level stations is being considerably increased, and that efforts are now being made to construct isobaric charts for various levels, for comparison with those at sea-level. He laid stress on the importance of establishing a high-level observatory in Norway or Sweden, most of those at present at work being situated in the centre or south of Europe. He believed that the next advance in weather forecasting would be made by connecting the sequence of meteorological changes at high levels with those occurring at the surface of the ground.

REVIEWS AND BOOKS RECEIVED.

Lehrbuch der Meteorologie von DR. JULIUS HANN. *Lieferungen*, 1, 2, 3, Leipzig, C. H. Tauchnitz. 1901. Size 10 × 7. Pp. 240. Plates.

WE merely wish, at present, to congratulate Dr. Hann on the appearance of the first three parts of his great treatise on Meteorology, a work which all meteorologists will welcome as the latest authoritative treatise on the science. When the book is complete we shall give our readers a summary of its contents. Meanwhile we promise ourselves much pleasure and profit in the study of Dr. Hann's conclusions.

The Distribution of Rainfall over the Land, by ANDREW J. HERBERTSON, Ph.D., F.R.S.E. With thirteen maps and a plate. London. John Murray, 1901. Size, 9½ × 6, pp. 70. Price 5s.

THE Royal Geographical Society has published, as a special memoir, this collection of monthly rainfall maps of the land of the globe, with descriptive text. Dr. Herbertson has been bold in attacking a problem the importance of which cannot be questioned, but the available data for which are so sparse and unequal as to deter most meteorologists who might have contemplated it from going further. That the difficulties of the case presented themselves to the author, we cannot doubt, but we regret that he did not give them even more prominence in the discussion than he has done. There was a day when anything that appeared in a printed book appealed to mankind as almost necessarily true. That time has passed, but there still lingers a similar superstition with regard to maps. The smoothly-spread tints on Mr. Bartholomew's beautiful maps which illustrate the memoir, certainly do not in themselves suggest that the information they have to convey varies from point to point between reasonable accuracy and pure guess-work. But with this caution established firmly in his mind, the student will find much that is full of interest and inspiration in the maps. Viewed qualitatively as a picture of the probable distribution of precipitation over the land in time and space, it would be difficult to over-estimate their value. They form a first approximation which supplies a basis for later workers to build upon. The usual system of augmentation, correction, and, it may be, refutation, will result in this case as it has resulted in others in the ultimate production of maps which will present a much closer approach to quantitative accuracy than is now possible.

In describing the conditions which are expressed cartographically on the maps, Dr. Herbertson treats not of countries or continents, but of zones, which he draws according to the dominating systems of winds. He treats the Earth's surface as divisible into (1) the Northern Storm Wind system, (2) the Southern Storm Wind system, and (3) the Steady Wind system of low latitudes, including the region of the trade winds and the equatorial belt of calms. For each

of these areas he discusses the climate of the month, and points out the peculiarities of rainfall which it presents.

In referring to the area of maximum precipitation sometimes occurring on the leeward side of a barrier of high land, Dr. Herbertson hardly succeeds in making it plain that this is an effect common amongst hills rather than mountains. Where the mountain barrier is high and snow-clad, we doubt if the maximum precipitation is ever found on the leeward slope. In the case of hills even as high as those of the English Lake District, it no doubt very frequently does so.

The data used for compiling the maps are referred to at considerable length. *British Rainfall* forms a somewhat conspicuous omission, but the data for the British Islands were drawn indirectly from that source.

We consider that Dr. Herbertson has rendered a marked service to climatology by the publication of this memoir.

The Eclipse Cyclone and the Diurnal Cyclones, by H. HELM CLAYTON. *Being Vol.* **43**. *Pt. I. of the Annals of the Astronomical Observatory of Harvard College.* Cambridge, Mass. 1901. Size $11\frac{1}{2} \times 9\frac{1}{2}$. Pp. 34. Diagrams.

THIS important paper is one of the special studies carried out at the Blue Hill Meteorological Observatory, under the direction of Mr. A. L. Rotch. It is the completest discussion yet made as to the meteorological effects of a solar eclipse. Not only was the fall and recovery of temperature recorded at many places, but the barometric movements and the winds were also observed over a wide area. As the result Mr. Clayton is convinced that a cold-air cyclone is developed by the fall of temperature during the eclipse, that this cyclone is developed and dissipated with remarkable rapidity, and that it does not drift with the atmosphere, but follows its originating cause over the Earth's surface at the rate of 2000 miles an hour. Mr. Clayton then applies these data to the diurnal heating and cooling of the Earth, which, he believes, produce a warm-air cyclone during the day, and a cold-air cyclone during the night. This theory would account fully for the puzzling phenomenon of the double daily maximum and minimum of atmospheric pressure.

This fascinating theory will, we hope, be fully discussed; but meanwhile we confess to some difficulty in grasping the idea of a cold-air cyclone, especially since Mr. Clayton says on p. 15, "Ferrel maintains, from theoretical considerations, that cyclones necessarily have an inner area of low pressure, surrounded by a ring of high pressure . . . ," and lower down on the same page he quotes Ferrel's words: "The centre of a cyclone with a cold centre may, or may not, have a minimum pressure, according to circumstances." And the diagrams of wind round the eclipse centre seem to show a circulation outwards from the centre in the same direction as in an

ordinary anti-cyclone. It is probably merely a question of terminology, and the "moving anti-cyclones" of Australia may be the "cold-air cyclones" of America.

Hourly Means of the Readings obtained from the Self-recording Instruments at the five Observatories under the Meteorological Council, 1897. *Published by the authority of* THE METEOROLOGICAL COUNCIL. London. Printed for His Majesty's Stationery Office. 1901. Size 12 × 10, pp. xii.+240.

THIS volume contains the hourly and daily means for five-day periods and for the months and the year, of pressure, temperature (wet and dry bulb), wind and rain, with duration of sunshine, for Valencia, Falmouth, Kew, Fort William and Aberdeen.

Lui Stefan C. Hepites. Manifestatiune cu ocasiunea Jumătăteĭ de veac a vîrsteĭ sale 5/17 *Februarie*, 1851—5/18 *Februarie*, 1901. Bucuresci, F. Göbl Fii, 1901. Size 12 × 9. Pp. 58.

THIS interesting tribute to the labours of Professor Hepites contains the text of the various letters of congratulation addressed to him on his fiftieth birthday, together with a portrait. It is a remarkable piece of typography, an art in which the Rumanians excel.

Meteorological Notes and Remarks upon the Weather during the year 1900, with its general effects upon vegetation, by JAMES WHITTON, Superintendent of Parks, Glasgow. Glasgow. Printed by Robert Anderson. 1901. Size $8\frac{1}{2} \times 7\frac{1}{2}$. Pp. 20.

