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## METEOROLOGICAL BIBLIOGRAPHY.

READERS of this Magazine must be fully aware of the importance which I have always attributed to the subject of Meteorological Bibliography, and they will, I believe, share my pleasure in feeling that at last one—nay, more than one—important advance has been made.

I am always reluctant to occupy space in these pages with reference to matters in which I am personally concerned, and with papers by myself which will be printed elsewhere. On the present occasion I do not see how to avoid transgressing in both respects, for it would be sheer affectation to re-write what I have elsewhere expressed as clearly as I could, and, therefore, without further preface, I insert a paragraph from the Presidential Address which I read to the Meteorological Society on January 18th :—

“ Another obstacle to meteorological progress, and a great cause of wasted labour, has been the difficulty of ascertaining what has been done in, and what has been written upon, each of the various branches of meteorology. I could give, but I will not weary you, details of many experiments and investigations tried over and over again, each new investigator fancying that it had never been tried before, This is one of the leading arguments in behalf of meteorological bibliography, a subject which has received the approval of nearly all meteorologists, notably at some of the International Congresses, yet towards which little has been contributed except the catalogue of our own library, the value of which has been recognised wherever the subject has been discussed. Our recently-published Index will doubtless be accepted as another very useful publication.

“ It is generally known that Prof. Cleveland Abbe, of Washington, U.S.A., extracted from the splendid *Catalogue of Scientific Papers*, published by our Royal Society, all the titles of papers bearing upon meteorology. For nearly twenty years I have myself been forming a bibliography of works upon Astronomy, Meteorology, and Terrestrial Magnetism, and that catalogue which now fills thirty-four volumes, has always been at the disposal of any one who would undertake to complete it and print it. Strong interest in it has

often been expressed, but the cost of printing was always regarded as prohibitory; and although I have more than once expressed my desire that our own country should have the credit of doing it, nothing has been proposed, far less arranged.

"Life slips away from all of us, and I began to fear lest the bibliography which has cost me considerable labour should be left a mere mass of MS. A few months since, Prof. Abbe wrote for some details respecting the scope of my work, and in my reply I expressed a strong desire to see his catalogue and my own united and published. This letter was, I believe, laid before the Regents of the Smithsonian Institution; at any rate mine and one from the Smithsonian Institution were laid before General Hazen, the Chief Signal Officer of the United States, and, therefore, Director of the Government Meteorological Office, with the result that that department has undertaken to repay all the expenditure which I may incur for copyists, and the entire cost of editing and printing, in America, a catalogue embracing every work, either in that formed by Prof. Cleveland Abbe, or in my own. The execution of my share of the task will involve the gratuitous devotion of many hundred hours to it; but far from begrudging them, I rejoice at the prospect of, as I believe, usefully employing them, and I trust that when all is ended, the United States Government will receive those hearty thanks from all meteorologists which its liberality will in my opinion merit."

Readers of these pages will remember how repeatedly I have urged the Directors of all Meteorological Institutes to follow the example of our own Government Office, and print complete lists of all their publications. Hitherto my appeals have seemed to be in vain, and if, when the United States Bibliography comes out, some of my friends find the lists of their works imperfect, they will know to whom to attribute the omission. For myself, and I believe I may speak also for Gen. Hazen, my desire is to spare no effort in rendering the work as full and as accurate as possible.

Sweden, I am glad to say, has set an example which, if *very promptly* followed by other countries, would be of extreme utility. Dr. Hildebrandsson requested one of his assistants, M. C. G. Fineman, to compile an "index" to the meteorological publications from Sweden during the last 25 years. The work has been done, the "index" is published,\* and if not absolutely perfect, is at any rate far better than any which any foreigner could have compiled.

Dr. Hildebrandsson, in a letter which he has been good enough to send me upon the subject, remarks that he limited the Index to the last 25 years, because the development of modern meteorology falls wholly within that period, and because it is much more easy to compile such an Index for recent, than for earlier, years. Dr. Hildebrandsson says that, as soon as time can be spared, the period

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\* "*Förteckning på Svenska arbeten och uppsatser i Meteorologi.*" Publicerade 1856-1881. Upprättad af C. G. Fineman.

before 1856 shall be taken in hand ; but he concludes by advising a similar division of the work for other countries, viz., first the preparation of a catalogue of works published within 25 years and then another for earlier dates. There are some reasons in favour of adopting this course, and perhaps the strongest of them is the respect due to the proposer ; but considering that it would involve the cutting in halves of the whole of Professor Cleveland Abbe's classification, the lists of the works of many authors, *e.g.*, of Dove's, of Jelinek's, &c., that it would involve the division of the whole of my own catalogue, and would result in the postponement, probably for some years, of the publication of much which would, I think, be generally useful, my present opinion is adverse to any chronological separation.

Gen. Hazen, in a recent letter, most modestly remarks—"These two combined catalogues can make no pretension to being a complete bibliography of meteorological literature, yet they will, I hope, be acceptable as a working index and a first contribution towards the exhaustive work that is desired." With this view of the case I thoroughly agree, but as my own catalogue has to be copied on cards for mixture with Professor Abbe's, a few hundred, or even a few thousand, extra titles would, I am sure, be welcomed by Gen. Hazen, as every one of them would add to the utility of the forthcoming volume.

I therefore conclude by inviting authors, directors of Meteorological Institutes, and all others who may be willing to help, to send—

- (1). Complete lists of Meteorological works published by them.  
If these are sent in MS., extremely legible (unmistakable) writing is indispensable ; but, of course, printing is preferable.
- (2). Copies of the papers or books. If any instructions as to the disposal of the works are sent, they shall be obeyed ; if none are sent, the books will be added to my own library if a copy is not already there, or they will be distributed among the libraries of The Meteorological Society, The United States Signal Office, The Meteorological Office, The Société Météorologique de France, and The Scottish Meteorological Society.

