

R E P O R T
OF THE
METEOROLOGICAL COUNCIL,
For the Year ending 31st of March 1897,
TO THE
PRESIDENT AND COUNCIL
OF THE
ROYAL SOCIETY.

Presented to both Houses of Parliament by Command of Her Majesty.



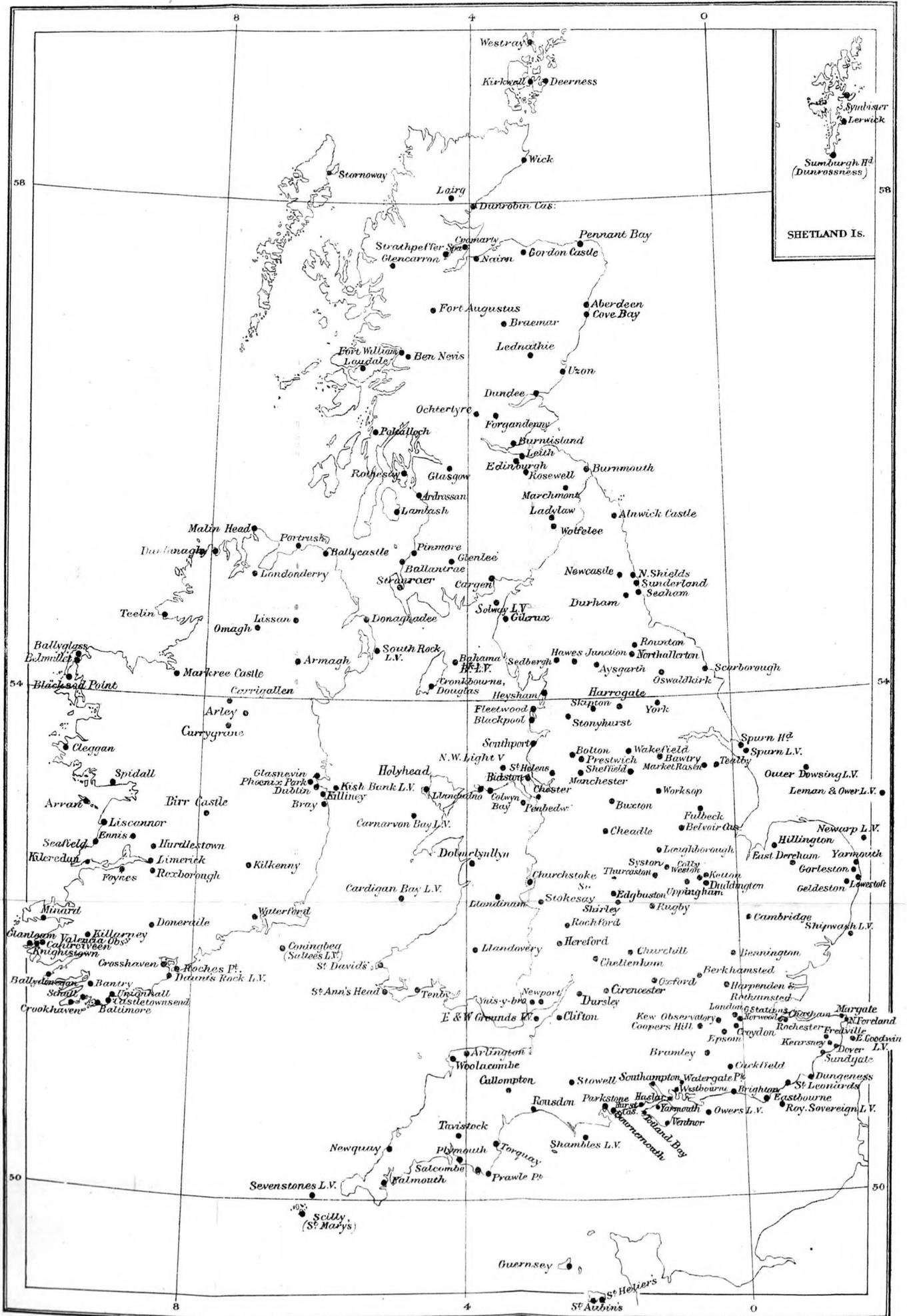
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MAP SHOWING THE APPROXIMATE POSITIONS OF THE STATIONS FROM WHICH OBSERVATIONS ARE RECEIVED.



For details of Information Received. - See Appendix XI.

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MAP OF STATIONS IN CONNEXION WITH THE OFFICE - Faces Title.

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THE METEOROLOGICAL COUNCIL,

1896-97.

Lieutenant-General SIR RICHARD STRACHEY, R.E., G.C.S.I.,
LL.D., F.R.S., Chairman.

MR. ALEXANDER BUCHAN, M.A., LL.D., F.R.S.E.

Professor GEORGE HOWARD DARWIN, M.A., LL.D., D.Sc., F.R.S.

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Rear-Admiral SIR WILLIAM J. L. WHARTON, K.C.B., F.R.S.,
Hydrographer of the Admiralty.

R E P O R T
OF THE
METEOROLOGICAL COUNCIL,
For the Year ending March 31, 1897,
TO THE
PRESIDENT AND COUNCIL
OF THE
ROYAL SOCIETY.

THERE has been no change in the Council during the year, and the executive of the Office is the same as before, Mr. R. H. Scott, M.A., F.R.S., being the secretary, and Nav.-Lieut. C. W. Baillie, R.N., F.R.A.S., the marine superintendent. Introductory

In September Mr. Scott attended the International Meteorological Conference, at Paris. There were present 43 delegates representing most of the European States, the United States, Mexico, Canada, and Queensland. The report of the meeting, translated into English, has been published.

The work of the Office may be conveniently considered under four heads, namely:

- I. OCEAN METEOROLOGY.
- II. WEATHER TELEGRAPHY.
- III. CLIMATOLOGY.
- IV. MISCELLANEOUS INVESTIGATIONS AND ADMINISTRATION.

PART I.

OCEAN METEOROLOGY.

Collection of Information.—The Office continues, as in the past, to collect data with respect to the meteorology of the ocean, and to carry out this object complete outfits of meteorological instruments are supplied to officers of merchant ships, who are willing to make observations at sea. Collection of information.

The instruments supplied are:—

One barometer; six thermometers, with a screen; four hydrometers.

Collection of information.

On the return of the ship to England the officer sends in a fair copy of the meteorological log and returns the instruments to the Office or to its agents.

Her Majesty's ships also are supplied with instruments, which, however, differ slightly from those lent to the Mercantile Marine. The Council continue to receive valuable observations from the officers of the Royal Navy.

Agents.

In order to facilitate the supply of instruments to the Mercantile Marine, agencies are established at some of the principal ports.

The following is a list of these agents :—

Cardiff, T. L. Ainsley, Bute Docks.

Dundee, Capt. A. Wood, Navigation School.

Glasgow, Messrs. D. McGregor and Co., Clyde Place.

Greenock, Messrs. D. McGregor and Co., Brymner Street.

Hull, Messrs. Castle and Co., Commercial Road.

Liverpool, J. Gill, Nautical College.

Southampton, Capt. D. Forbes, High Street.

The number of merchant ships supplied with instruments and log books during the year has been 82.

Sets of instruments are kept in working order at the Office in London, and at each agency, for the purpose of instructing observers in the method of observation. Notices to captains as to the supply of instruments are frequently distributed both from the Office and from the several agencies.

Recognition of "excellent" observers.

As a mark of recognition of valuable co-operation, the Council present various publications to observers who return well-kept logs. A list of the publications of the Office is given in Appendix XVI., p. 113.

Appendix I. (p. 21) contains a list of the observers who have, during the past year, contributed logs classed as "excellent." The Council take this opportunity of expressing their best thanks to those who have thus assisted them. Several of these observers have co-operated with the Office for many years. The names which appear in the list for the first time are as follows :—

Observer's Name.	Ship.
Alsop, J.J. - - - - -	"Brussels."
Beeching, C. - - - - -	"Ellesmere."
Brewis, Sub-Lieut., C.R.W., R.N.	H.M.S. "Penguin"
Gadd, C. - - - - -	S.S. "Valetta."
Guy, W. - - - - -	S.S. "Nova Zembla."
May, Sub-Lieut. F., R.N. - - - - -	H.M.S. "Dart."
Morton, J. - - - - -	S.S. "Tartar."
Penfold, Lieut. L.D., R.N. - - - - -	H.M.S. "Stork."
Simpson, Lieut. and Commr. C. H., R.N.	H.M.S. "Stork."
Weir, W. R. - - - - -	"Loch Ryan."

They note with regret the death of two of those who have rendered valuable assistance during many years past. The first of these,

Captain David Gray, died in May 1896. He had commanded whaling vessels sailing from Peterhead during 44 years, and enjoyed a very high reputation in that service. He had contributed 20 logs, nearly all "excellent." The second was Lieut. C. E. Pritchard, commanding H.M.S. "Alecto." He was killed in action near Benin in February 1897. He sent in 12 logs, mostly "excellent."

Recognition of
"excellent"
observers.

The meteorological logs received during the year numbered 142, of which 126 were either "excellent" or "very good."

Character of
logs received.

The Council have continued to receive, through the Ocean Steamship Company of Liverpool, a considerable number of logs, principally relating to voyages to and from the China Seas, viâ Suez.

A list of the meteorological logs from ships, received at the Office during the year is given in Appendix II. (p. 23), this list may be summarised as follows:—

North Atlantic	-	406	Pacific Ocean, South	-	68	Districts from which observa- tions are obtained.
South	„	- 139	Mediterranean	-	139	
Indian Ocean	-	177	Red Sea	-	112	
Pacific Ocean, North	-	75	Arctic Ocean	-	9	

Various publications of the Office in connexion with ocean meteorology have been either completed during the year, or are in progress.

Publications.

Monthly Current Charts for all Oceans.—This work was undertaken with the view of providing the navigator with more definite information as to the average direction and strength of oceanic currents at any period of the year than has hitherto been at his disposal, and it is now approaching completion. The primary part of the labour has consisted in examining the large mass of available material, calculating and plotting on 60 large sheets, the currents recorded in each month during 60 years, and this has occupied a portion of the staff of the Office continuously for eight years past.

Current
Charts.

The generalisation of this mass of matter, and its production in a form suited to the practical requirements of sailors, has been undertaken by the Hydrographic Department of the Admiralty. In the case of the Indian Ocean it was found that the differences from month to month were sufficient to justify the publication of all the generalised charts, and it is satisfactory to state that their issue, in 1896, has called forth laudatory comments in various countries besides our own.

For the Atlantic, the changes in the currents, as represented in the consecutive monthly charts, are neither so rapid nor so well defined, and it has appeared sufficient to engrave six charts only. As the variations have proved irregular, the months chosen for publication are also irregularly disposed, for while only one chart can be consulted for the months of December, January, and February, others refer to two months, and the month of November alone is represented by a special chart.

Current Charts,
Arctic Regions.

For the region lying north of 60° north latitude, the information is very scanty. The currents are weak and variable, and the available records uncertain, for lack of continuous astronomical observations. This portion of the charts is therefore unsatisfactorily bare.

The Atlantic charts are on the point of publication. Considerable progress has been made with the generalisations of the observations recorded in the Pacific Ocean, but the material is here also so insufficient that it is not contemplated to produce more than four charts, which, it is hoped, will be in the hands of the public by the end of the year.

The published charts show the average direction and velocity of the currents, and the maximum and minimum velocity which may be expected.

Southern
Ocean.

The Meteorology of the Southern Ocean.—The region referred to lies between the Cape of Good Hope and New Zealand, south of latitude 30° S. As no charts for this area have been previously published, this work will probably be of much value.

The charts are finished, and several have been engraved. They consist of wind, current, and sea temperature charts. As each series contains 12 monthly charts, there will be 36 in all.

The wind charts are partitioned into areas bounded by parallels of latitude 3° apart, and meridians of longitude 10° apart. The prevalent winds are indicated by the same form of wind-rose as that adopted in the Red Sea charts (see the Report for 1892, p. 7). Isobars of mean barometric pressure are drawn on the maps, to show the relationship between mean pressure and prevalent winds. The per-centage of observations, when fog was met with, is noted in the corner of each area. A small chart of the whole area is placed in the corner for the purpose of showing the mean air temperature by means of isotherms, and the occurrence of fog. This method was adopted because it was found that if the isotherms and fog-lines were drawn on the large charts there was danger of confusion.

The sea temperature charts show by shading the areas over which the range of temperature exceeds 20° .

The current charts are copied principally from the charts of the Indian Ocean, already published, but the area has been extended so as to embrace New Zealand.

South Atlantic.

The Meteorology of the South Atlantic and of the West Coast of South America.—The logs in the Office, which relate to this region, have been analysed; the data for those regions which are rarely visited by merchant shipping are supplied chiefly from the logs of the Royal Navy.

Instruments
for distant
stations.

Collection of Meteorological Observations from Distant Stations.—It has been the custom of the Office to supply instruments to observers in unfrequented parts of the world, when they have reason to believe that the observations will be taken with due care. The observers undertake to send to the Office copies of their observations.

A list of the documents received during the year from such foreign land stations is given in Appendix XII. (p. 82).

Instruments
for distant
stations.

During the past year no new stations of this class have been supplied with instruments on loan. The Foreign Office has, however, purchased three sets of instruments for use in Uganda. Measurements of the rainfall and of the water level of Lake Victoria have already been received from time to time; and copies of these observations have been supplied to the Royal Geographical Society.

Climatological Information for the Admiralty.—Statistics as to the climates of foreign ports are from time to time required by the Admiralty for use in various publications; a good deal of research and of correspondence with foreign meteorological institutes has been required to supply the necessary information.

Information
supplied for
the Admiralty

Supply and Stock of Instruments.—In Appendix III. (p. 31) a list is given of the meteorological instruments supplied during the year by the Office to the Royal Navy, together with a statement of the stock and of the distribution of the instruments standing on the books to the account of the Admiralty on the 31st March 1897.

Stock of
instruments
belonging to
the Office.

Appendix IV. (p. 32) gives similar information with regard to the disposal of the other instruments belonging to the Office, which either remain in store, or have been supplied to the Mercantile Marine, Observatories, and Telegraphic Reporting Stations, &c.

PART II.

WEATHER TELEGRAPHY AND FORECASTS.

The forecasts issued by the Office of the probable weather throughout the United Kingdom are based on meteorological observations made at a number of stations, which are in direct telegraphic communication with the Office.

General.

The Telegraphic Reporting Stations are those marked with the letter T in the list given in Appendix XI. (p. 76), and the same appendix contains a list of the Foreign Stations which send daily telegrams to the Office.

The only changes in the staff of observers at the home stations are that Miss E. Tolan has replaced Miss M. Tolan at Belmullet, and that Mr. Jenkins has replaced Mr. Cox at the North Foreland.

There has been no serious interruption of telegraphic communication during the year.

The Office continues to receive many inquiries concerning the weather, and a considerable amount of investigation and correspondence is required to obtain the needed information.

Inspection of the Telegraphic Reporting Stations.—The stations in the United Kingdom have been inspected during the year, in England by Messrs. J. S. Harding, F. Gaster, C. Harding, R. Curtis, and J. Curtis; in Scotland by Mr. Buchan; and in Ireland and Wales partly by Mr. Scott and partly by Mr. Gaster.