Meteorologisch Jaarboek voor 1898. Uitgegeven door het Koninklijk Nederlandsch Meteorologisch Institut. 50te Jaargang. Utrecht. J. van Boekhoven, 1901. Size $8\frac{1}{2} \times 11$. Pp. 390+xxxii.

The annual report of the Weather Department of Holland.

Buletinul Lunar al Observatiunilor Meteorologice din Romania. Publicat de STEFAN C. HEPITES. Anul IX., 1900. Bucuresci, Eminescu. 1901. Size $12\frac{1}{2} \times 9\frac{1}{2}$. Pp. 168.

The annual report of the Weather Department of Rumania.

The Circulation of the Surface Waters of the North Atlantic Ocean, by H. N. DICKSON, Lecturer in Physical Geography in the University of Oxford. Reprint from the *Philosophical Transactions of the Royal Society of London. Series* A., *Vol.* **196**, pp. 61-203. Plates. London. Published for the Royal Society, 1901. Size 12 × 9. Price 10s. *To be reviewed.*

ADDITIONS TO TABLES FOR 1900.

ON account of the late date at which the monthly returns of observers are sometimes received, the Magazine occasionally has to go to press with gaps in the Climatological and Rainfall Tables, which detract from their permanent value.

The following are the omissions during 1900 which the receipt of the annual returns enables us to supply. The month cited is that of the observation; the blank will be found in the Magazine for the following month.

RAINFALL AND TEMPERATURE AT 50 STATIONS, 1900.

Div.	STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL. Total Fall.	Difference from average 1880-9.	Greatest Fall in 24 hours. Dpth	Date	Days on which ·01 or more fell.	TEMPERATURE Max. Deg.	Max. Date.	Min. Deg.	Min. Date.	No. of Nights below 32°. In shade.	On grass.
		inches	inches.	in.								
	FEBRUARY.											
XX.	Broadford (Hurdlestown)	3·31	...	·60	8	18	...	...	...	...	...	...
	MARCH.											
XII.	Cargen [Dumfries]	·20	—3·10	·12	27	2	54·0	11	19·0	18	18	...
	MAY.											
III.	Hitchin	·99	— ·96	·23	9	10	70·0	27	31·0	10	1	...
XIX.	Dunrobin	1·85	— ·33	·38	6	12	64·0	16	36·0	11	...	...
	JUNE.											
VI.	Worcester (Diglis Lock).	1·93	— ·50	·51	12	17	...	...	...	...	...	...
XIV.	Colmonell	1·38	...	·62	24	12	86·0	3	38·0	1	...	...
	JULY.											
XVIII.	Glencarron Lodge	5·64	...	·98	5	28	67·1	15	40·0	31	...	...
XX.	Broadford (Hurdlestown)	2·13	...	·44	19	17	...	...	...	..	...	...
	AUGUST.											
XIX.	Dunrobin	3·15	+ ·75	1·54	22	9	72·0	12	44·0	5	...	...
	SEPTEMBER.											
XX.	Broadford (Hurdlestown)	1·41	...	·30	29	14	...	...	...	...	...	...
XVI.	Loch Leven Sluices	3·40	+ ·61	1·10	27	9	...	...	...	...	...	..
	OCTOBER.											
XX.	Broadford (Hurdlestown)	5·35	...	·59	8	22	...	...	...	...	...	...
	NOVEMBER.											
XVII.	Braemar	3·34	—1·24	·72	15	21	56·8	30	24·9	19	11	21
XXII.	Clifden (Kylemore)	6·40	...	·96	14	22	...	...	...	...	...	...
	DECEMBER.											
XV.	Mull (Quinish)	11·33	+3·76	1·25	18	27	...	...	...	...	...	...

SUPPLEMENTARY TABLE OF RAINFALL, 1900.

Div.	STATION.	Total Rain.	Div.	STATION.	Total Rain.
	JANUARY.	in.		JUNE.	in.
II.	Alton, Ashdell	3·86	XI.	Lake Vyrnwy	3·18
VII.	Market Overton	4·09	XXII.	Collooney, Markree Obs.	5·24
XII.	Stoneykirk, Ardwell House	3·63		JULY.	
XV.	Islay	7·84	XII.	New Galloway, Glenlee	3·82
XVIII.	S. Uist, Askernish	7·88	XIX.	Durness	3·09
XX.	Limerick, Kilcornan	3·60	XXIII.	Enniskillen, Model School.	3·08
XXIII.	Belturbet, Redhills	2·70		AUGUST.	
	FEBRUARY.		V.	Salisbury, Alderbury	2·79
IX.	Scalby, Silverdale	5·51	VI.	Wolverhampton, Tettenhall	2·86
XVIII.	Fearn, Lower Pitkerrie	·85	X.	Keswick, The Bank	6·83
,,	S. Uist, Askernish	2·70	XIII.	N. Esk Res. [Penicuick]	4·00
XXII.	Crossmolina, Enniscoe	3·75	XX.	Limerick, Kilcornan	3·30
	MARCH.		XXI.	Gorey, Courtown House	4·52
VII.	Market Overton	·79	XXIII.	Enniskillen, Model School.	4·61
	APRIL.			SEPTEMBER.	
XX.	Limerick, Kilcornan	1·21	II.	Dorking, Abinger Hall	·96
XXIII.	Enniskillen, Model School.	2·67	XXIII.	Enniskillen, Model School.	2·29
	MAY.			OCTOBER.	
XVI.	Blair Atholl	3·22	XXIII.	Enniskillen, Model School.	6·00
XVIII.	Aviemore, Alvie Manse	2·38		NOVEMBER.	
XX.	Ballingarry, Hazelfort	2·12	XXIII.	Enniskillen, Model School.	5·93
,,	Limerick, Kilcornan	·90			
XXIII.	Enniskillen, Model School.	2·61			
,,	Belfast, Springfield	3·10			

ROYAL METEOROLOGICAL SOCIETY.

THE Monthly Meeting of this Society was held on March 20th, at the Institution of Civil Engineers, Westminster, Mr. W. H. Dines, B.A., the President, being in the chair.

The following Fellows were elected:—Mr. R. Anderson, Señor P. P. d'Andrade, Mr. E. B. Atkinson, Rev. J. Bufton, Mr. J. Davies, Mr. G. G. Dixon, Mr. P. Harbord, and Mr. A. E. M. Rolland.