I must, however, once more insist upon promptitude, for I cannot promise to get cards written from any list or book unless it reach me before May 1st.

G. J. SYMONS.

62, Camden Square, N. W., Feb. 13th.

## THE METEOROLOGICAL SOCIETY.

THE Annual General Meeting of this Society was held on Wednesday evening, the 18th inst., at the Institution of Civil Engineers, Mr. G. J. Symons, F.R.S., President, in the chair.

The Secretary read the report of the Council for the past year, which shewed the Society to be in a very flourishing condition, for while in 1871 the Society continued its work without an office, accessible library, or an Assistant Secretary, and the number of the Fellows was 314, the staff, at present very fully employed, consists of an Assistant Secretary and three computers, with 555 Fellows on the roll. The receipts and expenditure in 1871 shew a marked contrast to the year just past; the receipts amounted to only £244, against more than £840 in 1881. The expenditure was only £197 against £780 in 1881. The Society also now receives Second Order and Climatological Observations from 83 stations, the results of which are published quarterly in the "Meteorological Record." In addition to the "Quarterly Journal," two publications have been prepared and issued under the direction of the Council, viz. :- "Hints to Meteorological Observers, with Instructions for taking Observations, and Tables for their Reduction," and "Index to the Publications of the English Meteorological Societies, 1839 to 1881."

The President (Mr. Symons) then delivered his address, which was devoted to the consideration of the present state and future prospects of Meteorology. He began by asking in what respects is our present system of observation capable of improvement? Should it be extended, either as regards distribution of stations, additional instruments, or additional hours of observation? Can any of the millions of entries at present made annually, be safely dispensed with? These questions can only be properly answered after considering two others—What observations are being made? and for what object? After referring to the different patterns of barometers, and the number of observations made, Mr. Symons said that he was aware there were several grounds upon which the maintenance of numbers of stations in excess of all possible requirements can be defended. In the first place, there is the constant difficulty which arises from the removals and deaths of the observers, and from the extension of buildings and growth of trees, &c. This renders it necessary that we should have two or three stations wherever we desire to make sure of a continuous record. But a far better and more scientific plan would be to choose a few unexceptionable localities remote from towns, purchase the freehold of a few surrounding acres, erect thereon stations identical in design and in every respect, and endow them with moderate funds, so that the observations may, humanly speaking, be established on an unalterable basis. That would be the way to detect secular changes. For climatic purposes the numerous climatological stations started by the Society are of great value. After speaking of hygrometers, anemometers, and

ozonometers, the President referred to daily maps of Atlantic weather, which should be on a scale of not less than 1 inch for 300 miles. The compilation of such charts is essentially national work, and falls wholly within the domain of the Government office. After referring to Weather Forecasts, the lack of original workers in discussing meteorological observations, the absence of academical encouragement, and the little prospect of those who devote themselves to meteorology obtaining more than a bare livelihood, the President concluded as follows:—"It is quite possible that the severe manner in which I have criticised a few of our existing arrangements, may have lead someone to consider that meteorology is languishing, feeble, or even moribund. I believe that the very contrary is the fact; when a case is weak, one hesitates to point out its weaknesses, for fear of a total collapse. No; the Meteorological Society never advanced so rapidly in numbers as it has in the two last years, and if it will but apply the pruning knife to fruitless observations, and try to secure the application of more brain power to the many problems yet unsolved, it will continue to receive an ever increasing amount of recognition and support, and to maintain that high position among kindred societies which it at present holds."

The following gentlemen were elected Officers and Council for the ensuing year:—

*President.*—John Knox Laughton, M.A., F.R.A.S., F.R.G.S.

*Vice-Presidents.*—William Ellis, F.R.A.S.; Rogers Field, B.A., M.Inst.C.E.; Joseph Henry Gilbert, Ph.D., F.R.S., F.C.S.; Baldwin Latham, M.Inst.C.E., F.G.S.

*Treasurer.*—Henry Perigal, F.R.A.S.

*Trustees.*—Hon. Francis Albert Rollo Russell, M.A.; Stephen William Silver, F.R.G.S.

*Secretaries.*—George James Symons, F.R.S.; John William Tripe, M.D., M.R.C.P.E., V.P. Soc. Anal.

*Foreign Secretary.*—Robert Henry Scott, M.A., F.R.S., F.G.S.

*Council.*—Edmund Douglas Archibald, M.A.; Arthur Brewin, F.R.A.S.; John Sandford Dyason, F.R.G.S.; Edward Ernest Dymond; Henry Storks Eaton, M.A.; Charles Harding; Robert John Lecky, F.R.A.S.; William Marcet, M.D., F.R.S., F.C.S.; Edward Mawley, F.R.H.S.; Richard Strachan; George Mathews Whipple, B.Sc., F.R.A.S.; Charles Theodore Williams, M.A., M.D., F.R.C.P.

#### THE GALE OF OCTOBER 14TH, 1881.

**EXTENSIVE PURCHASE OF BRITISH TIMBER.**—Serious havoc was committed in the policies and woods of Dunse Castle by the gale of the 14th October, thousands of trees having been uprooted. In the avenue and parks around the castle sixty fine old trees—many of them of large dimensions—have been replanted. The remainder of the fallen timber (estimated at over 50,000 trees) has been sold to Messrs. Brownlie, Earlston, who engage to remove it within four years. The purchasers are to be allowed to erect saw-mills on the estate to cut up the wood.—*Timber Trades' Journal.*

## REVIEW.

*The Water Supply of England and Wales; its Geology, Underground Circulation, Surface Distribution, and Statistics.* By C. E. DE RANCE, Ass. Inst. C.E., F.G.S., &c. 8vo., x.-623 pages and 6 maps. London: Stanford. 1882.