Inspection of
the Stations.

- Inspection of the Stations.** The reports of the Inspectors are printed in Appendix V. (p. 33), and they show that efficiency has been maintained.
- The Council have sustained a great loss by the death of the Rev. W. Clement Ley, who had been their Inspector for England since the year 1878. Mr. Ley had been in failing health for some years, and his last work, "Cloudland," was completed in 1895 by his son, Lieut. Cuthbert Ley, R.E.
- Discussion of the reports.** *Discussion and Publication of the Information received.*—A detailed account of the manner in which the meteorological information received by telegraph is utilised was given in Appendix X. of the Report for 1891, and there has been no change of procedure since that date. The Daily Weather Report contains a synopsis of the weather on the day of issue, based on the telegraphic data; it has appeared regularly during the year. Certain copies of the Daily Weather Report are distributed without charge, namely, 7 to newspapers, 71 for public exhibition at seaports, 80 to Government offices and public institutions, 61 to correspondents of the Office, and 35 to foreign meteorological institutions. The issue to subscribers amounted to nearly 200 copies.
- Distribution of reports.**
- Weekly Weather Report.** The Weekly Weather Report, and the Monthly Appendices, contain Weekly and Monthly Summaries of the weather. Details as to these publications are contained in Part III., pp. 17, 18, and in Appendix VI., p. 63.
- Display of information in front of the Office.** *Display at the Meteorological Office in London of the Weather on British Coasts.*—At 9.30 a.m. and 3 p.m. every week day the substance of the reports received by telegraph, as to the state of the weather and of the sea at the following stations: Yarmouth, Dungeness, the Needles (Hurst Castle), Scilly, Holyhead, and Valencia Island, is conspicuously displayed on the balcony of the Office, at 63, Victoria Street, S.W. At the same hours charts are suspended in the portico of the street door, which exhibit the latest information. The Council have reason to believe that the public appreciates the opportunity thus afforded them of learning the state of the weather on the coasts.
- Forecasts for the Admiralty.** *Supply of Forecasts to the Admiralty.*—At the request of the Admiralty daily forecasts are regularly supplied to the Commander-in-Chief, at Devonport.
- Forecasts.** *Weather Forecasts.*—Forecasts are made three times a day, namely, at 11 a.m., at 3.30 p.m., and 8.30 p.m. The Forecasts, issued at 11 a.m., are based on the telegrams of observations made at 8 a.m., and refer to a period of 24 hours from noon on the day of issue. These Forecasts are exhibited at several places in London,* and are supplied to newspapers for their later editions. The

* Viz., in the City at the Mansion House, Lloyd's Rooms, Messrs. R. & J. Beck's, Cornhill, and Messrs. de la Rue & Co.'s, Bunhill Row; in the West End, in the Libraries of the House of Lords and the House of Commons, at Messrs. Elliott's, St. Martin's Lane; Messrs. Stanford's, Charing Cross; Messrs. Negretti & Zambra's, Regent Street; and Messrs. Pastorelli's, New Bond Street; and at the Office, 63, Victoria Street.

Forecasts issued at 3.30 p.m. are of especial value in relation to storm warnings. They are also of service in the special series of Hay Harvest Forecasts referred to on p. 12. The Forecasts at 8.30 p.m. are prepared for the next morning's newspapers. Each of the three Forecasts has its special applicability, and all of them are available to the public on inquiry at the Office either by letter, by telegram, or in person.

The inquiries received by telegram through the Post Office for special forecasts amounted during the year to 98, and the personal applications to 69. The rules of the Office relating to such inquiries are stated in Appendix VI., p. 67.

A comparison for the year of the Forecasts for the United Kingdom issued at 8.30 p.m. with the subsequent weather actually experienced is given in detail in Appendix VII. p. 68.

The complete success, partial success, partial failure, and complete failure of the forecast is estimated according to definite rules which are designed to eliminate bias as far as possible.

It will here suffice to state that partial success means that the Forecast was correct at more than half the places of observation situated in the district in question, and a similar interpretation is to be applied to the term partial in the case of the failures.

The detailed comparison of the Forecasts with actuality may be summarised as follows :—

SUMMARY of RESULTS of 8.30 p.m. FORECASTS, 1896-97.

Districts.	Per-centages.				Sum of Successes complete and Partial.
	Complete Success.	Partial Success.	Partial Failure.	Complete Failure.	
SCOTLAND, N. - -	55	28	12	5	83
" E. - -	50	32	12	6	82
ENGLAND, N.E. - -	56	25	13	6	81
" E. - -	58	26	12	4	84
MIDLAND COUNTIES	56	28	12	4	84
ENGLAND, S. - -	60	27	11	2	87
SCOTLAND, W. - -	47	28	18	7	75
ENGLAND, N.W. - -	55	24	14	7	79
" S.W. - -	57	26	11	6	83
IRELAND, N. - -	52	26	14	8	78
" S - -	49	28	16	7	77
Summary - -	54	27	13	6	81

In order to test the success of the Forecasts of the year in comparison with those of previous ones, the following table has been drawn up. It shows for each year of the decade 1887-96 the percentages of complete and partial success of the Forecast issued at

Results of
Forecasts.

8.30 p.m. It will be noticed that the highest degree of complete success was obtained in 1893.

PER-CENTAGES of SUCCESS in the FORECASTS for the whole of
the BRITISH ISLES.

Year.	Complete Success.	Partial Success.	Sum of Successes complete and Partial.
1887	52	32	84
1888	51	31	82
1889	49	32	81
1890	50	32	82
1891	50	30	80
1892	46	33	79
1893	59	25	84
1894	56	27	83
1895	55	25	80
1896	54	27	81
Average	52.2	29.4	81.6

Hay Harvest
Forecasts.

Hay Harvest Forecasts.—As in previous years the Council has, during the hay harvest, sent Daily Forecasts, without charge, to certain observers selected by the Royal Agricultural Society, the Royal Dublin Society, and the Highland and Agricultural Society. The Council makes it a condition for the supply of these forecasts, that the information shall be disseminated by the recipients as widely as possible, and that a record of the weather actually experienced shall be sent weekly to the Office. No application for the supply of these Forecasts was received from the Board of Agriculture in 1896.

LIST of RECIPIENTS of the HAY HARVEST FORECASTS in 1896.

Districts.	Recipients.	Address.
0. SCOTLAND, N.	Rev. Dr. Joass -	Golspic.
	Major Smith -	Munlochy, Inverness.
1. SCOTLAND, E.	T. Wilson -	Glamis Castle, by Forfar.
	C. Pirrie -	Rothiemay, Huntly.
	T. Bett -	Dalnaline, Aberfeldy.
2. ENGLAND, N.E.	Sir J. Wilson -	Chillingham Barns, Belford, Northumberland.
	J. Smith, F.R.H.S. -	The Ferneries, Ulceby.
3. ENGLAND, E.	W. Birkbeck -	High House, Thorpe, Norwich.
	Sir J. B. Lawes, Bt., and Sir J. H. Gilbert, Ph.D.	Rothamsted, Harpenden.
	Royal Agricultural College.	Cirencester.
4. MIDLAND COUNTIES	Major Fosbery -	Warwick.
	T. H. Thursfield -	Barrow, Broseley, Salop.
	E. E. Harcourt-Vernon	Grove Hall, East Retford.
	The South - Eastern Agricultural College.	Wye, near Ashford, Kent.
5. ENGLAND, S.	C. Whitehead -	Barming House, Maidstone.
	E. P. Squarey -	The Moot, Downton, Wilts.
	M. J. Sutton -	Kidmore Grange, Caversham.

Districts.	Recipients.	Address.	Hay Harvest Forecasts.
6. SCOTLAND, W.	W. Calder - -	Castle Hill, Dalreoch, Dumbar- barton.	
	Sir M. J. Stewart, Bt., M.P.	Ardwell, Stranraer.	
7. ENGLAND, N.W.	J. Forbes - -	Eallabus House, Islay.	
	Lord Egerton of Tatton	Tatton Park, Knutsford.	
	R. Metcalfe, M.D. -	Leyburn, Yorkshire.	
8. ENGLAND, S.W.	The Earl of Ducie -	Tortworth, Gloucestershire.	
	T. Dyke - -	Long Ashton, Clifton, Bristol.	
9. IRELAND, N.	R. Neville Grenville	Butleigh Court, Glastonbury.	
	E. F. Farrell - -	Moynalty, Co. Meath.	
10. IRELAND, S.	J. M. Wilson, J.P. -	Currygrane, Edgeworthstown.	
	D. A. Milward - -	Lavistown, Kilkenny.	
	W. Talbot Crosbie, D.L.	Ardfert Abbey, Tralee, Co. Kerry.	

The telegrams were sent daily for the period of about five weeks, commencing in some districts on June 1st. In certain cases, by special request, they were continued for a longer period. There were besides four who subscribed for the Hay Harvest Forecasts.

An estimate of the degree of success of the Forecasts was furnished by the recipients themselves. The following table, compiled from these estimates, contains a summary of the independent judgment of those to whom the telegrams were sent.

SUMMARY of RESULTS.—HAY HARVEST FORECASTS, 1896.

Districts.	Names of Stations.	Per-centages.				Sum of all Successes Complete and Partial.
		Complete Success.	Partial Success.	Partial Failure.	Complete Failure.	
SCOTLAND, N.	Munlochy and Golspie - - -	59	26	14	1	85
" E.	Aberfeldy, Glamis, and Rothiemay - -	50	29	16	5	79
ENGLAND, N.E.	Belford and Ulceby - - -	48	35	14	3	83
" E.	Rothamsted and Thorpe - - -	63	23	12	2	86
MIDLAND COUNTIES	Cirencester, East Retford, Warwick, Broseley.	64	31	5	—	95
ENGLAND, S. -	Maidstone, Downton, Caversham, and Wye.	68	28	4	—	96
SCOTLAND, W.	Ardwell, Islay, and Dumbar- barton - -	68	22	9	1	90
ENGLAND, N.W.	Leyburn and Knutsford - - -	62	29	9	—	91
" S.W.	Tortworth, Clifton, and Glastonbury -	55	38	6	1	93
IRELAND, N. -	Moynalty and Edgeworthstown - -	58	23	17	2	81
" S. -	Tralee and Kilkenny - - -	50	40	7	3	90
	Mean for all districts - - -	59	29	19	2	88

These figures show that 88 per cent. of the Forecasts were useful; the corresponding per-centage in 1895 was 89. Several of the recipients expressed in writing their satisfaction with the

accuracy of the Forecasts, and Mr. M. J. Sutton, of Caversham near Reading, added the remark that the messages "were greatly appreciated by his neighbours."

Storm
Warnings.

Storm Warnings for the Coasts of the United Kingdom.—Warnings of coming storms are despatched by telegraph to certain stations on the coast. These stations are supplied with signals which are hoisted as a warning to mariners of an expected storm. The signals are defined in Circular 717 of the Board of Trade, issued in February 1874.

A list of the stations is given in Appendix VIII., p. 69. At the end of March 1897, there were 215, of which 117 are in England and Wales, 63 in Scotland, 28 in Ireland, 4 in the Isle of Man, and 3 in the Channel Islands.

A comparison has been made in the Office between the warnings issued during the year and the subsequent weather actually experienced. The method of comparison is explained in Appendix VI., p. 67, and the results are exhibited in the following table:—

COMPARISON between the WARNINGS and the subsequent WEATHER in 1896.

Coasts.	Total No. of Orders to hoist and repetitions.	Warnings justified by subsequent gales. Force 8 and upwards.	Warnings justified by subsequent strong Winds. Forces 6 and 7.	Warnings not justified by subsequent Weather.	Warnings late. Force 9 reached at two Stations before issue.	Warnings partially late. Force 9 reached at one Station before issue.	Warnings late owing to Telegraphic Error.	Storms for which no Warning was issued.
Scotland, N.E.	46	32	8	4	—	2	—	Dec. 25.
" E.	36	13	17	6	—	—	—	—
" N.W.	45	29	12	3	—	—	—	Dec. 25.
" W.	40	25	10	5	—	—	—	—
Ireland, S.W.	36	25	7	1	—	3	—	Mar. 16.
" N.W.	43	35	6	1	—	1	—	—
Irish Sea	42	31	9	—	—	2	—	May 20.
St. George's Channel	31	21	10	—	—	—	—	Mar. 16.
Bristol Channel	30	25	4	—	—	1	—	Mar. 16.
England, S.W.	31	24	6	1	—	—	—	—
" S.	20	15	3	1	—	—	1	—
" S.E.	21	12	7	2	—	—	—	—
" E.	21	15	6	—	—	—	—	Nov. 8.
" N.E.	25	14	6	2	—	3	—	—
Totals	467	316	111	26	—	13	1	
Per-centages	—	67·7	23·8	5·6	—	2·7	0·2	

NOTES as to GALES EXPERIENCED in 1896, but for which no WARNING was issued.

March 16th.—A south-westerley gale. Ireland S.W., St. George's Channel, and Bristol Channel. Our N. and N.W. coasts were all warned on the morning of 15th but a new deep depression advanced rapidly to our W. coasts on the night of the 15th–16th, giving no definite indication of its approach at 6 p.m. 15th.

May 20th.—Irish Sea. A north-westerly gale. All the Scotch Storm Warnings. coasts were warned at 3 p.m. on 20th, but the gale extended farther to the southward along our north-western coasts than was anticipated.

November 8th.—A strong northerly gale on the E. and S.E. coasts of England. This was caused by a sudden deepening of a small depression which advanced over England from the north-westward. There was no indication of danger at 6 p.m. on the 7th.

December 25th.—A south-south-westerly gale in Scotland N.E. and N.W. This gale was not indicated by the observations at 8 a.m. on the 25th, and at 6 p.m. it was too late for warnings to be issued. At 2 p.m. the Office was not open.

The following table contains a statement of the amount of success of storm warnings in the decade 1887–96. It will be seen that the warnings were very successful although slightly less so than in 1894, while the per-centage of warnings not justified by subsequent weather was the lowest on record, being only 2·9. Comparison of results for 1896 with previous years.

Years.	Total No. of Warnings issued.	Warnings justified by subsequent Gales.	Warnings justified by subsequent strong Winds.	Total Warnings justified.	Warnings not justified by subsequent Weather.
		p.c.	p.c.	p.c.	p.c.
1887	472	55·5	26·1	81·6	16·4
1888	539	55·3	28·6	83·9	14·3
1889	373	47·7	33·5	81·2	16·9
1890	525	61·0	25·5	86·5	9·3
1891	522	62·3	24·5	86·8	7·5
1892	488	59·4	31·2	90·6	6·8
1893	480	60·8	28·6	89·4	7·1
1894	502	68·5	23·5	92·0	6·0
1895	523	63·3	26·4	89·7	8·0
1896	467	67·7	23·8	91·5	2·9

Fishery Barometers.—Barometers have for many years been lent by the Office to fishing villages and other places on the coast, for the benefit of sailors and fishermen. A list of the stations thus provided is given in Appendix IX., p. 71. There are 214 stations of this kind, of which 67 are in England, 7 in Wales, 62 in Ireland, 73 in Scotland, 4 in the Isle of Man, and 1 in Jersey.

PART III.

CLIMATOLOGY.

I.—BRITISH ISLES.

Meteorological observations of the highest refinement and completeness entail considerable expense, and the service of highly trained observers. It has, therefore, been the policy of the Office Climatology.