The March meetings of the Society are generally of a popular or social character. Formerly, an Exhibition of Meteorological Instruments was held on the occasion, but of late years there has been either a Lecture or a Demonstration. This year, at the request of the Council, Dr. H. R. Mill, F.R.S.E., gave a lantern Lecture on "Climate and the effects of Climate."

The lecturer said that dealing as meteorologists do with air—a substance invisible and almost intangible—the discovery of the existence of which was a feat of human reason almost equal to that of the planetary nature of the Earth, it is inevitable that there is little to take the eye. Observations were made mainly by means of instruments, and whether the figures handled represented pressure, temperature, humidity, wind-force, rainfall, or any other element of meteorology, they themselves were as uninteresting, and perhaps not so stimulating to the untrained imagination, as the entries in a merchant's ledger. But when account was taken not of the phenomena of pure meteorology but of the effects they produce, the

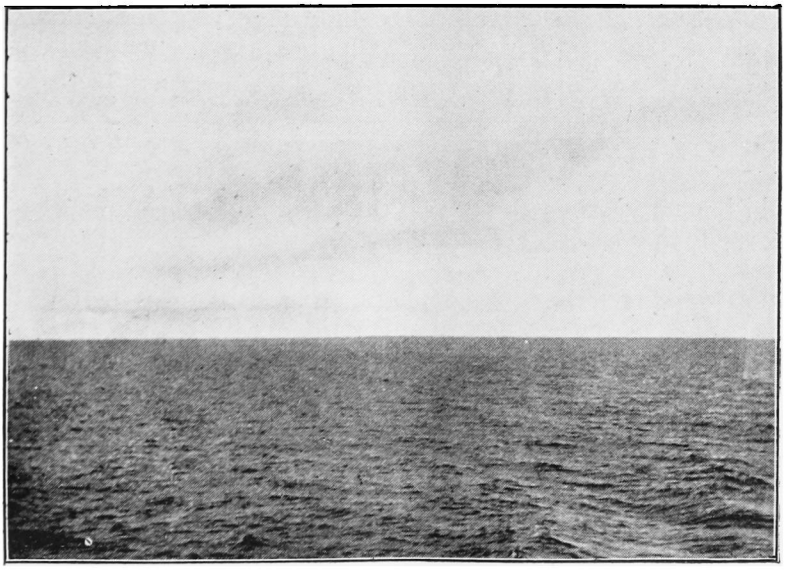

Fig. 1.—SMOKE SIMULATING CLOUD.

meteorologist entered on a part of his science of great general interest, and it was from that side that the subject would be treated.

Climatology was as much a branch of geography as of meteorology, in fact more, because it deals, in the first place, with the distribution of atmospheric conditions over the Earth's surface, which is a geographical question in itself; and because, in the second place, all the varieties of climate that give individuality to different countries are produced by the disturbing and controlling influence of the forms of the land. Visible effects could be photographed, and therefore the lecture would be illustrated by showing on the screen photographs which were taken by the lecturer on various holidays in many countries, reinforced by others obtained from friends. Perhaps it

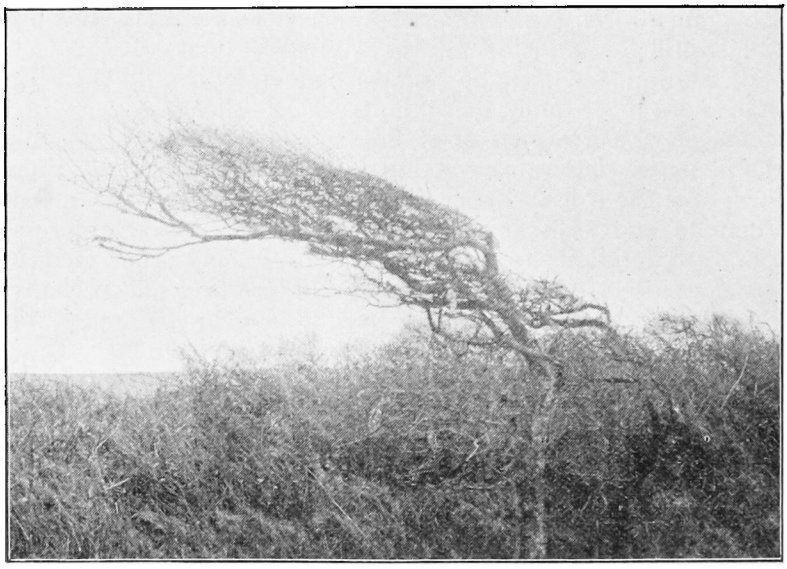

Fig. 2—TREE BENT BY PREVAILING WIND.

would be more correct to say that the series of seventy photographs suggested the subject of the lecture, which was an illustration addressed to the ear of what they conveyed to the eye.

In selecting typical climatic photographs care must be taken not to be misled by appearances of an origin different from what might be supposed. A photograph was shown (Fig. 1) which could hardly be distinguished from a typical stratus cloud, yet it consisted merely of wreaths of steamer smoke on a dead-calm cloudless summer day. Another phenomenon apparently meteorological, was the fine rainbow over Niagara Falls, the photograph of which was also taken on a cloudless day, although a raised umbrella in the foreground showed how the fine spray from the cataract simulated rain.

Climate might be defined as the normal or average condition of meteorological phenomena at a given place, in which case Weather

would have to be defined as the temporary disturbance of climate which actually occurred. On the other hand, Weather might be considered first, and defined as the condition of the atmosphere at any moment with regard to wind, warmth, cloud, electricity and precipitation; in that case Climate might fairly be called the average weather of a place. The latter was the practical way of approaching the question, the former the theoretical.

After a brief sketch of the climatic belts of the Earth and of the influence of land-forms on local climates, the lecturer pointed out the difference between the effects of climate and weather. As an example of the former he showed a photograph of a tree permanently bent from the perpendicular by the force of the prevailing wind

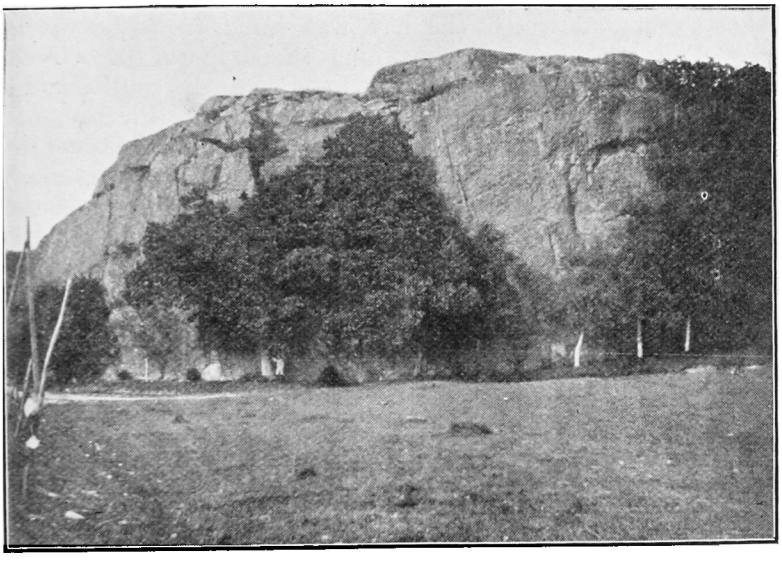

Fig. 3.—Trees on windward side of Cliff.