THIS book reminds us of a temporary fit of idleness in which we lately indulged. We had occasion to look for a word in Ferrall and Repp's *Danish-English Dictionary*, and instead of doing so began to read the Preface. Such a caustic *exposé* of book-making and literary dishonesty as forms that Preface we never read. At first sight, this remark may appear uncomplimentary to Mr. De Rance; but when we have gone into a little history, it will be found that he need by no means dread such a criticism as that in the *Danish Dictionary*. As a general rule, Mr. De Rance makes ample recognition for every quotation, and he gives an Index of authorities cited, which fills three pages with double columns. Four years ago the late Professor Ansted brought out a book almost identical in size, in subject, and in treatment with that now before us. Professor Ansted's was entitled, "*Water and Water Supply, chiefly in reference to the British Islands—SURFACE WATERS.*" We are not going to wander off into a review of this earlier work, but mention it rather as an illustration of, perhaps unconscious, literary lynch law. Professor Ansted's book was apparently chiefly compiled from the Ordnance Maps—whole pages of text are merely descriptive of what one would learn far more readily by looking at the Map. Peterman's Hydrographic Map, cut up into watersheds and very badly re-engraved, seems to have afforded the illustrations, and with a few other sources, supplied the bulk of the matter. Not one of these quotations was acknowledged. A very able reviewer of that work, after complaining bitterly of "the almost invariable absence of citation of authority," wrote as follows:—

"For the lecturer, who expects to be listened to as speaking with academical authority, or for the merely popular writer, exact citation of authority may be to some extent considered as a matter of taste or of honesty. But for the serious writer, for the man who would produce a standard work on any scientific or historic subject, clear, full, and accurate, citation of authority is essential."

Moreover, the very plan upon which the data in Professor Ansted's book were arranged, was almost identical with one laid down by Mr. F. R. Conder, in a paper which he read before the Society of Arts, and yet Mr. Conder's name is not mentioned on one of the 580 pages of Professor Ansted's book.

Mr. De Rance has been taken to task for not mentioning Professor Ansted's work, but (1) we doubt whether he has taken a single statement from it; (2) considering the mass of information given in the later work, we think it probable that much of it was written before the earlier one was printed; and (3) the quotations which we have given

indicate that if any one deserved to suffer from scant acknowledgment it was the author of "Water and Water Supply."

This rather long note is by no means intended to apply specially to the work before us. We have said that, as a general rule, Mr. De Rance makes ample recognition, but we find that appropriation without acknowledgment is increasing, and think that a lesson in a "matter of taste or of honesty" is needed.

The first two chapters are devoted to "Rainfall and Percolation of Rainfall" and to "Composition of Water," the following thirty-two chapters treat of rivers and groups of rivers, and the last chapter takes up the difficult subject of the propagation of epidemics by potable water.

The book is crammed with information topographical, geological, and statistical; consequently it is not by any means an agreeable book to sit down and read through. On the other hand, it contains a mass of information which can be found combined in no other book, and much of which is entirely new and based on the wide experience of the author, who, we may remind our readers, has special qualifications for the task he has undertaken, (1) in that he is on the staff of the Geological Survey, and (2) in that he has been, from its formation, Secretary to the British Association Committee on Underground Water.

By cross references, by excellent maps, and by no fewer than three separate Indexes, Mr. De Rance affords great help to those who desire to extract all the information on some given point. But a fourth or general Index would have been useful, for scattered about the book, in all sorts of unexpected places, are little gems of information which nothing but systematic reading through the book would bring to light.

In a work like this, containing thousands of figures and hundreds, if not thousands, of proper names, misprints are unavoidable. We are glad to see that the author has had the industry and the courage to track a few and quote them as errata—a practice far too rarely followed. We are glad to be unable to add to the list except the following very trifling items:—On page 9, Gaspain should be Gasparin; on page 12 (last line of note), 32·50 should be 22·50; and on page 129, Austy should probably be Ansty.

As a general rule the language is extremely clear, but sometimes the author, like everybody else, nods—only one should not nod in print. Here is an illustration, our notes are in italics:—

"In this classification I am inclined to think that the term 'Waterstones' does not include the compact Lower Keuper building stone and grit, which was evidently classified with the Bunter Beds beneath in the papers (*but the Beds were not in the papers*) by Mr. Ormerod and others of the period (*What period? Surely Mr. Ormerod did not belong to the period of the formation of the Lower Keupers*). This restricted use of the term 'Waterstones' is one which it is of importance to maintain, as they, probably, and not the building

stones beneath it, (*? them*) are the equivalent of the typical Water-stones of Warwickshire."

Putting aside trifles, we accept this work as a useful contribution towards the, at present, miserably scanty literature of British Hydrology.

## BAROMETRIC AND THERMOMETRIC EXTREMES IN JANUARY, 1882.

THE past month will probably, for many years to come, be regarded with considerable interest, as being remarkable

- (1). For the barometric maximum on the 18th.
- (2). For high mean atmospheric pressure.

As regards the first and most exceptional feature, we purpose saying little, because duplicate work is generally waste of time, and, therefore, understanding that Mr. H. Sowerby Wallis was preparing a paper upon the subject for the Meteorological Society, we handed to him all the information bearing upon it which we received, a course which we doubt not, will meet with the approval of our correspondents.

We may, however, state that according to letters published in *The Times*, the sea level pressure indicated by the observations at Camden Square between 1857 and 1881 exceeded 30·7 on only five occasions, viz. :—

1859.	January 9.....	11.40 p.m.	...	30·830 in.
1865.	December 15...	9.0 p.m.	...	30·782 in.
1867.	March 2.....	9.0 a.m.	...	30·788 in.
1873.	February 18 ...	11.0 a.m.	...	30·826 in.
1879.	December 23...	10.0 a.m.	...	30·793 in.