Climatology.

to subsidise and to maintain an intimate relationship with a small number of observatories of the highest class. The data derived from these stations are used in investigations, which require minute and continuous knowledge of the several meteorological elements. These stations are, however, too widely scattered to afford a good general representation of the winds, barometric pressure and sunshine, and it has accordingly been found necessary to supplement them by certain other "anemographic," "barographic," and "sunshine" stations.

The distribution required for representing the climate of these islands differs from that needed for the immediate forecasting of the weather. For the latter purpose, therefore, the Office is in communication with the "Telegraphic Reporting Stations" referred to in Part II.

The climate of Great Britain and Ireland is very diverse and fortunately there are throughout the country many stations where good meteorological observations are made by volunteer observers. Such of these stations as furnish the Office with observations are classified as stations of the second and third order.

This classification does not connote any defect of quality in the observations, but depends merely on the amount of information furnished to the Office. Thus the Observatory at Bidston, Liverpool, and the Radcliffe Observatory at Oxford are ranked as of the second order, although their equipment and the quality of work is of the first order.

A list of all the stations is given in Appendix XI. (p. 76). Certain letters are attached to each station, which indicate the nature of the information supplied to the Office. From what has been just stated it will have appeared that the observatories may be classified in seven categories; but an examination of the list in Appendix XI. will show that the categories to a certain extent over-lap, so that the same station may occur in two of them.

The seven categories are as follows:—

Observatories
of first order.

1. *Observatories of the First Order*, subsidised by the Office, and furnishing continuous photographic records of the barometer and thermometer, and continuous records of rainfall, wind, and sunshine with frequent eye observations of the weather and of the kind and amount of cloud.

Anemographic
Stations.

2. *Anemographic Stations* which furnish continuous records of the direction and force of the wind. These records are often of use in affording evidence in courts of law; they are regularly employed in checking the accuracy of the storm warnings.

Barographic
Stations.

3. *Barographic Stations* which furnish continuous records of the aneroid barometer.

Sunshine
Stations.

4. *Sunshine Stations* which furnish continuous records of bright sunshine. At most of these the record is made by the Campbell-Stokes instrument, of which an account was given in the Annual Report of the Office for 1879 (p. 32.)

The stations of the categories 2, 3, and 4 are of especial service in matters which relate to the weather as distinguished from climate.

5. *Telegraphic Reporting Stations* which furnish the data for the forecasts and storm warnings, as explained in Part II. Telegraphic Reporting Stations.

6. *Stations of the Second Order* which furnish complete climatological data. The observations are taken twice a day, and the observers are volunteers. Second Order Stations.

7. *Stations of the Third Order* which resemble those of the second order, except that the information sent to the Office is less full. Third Order Stations.

An account of the methods employed by the Office in dealing with all these records is given in Appendix X., p. 72.

The stations may be summarised as follows :—

Class.	Description.	Number.
1	Observatories - - - -	7
2	Anemographic stations - - -	15
3	Barographic (Aneroid) stations - -	15
4	Sunshine stations - - - -	62
5	Telegraphic stations - - - -	30
6	Second Order stations - - - -	79
7	Third Order stations - - - -	61

Inspection of the Stations.—The stations classified under the heads 1–5 are visited regularly by the Inspectors of the Office. Inspection of Stations.
The stations of Class 7 are inspected as opportunity offers. Some of the stations of Class 6 belong to the Royal Meteorological Society, and are visited by an Inspector appointed by that Society. In accordance with the recommendation of the Treasury Committee (1877) a contribution towards the cost of these inspections is made by the Office. The rest of the stations of Class 6 are visited, in most cases annually, by the Inspectors of the Office. The inspection of the seven principal observatories and of some of the anemographic stations was carried out by Messrs. T. W. Baker and E. G. Constable, of the Kew Observatory.

Extracts from the reports of the Inspectors are given in Appendix V., p. 33.

Information supplied to the General Register Office, Dublin. Reports supplied to Registrar General for Ireland.
—Reports from the Irish stations have been supplied regularly to the Registrar General for Ireland, for his Weekly and Quarterly Returns.

Details as to the Weekly Weather Report, which is prepared in the Telegraphic Branch of the Office, are given in Appendix VI. Publications. Weekly.
It supplies, by its synchronous daily charts and Monthly Summaries, an instructive view of the meteorological changes, day by day, over the greater part of Europe.

Appendix I. of the Weekly Weather Report for 1896 gives a summary for each quarter, and for the whole year, of the Rainfall and Temperature in each district, for the 31 years, 1866–1896, and also the Monthly and Progressive values of “Accumulated Heat,” Rainfall, and Bright Sunshine for all the districts in each month of 1896.

Publications.

Weekly.

Appendix II. to the same Report gives in continuation of the similar Appendices for 1895, the Weekly and Progressive values of the same elements during the year 1896.

Appendices III. and IV. give similar values for each week for the whole period 1881-1895, and for the three lustra therein contained.

The Preface also contains Tables of the mean values of Temperature, Rain, and Bright Sunshine for the longest period available in each case.

Hourly Means of Meteorological Observations.

Hourly Means of Meteorological Observations.—The Volume of Hourly Means for five of the first-class observatories for 1893 has appeared and that for 1894 is in the press. These volumes give hourly means, or totals, of pressure, temperature, wind force, rain and sunshine for periods of five days, and for the months and whole year.

The Council have in view the computation of the harmonic components of the diurnal curves of pressure and temperature from these values.

Publication of observations.

Observations at Stations of the Second Order.—The volumes for 1892 and 1893 are now issued, and that for 1894 is far advanced.

The form of this publication remains unchanged. It comprises, first, the actual observations at 9 a.m. and 9 p.m. at 21 stations, printed on a modification of the form A., adopted for International use by the Meteorological Congress at Rome, 1879—and, secondly, the Monthly Means and Summaries at stations printed in the form B. also adopted by the same Congress, together with an Annual Summary for all stations, and a Return of Bright Sunshine.

The stations published on form A. for 1893 differ from those for 1892 by the substitution of Plymouth for Babbacombe, where the observations have been discontinued.

Babbacombe now disappears also from form B. list, and Seaham Harbour, and Sheffield (Weston Park Museum), appear there for the first time.

The volume for 1894 is now passing through the press. It differs from the volume for 1893, in that Carmarthen disappears from the form A. list, and is replaced by St. David's. Carmarthen also disappears from the form B. list, while Ben Nevis, Heysham Hall (Morecambe Bay), and Bramley, Surrey, are added to it.

II.—FOREIGN and COLONIAL STATIONS.

Foreign and Colonial Stations.

Observations made at various Foreign and Colonial Stations are frequently received at the Meteorological Office.

During the year 46 such returns have come in, and a list of them is contained in Appendix XII., p. 82.

In most cases the observations were taken twice a day, and the results are dealt with in the same way as those from Stations of the Second Order in Class 6 above. Continuous records of bright sunshine were received from Georgetown (Demerara) and from Trinidad.

The meteorological results given in the Cyprus Blue Book, refer to six stations in the island. The tables continue to be constructed in the Office. Foreign and Colonial Stations.

Returns from foreign and colonial stations are published from time to time. Observations from Cape Juby on the N.W. coast of Africa, from Georgetown (Demerara), and from Malta, are now being prepared for publication.

PART IV.

MISCELLANEOUS INVESTIGATIONS AND ADMINISTRATION.

Anemometer Experiments.—Mr. Dines' pressure-tube anemometers at Holyhead and Scilly, mentioned in the last Report, have already yielded interesting results. Anemometer Experiments.

The pressure-tube anemometer which formerly stood on the roof of the Meteorological Office has been removed, and is now erected on the roof of the Kew Observatory.

The pressure-plate anemometer, referred to in the last Report and intended for use at Holyhead in conjunction with the bridled and pressure-tube anemometer, is finished and will be put up shortly. It is designed to register the maximum pressure during gales, and will be put in action when there is reason to expect violent squalls.

Measurement of Earth Temperature.—Since mercury thermometers are not well adapted for measurement of earth temperatures, experiments have been carried on at Kew Observatory with Callendar and Griffith's electrical resistance thermometers. The instrument is admirably adapted for the objects in view, but the cost is so high that observations can be undertaken at a few stations only. A considerable degree of skill is required for the manipulation of the most refined form of these thermometers, but the Council have reason to hope that a simpler and sufficiently accurate method of taking the readings may be devised, and that the instrument may then become more generally available. Earth Temperatures.

Rainfall Means for the British Islands.—Parts I., II., and III. have been printed. The last part is followed by an alphabetical index of all the stations for which data exist, either in the present or the previous publication. The work will be illustrated by maps, which give the average annual rainfall at each station for the decade 1881-90, and also show the limits of the principal river basins. Rain Tables for the British Isles.

The hourly results of the continuous rain records at the seven original observatories have now been calculated for the twenty years 1871-90, and will be published in the course of the coming year.

THE LIBRARY, &c.

The library contains standard works and serial publications on Meteorology and the allied Sciences. It consists at present of Library.

Library.

about 14,000 volumes and pamphlets, there are besides many charts and MS. records of observations. The library at the Office is accessible to students engaged in meteorological investigations.

The catalogue is arranged both under authors' names and subjects, and each work is now entered on a card as soon as received.

Appendix XIII., p. 85, contains a list of the additions to the library during the year.

Appendix XV., p. 108, gives a list of the important contributions to meteorology which have appeared in the various reports issued by the Office since 1866.

Appendix XVI., p. 113, gives a catalogue of publications issuing from the Office.

EXPENDITURE.

Financial.

Appendix XIV., p. 107, shows the receipts and payments during the year ending 31st March 1897. The amount voted by Parliament was 15,300*l.*, as in the previous year, and the miscellaneous receipts amounted to 931*l.* 8*s.* 6*d.*

The following abstract of expenditure shows the true charge against the Parliamentary grant of this and the preceding year, together with the increase or decrease in 1896-97, as compared with the previous year:--

NET EXPENDITURE.	1895-96.	1896-97.	Increase.	Decrease.
GENERAL ADMINISTRATION:				
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
<i>Payment of Council</i> -	991 5 0	991 5 0	—	—
<i>Secretary</i> -	800 0 0	800 0 0	—	—
<i>Office</i> -	904 10 9	945 8 0	40 17 3	—
<i>Rent, fuel, and lighting</i> -	703 15 6	714 12 11	10 17 5	—
<i>Alterations to premises and contingencies</i> -	340 13 5	273 15 8	—	66 17 9
<i>Expenses incidental to International Meteorological Congress</i> -	4 18 0	23 10 8	18 2 8	—
<i>Pensions</i> -	144 0 0	144 0 0	—	—
SPECIAL RESEARCHES -	826 9 0	752 3 5	—	84 5 7
LAND METEOROLOGY -	3,662 15 11	3,572 7 6	—	90 8 5
WEATHER INFORMATION -	3,785 9 9	3,775 9 1	—	10 0 8
INSPECTIONS -	519 4 0	445 17 0	—	73 7 0
OCEAN METEOROLOGY -	2,493 11 11	2,396 17 11	—	96 14 0
Total -	£ 15,186 13 3	14,835 7 2	70 7 4	421 13 5

In the year 1896-97 the sum of 1,725*l.* 8*s.* 7*d.* was paid to the Post Office on account of inland and foreign telegrams, allowances to telegraph clerks, rental of private wires, &c.

30th June 1897.

(Signed) R. STRACHEY,
Chairman.

APPENDIX.

APPENDIX I.

LIST of CAPTAINS and OFFICERS who have sent in Logs classed as "Excellent" during the year ending March 31, 1897. Figures are attached to the name of each observer to show the number of "Excellent" logs which he has supplied during the whole time of his co-operation with the Office.

Name of Captain or Officer.	Number of "Excellent" Logs.	Ship.
Alford, F. - - -	4	S S. "Monarch."
Alsop, J. J. - - -	1	Barque "Brussels."
Andersen, O. E. - - -	16	S.S. "Longhirst."
Angus, T. S. - - -	14	S.S. "Ballarat."
Atkinson, G. W. - - -	16	S.S. "Valetta."
Balfour, Comr. A. F., R.N. -	27	H.M.S. "Penguin."
Beeching, C. - - -	1	Barque "Ellesmere."
Bolton, S. H. - - -	22	S.S. "El Dorado."
Brewis, Sub-Lieut. C. R. W., R.N.	2	H.M.S. "Penguin."
Bright, H. - - -	11	Barque "Beltana."
Cheshire, G. H. - - -	6	S.S. "Aldgate."
Docherty, H. - - -	7	Barque "Tinto Hill."
Dupen, P. P. - - -	4	S.S. "Cabenda."
England, T. - - -	18	Barque "Glen Grant."
Field, A. M., R.N. - - -	17	H.M.S. "Penguin."
Free, T., R.N.R. - - -	4	S.S. "Port Chalmers."
Gadd, C. - - -	1	S.S. "Valetta."
Gibson, J. H. - - -	4	S.S. "Wydale."
Glossop, Lieut. H. A. P., R.N.	6	H.M.S. "Rambler."
Goodrham, H. - - -	4	S.S. "Woolloomooloo."
Gubbins, Lieut. G. W., R.N. -	4	H.M.S. "Penguin."
Guy, W. - - -	1	S.S. "Nova Zembla."
Howard, Lieut. and Comr. W. V. S., R.N.	5	H.M.S. "Dart."
Jamieson, D. E. - - -	3	S.S. "Port Chalmers."
Lobb, Staff-Comr. F. J., R.N. -	2	L.H. Tender "Richmond."
May, Sub-Lieut. F., R.N. -	1	H.M.S. "Dart."
Milican, J. W. - - -	13	S.S. "Loughrigg Holme."
Milne, W. F. - - -	12	S.S. "Eclipse."
Milner, W. H. - - -	24	S.S. "Pará."
Mitchell, J. - - -	5	Barque "Cape York."
Moignard, P. - - -	9	Ship "Garsdale."

Name of Captain or Officer.	Number of "Excellent" Logs.	Ship.
Morton, J. - - -	1	S.S. "Tartar."
Mullan, F. C., F.R.G.S. - -	2	S.S. "Romney."
Murdoch, P. - - -	17	Ship "Sierra Lucena."
Murray, A. - - -	4	Barque "Perseverance."
Nedden, H. zur - - -	6	S.S. "Madeline."
Norman, F. - - -	9	Ship "Milton Stuart."
Peebles, R. - - -	20	S.S. "Breconshire."
Penfold, Lieut. L. D., R.N. -	3	H.M.S. "Stork."
Price, J. H. - - -	10	Ship "Othello."
Randall, W. - - -	16	Ship "Laomene."
Renaut, W. - - -	2	Ship "Timaru."
Richards, Comr. G. E., R.N. -	6	H.M.S. "Rambler."
Sargent, A. H. - - -	10	Ship "Pleione."
Simpson, Alexander - - -	23	S.S. "Thermopylæ."
— Alexander - - -	27	S.S. "Traveller."
Simpson, Lieut. and Comr. C. H., R.N. - - -	3	H.M.S. "Stork."
Thomas, H. G., R.N.R. - - -	5	S.S. "Yarrawonga."
Trott, S., F.R.Met.Soc. - -	33	S.S. "Minia."
Tuke, F. M. - - -	4	S.S. "Ormuz."
Weir, W. R. - - -	1	Ship "Loch Ryan."
Worcester, W. D. G., R.N.R. -	6	S.S. "Victoria."