(Fig. 2)*, and demonstrating even to a passing traveller, the direction and force of the prevailing wind, a very important element of climate. Another photograph, taken by the lecturer in western Sweden (Fig. 3), showed how on a moorland, treeless on account of the sweep of the wind, large trees had established themselves on the windward face of the cliff, where the moving air was stopped and compelled to rise to get over the obstacle. The stems were flattened against the rock, and moulded to its surface. As an example of the effect of weather, a picture was shown of a forest where the trees had been uprooted and thrown down by a violent gale.

Similar effects on vegetation, and on the surface of the land, were illustrated for other elements of climate; and were followed by an account of the effects on human beings.

* This photograph was kindly taken for the occasion by Dr. A. Hardwick, of Newquay.

Among the most interesting effects of these were the adaptations of industrial processes, or dwellings, in order to take advantage of climatic conditions, or to mitigate their unpleasant features. Such, for instance, were the arcaded footways of southern towns, where shade was the first desideratum, the temporary roofs placed over the lemon gardens in northern Italy on a threatening of frost; the covered bridges of Tyrol, constructed to prevent the accumulation of snow on the wooden roadway; and the huge water-pipes which disfigured the finest buildings in St. Petersburg, but were required to carry off the great volume of water resulting from the sudden melting of the winter's snow on the roofs in spring. Special attention was given to the devices adopted by farmers in drying hay and other crops, in wet countries,—the stakes, fashioned like hat-stands, on which the hay was hung in northern Tyrol (Fig. 4); the vast frames, resembling the supports for wires on a telephone exchange, used for the same purpose in southern Tyrol, and the hurdles, arranged like fences, across the direction of the prevailing wind in Norway. A photograph of the last-mentioned device, taken in British Columbia, showed how similar methods might be employed in similar climates, even when the countries were widely separated. In every part of the world the climate depended on the position of a place in latitude, its distance from the ocean, and, above all, on the configuration of the land; and the climate in turn affected the life of plants and animals, and the habits and industries of mankind.

On the motion of Dr. C. Theodore Williams, seconded by Mr. Baldwin Latham, a vote of thanks was given to Dr. Mill.

Fig. 4.—Hay-drying in Northern Tyrol.

METEOROLOGICAL NEWS AND NOTES.

THE REV. JOHN M. BACON describes in *Knowledge* for March his experience of the thunderstorm of July 27th, 1900, as observed from a balloon. He ascended from Newbury at 5.45 p.m., the weather at the time being clear, and at an elevation of 700 feet the balloon was being carried by the wind due west at 40 miles an hour, while a thunderstorm came up from the west travelling exactly in the opposite direction, but with a speed that was not determined. The temperature of the air fell suddenly, and a stinging shower of hail was felt simultaneously with the complete envelopment of the balloon in a thunder-cloud in which vivid flashes of lightning appeared, followed by short, sharp detonations of thunder without any of the reverberation which adds so much to the effect of a thunder peal when heard on the surface of the ground. The balloon was not struck, and no harm befel the aëronaut.

DR. J. VAN BEBBER describes in a recent number of *Das Wetter* the reorganization of the weather telegraphy system in Germany, in consequence of which direct messages are sent to the German Naval Observatory at Hamburg every morning at 8 a.m., Central European Time, from a large number of German, British and other European stations, for the preparation of the German weather forecasts. So successfully has this system worked that the distinguished German meteorologist is anxious to introduce a general Weather Service for Europe based on that of the United States, which has to deal with an approximately equal area. In the United States the circuit-system of weather telegraphy is employed, by means of which a telegram containing information from one terminal forecasting station to another is read as it passes through each of the intermediate telegraph offices, from which information may be at once conveyed to the nearest intermediate forecasting centres. But in Europe it is pointed out that a different method of telegraphy is employed, which does not admit of the transcription of passing messages, so that the circuit-system could not be adopted without great waste of time. Dr. van Bebber therefore proposes to introduce a radial system of weather telegraphy for Europe, and offers to receive at Hamburg all the observations for forecasts from every country in Europe, and after discussion to disseminate the results to all the various centres of publication. We presume that the proposal is not to make all the local forecasts at Hamburg, but to send in one telegram to each of the national Weather Offices a complete statement of the data, from which these offices will construct their own charts and forecasts. The proposal was discussed at the International Meteorological Congress at Paris last year, but without convincing the other delegates of the practicability or desirability of this somewhat sweeping reconstruction.

THE DEPERDITOMETER is a new instrument, or rather it will be a new instrument if the suggestion put forth in the *Bulletin Mensuel*

de l'Observatoire Carlier for January last is ever realized, for comparing climates according to their effect upon human beings. It is proposed to fill a porous cell, covered with animal membrane, with distilled water maintained at a temperature of 98°·6, the normal temperature of the body, by means of an automatic regulator controlling a gas jet. The amount of heat abstracted from the cell will be measured by determining the quantity of gas burned in order to maintain the normal temperature. If this ingenious idea can be carried out, it will give readings which combine the effect of temperature and humidity; but there is a flaw in the argument of the anonymous inventor, because the porous cell becomes a wet-bulb thermometer and will lose most heat when the air is driest, whereas it is well known that the sensation of cold in the human subject is most felt when the air is laden with moisture.

MR. H. H. KIMBALL, of the U.S. Weather Bureau, gives in the *Monthly Weather Review* for November, 1900 (published January 19th), an important paper on Rainfall from convectional currents. The maximum falls in short periods recorded in the United States are given as at the rate of 2·55 in. per hour for 60 minutes, 7·08 in. per hour for 10 minutes, and 9·00 in. per hour for 5 minutes. The origin of this prodigious amount of water in the atmosphere over any given place is the problem considered. After discussing the rate of reduction of temperature by the expansion of an ascending current of air, Mr. Kimball came to the conclusion that a continual current of air ascending at the rate of 12 or 13 miles an hour would account for the heaviest local rains which have been observed.