Mr. Symons quoted also the three following instances of very high pressures in or near London as the only ones which he could find fairly comparable with that of Jan. 18th, 1882, viz. :—

London (on the authority of Sir G. Shuckburgh, F.R.S.)	1778	30·935.
Greenwich (          "          " Mr. Belville)	1825, Jan. 9th,	30·958.
Royal Observatory, Greenwich,	1849, Feb. 11th, 9.0 p.m.	30·895.

The maximum value indicated by the Camden Square observations in January, 1882, was 30·955, at 10.30, a.m., on the 18th.\*

Hence we see that there is, within half-a-century, no instance of a pressure nearly equal to that recently experienced, and only one instance even by going back upwards of a century.

The mean pressure for the month was extremely high, 30·355 in. at Camden-square. According to Mr. Eaton's paper† the mean pressure reduced to sea level for January in London is 29·945 in.,

\* *Quar. Jour. Met. Soc.*, Vol. VI.

† Curiously enough agreeing almost to an hour with the time on the same day in 1881 on which the great snowstorm gale reached serious intensity.



and during the ninety years, 1790—1879, the mean exceeded 30·3 only in the following years:—

$$1825 = 30\cdot324.$$

$$1858 = 30\cdot357.$$

Observations were, however, made from 1774 to 1781, and in one of those years a higher mean value was reached, viz., 30·387 in 1779.

If, as we think probable, the mean value for Greenwich in 1882 should be a few thousandths higher than that at Camden Square, we shall find the mean for the month without precedent for ninety years.

We put temperature in the heading of this article, because we desired to say a few words respecting it. It has not been at all unprecedentedly high, but coming immediately after the coldest of three extremely cold Januarys, it naturally excites attention by the contrast—the mean temperature at 9 a.m. in January, 1881, was 30°·2; in the corresponding month of 1882 it was 40°·4. As a general rule, high barometric pressure and low temperature go together, and *vice versa*. But those relations are chiefly due to the passage of storms across these islands. And the exceptional occurrence of high pressure and high temperature characterizing the same month is due to the anomalous distribution of pressure which has prevailed. As to the cause of this we offer no opinion, but merely quote a few words by Dr. Hann from the *Zeitschrift*, and a note from the *Colonies*, which, though written in a style of half banter, seems to us of considerable importance, and a most appropriate sequel to Dr. Hann's opinion.

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“I think that the explanation of these barometric maxima, of their constancy and of their oft-repeated appearance in certain winters, lies in the distribution of temperature in countries to the S. or S.W. of Europe. In consequence of unusual heat in these districts, the air overflows, and passes to higher latitudes, where it checks the diminution of barometric maxima, and so maintains a pressure sufficient to prevent the barometric minima following their usual paths.”—*Dr. Hann in the Zeitschrift der Oesterreichen Gesellschaft für Meteorologie*, Feb., 1882.

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#### AMERICAN STORMS IN AFRICA.

The *Gibraltar Guardian* records a curious fact which, if the circumstances are correctly reported, indicates the existence of a new danger to navigation along the North-West Coast of Africa. The Atlantic coast of Morocco, which, it appears, has long been remarkable for its immunity from storms, was suddenly visited at the end of last year by one of the “depressions” which we are warned are “developing energy” as they cross the Atlantic, and will strike our shores with dangerous force, so continually, that the belief is gaining ground that they are somehow manufactured for our benefit by Fenians, or other ill-disposed individuals in America. One of these storms, which was to have brought bad weather to our shores, took a more southerly track than

was expected, and visited the coasts of Morocco, doing considerable damage to the town of Mazagan, and carrying away the massive stone roofs of houses which had never before been so rudely disturbed by any of the winds of heaven. Since then the coast has been visited by similar storms, and it would seem that the calm which has reigned from time immemorial on the shores of Morocco is to give place to periodical hurricanes. The open roadsteads which have hitherto given sufficient shelter to shipping at all periods of the year will consequently be useless, and the navigation of the coast will be attended with a new and utterly unforeseen danger. If the facts are as reported, and if a recurrence of the storms is experienced, they will lend force to the theory that the whole climate of the Northern hemisphere is undergoing a permanent change. The present season, however, is altogether phenomenal; and it may happen that when the seasons are restored to their normal conditions, the coasts of Morocco will regain their perennial calm. If not, Art will have to step in to make up for the deficiencies of Nature, and supply, by means of breakwaters and harbours of refuge, that shelter for shipping which the natural conformation of the coast denies.—*The Colonies, February 10, 1882.*

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### NEWSPAPER METEOROLOGY.

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IN few respects is the increased interest taken in Meteorology more evident than by its treatment in the newspapers. There are now few daily papers without their daily weather chart, or curve of barometric pressure at "our office," completed up to 2 or 3 a.m., as the case may be.

It is, however, in the quaint old town of Magdeburg, in Saxony, that the latest and fullest development of journalistic meteorology has occurred.

There are in Magdeburg two daily newspapers; with one of these alone are we concerned—the *Magdeburgische Zeitung*—its printing offices seem to be rather extensive, and include a tower 13ft. in diameter and 112ft. high, erected for meteorological purposes, and forming an imposing feature at the angle of two of the principal streets.

The basement of the tower is 16ft. deep, and is appropriated to a Fuess's standard syphon barometer and a Sprung's barograph. The flat roof of the printing offices is 52ft. above the ground, and, therefore, the tower rises 60ft. above this roof. Outside the eastern window of that room of the tower of which the floor is level with the roof of the printing office, is fixed a Reinert's window screen, containing max., min., dry and wet thermometers. The next story may be regarded as a workshop with sundry tools, apparatus for testing thermometers, &c. The next story is devoted to the library, and to the storage of blank forms, tables, &c. Above this comes the office of the Director and his two assistants. This must be rather close quarters, for the outside diameter of the tower is only 13ft.; it is octagonal inside, and from its total floor space must be deducted that occupied by the steps to pass from floor to floor, and also a few inches for another standard barometer.