APPENDIX II.

LIST of METEOROLOGICAL LOGS and DOCUMENTS received from SHIPS.

Captain's Name.	Ship.	Voyage.	Year.	Officers who have assisted in keeping the Meteorological Register.
Alford, F.	H.M.T.S. Monarch	Off coasts of British Isles	1895-96	F. Bourdeaux and other officers.
Alsop, John J.	Barque Brussels	Brisbane	1896-97	—
Andersen, O. E.	S.S. Longhirst	Pernambuco and New York	1895-96	—
"	"	East Coast of North America	1896	1st and 2nd officers.
Angus, T. S.	S.S. Ballaarat	Sydney, via Suez	1896	E. Williamson, 4th Officer, E. Hurleston, 5th officer, and W. J. Hinks, 6th Officer.
"	"	"	1896	T. W. Bennett, 4th Officer, E. Williamson, 5th Officer, and S. S. Higgins, 6th Officer.
"	"	"	1896-97	E. Williamson, 4th Officer, W. A. Faulkener, 5th Officer, and H. J. Feakes, 6th Officer.
Atkinson, G. W., F.R.Met.Soc.	S.S. Valetta	Sydney, via Suez	1896	Messrs. Tyers, Baker, and Hay.
"	"	"	1896	J. Bennett, F. Hutchinson, and W. Hallam.
W. T.	S.S. Benedick	China, India, and Mauritius, via Suez	1895-97	S. Williams, C.O., and C. Owen, 2nd Officer.
Aubin, F. P.	S.S. Port Melbourne	New Caledonia, via Cape Town	1896	A. E. Sprosen, 1st Mate, F. A. Peake, 2nd Mate, and C. A. Rowlinson, 3rd Mate.
"	"	Australia, via Cape, and home, via Suez	1896-97	A. E. Sprosen, Mate, F. W. S. Peake, R.N.R., 2nd Mate, and C. A. Rowlinson, 3rd Mate.
Bain, David	Ship Orontes	Melbourne	1895-96	J. C. Kerr, 1st Mate, H. P. Joseph, 2nd Mate.
Balfour, Com. A. F., R.N.	H.M.S. Penguin	At Australian station	1894-96	Lieut. G. W. Gubbins, R.N.
Barker, D. Wilson, R.N.R.	School Ship Worcester	Off Greenhithe	1896	The Cadets.
Barr, I.	S.S. Orestes	China, via Suez	1892	—
Barr, John	Ship Falls of Foyers	Calcutta and New York	1895-96	Fred. Title, Chief Officer, and J. W. Read.
Bartlett, T.	S.S. Achilles	China, via Suez	1893	—
Barwise, Jeremiah	S.S. Telemachus	Batavia, via Suez	1894	—
Beeching, Charles	Barque Ellesmere	San Francisco	1895-96	—

LIST of METEOROLOGICAL LOGS and DOCUMENTS received from SHIPS—continued.

Captain's Name.	Ship.	Voyage.	Year.	Officers who have assisted in keeping the Meteorological Register.
Bell, C. H.	S.S. Laconia	Alexandria	1896	Henry Evans, 2nd Officer.
"	"	Mediterranean Ports	1896	"
Blair, James	Barque Loch Rannoch	Adelaide	1896-97	"
Bolton, S. H.	S.S. El Dorado	Spanish Ports, &c.	1895-96	W. Holms-Paisley, T. McClements, 1st Mate, and D. Campbell, 2nd Mate.
"	"	Continental Ports	1896	G. R. Anstice, Chief Officer.
Brander, J.	R.M.S. Thames	River Plate	1897	"
"	"	"	1896	"
Bright, H.	Barque Beltana	Adelaide	1896	"
Bulkeley, T. D.	S.S. Atrato	West Indies	1896-97	J. W. Budgen and W. Mulley.
Burton, G.	S.S. Rangatira	Auckland, via Cape Good Hope, and home, via Cape Horn.	1896-97	H. J. Bennett, 3rd Officer, F. J. Sweeting, 4th Officer, and F. S. Little, 5th Officer.
Burton, Thomas	Ship Crusader	New Zealand	1895-96	"
Catrall, C.	Ship Loch Lomond	Melbourne	1895-96	"
Chesshire, G. H.	S.S. Aldgate	New Orleans and Monte Video	1895-96	C. Louis, 1st Officer, C. Oldham, 2nd Officer, and V. Holyoake, 3rd Officer.
Combe, Lieut. and Comr. J. W., R.N.	H.M.S. Waterwitch	West Coast of Africa, Simons Bay, Hobart, Sydney, and Fiji.	1894-95	Sub-Lieut. W. T. P. Wilson, R.N.
Davies, J. A.	S.S. Oanfa	China and Japan, via Suez	1896	F. Skeggs.
"	"	China, via Suez	1896-97	R. J. Woodget.
Davis, G. W.	S.S. Alberta	New York, Cape Town, and New Orleans	1896	Harold Davie, Chief Officer; assisted by T. Younghusband, 2nd Officer.
Day, R.	S.S. Deucalion	Batavia, via Suez	1894	"
De Horne, M.	S.S. Carthage	Bombay, via Suez	1896	W. R. Calder, and C. F. Winthrop.
"	"	"	1896	" 5th Officer.

Dickens, E. G.	S.S. Diomed	-	China, via Suez	-	1893	H. J. Bennett, 3rd Officer, F. J. Sweeting,
Dickinson, L. R.	S.S. "Atrato"	-	West Indies	-	1896	4th Officer, and F. S. Little, 5th Officer.
"	"	-	"	-	1896	H. G. Roberts, 4th Officer, and H. E. F. Paterson.
Doeherty, Hugh	Barque Tinto Hill	-	Rio Janeiro, Batavia, and Boston	-	1895-96	E. A. Dent, 2nd Mate.
Dupen, P. P.	S.S. Cabenda	-	West Coast of Africa	-	1896	C. C. Boase, 2nd Officer.
"	"	-	"	-	1896	"
"	"	-	"	-	1896	J. Lennox.
Edwards, John T.	Barque Dumfrieshire	-	To Sydney	-	1895	A. W. Trant, 1st Mate, and W. H. Simpson, 2nd Mate.
England, Thomas	Barque Glen Grant	-	Apalachicola	-	1895-96	
Field, A. M., R.N.	H.M.S. Penguin	-	At Ellice Islands and Fiji	-	1896	Sub-Lieut. C. R. W. Brewis, R.N.
"	"	-	South Pacific	-	1896	"
Forsdick, J. P.	Ship Waitangi	-	New Zealand	-	1895-96	S. Thomas, Chief Officer, and S. Muir, 2nd Officer.
Forth, J. W.	S.S. Galileo	-	New York	-	1896	A. E. Booth, 2nd Officer.
Free, Thomas, R.N.R.	S.S. Port Chalmers	-	Melbourne, via Suez	-	1895-96	Walter Plugge, 1st Officer, Frederick Tunbridge, 2nd Officer, and E. N. Lewer, 3rd Officer.
Gadd, Chas.	S.S. Valetta	-	Sydney, via Suez	-	1896-97	J. de C. Gibbons, 6th Officer, assisted by A. P. Parneter, 4th Officer, and W. W. Hallam, 5th Officer.
Gibson, J. H.	S.S. Wydale	-	New Orleans, and Newport News	-	1895-96	T. Sutton and J. Donovan.
"	"	-	New Orleans	-	1896	
Goodrham, H.	S.S. Woolloomooloo	-	Adelaide, via Cape Good Hope, and home, via Suez.	-	1896	A. Rogers, Chief Officer, H. Reay, 2nd Officer, P. Moore, 3rd Officer, and T. Tucker, 4th Officer.
"	"	-	"	-	1896	Alf. Rogers, H. Reay, E. Tucker, and C. Trumper.

LIST of METEOROLOGICAL LOGS and DOCUMENTS received from SHIPS—continued.

Captain's Name.	Ship.	Voyage.	Year.	Officers who have assisted in keeping the Meteorological Register.
Goodwin, J. H.	S.S. Hector	Batavia, via Suez	1893	—
"	S.S. Ajax	China, via Suez	1894-95	—
Goulding, William	Barque Cardigan Castle	Adelaide	1895-96	T. W. Sanderson, 1st Mate, Cyril Whyte, 2nd Mate.
Granger, Alexander	Ship Earl of Zetland	Melbourne, San Diego, Oregon	1894-96	John A. Thomson, Mate.
Grey, Robert, R.N.R.	S.S. Amber	Perim, &c. via Suez	1896	W. F. R. Mist, J. Gibson, and G. C. Hogg.
Grier, J.	S.S. Laertes	China, via Suez	1894	—
Griffin, E. J., R.N.R.	R.M.S. Moor	Cape Town	1896	Officers.
"	"	"	1896-97	Officers.
Griffiths, William	Barque Cambrian	Adelaide, Newcastle (N.S.W.), Callao	1895-96	—
Guy, William	S.S. Nova Zembla	Davis Straits and Melville Bay	1896	John J. Cooney, Mate.
Heal, John C.	Ship Parthenope	Melbourne	1895-96	—
Hepworth, M. W. C., R.N.R.	S.S. Port Melbourne	To Fremantle, via Cape Good Hope	1896	—
Hillecoat, C. H.	S.S. Britannia	Calcutta, via Suez	1896	A. E. Sprosen, 1st Mate, F. A. Peake, 2nd Mate, C. A. Rowlinson, 3rd Mate.
"	"	Bombay, via Suez	1896	John M. Tulloch.
Howard, Lieut. and Comr. W. V. S., R.N.	H.M.S. Dart	Off Queensland	1896	2nd Officer. Sub-Lieut. F. May, R.N.
Howe, Percy B. F.	Ship Roderick Dhu	To San Francisco	1895-96	H. B. Harvey.
Jackson, C.	S.S. Palamed	China, via Suez	1892-94	—
"	S.S. Priam	"	1894	—
"	S.S. Telamon	"	1893-94	—
"	S.S. Palinurus	"	1893-94	—
Jamieson, D. E.	S.S. Port Chalmers	Sydney, via Cape Good Hope, and home, via Suez.	1896	Frederick Tunbridge, assisted by W. Plugge and E. N. Lewer.

Jensen, J.	-	Ship Routenburn	-	From San Francisco	-	1896	—
Jones, Henry	-	S.S. Tantalus	-	China, viâ Suez	-	1893	—
Kerr, John J.	-	S.S. Cascapædia	-	Monte Video, &c.	-	1896	A. Paine, Chief Officer, and J. T. Beckerleg, 2nd Officer.
Lapage	-	S.S. Ulysses	-	China, viâ Suez	-	1893-94	—
Latta, William	-	Ship Lauriston	-	San Francisco, Sydney, Newcastle (N.S.W.)	-	1895-97	Messrs. Robert Beatty, Mulqueen, Goodwin and Douler.
Lobb, Staff	Com-	L.H. Tender Richmond	-	Nassau, Bahamas	-	1896	F. W. Holden, Chief Officer.
mander, F. J., R.N.	-	Ship Eaton Hall	-	Los Angeles and Tacoma	-	1895-96	John Montador, 3rd Officer, Robert M. Farquhar, 4th Officer, Henry Baxendale, and James Kelland, Apprentices.
Lrison, G. M.	-	S.S. Duffield	-	Philadelphia	-	1896	F. A. White.
Lowe, James	-	"	-	"	-	1896	"
"	-	"	-	"	-	1896	"
Martin, T. C.	-	Ship Loch Tay	-	Melbourne	-	1895-96	—
Milburn, B.	-	Barque Lalla Rookh	-	Valparaiso	-	1895-96	—
Miller, A. T., R.N.	-	School Ship Conway	-	Off Rock Ferry, Cheshire	-	1896	The Cadets.
Millican, J. W.	-	S.S. Loughrigg Holme	-	East Coast of North America	-	1895-96	Messrs. S. J. Holm, J. Eland, and Richmond.
"	-	"	-	Quebec and Genoa	-	1896-97	S. J. Holm and J. Eland.
"	-	S.S. Eclipse	-	Davis Straits	-	1896	—
Milne, W. F.	-	R.M.S. Pará	-	West Indies	-	1896	Charles Doucett, 3rd Officer.
Milner, W. H.	-	"	-	"	-	1896	Messrs. Lewis, 2nd Officer, and Brander, 3rd Officer.
"	-	"	-	New York and Mediterranean Ports	-	1896-97	W. O. Lewis, R.N.R., 2nd Officer.
"	-	S.S. California	-	San Francisco	-	1896	—
Mitchell, George	-	Barque Cape York	-	Newcastle, N.S.W., viâ Cape and Valparaiso	-	1895-96	C. W. Darling, Chief Mate, Charles Ogilvie, 2nd Mate, and W. E. Edwards, 3rd Mate.
Mitchell, John	-	Ship Garsdale	-		-		T. Sullivan, Chief Officer.

LIST of METEOROLOGICAL LOGS and DOCUMENTS received from SHIPS—continued.

Captain's Name.	Ship.	Voyage.	Year.	Officers who have assisted in keeping the Meteorological Register.
Morton, J.	R.M.S. Tartar	Cape Town, &c.	1896-97	G. R. P. Thwaites.
Moseley, F. J., R.N.R.	S.S. Trojan	Cape Town	1896	Bertram E. Dowse and F. Girdler Brown.
Mullan, F. C., F.R.G.S.	S.S. Romney	China and Japan, via Suez	1895-96	John Hunter, Mate, E. Holmes, 2nd Officer, and R. Hurford, 3rd Officer.
Murdoch, Peter	Ship Sierra Lucena	Mauritius and Bassem	1895-96	N. P. Pilcher.
Murray, A.	Barque Per-severance	Hudson's Bay	1895-96	—
Nedden, H. zur	S.S. Madeline	India, via Suez	1895-96	N. Traill, 2nd Mate.
"	"	New York, Savannah, and home	1896	—
"	"	East Coast of North America	1896-97	N. Traill, 2nd Mate.
Nelson, R.	S.S. Myrmidon	China, via Suez	1893-94	—
Nish, H.	S.S. Cyclops	China, via Suez	1891	—
"	S.S. Ixion	China, via Suez	1893-94	—
Norman, Francis	Ship Milton Stuart	Calcutta and New York	1895-96	—
Page, R. E.	S.S. Gabileo	New York	1896	A. E. Booth, 2nd Officer.
Pattman, R.	Barque Loch Torridon	Cape Town, Melbourne, and Newcastle, N.S.W.	1895	C. Robey, 1st Mate, and D. Bridger, 2nd Mate.
Peebles, R.	S.S. Breconshire	China and Japan, via Suez	1896	G. Elliott and A. N. Mell.
"	"	East Coast of North America	1896	George Elliott.
Pitts, F.	S.S. Saladin	Singapore and Fremantle	1890	—
Price, J. H.	Ship Othello	Newcastle (N.S.W.) and Caldera (Chile)	1895-96	—
Pritchard, B. W. S.	Barque Banffshire	Sydney to Mauritius and Lisbon	1893-94	—
Purdy, Thomas	S.S. Dardanus	China, via Suez	1892-93	—
Randall, W.	Ship Laomere	San Francisco	1895-96	Mr. Labatt, 1st Mate.
Renaut, W.	Ship Timaru	Lyttleton	1896	Hugh W. Gray, and A. E. Bennett.
Richards, Comr. G. E., R.N.	H.M.S. Rambler	Off East Coast of North America	1896	Lieut. H. A. P. Glossop, R.N.
"	"	Jamaica, Belize, and Bermuda	1896	"
"	"	Halifax, Bermuda, Jamaica, and Belize	1896-97	"