PARTICULARS of the remarkable falls of red rain in Sicily and over a great part of Italy and Austria have now been received, and there is no room for doubt that they were simply due to desert sand from the Sahara, raised high into the air, carried northward by the wind, and deposited with or without rain. In a letter to *Nature* of March 28th, Professor J. W. Judd describes the composition of some of the dust, which consisted mainly of particles of quartz and other minerals with an admixture of frustules of fresh-water diatoms. The specimens were sent by Professor A. W. Rücker, who happened to be in Sicily at the time, and observed the phenomenon on March 10th and again on March 20th. On the latter occasion he made a rough measurement which showed that on the marble-topped tables on the terrace of his hotel the fall of dust was at the rate of $5\frac{1}{2}$ tons per square mile. Mr. Silva White, writing to the *Scottish Geographical Magazine* for April, describes the phenomenon of March 10th in the island of Capri. It reminded him of the sand storms he had experienced in the Egyptian desert and the Sudan, only on this occasion the sand-clouds were high overhead, and it was only when the temperature fell at night, that sand and rain came down together, covering the whole island with a light deposit.

MR. J. Y. BUCHANAN, F.R.S., is announced to give a course of three lectures at the Royal Institution, on Climate, its Causes and its Effects, commencing on April 20th.

THE "DISCOVERY," the first ship ever built in this country exclusively for exploration and scientific investigation, was successfully launched at Dundee on March 21st, for the British National Antarctic Expedition; and the similar vessel of the German Antarctic Expedition, the "*Gauss*," was launched at Kiel a few days later. No science is so sure of important results arising from these expeditions as is meteorology, for many indications point to the unknown Antarctic area as that within which the most important climatological discoveries are likely to be made. The equipment of both expeditions for meteorological observations will be exceptionally complete.

MR. ALEXANDER G. MCADIE, of the U.S. Weather Bureau, is to be congratulated on the exquisite photographs of mountain fogs which illustrate his interesting article on "Fog Studies on Mount Tamalpais," in the November number of the *Monthly Weather Review*. The view of fog waves is particularly striking on account of its marvellous resemblance to the waves of a stormy sea.

THE MONTHLY WEATHER REVIEW, the official organ of the United States Weather Bureau, is the largest serial publication devoted to meteorology, and under the distinguished editorship of Professor Cleveland Abbe, it has become much more than a record of the weather of the United States. The last number we have received, that for December, 1900 (published on February 19th), illustrates the attention now being paid in America to theoretical questions bearing on the dynamics of the atmosphere. A translation is given of a second mathematical paper by Professor Bjerknes on "The circulatory movements in the atmosphere," followed by an original supplementary treatise on "Line integrals in the atmosphere," by Professor F. H. Bigelow, in which he shows the importance of the higher mathematical methods in discussing masses of data from which rules for practical weather-forecasting may be deduced. While these papers are only to be studied by the mathematician, the ordinary reader will find a very sane discussion of the unpractical and useless speculations as to whether there are people in Mars, and the Editor's Notes are interesting and of wide range. In a note on Arctic and Antarctic Meteorological Observers, however, he greatly overestimates the number of expeditions which are likely to be exploring the polar seas this year.

IN ONE of the letters of congratulation to Prof. S. C. Hepites on his fiftieth birthday, the Rumanian compositor transposed two letters of a German word, changing "fruchtbaren Forscher" into "furchtbaren Forscher." The result was that the head of the Rumanian Weather Service was hailed as a "frightful" instead of a "fruitful" investigator.

CLIMATOLOGICAL TABLE FOR THE BRITISH EMPIRE, OCTOBER, 1900.

STATIONS. (*Those in italics are South of the Equator.*)	Absolute. Maximum. Temp.	Absolute. Maximum. Date.	Absolute. Minimum. Temp.	Absolute. Minimum. Date.	Average. Max.	Average. Min.	Average. Dew Point.	Average. Humidity.	Absolute. Max. in Sun.	Absolute. Min. on Grass.	Total Rain. Depth.	Total Rain. Days.	Aver. Cloud.
	°		°		°	°	°	0-100	°	°	inches		
London, Camden Square	73·8	8	34·2	16	59·3	44·4	44·7	78	111·2	26·7	1·86	15	5·4
Malta	91·3	23	60·3	31	81·7	67·3	64·9	78	139·4	51·2	·60	1	2·8
Cape of Good Hope	82·1	4	42·6	7	67·2	51·9	52·0	74	...	...	2·56	9	4·5
Mauritius	79·7	13	60·9	22	77·6	65·8	61·3	72	146·7	54·0	1·59	15	5·6
Calcutta	92·4	13	66·0	31	88·5	74·4	71·9	74	147·8	60·5	·82	4	4·4
Bombay	92·9	25	72·5	22	88·4	76·0	72·8	74	144·5	62·4	·00	0	2·1
Colombo, Ceylon	92·2	8	72·6	29	89·1	75·4	74·3	82	151·0	70·5	9·47	17	5·2
Melbourne	86·1	17	38·1	6	66·4	47·5	45·2	70	144·0	33·0	1·28	11	5·8
Adelaide	91·5	26	40·8	13	73·5	52·5	46·2	96	156·3	36·1	·65	7	4·8
Sydney	97·3	20	45·4	14	74·6	54·9	47·9	57	145·0	40·0	·59	9	3·5
Wellington	66·5	3	39·0	1	60·2	49·8	45·0	71	125·0	30·0	4·40	19	5·0
Auckland	67·5	16	46·0	1	63·4	52·8	47·0	67	140·0	43·0	5·08	22	7·1
Jamaica, Halfway Tree	90·0	18	68·0	25	86·8	71·1	70·9	81	...	...	2·09	10	3·7
Trinidad	98·0	8	70·0	*a*	89·2	72·8	73·8	79	165·0	56·0	6·53	16	...
Grenada	91·5	4	70·0	17	85·6	74·9	72·9	73	155·0	...	5·23	21	4·3
Toronto	83·0	6	25·9	17	66·0	46·7	51·9	83	97·6	20·0	2·12	8	5·5
Fredericton New Brunswick,	74·8	4	18·4	20	58·8	39·0	40·3	72	...	...	10·62	12	6·1
Winnipeg, Manitoba	68·5	19	23·0	24	56·8	35·3	...	82	...	...	·94	10	5·1
Victoria, British Columbia	64·0	8	38·2	6	55·1	45·2	..	...	...	...	2·68	18	7·4

a—on 7 days.

REMARKS.

MALTA.—Mean temp. of air 72°·8, or 3°·4 above average. Mean hourly velocity of wind 8·1 miles, or 0·8 below average. Mean temp. of sea 76°·3. TSS on 8th and 9th. J. F. DOBSON.