The top story is very much like a lighthouse lantern without a lamp—for all its sides are glazed with heavy glass, and an outside iron balcony completes the resemblance.

Here are placed not merely another set of shade thermometers, but a self-recording anemometer and rain gauge, a sun thermometer, a sunshine recorder, a cloud mirror, a cloud camera, a spectroscope for observations of the "Rainband," and a telescope for determining the transparency of the air.

There are earth thermometers in the courtyard, and various rain gauges and other instruments in the immediate vicinity.

The regular observations are made at 8 a.m., 2 p.m., and 8 p.m., with an extra one for the International Series at 0.56 p.m. daily. All these values are printed daily in the *Zeitung*.

This is, however, the least part of the duties of the director, Dr. Assmann, and his staff. There are two issues daily of the *Zeitung*, one at 1 p.m., the other in the early morning. At about 11 a.m. a cypher telegram arrives from the Deutsche Seewarte (the Government Naval Observatory) at Hamburg, in which are given the principal data for that morning at several places in the German Empire. Reports are also received from various parts of Saxony. At noon the forecast issued at Hamburg arrives, and it (modified if necessary according to the readings of the instruments in the observatory) together with all the actual observations, is prepared for the 1 p.m. issue. A full telegram is received from Hamburg at 2 p.m., giving indications of the general direction of the isobars over Europe, and from this and all the data collected up to the time, is compiled the weather map for the next day's paper.

This, however, is not all; the *Magdeburg Zeitung* is forming an Agricultural Meteorological Society, with a merely nominal fee for membership (7½ d. !) but as there are already more than 6000 members, the Society has an income of nearly £200 per annum, and we suppose every member is also a purchaser of the *Zeitung*. Be that as it may, the Society is evidently a powerful body, with 20 second order, 30 third order, and upwards of 100 rain gauge stations, all reporting to the *Zeitung*, many of them in time for their observations to be utilized in the journal, and all interested in the success of the enterprise.

This is all very well, and we congratulate the proprietors on a bright idea well carried out. But there is one thing for which we thank them especially, viz., that it seems to be a rule of the office to rigorously examine their forecasts *after* they have been issued, and, both at the Observatory and by the members of the Society, to seek earnestly for the reason of every failure, in order to guard against it, and profit by it in the future. In our opinion it is impossible to devote too much time and care to that practice.

[For nearly all the facts in the above note we are indebted to the *Zeitschrift*, September, 1881, and *Ciel et Terre*, January, 1882.]

## SUPPLEMENTARY TABLE OF RAINFALL IN JAN., 1882.

[For the Counties, Latitudes, and Longitudes of most of these Stations,  
see *Met. Mag.*, Vol. XIV., pp. 10 & 11.]

Div.	STATION.	Total Rain. in.	Div.	STATION.	Total Rain. in.
II.	Dorking, Abinger .....	1.54	XI.	Castle Malgwyn .....	5.50
„	Margate, Acol .....	.79	„	Rhayader, Nantgwillt..	7.39
„	Littlehampton .....	1.20	„	Carno, Tybrite .....	6.53
„	St. Leonards .....	1.06	„	Corwen, Rhug .....	3.87
„	Hailsham .....	1.60	„	Port Madoc .....	4.70
„	I. of W., St. Lawrence.	1.45	„	Douglas .....	2.78
„	Alton, Ashdell .....	2.06	XII.	Carsphairn .....	5.96
III.	Great Missenden .....	1.74	„	Melrose, Abbey Gate ..	2.57
„	Winslow, Addington ..	1.44	XIII.	N. Esk Res. [Penicuik]	...
„	Oxford, Magdalen Col...	1.15	XIV.	Ayr, Cassillis House ..	4.16
„	Northampton .....	1.52	„	Glasgow, Queen's Park.	3.65
„	Cambridge, Beech Ho...	1.38	XV.	Islay, Gruinart School..	4.15
IV.	Southend .....	.85	XVI.	Cupar, Kembach .....	1.16
„	Harlow, Sheering .....	1.03	„	Aberfeldy H.R.S. ....	2.96
„	Diss .....	1.47	„	Dalnaspidal .....	7.04
„	Swaffham .....	1.74	XVII.	Tomintoul .....	2.72
„	Hindringham .....	2.01	„	Keith H.R.S. ....	1.70
V.	Salisbury, Alderbury ..	1.28	XVIII.	Forres H.R.S. ....	2.06
„	Calne, Compton Bassett	2.04	„	Strome Ferry H.R.S....	6.60
„	Beaminster Vicarage ..	2.07	„	Lochbroom .....	6.47
„	Ashburton, Holne Vic..	4.93	„	Tain, Springfield .....	2.55
„	Langtree Wick .....	2.88	„	Loch Shiel, Glenaladale	14.53
„	Lynmouth, Glenthorne.	4.76	XIX.	Lairg H.R.S. ....	3.09
„	St. Austell, Cosgarne ..	3.39	„	Forsinard H.R.S. ....	...
„	Taunton, Fullands .....	1.41	„	Watten H.R.S. ....	1.79
VI.	Bristol, Clifton .....	2.72	XX.	Fermoy, Glenville .....	3.79
„	Ross .....	2.99	„	Tralee, Castlemorris ..	4.78
„	Wem, Sansaw Hall .....	2.67	„	Cahir, Tubrid .....	2.25
„	Cheadle, The Heath Ho.	2.71	„	Newcastle West .....	2.69
„	Worcester, Diglis Lock	1.97	„	Kilrush .....	2.75
„	Coundon .....	2.34	„	Corofin .....	2.98
VII.	Melton, Coston .....	1.96	XXI.	Kilkenny, Butler House	..
„	Ketton Hall [Stamford]	1.80	„	Carlow, Browne's Hill..	1.88
„	Horncastle, Bucknall ..	1.75	„	Navan, Balrath .....	2.08
VIII.	Macclesfield Park .....	2.86	„	Athlone, Twyford .....	2.52
„	Walton-on-the-Hill .....	2.51	XXII.	Mullingar, Belvedere ..	2.57
„	Broughton-in-Furness ..	4.65	„	Ballinasloe .....	2.53
IX.	Wakefield, Stanley Vic.	3.27	„	Clifden, Kylesmore .....	6.57
„	Ripon, Mickley .....	3.12	„	Crossmolina, Enniscoe..	3.76
„	Scarborough .....	1.60	XXIII.	Carrick-on-Shannon ..	2.06
„	East Layton [Darlington]	1.67	„	Dowra .....	2.76
„	Mickleton .....	2.64	„	Rockcorry .....	2.46
X.	Haltwhistle, Unthank..	2.78	„	Warrenpoint .....	2.51
„	Shap, Copy Hill .....	5.39	„	Newtownards .....	1.60
XI.	Llanfrechfa Grange ..	4.21	„	Belfast, New Barnsley ..	2.43
„	Llandovery .....	5.21	„	Bushmills .....	2.23
„	Solva .....	3.40	„	Buncrana .....	2.94