Riley, J.	S.S. Teucer	-	China, viâ Suez	1893	William Gill, 2nd Officer.
Rogers, B. H.	S.S. Lorenzo	-	Kurrachee, Alexandria	1896	
Rorison, I.	S.S. Anchises	-	Batavia, viâ Suez	1894	
Rudge, H.	R.M.S. Elbe	-	East Coast of South America	1896	P. Moore and E. J. Miall.
Rudge, H. E.	S.S. Trent	-	Brazil	1896	E. J. Miall and C. Garden.
Russell, Edward	Barque Rontenbeck	-	Honolulu, Esquimalt, Iquique, and Philadelphia.	1894-96	Alfred Coulsting, 2nd Mate.
Sargent, A. H.	Ship Pleione	-	Wellington	1895-96	G. Wood, Chief Officer, and F. Roads, 2nd Officer.
Seator, George T.	Ship Barfillan	-	San Francisco	1895-96	William Arthur, Chief Officer, and S. Taylor, 2nd Officer.
Simpson, Alexander	S.S. Thermopylæ	-	Melbourne, viâ Cape Town	1896	W. Douglas, Chief Officer, J. Paterson, 2nd Officer, and H. Trowbridge, 3rd Officer.
"	"	-	"	1896	W. Douglas, J. Paterson, and H. Trowbridge.
Simpson, Alexander	Barquentine Traveller	-	Ivigtut	1896	
"	H.M.S. Stork	-	At Malta	1896	
"	"	-	In Mediterranean	1895-96	Lieut. Lewis D. Penfold, R.N.
"	"	-	"	1896	"
Singer, P.	S.S. Den of Airlie	-	Bombay, viâ Suez	1896	"
"	"	-	"	1896	F. T. Woolcott, 3rd Officer.
Steeves, T. G.	S.S. Bellerophon	-	Batavia, viâ Suez	1896	"
"	S.S. Agamemnon	-	China viâ Suez	1894	"
Suffern, Robert	Barque Craigerne	-	Rio Janeiro, Newcastle (N.S.W.), and Toppilla (Chili).	1895	
"	"	-	"	1895-96	G. M. Collie, 1st Officer, and W. Buchanan, 2nd Officer.
Thomas, H. G., R.N.R.	S.S. Yarrowonga	-	Adelaide, viâ Cape, and home, viâ Suez	1896	S. Pidgeon, 2nd Officer, L. Gibbs, 3rd Officer, and H. Sandeman, 4th Officer.
"	"	-	Sydney, viâ Cape Town, and home, viâ Suez	1896	Messrs. Gibbs, 2nd Officer, Free, 3rd Officer, and Sandeman, 4th Officer.
Towell, W.	S.S. Jason	-	Batavia, viâ Suez	1894	
Trenaman, R. W.	S.S. Pascal	-	Monte Video and New York	1892-93	

LIST of METEOROLOGICAL LOGS and DOCUMENTS received from SHIPS—continued.

Captain's Name.	Ship.	Voyage.	Year.	Officers who have assisted in keeping the Meteorological Register.
Trenaman, R. W.	S.S. Lassell	Rio Janeiro, St. Lucia, New York	1896-97	A. Gittins, 2nd Officer.
Trott, Samuel, F.R.Met.Soc.	S.S. Mimia	On East Coast of North America	1895-96	W. G. Squares, Chief Officer.
"	"	At Halifax and home	1896	W. G. Squares, Chief Officer, J. Adams, Navigating Officer, and J. Crasso, 2nd Officer.
"	"	In the North Atlantic	1896-97	E. J. Tayler, assisted by F. W. Kershaw and G. H. Jones.
Tuke, F. M.	R.M.S. Ormuz	Sydney, via Suez	1896	A. W. Thomson.
"	"	"	1896	John H. Kerbey.
Turner, A. C., R.N.R.	S.S. Britannia	New York	1896	"
Tyson, John	S.S. Guelph	Cape Town	1896	"
"	"	"	1896	"
Watt, H. F.	Barque Elissa	Brazil, Barbados, and Mexico	1895-96	G. McLeod and A. J. Sharples.
Weir, W. R.	Ship Loch Ryan	Melbourne	1895-96	A. V. Brander, Chief Officer.
"	"	"	1896-97	"
Williams, G. F.	Barque Salamanca	Sydney and Valparaiso	1895-96	"
Williams, O. P.	S.S. Agamemnon	China, via Suez	1893-94	"
Wilson, John, R.N.R.	S.S. Ethiopia	New York	1896	James S. Noble, 3rd Officer.
"	"	"	1896	"
Worcester, W. D. G., R.N.R.	S.S. Victoria	Malta and Cape Town	1896	W. H. Sweny, R.N.R., W. R. Le Mare, R.N.R., G. Rabbitts, R.N.R., and H. Davis, R.N.R.
"	"	Sydney, via Suez	1896	W. H. Sweny, R.N.R., W. R. Le Mare, R.N.R., W. H. Walker, and F. S. Armstrong, R.N.R.
"	"	Bombay, via Suez	1896-97	W. H. Sweny, R.N.R., W. Hayward, R.N.R., W. R. Le Mare, R.N.R., H. G. Evans, R.N.R., and M. Burne, R.N.R.

APPENDIX III.

INSTRUMENTS supplied, &c. to the Royal Navy.

Per Account.	Baro- meters.	Ane- roids.	Thermometers.				Hydro- meters.
			Ordinary.	Max.	Min.	Screenis.	
April 1st, 1896, afloat -	232	601	1,414	372	376	225	54
Issued since -	92	177	402	74	77	37	8
Returned since -	324	778	1,816	446	453	262	62
April 1st, 1897, afloat -	239	622	1,459	392	397	237	47

INSTRUMENTS supplied, &c. for use at Naval Stations.

April 1st, 1896, in use -	77	74	244	34	43	10	11
Issued since -	1	2	37	5	6	1	—
Returned since -	78	76	281	39	49	11	11
April 1st, 1897, in use -	74	74	242	33	47	10	11

DISPOSITION of ADMIRALTY INSTRUMENTS on April 1st, 1897.

Afloat in Royal Navy -	239	622	1,459	392	397	237	47
In use at stations -	74	74	242	33	47	10	11
In store at M.O. -	81	160	250	117	118	27	47
" Chatham -	17	53	110	31	32	21	15
" Sheerness -	5	18	30	12	12	9	6
" Portsmouth -	20	48	138	43	46	23	8
" Devonport -	20	40	116	36	37	15	16
" Queenstown -	3	2	13	3	3	—	4
" Gibraltar -	4	3	9	3	3	—	4
" Malta -	10	16	57	9	9	7	6
" Bombay -	4	3	11	4	4	—	4
" Halifax -	4	4	24	4	3	2	7
" Bermuda -	7	6	23	7	9	2	4
" Jamaica -	2	3	20	2	2	1	3
" Cape of Good Hope -	1	3	22	4	2	3	4
" Trincomalee -	5	7	14	2	4	1	4
" Hong Kong -	13	13	33	10	14	3	21
" Coquimbo -	3	6	13	4	3	1	19
" Sydney -	5	9	24	9	6	2	15
" Esquimalt -	4	3	17	3	6	1	4
Total, April 1st, 1897 -	521	1,093	2,625	729	757	365	249
Lost, &c. since April 1st, 1896 -	2	6	234	19	15	13	3
Under repair April 1st, 1897 -	9	6	—	—	—	—	—

APPENDIX IV.

INSTRUMENTS supplied, &c. to Mercantile Marine.

Per Account.	Baro- meters.	Com- passes.	Thermometers.				Hydro- meters.
			Ordinary.	Max.	Min.	Screens.	
April 1st, 1896, afloat -	112	—	659	—	1	104	373
Issued since -	52	—	347	—	—	44	195
Returned since -	164	—	1,006	—	1	148	568
April 1st, 1897, afloat -	56	—	364	—	—	48	212
	108	—	642	—	1	100	356

INSTRUMENTS at Stations, viz., Telegraphic Reporting Stations,
Observatories, Fishing Villages, &c.

April 1st, 1896, in use -	298	2	296	61	76	58	16
Issued since -	9	1	11	3	5	3	1
Returned since -	307	3	307	64	81	61	17
	8	1	15	2	8	3	4
April 1st, 1897, in use -	299*	2	292	62	73	58	13

DISPOSITION of BOARD of TRADE INSTRUMENTS on April 1st, 1897.

In merchant ships -	108	—	642	—	1	100	356
In use at stations -	299	2	292	62	73	58	13
In store at M.O. -	50	3	144	13	30	29	80
At Liverpool Agency -	3	—	18	—	—	5	7
„ Glasgow „ -	3	—	21	—	—	1	14
„ Dundee „ -	5	—	23	—	—	6	18
„ Hull „ -	3	—	15	—	—	3	10
„ Cardiff† „ -	9	—	46	—	—	8	37
„ Southampton „ -	2	—	16	—	—	5	—
Total, April 1st, 1897 -	482	5	1,217	75	104	215	535
Lost, &c. since April 1st, 1896 -	—	—	94	—	1	12	66
Under repair April 1st, 1897 -	8	—	—	—	—	—	—

* Of these barometers 214 are lent for use of seafaring communities at fishing villages and ports.

† No return since September 30th, 1896.

APPENDIX V.

REPORT OF PARTIAL INSPECTION OF WALES AND IRELAND.

I HAVE the honour to report that I commenced my inspection on the 26th of September, and had visited four stations when I met with an accident, being thrown off a car in Dublin (September 30th), and incapacitated from going on with the inspections in the present autumn.

Holyhead, visited September 28th.—I found the telegraphic station in good order. The rain-gauge was not quite steady in its stand.

Mr. Cotton seems to be of opinion that the difficulty found in making the top of the Dines' anemometer move freely arises from decomposition of the metal of which the tubes are made.

Newcastle, Co. Wicklow.—This is a locality where a climatological station is to be started at once in connexion with the newly erected consumption hospital. The hospital is actually at Killadreenan, some two miles from Newcastle, and affords an excellent site for the instruments. I visited it on the 29th September, and had an opportunity of going over the grounds with Dr. B. H. Steede, the principal.

Dublin, Fitzwilliam Square, visited September 30th.—This station was, as usual, in perfect order.

Dublin, Glasnevin, visited September 30th.—At this station the thermometer screen was not firmly fixed, and there is reason to suspect that the rain-gauge is not always visited daily. All else was in good order.

(Signed) ROBERT H. SCOTT.

REPORT OF INSPECTION OF SCOTTISH STATIONS for the YEAR 1896.

BAROMETERS.

The barometers of the stations were compared with inspector's standard No. 690, which was in good order throughout the inspection, as shown by comparisons with the standard in Edinburgh at the beginning and end of the inspections. All the barometers were found to be correct, and they continue to be kept in the same good order as heretofore. Table I. shows the comparisons with No. 690, the readings of the station barometers not being corrected.

TABLE I.

STATIONS.	Inspector's Standard No. 690 corrected.	Reporting Barometer uncorrected.	Check Barometer uncorrected.	REMARKS.
Ladylaw - - -	Inches. 29·738	Inches. 29·740	Inches. —	
Wolfelee - - -	29·530	29·530	—	
Caigen - - -	29·704	29·695	—	
Glenlee - - -	29·735	29·735	—	
Ardrossan - - -	30·252	30·253	—	
Rothesay - - -	30·135	30·134	—	
Poltalloch - - -	30·025	29·990	—	
Laudale - - -	30·116	30·118	30·108	Check barometer hung in lower room.
Fort William - - -	29·944	29·959	—	
Nairn - - -	29·956	29·956	29·950	

TABLE I.—continued.

STATIONS.	Inspector's Standard No. 690 corrected.	Reporting Barometer uncorrected.	Check Barometer uncorrected.	REMARKS.
Strathpeffer	Inches. 29·592	Inches. 29·594	—	Check barometer is in good order.
Dunrobin	29·875	29·875	—	
Wick	29·860	29·856	—	
Dunrossness	29·507	29·508	29·515	
Deerness	29·824	29·856	—	
Lairg	29·125	29·110	—	
Aberdeen	29·912	29·917	29·915	
Leith	29·030	29·030	29·033	
Edinburgh	29·032	29·044	—	

THERMOMETERS.

As in previous inspections, the thermometers were read twice, first by the observer as they hung in the screen, and then by the inspector after they had been in water for the times specified in the table. Except in the case of Nairn, where about half a degree of the spirit was lodged near the top of the tube, all the minimum thermometers were in good order.

TABLE II.

STATIONS.	Inspector's Thermometer, No. 4433.	Dry Bulb.	Wet Bulb.	Spare Thermometer.	Max. Thermometer.	Min. Thermometer.	Time in Water in Minutes.	Change of Temperature.	REMARKS.
Ladylaw	59·9	0·0	0·0	-0·1	+0·1	-0·1	180	0·0	
Wolfelee	57·9	-0·1	-0·1	—	+0·1	-0·9	90	+0·3	
Cargen	58·6	-0·2	-0·2	—	0·0	-0·2	105	-0·2	
Glenlee	62·3	+0·2	+0·2	—	-0·1	+0·1	90	-0·4	
Ardrossan	61·4	+0·3	+0·3	—	0·0	-0·1	105	+0·5	
Rothsay	59·4	0·0	0·0	—	+0·1	-0·1	70	+0·3	
Poltalloch	58·8	+0·2	+0·2	—	+0·9	0·0	110	+0·2	
Laudale	57·5	+0·2	+0·2	—	+0·1	+0·1	130	0·0	
Fort William	62·7	+0·3	+0·3	—	0·0	-0·1	160	0·0	
Nairn	53·4	+0·7	+0·8	+0·2	+0·2	0·0	25	+0·3	
Strathpeffer	54·8	-0·1	0·0	—	0·0	-0·2	80	-0·3	
Dunrobin	58·6	+0·1	+0·1	—	+0·2	-0·1	120	+0·2	
Wick	56·1	+0·5	+0·5	—	+0·1	0·0	65	0·0	
Dunrossness	55·6	+0·5	+0·3	+0·4	+0·1	-0·3	120	0·0	
Deerness	58·9	+0·2	+0·2	—	-0·8	0·0	125	+0·2	
Aberdeen	55·9	+0·2	+0·2	—	+0·2	+0·3	70	+0·2	
Leith	51·8	+0·1	+0·2	—	-0·1	-0·4	115	0·0	
Edinburgh	49·1	+0·1	+0·1	—	-0·1	-0·2	60	0·0	
Lairg	54·1	—	+0·1	—	-0·1	+0·2	120	0·0	See note on station.

HYGROMETERS.

Much attention continues to be given to the readings of the dry and wet bulbs as they hang in the screen, immediately the screen is opened. The result of the readings, and the state in which these instruments were found, convinced me that in all cases these thermometers are maintained in good order for hygrometric observations.

NOTES OF INSPECTION OF THE STATIONS.