Mauritius.—Mean temp. of air 0°·4, and of dew point 0°·5, and rainfall ·01 in. below, their respective averages. Mean hourly velocity of wind 10·5 miles, or 0·6 mile below average; extremes, 25·0 on 17th and 1·7 on 15th; prevailing direction E.S.E. T. F. CLAXTON.

COLOMBO, CEYLON.—Mean temp. of air 1°·2 above, of dew point 1°·4 above, and rainfall 5·05 in. below, their respective averages. Mean hourly velocity of wind 6·2 miles; prevailing direction S.W. to N.W. TSS on 4 days; L was seen on 7 days. H. O. BARNARD.

Adelaide.—Mean temp. of air 1°·0 above average. Rainfall very deficient, 1·13 in. below average. The whole country was suffering from a dry spell. C. TODD, F.R.S.

Sydney.—Mean temp. of air 1°·3 above, humidity 11·0 per cent. below, and rainfall 2·21 in. below, their respective averages. H. C. RUSSELL, F.R.S.

Wellington.—Mean temp. of air 1°·4 above, and rainfall ·03 in. above, their respective averages. Showery and unsettled weather generally; prevailing N.W. wind and frequent storms. T on 22nd; fog on 24th. Earthquake on 16th at 10.50 p.m., very slight, E. and W.; and on 21st at 9.32 p.m., very slight. R. B. GORE.

Auckland.—Mean temp. of air slightly above, and rainfall 1·75 in. above, their respective averages. Very stormy and disagreeable throughout the month. T. F. CHEESEMAN.

TRINIDAD.—Rainfall ·14 in. below the 30 years' average. J. H. HART.

FREDERICTON, NEW BRUNSWICK.—On 10th and 11th 7·04 in. of rain fell. R. F. STUPART.

SUPPLEMENTARY TABLE OF RAINFALL, MARCH, 1901.

Div	STATION.	Total Rain.	Div.	STATION.	Total Rain.
		in.			in.
I.	Uxbridge, Harefield Pk..	1·65	XI.	Castle Malgwyn	4·94
II.	Dorking, Abinger Hall .	2·35	,,	Builth, Abergwesyn Vic.	7·81
,,	Birchington, BeresfordLge.	1·82	,,	Rhayader, Nantgwillt ...	6·98
,,	Hailsham	2·34	,,	Lake Vyrnwy	6·36
,,	Crowborough.....	2·19	,,	Corwen, Rhug	4·76
,,	Ryde, Thornbrough	...	,,	Criccieth, Talarvor	2·72
,,	Emsworth, Redlands ...	2·56	,,	I. of Anglesey, Lligwy..	3·54
,,	Alton, Ashdell	2·85	,,	I. of Man, Douglas	2·66
,,	Newbury, Welford Park	1·94	XII.	Stoneykirk, ArdwellHo.	2·68
III.	Oxford, Magdalen Coll..	1·41	,,	New Galloway, Glenlee	2·48
,,	Banbury, Bloxham	2·04	,,	Moniaive, MaxweltonHo.	2·49
,,	Pitsford, Sedgebrook ...	2·10	,,	Lilliesleaf, Riddell	1·80
,,	Huntingdon, Brampton.	2·45	XIII.	N. Esk Res. [Penicuick]	2·90
,,	Wisbech, Bank House...	1·90	XIV.	Glasgow, Queen's Park..	2·20
IV.	Southend	1.82	XV.	Inveraray, Newtown ...	4·07
,,	Colchester, Lexden	1·54	,,	Ballachulish, Ardsheal...	3·26
,,	Saffron Waldon, Newport	2·46	,,	Islay, Eallabus.....	2·83
,,	Rendlesham Hall	1·91	XVI.	Dollar.....	2·38
,,	Swaffham	1·70	,,	Balquhidder, Stronvar...	5·26
V.	Salisbury, Alderbury ...	1·87	,,	Coupar Angus Station...	2·09
,,	Bishop's Cannings	2·34	,,	Blair Atholl	2·16
,,	Blandford, Whatcombe .	2·35	XVII.	Keith H.R.S.....	2·50
,,	Ashburton, Druid House	5·00	,,	Forres H.R.S.	1·63
,,	Okehampton, Oaklands.	5·08	XVIII.	Fearn, Lower Pitkerrie..	1·49
,,	Hartland Abbey	2·48	,,	S. Uist, Askernish	...
,,	Lynton, Glenthorne ...	...	,,	Invergarry.....	1·64
,,	Probus, Lamellyn	3·21	,,	Aviemore, Alvie Manse.	1·09
,,	Wellington, The Avenue	3·20	,,	Loch Ness, Drumnadrochit	3·40
,,	North Cadbury Rectory	2·28	XIX.	Invershin	3·58
,,	Clifton, Pembroke Road	2·94	,,	Durness.....	3·04
VI.	Ross, The Graig	2·19	,,	Watten H.R.S.....	1·87
,,	Wem, Clive Vicarage ...	2·36	XX.	Dunmanway, Coolkelure	6·82
,,	Wolverhampton, Tettenhall	2·08	,,	Cork, Wellesley Terrace	3·30
,,	Cheadle, The Heath Ho.	2·46	,,	Killarney, District Asyl.	4·84
,,	Coventry, Priory Row...	1·86	,,	Caher, Duneske	2·86
VII.	Market Overton	1·70	,,	Ballingarry, Hazelfort...	1·98
,,	Grantham, Stainby	1·13	,,	Limerick, Kilcornan ...	...
,,	Horncastle, Bucknall ...	·92	,,	Miltown Malbay	3·34
,,	Worksop, Hodsck Priory	1·90	XXI.	Gorey, Courtown House	1·79
VIII.	Neston, Hinderton	1·42	,,	Moynalty, Westland ...	3·40
,,	Southport, Hesketh Park	2·66	,,	Athlone, Twyford	3·51
,,	Chatburn, Middlewood.	3·31	,,	Mullingar, Belvedere ...	3·48
,,	Duddon Val., Seathwaite Vic.	5·19	XXII.	Woodlawn	3·29
IX.	Melmerby, Baldersby ...	2·48	,,	Crossmolina, Enniscoe ..	4·17
,,	Scalby, Silverdale	2·97	,,	Collooney, Markree Obs.	3·65
,,	Ingleby Greenhow Vic..	2·72	XXIII.	Enniskillen, Model Sch.	3·29
,,	Middleton, Mickleton ...	2·12	,,	Warrenpoint.....	2·96
X.	Haltwhistle, Unthank H.	...	,,	Miltown, Banbridge.....	2·15
,,	Bamburgh	1·85	,,	Belfast, Springfield	3·26
,,	Keswick, The Bank.....	...	,,	Bushmills, Dundarave..	2·46
XI.	Llanfrechfa Grange	3·14	,,	Stewartstown	2·91
,,	Treherbert, Tyn-y-waun	5·92	,,	Killybegs	5·46
,,	Llandovery	4·51	,,	Horn Head	2·93

MARCH, 1901.