## JANUARY, 1882.

Div.	STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL.				Days on which .01 or more fell.	TEMPERATURE.				No. of Nights below 32°	
		Total Fall.	Differ- ence from average 1870-9	Greatest Fall in 24 hours.			Max.		Min.		In shade.	On grass.
				Dpth.	Date.		Deg.	Date.	Deg.	Date.		
I.	Camden Square.....	inches. 1.30	inches. — 1.05	in. .56	8	7	53.4	6	27.4	25	7	15
II.	Hunton Court .....	.96	— 1.61	.32	8	8	...	...	...	...	...	...
III.	Strathfield Turgiss .....	1.29	— 1.26	.39	2	10	52.8	6	23.8	21 <i>d</i>	8	24
IV.	Hitchin .....	1.19	— 1.03	.55	8	10	51.0	6	25.0	24 <i>k</i>	14	...
V.	Banbury .....	1.90	— .48	.87	8	17	52.0	6	24.0	25	9	...
VI.	Bury St. Edmunds .....	1.63	— .21	.87	8	10	53.0	6	23.0	31	10	...
VII.	Cossey .....	1.76	+ .06	.68	8	8	54.0	6	28.5	25	10	10
VIII.	Bridport .....	1.39	...	.39	2	12	53.0	11	18.0	24	15	...
IX.	Barnstaple .....	2.56	— 1.70	.52	2	16	54.0	28 <i>a</i>	28.0	24	...	...
X.	Bodmin .....	3.08	— 3.43	.76	2	14	54.0	28	27.0	24	1	7
XI.	Cirencester .....	2.82	— .56	.79	8	12	...	...	...	...	...	...
XII.	Woolstaston .....	3.17	— .26	.85	28	16	51.0	5, 6	29.0	20 <i>l</i>	5	12
XIII.	Orleton, Tenbury.....	2.57	+ .42	.64	8	15	55.6	6	25.0	25	6	13
XIV.	Leicester .....	2.11	...	.59	8	12	52.3	5	37.0	18	4	17
XV.	Boston .....	1.63	— .09	.51	28	7	53.0	6	29.0	19	6	...
XVI.	Grimsby .....	1.95	+ .19	1.02	29	18	52.0	5	31.0	25 <i>m</i>	3	...
XVII.	Mansfield .....	3.23	+ .80	1.75	29	12	...	...	...	...	...	...
XVIII.	Manchester (Ardwick).....	2.90	— .34	.48	2	15	50.0	2.5, 6	33.0	27	0	...
XIX.	Ribstone Hall .....	2.50	+ .28	...	...	...	...	...	...	...	...	...
XX.	Arncliffe .....	6.88	— .05	1.50	2	22	49.0	5	31.0	3	3	...
XXI.	North Shields .....	.57	— 1.27	.11	6	13	55.0	5	30.0	4, 27	5	6
XXII.	Seathwaite (Borrowdale).....	11.40	— 7.35	2.54	4	21	...	...	...	...	...	...
XXIII.	Ely.....	3.16	— 1.55	.77	2	13	...	...	...	...	...	...
XXIV.	Haverfordwest .....	6.73	+ .46	1.24	9	15	52.0	5, 6	30.0	22	1	5
XXV.	Plinlimmon (Cwmsymlog)...	3.19	...	...	...	...	...	...	...	...	...	...
XXVI.	Llandudno.....	3.19	+ .23	.69	29	15	55.5	14	33.1	29	...	...
XXVII.	Cargen .....	2.63	— 3.48	.41	5	16	51.4	15	31.0	4	2	...
XXVIII.	Hawick .....	1.78	— 1.44	.44	2	11	...	...	...	...	...	...
XXIX.	Newmains .....	4.97	— .47	.96	2	21	...	...	...	...	...	...
XXX.	Kilmory .....	7.32	— .55	.95	2	23	...	...	...	...	...	...
XXXI.	Appin (Airds) .....	6.29	...	...	...	...	...	...	...	...	...	...
XXXII.	Quinish (Mull).....	5.48	...	1.12	4	23	...	...	...	...	...	...
XXXIII.	Loch Leven Sluices .....	3.10	— .72	.50	3, 5, 6	12	...	...	...	...	...	...
XXXIV.	Arbroath .....	1.15	— 1.30	.36	2	11	52.0	5	29.0	29	4	...
XXXV.	Braemar .....	2.89	+ .11	.60	7	17	50.4	18	21.7	4	7	14
XXXVI.	Aberdeen .....	1.06	...	.32	4	10	55.0	18	29.0	4, 11	8	...
XXXVII.	Sligachan .....	18.31	...	2.64	28	29	...	...	...	...	...	...
XXXVIII.	Culloden .....	2.43	+ .66	.68	6	7	55.5	15	28.0	29	5	18
XXXIX.	Dunrobin .....	3.05	...	.55	2	17	55.8	15	27.0	4	6	...
XL.	Sandwick .....	3.15	— .19	.44	6	20	51.9	17	32.0	30	1	5
XLI.	Blackrock .....	4.27	— 1.75	.81	30	19	53.0	15 <i>b</i>	30.0	3, 29	4	...
XLII.	Dromore Castle .....	5.38	...	.95	2	16	57.0	2	30.0	29	1	...
XLIII.	Brook Lodge.....	3.78	...	.83	30	17	52.0	14 <i>c</i>	33.0	3, 20	0	...
XLIV.	Killaloe .....	3.67	...	.69	4	14	54.0	12 <i>d</i>	31.0	1 <i>n</i>	4	...
XLV.	Portarlington .....	2.32	— .74	.70	27	22	53.0	15	32.0	6	2	...
XLVI.	Monkstown .....	1.56	...	.26	27	16	55.0	5, 6 <i>e</i>	28.0	18 <i>o</i>	...	...
XLVII.	Queen's College (Galway) ...	3.06	...	.61	3	14	55.0	13 <i>f</i>	29.0	30	1	...
XLVIII.	Waringstown .....	...	...	...	...	...	...	...	...	...	...	...
XLIX.	Londonderry...	2.98	...	.48	6	15	55.0	14 <i>g</i>	32.0	29	1	13
L.	Edenfel .....	2.09	— 1.68	.47	4	20	53.0	14 <i>g</i>	29.0	28	8	...