Ladylaw, July 27th, 1896.—Nothing could exceed the admirable order in which the instruments are kept, and great zeal and intelligence are manifested in conducting the whole work of this station. At the time of inspection, Mr. Wilson was in excellent health, but died a fortnight after it. The observations continue to be made by his family.

Wolfelee, July 28th.—The instruments at this station continue to be well kept, and the observations made with the greatest care.

Cargen, July 29th.—The instruments are well kept, and the observations are carefully and correctly made by the observer, Mr. Peacock, on whom, since Mr. Dudgeon's death, the whole work now falls.

Glenlee, July 30th.—The instruments are in excellent order, and the observations are made with much skill and intelligence.

Ardrossan, August 6th.—The introduction of the telephone into the post office necessitated the removal of the barometer to another part of the office. This has been satisfactorily done, and the instrument is hung at the same height as before. The thermometer screen was ordered to be repaired and repainted. The other instruments were in very good order, and the observations are made with correctness and intelligence.

Rothesay, August 6th.—The instruments are particularly well attended to, and much enthusiasm is displayed by the observer in securing fullness and accuracy in the observations.

Poltalloch, August 7th.—The instruments are all in very good order, and the observations are made carefully and correctly.

Laudale, August 12th.—The thermometer screen has been still further strengthened against the high winds to which this station is exposed. The instruments are in excellent order, and the observations are made with much care and intelligence.

Fort William, August 13th–14th.—A new check rain-gauge was placed here in March, which, so far, appears to agree with the old check gauge rather than with the Beckley's. The instruments are in excellent order, and all the observations are taken with commendable fullness and correctness.

Fort Augustus, August 15th.—Of this station a hasty inspection was made during the short time the canal steamer was passing the locks. Everything was found in very good order.

Nairn, August 17th.—About half a degree of spirit was lodged near the top of the minimum tube in a position not easily seen. Miss Penny, under direction, put it right. Otherwise the instruments were in excellent order, and the observations are well attended to.

Strathpeffer, August 17th.—For two months the barometer had been removed to a contiguous room, where it was hung at the same height.

Much interest is taken in the observations by Dr. Fox and his son. Everything was in good order, and much intelligence is shown in making the observations.

Dunrobin, August 18th.—All the instruments are in very good order, and the observations continue to be made with the greatest care.

Wick, August 19th.—I was informed that the recent delay in the despatch of the telegrams from Wick was due to the press of telegrams during the herring fishery. The instruments are kept in excellent order, and very considerable intelligence is manifested in the work of observing.

Dunrossness (Sumburgh Head), August 21st.—The instruments are in good order, and the observations are made with care and correctness. In future the observer will telegraph with greater regularity the extreme readings from the barogram, notes of weather, and the late observations.

Deerness, August 22nd.—All the instruments are in excellent order, and no effort is spared to render the observations full and accurate. An estimate of the force of the wind, independent of the anemometric readings, will in future be made.

Lairg, August 25th.—This station was visited for the double object of inspection and obtaining a new observer. Through the kind assistance of the Rev. Dr. Joass, of Golspie, the services of the Rev. D. Macrae, minister of the parish of Lairg, have been secured. From what I have seen of Mr. M., he will prove to be a desirable observer for this station. The barometer was first compared with the inspector's standard at the old station at the schoolhouse, and thereafter at its new position at the manse, with these results:—

—	Inspector's Standard 690.		Station Barometer.	
10.30 a.m. Readings at old station - - -	29.225	58.0	29.210	57.5
11.0 .. Readings at new station - - -	29.125	57.0	29.110	57.0
1.35 p.m. - - -	29.143	57.0	29.128	57.0

This difference between the two barometers is in accordance with the known error of this instrument.

The dry bulb at this station was found broken. A new hygrometer has since been sent. The Kew corrections of both thermometers at all points are 0 0, and the old wet bulb is to be retained as a spare thermometer. Before leaving, the instruments were placed in their new positions.

Aberdeen, August 28th.—The instruments both at this station and the observatory are kept in excellent order, and the observations are made with care and exactness. Inquiries were made regarding the late arrivals on Sundays of the daily telegrams at the Meteorological Office; and I was informed that the lateness was mainly occasioned by the change of clerks during the holiday season.

Leith, October 8th.—The instruments and observations are both particularly well attended to. Since last inspection a block of houses, four stories high, has been built at about 20 yards from the instruments. Inquiries are consequently being made for a new position for the station.

Edinburgh, October 24th.—The instruments at this station include, in addition to the usual instruments, a barograph, a thermograph, a

hygrograph, a Richard's registering rain-gauge, a storm rain-gauge, a sunshine recorder, and three underground thermometers. All the instruments were in excellent order, and much care and enthusiasm is displayed in making the observations.

(Signed) ALEXANDER BUCHAN,
Inspector.

REPORTS OF INSPECTION OF THE ENGLISH STATIONS.

Clifton, Weekly Weather Report Station, September 5th.—The station is 230 feet above M.S.L., and is situated in one of the quadrangles of Clifton College. The Clifton Down to the south-west, and the Durdham Down to the north, have a considerably higher elevation. The thermometers and rain-gauge are in a railed enclosure, near the centre of the quadrangle; the door of the screen opens to the southward, and does not stand over grass, and the college buildings and trees would apparently cut off the sunshine in the morning and evening. The observer, Mr. Rintoul, was absent, but I saw one of the clerks of the secretary's office, who takes the observations when necessary. The instruments are evidently well attended to, and the readings are regularly posted up.

Arlington Court, Weekly Weather Report Station, September 7th.—The instruments were in good condition, but the covering of the wet bulb was rather too thick. The observer has been recently changed, so I explained the method of mounting the wet bulb, and its management in case of frost. The rain-gauge (which is a 5-inch one) was out of level, and was put right; it is only kept in position by wooden stays. The exposure at this station is excellent, and the observer takes interest in the observations.

Prawle Point, Reporting Station, September 8th.—Everything was in good order at this station except that the rain-gauge required slight repair (which has since been attended to), and that the tube of the dry-bulb thermometer was possibly cracked, and was stuck with sealing-wax. This instrument has now been removed from the screen. Mr. Howse, Chief Officer of Coastguard, seems to be very attentive to the work, and the wet-bulb thermometer was clean and well mounted.

Plymouth, Second Order Station, September 9th.—Mr. Prigg, the borough meteorologist, is very enthusiastic in the work, and spends much of his private time in connexion with it. The position on the Hoe is possibly the best that can be found near the town; the only obstruction to the sun would be for an hour or so in the early morning from the Citadel, except in the summer season. There is a small cooking stove in the room in which the barometer hangs, and there is also a slab at the foot of the thermometer screen; the observer promised to have part of it cut away. I also visited a second rain-gauge in Freedom Fields, situated at a higher level than the Hoe. All the instruments are carefully kept and attended to, and the observer hopes to add to their number in course of time.

Guernsey, Sunshine Station, September 11th.—The instrument is one of Jordan's, and is exposed in a good position; the sun would only be obstructed in the evening. Dr. Carey measures the photographic trace before it is fixed. He has a complete set of instruments for a station such as those reporting weekly, and two rain-gauges, an 8-inch and a 5-inch; the latter is well placed in a garden to the south of the house.

Jersey, Reporting Station, September 12th and 13th.—The instruments at St. Aubins were all in good condition, the wet bulb clean and properly mounted, and the observer is much interested in the work. Mr. Fisher also has charge of a fishery barometer (Negretti and Zambra, No. 275), and the readings are regularly posted up on forms purchased for the purpose. Mr. Fisher would be glad to have forms from the Meteorological Office. I also inspected the sunshine recorder on Fort Regent, St. Helier's. There was no sunshine at the time, but the instrument is very firmly fixed, and level, while an inspection of the cards showed that it was apparently truly set for latitude. The only possible obstruction to the sunshine might arise for a short time in the evening, in winter time, from adjacent chimney pots.

I subjoin the table of the thermometer comparisons:—

STATIONS.	Standard corrected.	Corrections to be applied.						REMARKS.
		Dry Bulb.	Wet Bulb.	Spare Therm.	Max. Therm.	Min. Therm.	Grass Min.	
Clifton - -	61° 2	-0° 5	-0° 5	0	+0° 6	0° 0	0	
Arlington Court.	58° 9	+0° 2	+0° 1	—	+0° 1	+0° 5	—	
Prawle Point -	60° 9	-0° 4*	+0° 2	-0° 1	-0° 1	-0° 2	—	* Damaged.
Plymouth - -	61° 5	-0° 3	-0° 2	—	+0° 2	+0° 5	0° 0	
Jersey - - -	61° 7	-0° 6	-0° 7	—	-0° 3	+0° 5	—	No spare therm.

(Signed) J. S. HARDING.

Chester.—Observer, Rev. J. C. Mitchell, B.D. Second Order Station. Inspected, July 20. Instruments in good order, and located the same as at last inspection. The minimum thermometer gave indications 0°·7 below the standard (B.T. 4569) which I carried with me, and the barometrical readings agreed exactly with those of the barometer I took with me. I checked a duplicate set of thermometers by Sidall, which had been lent to observer, and found the dry bulb indicated values rather (0°·6) too high, the wet bulb and maximum were both accurate, but the minimum was 2°·2 too low. Were it not for the fact that there is a road running beside the garden in which the outdoor instruments are exposed, and that the neighbourhood is very open, I should say the exposure of the thermometers is very defective. I report that now because the erection of any buildings contiguous to the garden would render the observations valueless.

Colwyn Bay.—Observer, D. Lord. Sunshine recording station. Instruments—a Campbell-Stokes recorder and a Jordan—very well exposed, and carefully attended to.

Bidston Observatory, Birkenhead.—The principal object in visiting this station was to see whether the indications of all the thermometers agreed. A series of careful comparisons were made, with the result that while the *dry bulb*, No. 2,551, read about 0° 5 too high, the *minimum*, No. 3,488, gave indications 0°·6 too low, and No. K.O. 41,250 1°·7 too low. All the other thermometers were correct.

Cronkbourne.—Isle of Man.—Observer, A. W. Moore. Instruments good, well exposed, and apparently well attended to. I could not see Mr. Moore, but the gardener, who takes many of the observations, is in every way a competent observer. The minimum thermometer gives

indications $0^{\circ}\cdot4$ too low, the dry and wet $0^{\circ}\cdot6$ too high. All else was well.

St. Helen's.—The instruments are under the control of Dr. Robertson, and are placed in a very good position in the public park. The indications of the barometer and the thermometers agree very well indeed with those of the standards used by the inspector, and the park keeper, who takes most of the readings, appears to be a very intelligent man and very painstaking.

Southport.—There is a full supply of instruments at this station, but it is only the sunshine records which are forwarded to the Meteorological Office. The instrument is a good one (Campbell-Stokes), and the exposure very good. Mr. Baxendell is a most enthusiastic worker, and his assistants share his spirit and are very careful workers. The difference between the indications of the Campbell-Stokes recorder and those of a Jordan (Twin) recorder close by are extraordinarily variable.

Manchester—Oldham Road.—At this station the instruments are placed on a circular plot of grass 22 feet in diameter, and this is situated in a large rectangle about 130 feet square. This rectangle is surrounded by buildings, the angle from which to the centre is about 23° all round, and is considered by Dr. Niven to represent very nearly the general conditions prevalent within Manchester itself. The thermometers are very good and accurate instruments, and the barometer (a Fortin's Standard) agreed in its indications with the standard (B. T. 789) which I had with me. The observer (the officer in charge of the works) was thoroughly competent to do the work, and gave me every assistance.

Prestwich—County Asylum.—Inspected 27th July 1896. Dr. Clunn was absent when I called, but I saw Dr. Ley, and the officer who usually takes the observations rendered every assistance necessary. The barometer (Adie B.T. 602) was in close agreement with No. 789, which was in my charge as a standard, and the observer's readings and mine agreed. The thermometers are very good instruments, and are well exposed. The sunshine recorder is *slightly* sheltered in an easterly direction, but well exposed in other directions. I would point out that the position of the outdoor instrument is very different from that occupied when I inspected the station in 1888, but the change is an improvement, and the present exposure could hardly be improved.

Heysham Hall, Morecambe—(Second Order).—The instruments at this station were very good, and were apparently carefully attended to by the gardener. There were discrepancies in the barometer readings, to which I gave special attention, and as far as I could gather they were caused by the fact that the rack and pinion had become loose and, as a result, the vernier, after being set, occasionally slipped down a little, and the readings were consequently at times defective. I put this right, and think the readings will improve, as the observer appeared anxious to take and report them accurately. The thermometers were very fairly correct—excepting the solar radiation thermometer (No. 204), which was about 7° too high.

Sedbergh—“Gate”.—A rainfall station. The instrument is a very good 5-inch copper gauge, placed on the retaining wall of a garden, cut in a bank of the hill on which the residence and garden are placed. Its rim was level and the instrument firmly fixed, but it was too much dominated by high trees to the eastward. The observations are taken regularly at 9 a.m. I gave full instructions as to the method of measuring snow, &c. There is no probability of a complete set of instruments being started. The rains are often very local in character.

Gilcrux.—Observer Mr. Monkhouse. Inspected on July 31st. Observer was in attendance. Instruments are all very good, are well exposed, and carefully read. The grass minimum, however, had about 4° of spirit at top of tube, which I dislodged—the instrument then read correctly, but for some time (I could not find out for how long) these readings must have been 4° too low. Barometer very good, and accurately read.

East Marton, near Skipton.—Inspected August 1st. Observer (Mr. Ecroyd) was absent, but his clerk showed me all the instruments, and aided in comparing them. Instruments all very good, and well exposed, but the solar radiation thermometer is a Negretti's maximum (not in vacuo) and has a bright black bulb. Rain-gauge is a 5-inch Snowdon pattern, rim 10 ins. above ground and 573 feet above sea level. Barometer (Fortin's standard) read rather lower than the instrument I had with me.

Chapel-en-le-Frith.—Inspected on August 2nd. Observations having been tendered by the observer, I called to see what the station was like. It is in every way unfit for scientific work.

IRISH AND WELSH STATIONS.

I beg to report that in October I proceeded to Ireland in order to inspect some of the Irish Stations, which Mr. Scott was unable to see owing to his accident (p. 33).

Londonderry.—Observer Mr. J. Conroy. Inspected on October 21st. Observer was away, but his son showed me the instruments. The exposure is bad, the garden too small, and there are too many trees, shrubs, &c. about. Thermometer screen is too small, and is only single louvered. Thermometers are not Kew verified, but are fairly good. Rain-gauge, 5 ins. diameter, was *much* too close to trees, about 15 feet high, at east end of garden. I had the gauge removed to a less objectionable position, and gave advice as to obtaining a new screen—but the position in that garden can never be good.

Malin Head.—Inspected 23rd August. Observer was in attendance. Barometers agree well, but their frames are very dirty and the shield of one is broken. Observer sets and reads them accurately. Gave observer careful instructions how to use his self-recording aneroid in order to report "extreme" readings of barometer properly. Thermometers agreed well with my standard, but wet bulb was rather dirty. Observer very intelligent, and promises to follow the instructions given him.

Omagh.—Visited on October 24th. Observer Colonel Buchanan. The object in visiting this station was to clear up a question as to the accuracy of certain temperature observations forwarded to the Meteorological Office in August last. It appears that observer was then away from home, and that in his absence his clerk had used a defective Six's thermometer to report from, and had exposed it in a bad position. Colonel Buchanan expressed his great regret at the occurrence, and undertook that it should not occur again. The thermometers he usually reports from are very good instruments, and are well exposed in a proper Stevenson's screen. Rain-gauge well exposed.