Div.		STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL. Total Fall.	Difference from average 1890-9.	Greatest Fall in 24 hours. Dpth	Greatest Fall in 24 hours. Date	Days on which ·01 or more fell.	TEMPERATURE. Max. Deg.	Max. Date	Min. Deg.	Min. Date.	No. of Nights below 32°. In shade.	No. of Nights below 32°. On grass.
			inches.	inches.	in.								
I.	ENGLAND.	London (Camden Square) ...	2·14	+ ·68	·60	30	16	55·2	4, 5	23·2	29	9	18
II.		Tenterden	1·87	+ ·18	.45	7	17	53·0	1	24·0	26*e*	5	13
,,		Hartley Wintney	1·86	+ ·30	·37	2	16	55·0	1*b*	23·0	28	11	17
III.		Hitchin	2·65	+ 1·21	·49	30	18	53·0	5	23·0	26	17	...
,,		Winslow (Addington)	1·96	+ ·44	·44	19	14	55·0	5*c*	20·0	27*a*	14	20
IV.		Bury St. Edmunds (Westley)	1·61	— ·02	·30	7	18	55·0	5	21·0	27	...	...
,,		Norwich (Brundall)	1·98	...	·30	27	21	56·1	5	25·5	29	9	17
V.		Winterbourne Steepleton ...	2·65	...	·61	20	18	55·3	12	20·8	29	11	14
,,		Torquay (Cary Green)	4·75	...	2·31	20	20	54·3	12	25·5	28	5	10
,,		Polapit Tamar [Launceston]..	3·88	+ 1·60	·78	20	17	55·0	13	20·3	29	14	17
VI.		Stroud (Upfield)	2·51	+ ·83	·48	19	15	54·0	5	25·0	25*f*	10	...
,,		Church Stretton (Woolstaston)	4·08	+ 2·31	1·31	30	18	55·0	12	20·5	26	12	22
,,		Worcester (Diglis Lock)	2·39	+ 1·05	·42	5	15	...	...	...	...	...	...
VII.		Boston	1·50	+ ·31	·45	19	15	49·0	31	22·0	26	19	...
,,		Hesley Hall [Tickhill].....	1·41	+ ·01	·43	29	18	53·0	12	20·0	29	12	...
,,		Derby (Midland Railway).....	1·92	+ ·50	·35	29	18	55·0	12	21·0	29	9	...
VIII.		Manchester (Plymouth Grove)	2·15	+ ·08	·45	4	12	60·0	13	21·0	28	9	12
IX.		Wetherby (Ribston Hall) ...	1·85	+ ·22	·65	29	18	...	...	...	...	...	...
,,		Skipton (Arncliffe)	5·63	+ ·51	1·33	29	18	...	...	...	...	...	...
,,		Hull (Pearson Park).....	1·71	+ ·05	·34	29	18	53·0	12*b*	21·0	26	14	23
X.		Newcastle (Town Moor)	1·51	— ·43	·40	16	19	...	...	...	...	...	...
,,		Borrowdale (Seathwaite).....	8·71	+ 1·95	2·55	4	14	55·5	13	20·2	29	11	...
XI.	WALES.	Cardiff (Ely).....	2·10	— ·46	·34	29	12	...	...	...	...	...	...
,,		Haverfordwest	3·26	+ ·52	·83	29	15	54·5	13	22·0	29	9	20
,,		Aberystwith (Gogerddan) ...	3·66	+ ·82	·80	30	14	58·0	12*d*	16·0	25	14	...
,,		Llandudno.....	2·61	+ ·67	1·05	29	16	56·0	13	27·5	29	5	...
XII.	SCOTLAND.	Cargen [Dumfries]	2·40	— ·65	·76	30	8	55·0	13	16·0	29	11	...
XIII.		Edinburgh (Royal Observatory)	1·52	...	·25	5	17	54·8	12	22·3	29	6	11
XIV.		Colmonell	1·60	— 1·64	·38	2*a*	10	55·0	12	18·0	25	...	...
XV.		Tighnabruaich	3·35	...	·80	2	11	50·0	12*d*	22·0	27	14	...
,,		Mull (Quinish).....	3·01	— 1·16	1·28	5	17	...	...	...	...	...	...
XVI.		Loch Leven Sluices	2·30	— ·28	·69	31	10	...	...	...	...	...	...
,,		Dundee (Eastern Necropolis)	1·35	— ·63	·30	2*a*	14	58·3	10*c*	18·8	29	9	...
XVII.		Braemar	3·27	+ ·95	·58	1	21	50·1	10	1·0	29	23	28
,,		Aberdeen (Cranford)	2·21	+ ·01	·38	1	21	63·0	10	10·0	28	21	...
,,		Cawdor (Budgate)	2·23	— ·01	·43	6	17	...	...	...	...	...	...
XVIII		Strathconan [Beauly]	4·63	+ ·41	1·00	7	8	..	...	...	...	...	...
,,		Glencarron Lodge.....	6·38	— ·56	1·86	4	21	55·2	13	12·0	29	9	...
XIX.		Dunrobin	2·24	— ·20	·44	6	16	54·0	13	18·0	29	7	...
,,		S. Ronaldshay (Roeberry) ...	1·98	— 71	·79	30	26	52·0	13	21·0	24*g*	9	...
XX.	IRELAND.	Darrynane Abbey.....	2·22	— ·90	·69	1	18	...	...	...	...	...	...
,,		Waterford (Brook Lodge) ...	2·78	+ ·26	1·05	29	13	55·5	10	21·0	29	9	...
,,		Broadford (Hurdlestown) ...	2·93	+ ·73	·72	1	19	68·0	7	24·0	25	11	...
XXI.		Carlow (Browne's Hill)	1·98	— ·23	·41	29	14	...	...	...	...	...	...
,,		Dublin (Fitz William Square)	1·78	— ·04	·33	5	17	54·6	12	26·0	26	7	11
XXII.		Ballinasloe	3·25	+ ·83	·78	1	18	60·0	3	21·0	24	14	...
,,		Clifden (Kylemore)	4·90	— ·29	·94	26	14	...	...	...	...	...	...
XXIII		Seaforde.....	2·81	+ ·40	1·09	29	12	54·0	11	23·0	28	14	17
,,		Londonderry (Creggan Res.).	3·67	+ ·98	·54	31	18	...	...	...	...	...	...
,,		Omagh (Edenfel)	3·85	+ 1·27	·90	29	18	51·0	4*c*	23·0	25*f*	16	23

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

a—and 29. *b*—and 31. *c*—and 12. *d*—and 13. *e*—and 28, 29. *f*—and 28. *g*—and 26.