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

 a And 29. b And 16, 17. c And 27. d And 13. e And 14. f And 17. g And 15.  
 i And 25. k And 31. l And 21, 27. m And 27. n And 12, 18. o And 19.

## METEOROLOGICAL NOTES ON JANUARY.

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

## ENGLAND.

STRATHFIELD TURGISS.—Altogether a mild pleasant month, exceptionally warm during the first fortnight. All agricultural products very forward. Blackbirds, thrushes, and rooks busy building nests on 12th and 13th. Snow-drops in flower on 21st.

BANBURY.—Mean temperature of the month,  $40^{\circ}5$ ; high wind on six days.

CULFORD.—Month throughout very fine; fruit trees forward; everything beginning to have quite a spring-like aspect.

COSSEY.—Very high barometer from the 12th to the end of the month, with dull misty weather. Bar  $30\cdot92$  in. on the 18th.

BODMIN.—Average temp. of the month,  $44^{\circ}1$ . On the 18th, the bar. rose to  $30\cdot95$  in. (reduced), being the highest ever known here. The winter hitherto has been by far the mildest on record.

CIRENCESTER.—A mild, genial month with no snow. After the middle, a long continuance of high barometer.

WOOLSTASTON.—Mean temp. of the month  $39^{\circ}6$ . A singularly mild and genial month. Bar. (corrected),  $30\cdot80$  in. on 18th.

TENBURY, ORLETON.—The first 8 days were generally cloudy, with a high temperature, rough winds, and frequent R. The barometer then became high, and the weather dry, warm, and cloudy. On the morning of the 15th, the barometer rose to  $30\cdot43$  in. (uncorrected), and it did not fall again below  $30\cdot30$  in. till the 26th. On the morning of the 18th it registered  $30\cdot72$  in., and it remained above  $30\cdot60$  in. from the evening of the 16th to the evening of the 19th. The highest point registered before with the same barometer was  $30\cdot65$  in., on the 11th of February, 1849. After the 15th the weather became colder with S. wind, and was very cloudy, dark, and gloomy, with frequent fog and no sun; the air generally calm. Much R fell on the 28th and 29th, and the barometer went down to  $29\cdot75$  in. on the latter day, but rose again to  $30\cdot45$  in. on the 31st. Lunar halos were seen on the 1st and the 5th, and the wind was very high on the 6th and 7th. The ground was never covered with S, and frosts were not frequent. The mean temp. of the month was more than  $2^{\circ}5$  above the average of 20 years.

LEICESTER.—Fog at 9 p.m. on 17th; all day on 18th, and at 9 a.m. on 19th.

BOSTON.—Temperature  $3^{\circ}$  above the average. Weather generally fine. Remarkably high barometer ( $30\cdot95$  in. 25 feet above sea level) on the 18th. In the middle of the month, in addition to the usual January flowers, the following could be gathered: aconite, primrose, anemone, periwinkle, snowdrop, crocus, polyanthus, hepatica. In a sheltered place a geranium still survives, and also some mignonette.

GRIMSBY.—A very remarkable month:—(1) For the unprecedented and long continued height of the bar.; (2) The total absence of snow and the very slight frosts; (3) For the amount of fog and cloud, and consequent absence of sunshine. On the 17th, the bar. was  $30\cdot90$  in. at 11 p.m.; on the 18th, at 9 a.m., bar.  $30\cdot87$  in., noon  $30\cdot90$  in.; on the 19th, 9 a.m., the bar. was  $30\cdot90$  in., at 10.45 p.m.  $30\cdot84$  in.

ARNcliffe.—Weather of the month remarkably mild, and the thermometer only once falling below freezing point.

NORTH SHIELDS.—Plants in flower on Jan. 1st: yellow primrose, cowslip, polyanthus, pansy, carnation, Christmas rose, wallflower, white rock cress, double daisy, chrysanthemum, yellow jessamine, auricula, heath. Snowdrops in flower on 19th.