Belmullet.—Telegraphic Reporting Station. Inspected on October 28th. Barometers in very good order and agree fairly well. New observer (Miss E. Tolan) set them too low, until properly instructed. Thermometers are in a yard at some distance from the house. The dry, wet, and maximum thermometers were in good order, but the

spirit of the minimum was *much* broken, and the readings for some time past cannot have been of any value. I united the column and set the index correctly. The screen legs were rotten, and I gave instructions to have them repaired. Rain-gauge was very clean and in good order. Vane was not quite free; saw the "line man," and gave careful instructions as to keeping the vane greased. Bearings are true. Also gave such instructions as I could about cloud observations. Visited coast guard officer, and expelled all air from fishery barometer which had been sent there from Elly Bay.

Llandoverly.—Weekly Weather Report Station. Observer (Mr. Watkin) was at home. Thermometers are very poor, and are not exposed in a proper Stevenson's screen. Undue *range* of temperature is thus recorded, both maxima and minima being affected. Rain-gauge (5 ins.) is well exposed. Observations taken carefully and regularly.

The comparisons made between the instruments at the various stations and the standards which I had with me show that the following corrections are necessary to bring the indications of the station instruments into accord with the standards.

CORRECTIONS necessary for THERMOMETERS.

Names of Stations.	Corrections to Thermometer—						Temp. of Water.
	Dry.	Wet.	Max.	Min.	Terrest. Rad.	Spare.	
STATIONS IN THE N.W. OF ENGLAND.							
Chester—2nd Order . .	0·0	+0·2	+0·7	-0·1	+0·6	—	74·7
„ —Duplicate set by Sidal.	-0·6	0·0	0·0	+2·2	—	—	70·2
Bidston Obs.—Tel. Rep. .	-0·5	-0·1	-0·1	+0·6	—	—	63·2
„ —2nd Order .	—	—	0·0	+0·7	—	—	63·6
Cronkbourne—2nd Order .	-0·6	-0·6	-0·1	+0·4	+0·1	—	59·4
St. Helen's—2nd Order .	0·0	+0·5	0·0	+0·5	—	Earth +0·5	62·9
Manchester, Oldham Road, —2nd Order.	0·0	0·0	+0·3	+0·3	+0·1	—	61·3
Prestwich—2nd Order .	-0·5	-0·2	0·0	+0·1	+0·2	—	61·3
Heysham—2nd Order .	-0·4	-0·1	-0·4	+0·1	+0·1	—	58·3
Gilcrux—2nd Order . .	0·0	-0·1	-0·1	0·0	+0·1	—	57·2
E. Marton—2nd Order .	0·0	-0·1	+0·6	0·0	-0·1	—	58·9
IRISH AND WELSH STATIONS.							
Londonderry—W. W. Rep.	-0·7	-0·7	-0·1	-0·1	—	—	44·9
Malin Head—Tel. Rep. .	0·0	0·0	+0·1	-0·1	—	—	42·9
Omagh—W. W. Rep. .	—	—	0·0	-0·1	—	Second Stand	49·0
„ —Six's Ther. .	—	—	+3·7	+4·7	—	-0·7	49·0
Belmullet—Tel. Rep. .	0·0	0·0	+0·1	+1·6*	—	—	45·0
Llandoverly—W. W. R. .	—	—	-0·7	+0·9	—	—	43·0

* After being adjusted, observer instructed to add 1° daily till further orders.

(Signed) FREDC. GASTER.

ENGLISH STATIONS.

Oxford, August 5th and 6th.—The instruments are in excellent condition, and carefully read. Much care was given to the barometer comparison, as the difference of reading in instruments compared,

ranging between 0·015 in. and 0·020 in., seemed unduly large. Ample time was given for the Office barometer to take up its proper reading, which, however, it did somewhat tardily. The base of sunshine recorder is not fixed.

Churchill, August 6th.—At present only a rainfall station. The exposure of gauge is good, and the observations are evidently made with great regularity and with care. The responsible observer was away from home, and no information could be gained as to prospect of obtaining other observations.

Cirencester, August 7th.—The instruments are in good order, and the regular observer shows great intelligence and precision in observation. The exposure of many of the instruments is bad, owing to their being overcrowded. Sunshine recorder, anemometer, thermometer, screen, solar and terrestrial radiation thermometers, and rain-gauge being crowded into a small railed space for safety and protection. The exposure of rain-gauge is especially bad, and a better exposure could easily be found. The grass thermometer is completely caged in, and has some 9 inches or 1 foot above it a caging of fairly thick iron rods. Professor Ohm, who is responsible for the observations, being away, no action could be taken with respect to removal of instruments.

Dursley, August 8th.—At present only a rainfall station. The position of rain-gauge was removed a distance of between 2 and 3 miles on August 1st. The old exposure was not good. The removal has effected a considerable improvement, and exposure is now good if plants around are kept down. The observer's attention was especially called to the necessity of seeing that gauge is not sheltered.

Kidderminster, August 10th.—The thermometers and rain-gauge are well exposed, and the observer has all the qualities necessary for keeping good returns. A piece of ground has been rented some little distance from the Town Hall (the municipal authorities having full control of the observations), so that instruments should have a good exposure; this piece of ground is well protected, and the instruments cannot be easily tampered with. There is a Stevenson's screen, and this, together with rain-gauge, is railed in as a further safeguard. The gauge was sheltered by the screen, and I recommended the raising of gauge to 5 feet 9 inches, to avoid shelter; this the observer promised to effect at once.

Rochford, August 11th.—Rainfall and self-registering aneroid observations at present forwarded. The position of rain-gauge has been altered since last inspection, and exposure is now exceptionally good. The observer intends getting a Stevenson's screen and full set of thermometers. I recommended position for Stevenson's screen.

Shirley (near Birmingham), August 12th.—The observer has recently removed from Solihull. The height of ground is 470 feet, as determined by B. M. on sign-post close to house. The exposure of Stevenson's screen is excellent. Rain-gauge has also a very good exposure. The observer has promised to enclose rain-gauge with a rail to keep the cattle away.

Rugby, August 12th and 13th.—The responsible observer was just starting on holiday, and I could only see him a few minutes. The peculiarities in returns were pointed out, and instructions given in the making of barometrical reductions. The gardener, who takes most of the observations, is intelligent. The barometer and its position have been recently changed; now in entrance hall to school, and is 380 feet

above sea level. Stevenson's screen is too much sheltered, and only in direct rays of sun from about 10 a.m. to 2 p.m. The rain-gauge is very much sheltered. The exposure of grass thermometer is bad.

Syston (near Leicester), August 13th.—At present only a rainfall station. The observer is very intelligent and careful. The rain-gauge is very rough in form, and made locally, the diameter is 5.2 inches instead of exactly 5 inches. Observer is anxious to take temperature observations, and he intends getting screen and thermometers.

Thurcaston, August 13th and 14th.—Only sunshine records received from this station. The burning of the cards, &c. showed certain defects existed. Remedied defects in fixing and adjustment as far as possible. Sunshine at time of inspection very broken, and sun only visible for a few minutes at a time.

Loughborough, August 15th.—The instruments are all in excellent order, and the observations are made with the greatest care and regularity. The observer has himself taken every observation for the last 13 years.

Duddington, August 17th.—This is only a rainfall station, and had not previously been inspected, although observer had kept observations for Office. The observer was away from home. The records are from a 5-inch gauge, and evidently kept with care and regularity. The exposure is not altogether satisfactory, and this was explained to observer in writing.

Colley Weston, August 17th.—This is only a rainfall station. Observer is evidently careful and regular. The rain-gauge has been shifted slightly since last inspected, and its position is not altogether satisfactory, being somewhat sheltered by neighbouring plants. Selected another position for gauge, and observer promised it should be at once removed. The new position will be a satisfactory exposure.

Ketton Hall, Stamford, August 17th.—Observations seem well and regularly made. The exposure of thermometers in Stevenson's screen very good; the wet bulb was mounted but not in action. The grass thermometer had been removed for examination; its exposure was good, except that it is caged on all sides by clove wire-netting 1 foot high, but open at top. The rain-gauge has been moved since last inspected, now well exposed, except for temporary shelter from flowering plants; the observer promised this should be remedied at once.

Cambridge, August 18th.—The instruments are in excellent order, and observer evidently takes a keen interest in the observations. The rain-gauge is somewhat sheltered to south and east by trees. The sunshine recorder would also be sheltered to south-east by same trees in winter at about 9.30 or 10 a.m. Observer promised to report screening of rain-gauge and sunshine recorder to Sir Robert Ball, with recommendation that elm trees be lopped. The sunshine recorder is slightly out of level, being highest at east, but as instrument is firmly cemented, no alteration is suggested.

Geldeston, August 19th.—The instruments are in excellent order, and the observations evidently made with great care. The rain-gauge is sheltered by a disused Stevenson's screen, 2 yards distant to the north-west. Recommended that this be removed. I adjusted the thermograph (dry and wet) at the request of observer.

Yarmouth, August 20th.—Observations taken regularly and with care. The Stevenson's screen, containing thermometers, is on the north

side of a wall which affords considerable shelter from sun. The observer is quite willing that screen should be removed to the open. Selected a spot, but left directions for removal to be sent from Office, as station has been going many years. Rain-gauge partially sheltered by large shrub, which observer promised to cut back. Self-registering aneroid partially adjusted, the error being reduced by about one half; the screw affixed for adjustment evidently not in action.

BAROMETERS.

STATIONS.	Inspector's Standard No. 789 corrected.	Reporting Barometer uncorrected.	Check Barometer uncorrected.
Oxford	Inches. 30·065	Inches. 30·048	Inches. —
Cirencester	29·765	29·728	—
Shirley, near Birmingham	29·873	29·870	—
Rugby	29·783	29·770	—
Loughborough	29·942	29·932	—
Cambridge	30·017	30·000	—
Geldeston	29·875	29·873	—
Yarmouth	29·987	29·985	29·971

THERMOMETERS.

STATIONS.	Reading of Standard.	Corrections to be applied to the Readings of the—						REMARKS.
		Dry Bulb.	Wet Bulb.	Spare Therm.	Max. Therm.	Min. Therm.	Grass Therm.	
Oxford	61·8	0	0	0	-0·2	+0·2	{ +0·6 +3·2	Long bulb. Spherical bulb.
Cirencester	59·6	-0·3	-0·2	—	-0·1	+0·2	+0·2	
Kidderminster	60·7	-0·1	-0·1	—	+0·7	+0·7	—	
Shirley, (near Birmingham).	62·2	+0·1	+0·1	—	+0·1	+0·2	—	
Rugby	63·5	-0·3	+0·2	—	+0·4	+0·3	-0·3	
Loughborough	62·1	0·0	+0·1	+0·1	-0·1	+0·2	+1·1	
Ketton Hall, Stamford.	53·5	-1·3	-1·0	—	-0·8	-0·5	—	
Cambridge	60·4	-0·9	-1·0	—	-1·5	+0·4	—	
Geldeston	59·9	-0·3	-0·3	-0·4	-0·7	+0·7	—	
Yarmouth	63·8	0·0	+0·1	-0·6	-0·2	+0·8	—	

(Signed) CHARLES HARDING.

ANEMOMETER STATION.

Scilly, August 25th-28th.—*Robinson Anemometer*.—I found this instrument in fairly good order, but the brake was not acting properly,

owing to an insufficient supply of oil in the brake-box. During the year the lubricant supplied from Kew last August had thickened, and caused the pistons to stick, preventing the vane from turning; to remedy this the box had been opened, and in putting it together again it had not had a sufficient supply of oil put into it. All parts of the instrument were examined and cleaned, and left in good order. I found the time pricker was out of its proper place, and I instructed the observer to allow for the error in putting on his sheets. I also determined very carefully the bearings of the instrument, and gave the observer a good mark, true south, for use in orienting the vane. I used sperm oil for lubrication, and left a supply for use during the ensuing twelve months.

Pressure-tube Anemometer.—I opened this instrument, and examined it very carefully. Its condition was in every way quite satisfactory; the water in the container was clean, as were also all the interior portions of the instrument. The glass shade had been broken, and a new one has now been sent to replace it. Outside it was also in good order, and the vane was perfectly free, and, I was told, had never shown the slightest tendency to stick. Some trouble had, however, been experienced with the traces, which I found arose from the way in which the pens were put on and used; this was pointed out, and the traces are now much better.

TELEGRAPHIC REPORTING STATIONS.

Scilly, August 27th.—The general condition of this station was satisfactory, and the observer is, I think, careful in his work. I found that the louvres of the thermometer screen had become loose, and the legs below the ground decayed, and these defects were made good. I also removed the rain-gauge to a new site, near the anemometers, because there was no doubt that in its old position it was affected, especially during northerly winds, by the high wall of the bastion in which it was placed; in its new position it has a free exposure all round, and is protected from interference by a very open rail.

North Shields, September 8th.—Here also the thermometer screen required repair, and I gave instructions for it to be done. The rain-gauge is much battered, and, in its present position, is liable to be interfered with by children. I found indications of this having recently taken place. In every other respect the station was in very good order, and the observer is evidently very careful and painstaking.

York, September 12th and 14th.—The thermometer screen now occupies a satisfactory position to the north of the museum, free from trees or other obstructions. The thermometers are, however, not suspended in a satisfactory manner; they are bound by wire to pieces of wood, which are screwed at their ends to the roof of the screen, and to get at the instruments these pieces of wood have to be unscrewed every time; the screen is also overcrowded. There is no spare thermometer, and both the maximum and the wet-bulb thermometers are loose on their scales, the clamps being corroded and broken. The screen is nearly black, and I requested that it should be repainted. I also suggested the use of another vane than that now employed, for wind direction.

Spurn Head, September 15th.—With the exception of the rain-gauge, everything here was in a very satisfactory condition, and the

observer appears to be a very intelligent man, much interested in his work. The gauge was placed in a hollow in the low sand hills, where it was impossible to prevent it from becoming filled with the drifting sand, particularly in windy weather. It has now been raised on a post 3 feet above the ground, where it will be far less subject to this drawback. The barometers are now hung in a very good light, in the lower room of the new lighthouse. The thermometer screen needed a few small repairs.

OTHER STATIONS.

Newquay, August 29th–31st.—The sunshine recorder was loose, the fastenings having given way last winter in a gale; it was therefore somewhat out of adjustment, and the ball was also not quite central in the bowl. In consequence of the unsettled weather, I feared to undertake the latter adjustment, lest I should not have sunshine to aid me in replacing it; but I made the other adjustments, and secured the base in its place as firmly as the rather decayed state of the stand would allow. The instrument appears to be rather better looked after now than has been the case of late.

Newcastle-on-Tyne, September 8th and 9th.—Everything at this station was in excellent order, and the observations are carefully made. I inspected a garden in front of Mr. Martin's residence, and selected sites for another thermometer screen and rain-gauge, which it is proposed to erect there with a view to comparing the observations with those made at Northumberland Road.

Alnwick Castle, September 9th.—I arranged here that the temperature observations sent in future should be those taken from the thermometers in the Stevenson screen, and not from the large window thermometer hitherto used. The position of the screen and of the rain-gauge, in the garden, is very good, and the instruments are carefully attended to by the gardener.