METEOROLOGICAL NOTES ON MARCH, 1901.

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 singularly disagreeable month, on account of the prevalence of cold wind, frequent showers, including snow, sleet and hail, and rapid alternations of strong sunshine and heavy cloud. The mean temp. of air was 39°·9. or 2°·2 below the average of 40 years, the mean max. 3°·1, and mean min. 1°·5 below their respective averages; yet the month was not an extreme one in any instrumental readings; during the last 43 years there were eight Marches with a mean temp. equally low, or lower, eight with a lower mean max, and nine with a lower mean min.

TENTERDEN.—A remarkably dull month, with only 62 hours of sunshine, but though the days were cold, the night temp. was higher than in 1899 and 1900. The first week was wet and the fourth week very cold.

HARTLEY WINTNEY.—An intensely cold month; after the first wet week the cold increased until the end, with bitter, biting N.E. and E. winds; slight S showers from 18th to 27th. The last three days were wet, with S.W. gales. Ozone on 22 days, with a mean of 6·2. The chiff-chaff was seen on the 6th.

WINSLOW, ADDINGTON.—A cold month, and often very stormy. Intense frost from 26th to 29th, grass min. at or below 20° on four days. Mean temp. of month 38°. Much S on 19th, and again on 24th and 25th. T on 30th and 31st. Thick fog on 12th.

BURY ST. EDMUNDS, WESTLEY.—An unusually cold month, with 21 days of N. wind. Vegetation very backward. T on 1st, 28th and 31st. S from 24th to 27th.

NORWICH, BRUNDALL.—A very unkindly month, although the mean temp. was 0°·8 higher than that of March, 1899. TS with S on 28th. T on 1st; S on 24th, 25th, 27th and 28th; H on 1st, 3rd, 18th and 19th.

WINTERBOURNE STEEPLETON.—The weather was squally and disagreeable, and between 22nd and 29th very cold, the mean temp. of these eight days being 34°·0. That of the whole month was 39°·3. The first week was warm, with a mean of 43°·3. H on 2nd, 3rd and 6th; S on seven days.

TORQUAY, CARY GREEN.—R 1·91 in. above the average. Mean temp. 3°·1 below the average, and duration of sunshine 22 hours below the average, with four sunless days. Mean amount of ozone 5·0, the highest being 7·5, and the lowest 1·0. So far as can be traced the R of the 20th (2·31 in.) was the heaviest ever recorded at Torquay.

POLAPIT TAMAR [LAUNCESTON].—A wet, cold month, very stormy during the first week. The last week showed a remarkable quantity of S. T and L on 1st and 2nd; T on 6th; H on 3rd and 5th.

STROUD, UPFIELD.—T and L in S.W. and S.E. on 2nd. S on 19th, 25th and 26th.

ARNCLIFFE VICARAGE.—The 29th was one of the wildest days, with S, experienced for many years.

WALES.

HAVERFORDWEST.—A wet, cold month, with the first eight days stormy. From 8th to 18th no R fell, and four other days were rainless. S fell on five days, and the temp. was generally low. Lowest grass min. 14°·1 on the 26th. Duration of sunshine 82·2 hours, with six sunless days. Primroses, daffodils and other spring flowers were in bloom, but vegetation generally was backward.

ABERYSTWITH, GOGERDDAN.—Very cold, with N. and N.E. wind, nearly all the month. A fall of S on 20th, and on 27th and 28th, about 2 in. falling on each occasion.

SCOTLAND.

CARGEN [DUMFRIES].—Vegetation was generally very backward. Farm work was hindered by severe frost at the end of the month. S five inches deep on 30th.

CLACHANTON, COLMONELL.—Mean temp. 39°·8, or 0°·6 below the average. About 3 in. of S on 29th.

TIGHNABRUAICH, CRAIGANDARAICH.—There was much sunshine, and the average max. shade temp. was 44°·1. At night the temp. was low, the average min. being 32°·3.

ABERDEEN, CRANFORD.—S every day from 24th, with N. and N.W. wind. Strong gale on the night of 30th and morning of 31st.

S. RONALDSHAY, ROEBERRY.—Very cold upon the whole. The last 10 days were very severe, especially 26th, when there was a blizzard. Winds mainly N. and N.E.

IRELAND.

DARRYNANE ABBEY.—On the whole a dry month; the middle part very cold, with frost on several nights. Strong N.E. gale on 25th. H on 4th.

WATERFORD, BROOK LODGE.—A very harsh month. A little S on several days. H on 1st, 5th, 6th and 30th.

BROADFORD, HURDLESTOWN.—A favourable month on the whole. S on 26th, 27th and 28th.

DUBLIN, FITZWILLIAM SQUARE.—A rather cold month, but not so cold as March, 1900. Bright sunshine 132½ hours. Northerly winds predominated, except at the beginning, when there were strong S.W. to W. winds. Mean temp. 41°·9, or 1°·2 below the average. Fog on 3 days; gales on 5; S or sleet on 8 days, and H on 8 days.

OMAGH, EDENFEL.—The month commenced with stormy, boisterous and unsettled weather, and cold, saturating rains, 2·16 in. falling in the first week. From 8th to 23rd a fine dry cold period followed, drying the land for farming purposes. The last week was by far the severest of the winter, or of any winter since 1895; heavy S squalls, and keen night frosts prevailed without intermission, reducing the mean temp. of the month to 2°·4 below the average, and that of the last week to 8°·7 below the average of 30 years. Vegetation was dormant, and the sowing of seed was impossible.

THE "EXTRAORDINARY RAINFALL."

With reference to our fear expressed in this Magazine for March that the correction of the absurd story as to a rainfall of 9 feet 2 inches on Armboth Fells in February would never overtake the error, we note with some amusement that the editor of the well-known Guide-books to the Lake District, Mr. J. B. Baddeley, in writing to *The Standard* of April 9th on the exceptional sunniness of the previous fortnight at Windermere, remarks :—"Of course the Lake District has a well-earned reputation for rainfall. The amount that fell on the west side of Thirlmere during February was so prodigious that I tremble to record it, for fear of being accused of belonging to the angling fraternity. Suffice it to say, that it was measured by feet, not inches, and that Manchester had no fear of a water famine. But the Lake District does not do things by halves."