## WALES.

HAVERFORDWEST.—The year commenced very wet and stormy, the air bleak and wintry, and low bar. After the 12th, a rather sudden change took place, the

air became colder and drier, sky over-cast, and the nights intensely dark and misty with remarkable high barometric pressure, which culminated on the 18th, the reading on that day at 9 a.m. corrected for temperature, (154 feet above mean sea level) was 30·920 in., which, with the addition for mean sea level, would be 30·963 in.; it remained at a very high point up to the 25th, when it stood, at 9 a.m., at 30·702 (corrected); on the 26th, another stormy and very wet period set in continuing till the end of the month; lowest barometric reading 9 a.m., 28th, 30·105 in.

LLANDUDNO.—With the exception of a storm of wind and snow on the 29th, the month was characterised by fine calm weather. Both the rainfall and mean temp. were as near as possible the average. Being from home the first half of the month, I have no record of the duration of sunshine for that period, but it amounted to 24·8 hours from the 17th to the 31st inclusive. The bar. was generally very high, especially after the 9th, from which date to the end of the month it did not fall below 30 inches.

#### SCOTLAND.

CARGEN.—Bar. remarkably high from 15th to end of month, highest 30·920 on 18th. Mean temp. 43°·1, being 5°·2 above the average. Great want of sunshine, only 30 hours during the month, the average being 66 hours; for 13 consecutive days (8th–20th) only one hour of sunshine was recorded: rainfall below the average. Early rhododendron, mahonias, *Pyrus japonica*, yellow jasmine, &c., in flower. A very fine lunar halo occurred on the night of the 28th, an inner ring of pale crimson shading off to violet was seen when the halo was at its brightest, between 9.30 and 10.30 p.m. the crimson was inside, nearest the moon.

SILVERBUT HALL, HAWICK.—A terrible storm of wind, hail, and rain, occurred on the 6th and 7th. From the 12th to the 27th very mild and spring-like. Hills white with snow on the 29th. No one living here remembers such a mild January before. The roads were so clean that coachmen did not require to wash their carriages. A blackbird's nest with four eggs was found in a hedge here on the 26th. Many of the rose-buds are over an inch in length, and the grass fields are greener now than they were last year at the beginning of April.

BRAEMAR.—Hurricane from 9 a.m. to 2 p.m. on 6th, and 6 inches of S on 7th, with the exception of which the month was exceedingly mild. Mean temp. 39°·9.

ABERDEEN.—Mild, genial weather prevailed during the greater part of January; the prevailing wind being south-westerly, rainfall fully an inch and a half below the average. Fresh gale on 27th, H on 29th. There was a marked absence of aurora, although for about a dozen nights the sky was practically cloudless.

CULLODEN.—The month all through was particularly mild, frost and snow entirely absent; frequent strong gales from S.W. and S.S.W.; pasture land fresh and green; labour well forward. Temperature ruling high; weather between 9th and 23rd very fine and dry.

SANDWICK, ORKNEY.—The month was mild, but stormy. There were gales of 50 miles an hour or more on the 2nd, 5th, 6th, 9th, and 10th. On the 6th it was 80 miles an hour from 5 to 6 p.m. L in the morning on 7th, a house struck, and the occupants stunned; a barn was also struck and burnt, and a bullock killed; several flashes again on the 9th.

#### IRELAND.

DROMORE CASTLE.—A very fine month, though cattle suffered from the constant wet of December, and of the first fortnight of January. There is perceptible growth of grass already, and spring operations are forward. Mean temp. 44°·8.

WATERFORD.—Primroses in flower on 6th. S on Comeragh Mountains on 28th, S to S.W. gale on 2nd. Bar. 30·9 in. on 17th.

KILLALOE.—Very fine weather from the 10th to the end of the month. Quite spring-like in mildness of temp. Bar. extraordinarily high in the middle of month, nearly reaching 31in.

MONKSTOWN.—The great feature of the month was the extraordinary high barometer, reaching 30·95 (uncorrected) on the 18th. The weather was extremely mild, the lowest shade temp. being 28°, also on 18th.

LONDONDERRY.—Wind principally S.W. One of the finest Januarys we have had for many years; almost all hedges, fruit-trees, shrubs, &c., being covered with buds. Only one gale during the month, on the morning of the 6th. Temperature of soil (4 feet below the surface) at the end of the month 43°·8. Mean height of bar. 30·134 in.; max. 30·884 in. on 18th; min. 29·112 in. on 6th.

EDENFEL, OMAGH.—A month of extraordinary fineness and mildness. Many days almost cloudless, the 11th absolutely so, and many nights clear, yet frostless. From an old record in my possession, I find that the winter of 1831-2 was almost identical with this, and was followed by an early and favourable spring, and a fairly productive year.

## A PLEA FOR THE RAINBAND.

*To the Editor of the Meteorological Magazine.*

SIR,—In answer to a suggestion from a Fellow of the Meteorological Society, will you permit me to state that Mr. John Browning, of 63, Strand, has prepared and submitted to me a Spectroscope so arranged as to give a spectrum of the same breadth and length as those shewn in the lithographed plate which accompanied my paper. Of course, such an arrangement is not absolutely necessary, as any Spectroscope of small dispersion will shew the Rainband; but it will be found in practice that an estimate of intensity is much easier formed where similar conditions of dispersion and slit length prevail. Such an instrument is, of course, also available for general Spectroscopic work.

J. RAND CAPRON.

*Guildown, February 2nd.*

## THE MEAN TEMPERATURE, 1881-82.

*To the Editor of the Meteorological Magazine.*

SIR,—The mean temperature out of doors in January, 1882, as compared with January, 1881, at this place, strikingly shows the difference of the seasons:—

	Max.		Min.
1882 .....	44·3	...	36·3
1881 .....	34·0	...	23·5
Difference .....	10·3	...	12·8

The mean min. of 1882 being 2°·3 more than the max. of 1881.—Yours truly,

W. B. CLEGRAM.

*Saul Lodge, Stonehouse, Gloucestershire, 1st Feb., 1882.*