Seaham Harbour, September 10th.—The instruments were all in good order with the exception of the minimum thermometer, which had a degree of spirit at the top of the tube. The observations are carefully made, and the observer is much interested in the work.

Durham, September 11th.—Everything at this observatory was in excellent order. It is probable that a Stevenson thermometer screen will be erected shortly, in addition to the Glaisher screen at present in use.

Oswald Kirk, September 12th.—This is a sunshine station which had not been visited before. The exposure of the instrument is somewhat interfered with in summer for morning and evening sunshine, but much trouble has been taken by Mr. Thompson to make it as good as possible, and the station represents a very important district.

York, 51 Bootham, September 12th and 14th.—The sunshine recorder was not only out of adjustment as regards position, but also out of focus. I dismantled it and re-set the lens, and then re-adjusted it properly. I found that the wrong cards were in use, and the record was being lost in consequence, but a promise was given that this should not occur again, and I think the system now adopted of calling for the card daily will prevent some of the faults which have existed in the past.

Market Rasen, September 16th.—The observer was absent from home, but the observations are carefully made, although the returns to the Office are considerably in arrear; the assistant observer promised that this should be attended to.

Tealby, September 16th.—The observations are carefully made, but the position of the rain-gauge is not altogether satisfactory; the other instruments are well placed, and their condition was quite satisfactory.

Hesley Hall, September 17th.—The wet bulb was very dirty, and had far too much muslin round it, and the rain-gauge is much battered and dented. As far as I could judge, the observations are punctually made, but I had no opportunity of judging as to the care used in reading the instruments.

Sheffield, September 18th.—Everything at this station was in excellent order, and much care is given to the observations. I selected a site for a sunshine recorder which it has been decided to erect.

Worksop, September 18th.—This is a very carefully arranged station. The position of the instruments leaves nothing to be desired, and the observations are taken with great care and punctuality.

Fulbeck, September 19th.—A new thermometer screen and thermometers and a barometer have been added since the last inspection, and the observer is desirous of adding a sunshine recorder to his equipment. The instruments are well placed, and, I should judge, carefully attended to, but unfortunately the observer was absent from home on the day of my visit.

Belvoir Castle, September 21st.—The instruments here were in a fairly good condition, and I think the observations are carefully made, although the work appears to be a good deal subdivided. Mr. Divers superintends it, and is anxious that it should be as correct as possible.

BAROMETER COMPARISONS, 1896.

STATIONS.	Inspector's Standard B. T. 426 (corrected).	Reporting Barometer (uncorrected).	Check Barometer (uncorrected).	Correction required to reduce Reporting Bar. to Standard.	REMARKS.
Scilly - - -	—	30·190	30·190	—	
Newcastle-on-Tyne - -	29·895	29·894	—	+·001	
North Shields - - -	29·903	29·886	29·892	+·017	
Seaham - - -	29·598	29·602	—	-·004	
Durham - - -	29·443	29·437	—	+·006	
York - - -	29·347	29·350	—	-·003	
Spurn Head - - -	29·803	29·798	29·798	+·005	The "check" barometer is a wood-cased instrument, very dirty, and never used.
Tealby - - -	29·710	29·700	—	+·010	
Sheffield - - -	29·287	29·287	—	·000	
Fulbeck - - -	29·553	29·559	—	-·006	
Belvoir Castle - - -	29·536	29·564	—	-·028	

THERMOMETER CORRECTIONS, 1896.

STATIONS.	Standard corrected B. T. 5118.	Dry.	Wet.	Spare.	Max.	Min.	Grass Min.	NOTES.
Silly - -	61.0	-0.7	-0.5	-0.1	-0.6	0.0	-	
Newcastle - on Tyne.	60.0	-0.1	-0.1	-	-0.3	+0.2	-	
Alnwick Castle -	57.5	-	-	-	0.0	0.0	-	Large size window thermometer.
	55.0	-0.1	-0.2	-	-0.2	0.0	-	
North Shields -	60.0	0.0	-0.3	0.0	-0.1	+0.7	-	
Seaham - -	62.2	-0.8	-0.7	-0.6	+0.3	+0.7	-	
Durham - -	56.2	-0.5	-0.5	-	-0.6	+0.1	-	
York (Telegraphic).	60.6	-0.4	-0.4	-	-0.6	+0.7	-	
York (Second Order).	60.6	-0.4	-0.4	-	-0.2	+0.3	-	
Spurn Head -	61.3	-0.7	-0.4	0.0	+0.1	+0.1	-	The present "spare" instrument is for the future to be the dry, the latter being kept as the reserve thermometer.
Tealby - -	54.4	-0.4	-0.4	-0.4	-0.4	+0.1	-	
Bawtry - -	61.1	0.0	-0.1	-	-0.5	0.0	-	
Sheffield - -	56.1	-0.3	-0.6	-	-0.2	-0.2	-	
Fulbeck - -	59.8	-0.1	-0.2	-	-0.3	+0.5	-	
Belvoir Castle -	56.0	0.0	-0.1	-	+0.3	{ Read P.M. +0.2 +0.1 { Read A.M.	+0.4	Max. is difficult to set.

(Signed) R. H. CURTIS.

TELEGRAPHIC REPORTING STATIONS.

Dungeness, September 8th.—I found everything in good order at this station, except that the wet bulb was slightly coated with lime, and not properly mounted.

Hurst Castle, September 15th.—I spent a long time at this station, and went over the details of the work carefully with the observer, calling special attention to errors which had been noted in his telegrams, and pointing out how similar mistakes might be avoided in the future. The wet bulb was thickly coated with lime. This I removed, and instructed the observer to keep the bulb bright in future.

The rain-gauge was in the improved position assigned to it in 1894, but it was not firmly fixed. It was promised that this should be rectified at once.

North Foreland, September 3rd.—At the time of my visit the observer was in the Isle of Wight on relief duty, and the observations were being taken by Mr. Brown, the coastguard signalman, who is a competent observer, and who has frequently acted on previous occasions. All was in good order, except that some large plants were growing close to the thermometer screen. I gave instructions that these should be removed, and turf laid down instead.

STATIONS OF THE SECOND ORDER.

Bramley, September 18th.—I found everything in good order at this station. Mr. Bartlett being anxious to remove the thermometer screen, I selected a new position for it, about 10 feet nearer the house. The change will not affect the observations.

Epsom, September 23rd.—The responsible observer at this station has been recently changed, and Mr. Gardiner, the new science master, is quite strange to the work. The actual observations are still taken by two of the students, and with these and with Mr. Gardiner I went over the details of the work as fully as time permitted. I found the wet bulb dirty and badly mounted, but I gave the requisite instructions.

Eastbourne, September 9th.—I found everything in good order at this station, and Mr. Sheward, the observer, is certainly very zealous and painstaking. The instruments, however, are widely scattered, and in consequence there is an interval of 15 minutes between the times of reading the thermometers and the barometer. The former are always read at 9 a.m. and 9 p.m., the latter at 8.45 a.m. and 9.15 p.m.

Parkstone, September 14th.—Everything was in excellent order at this exceedingly well-equipped and well-managed station.

St. Leonards, September 8th.—The outdoor observations are taken by Mr. Kershaw at the Gensing Gardens. I found him to be a careful observer, and I think the instruments are well attended to, though the muslin on the wet bulb was rather dirty. The barometer remains in Dr. Colborne's house. Dr. Colborne impressed me as being a competent observer, but as unable to give the time necessary to keep the record well up to date. He has lately succeeded in getting the Town Council to establish a second station, with verified thermometers and rain-gauge, at West Marina, the extreme west of St. Leonards, on the sea front. Doubtless the observations would be supplied to the Meteorological Office if desired, and the comparison between the two stations should yield very interesting results. The exposure at West Marina is excellent.

Southampton, September 16th.—Everything was, as usual, in excellent order at this station. Corporal Amos, R.E., the deputy observer, was absent on the day of my visit, and I could not, therefore, test his readings, but the observer, Mr. Cook, assured me that he had now become a very competent observer, and might be fully depended upon.

PROPOSED STATIONS OF THE SECOND ORDER.

Aldershot, September 17th.—I called, as requested, on Captain Ward, R.E., at the School of Ballooning, and found that he had a complete outfit of meteorological instruments, including a Fortin barometer. There is a good site available for the outdoor instruments, and I selected positions for the thermometer screen and rain-gauge. I tested the thermometers in water in the usual way, and found that the Sergeant who will have to take the observations reads accurately and can properly reduce the barometer readings.

The station, if established, should yield a valuable record, and I recommend that it be accepted.

Higham, near Rochester, September 2nd.—Mr. W. Harold Tingey having offered to establish a Station of the Second Order, I called as

arranged, to see him. I found that he has a complete set of instruments, including a Fortin barometer made by himself (which, on being verified at Kew, was found to need a correction of only $\cdot 001$ inch), with a very good position for the thermometer screen and rain-gauge.

The thermometers being new, with recent Kew certificates, I did not think it necessary to test them in water. The rain-gauge was only 9 inches above ground, and was not firmly fixed; these defects I corrected.

Mr. Tingey will, I believe, make an excellent observer; and I therefore recommend that his offer be at once accepted.

SUNSHINE STATIONS.

Bournemouth, September 14th.—The recorder is placed on a wooden post which has warped, and is no longer vertical. Presumably owing to this fact, certain adjustments were required in level and for latitude. These I made, but probably further adjustments will be required as time goes on. I found that the sphere was not concentric with the bowl, it being $\frac{1}{8}$ inch nearer to the eastern than to the western side, but the instrument being one of the Negretti-Whipple pattern, I was unable, with the tools I had, to correct it.

I think the recorder is carefully attended to, but the summer cards had been used from September 1st to 8th.

Brighton, September 11th.—This instrument is firmly and well fixed on the roof of the Town Hall. It was clean and in good order, and I think is very carefully attended to. Another recorder will shortly be brought into use at the new sanatorium, on the Downs behind the town.

Emsworth, September 12th.—This instrument is at Watergate Park, five miles to the northward of Emsworth. It is fixed on a wooden post in the middle of a large field on nearly the highest ground round. It is proposed to replace the post with a brick pillar shortly. The position is a very good one. Mr. R. Christy was from home on the day of my visit, but I saw Mr. Hutty, the gardener, who has the charge of the instrument, and found him to be a very intelligent man, taking much interest in the matter.

Hastings, September 9th.—The recorder is still at the Hastings Waterworks, but owing to the erection of the manager's residence, its exposure is not so good as it was. It has been moved recently, but no position on the ground is free from objection, and I suggest, therefore, that endeavour be made to have it placed on top of the engine-house, where a very good position can be found for it.

The summer cards were still in use on the day of my visit, and the record was in consequence imperfect. I corrected this, and left particular instructions as to the dates for taking the different cards into use.

Margate, September 4th.—This instrument is well fixed, and carefully attended to. The cards, as supplied, however, are too large, and need trimming to make them fit the frame. I cut one carefully to the required size, and asked that it might be used as a pattern in future.

Southampton, September 16th.—The recorder is excellently placed on the roof of one of the main Ordnance Survey buildings. It has a good exposure, and is carefully attended to. As requested, I determined its height above the ground, and found it to be 48 feet.

Westbourne, September 12th.—The instrument in use at this station is a "Jordan" photographic recorder. It is fixed on a stone pillar, but was protected by a large glass shade. I recommended that this be removed, since the deposition of moisture on the glass must interfere to some extent with the record. I consider the exposure good, but better in summer than in winter, when the sun would be cut off about 4 o'clock.

STATIONS OF THE THIRD ORDER.

Chatham, September 2nd.—Except that the wet bulb was not sufficiently damp, I found everything in good order at this station. The barometer, however, is in a poor light, and somewhat difficult to set. I had some conversation with the observers as to the possibility of getting 9 p.m. observations, but it seems hopeless to expect these under present conditions.

Cuckfield, September 10th.—This is a rainfall station which had never been inspected. I found the gauge was in a position very convenient for access, but too much sheltered to yield a satisfactory record. I therefore selected a new position, with a much better exposure, and requested that the gauge might be shifted.

Dover, September 5th.—This is also a rainfall station which had never been inspected. The gauge is at the Dover Corporation Waterworks, on a kind of terrace on the Castle Hill. It overlooks the valley, which runs N.W. and S.E., and is about 140 feet below the top of the hill.

The position is good, but I suggested that the gauge be moved about 12 feet, to avoid possible interference by the growth of trees. It was promised this should be done, and also that the gauge, which was loose, should be firmly fixed.

Fredville, September 5th.—This is another new rainfall station. The observer, Mr. H. W. Plumptre, was from home, but I saw his father, Colonel Plumptre. The gauge is exposed in the kitchen garden, and when I saw it, it was much sheltered by a high row of beans. In its present position it will always be liable to be protected by high crops, and I therefore advised its removal to another position, which I selected, where it will have a better exposure. It is at present 2 feet above the ground, and I think this height should be maintained. The gauge was not circular, but this I was able to correct.

Kearsney, September 4th.—The rain-gauge at this station had been shifted to a new position, selected for it on the last inspection. The new position is, I think, the best available, but some bushes near, having grown much, need to be removed. This it was promised should be done at once, and others kept cut back. The gauge was loose, but I was assured this should be rectified.

Sandgate, September 7th.—The rain-gauge is exposed on a terrace in the cliff, at perhaps 100 yards distance from the sea, and at the level of the tops of the houses in the High Street. At about 40 yards from the gauge there are some houses 45 feet high, immediately behind which rises the cliff. The position is probably the best available, and I think the results will correctly represent the rainfall for the town. The instrument was clean and in good order.

I append the usual tables of instrumental corrections.

BAROMETERS.

RESULTS of COMPARISONS with the INSPECTOR'S STANDARD,
Adie B.T. No. 789.

STATIONS.	Observer's reading compared with Inspector's.	Correction to reduce to Inspector's Standard.
TELEGRAPHIC REPORTING STATIONS.		
Dungeness	in. - '002	in. + '014
Hurst Castle	+ '002	+ '019
North Foreland	- '002	—
STATIONS OF THE SECOND ORDER.		
Aldershot	—	—
Bramley	+ '001	+ '009
Chatham	'000	+ '013
Eastbourne	'000	+ '007
Epsom	- '005	+ '009
Parkstone	- '001	- '011
St. Leonards	- '002	+ '033
Southampton	- '001	+ '014

THERMOMETERS.

RESULTS of COMPARISONS with the INSPECTOR'S STANDARD No. 4569.

STATIONS.	Correction to be applied to readings of						REMARKS.
	Dry Bulb.	Wet Bulb.	Maximum.	Minimum.	Grass.	Spare.	
TELEGRAPHIC REPORTING STATIONS.							
Dungeness	-0'4	-0'3	-0'3	-0'1	—	—	
Hurst Castle	-0'5	+0'2	-0'5	-0'2	—	—	
North Foreland	-0'8	-0'3	+0'1	0'0	—	-0'4	Observer has been applying + 1'0 to readings of maximum.
STATION OF THE SECOND ORDER.							
Aldershot	-0'4	-0'1	-0'3	-0'1	-0'1	—	Long bulb therm. -0'2.
Bramley	+0'1	+0'1	+0'3	+1'1	+3'1	—	
Chatham	-0'4	-0'4	0'0	+0'2	—	—	Solar rays max. -0'2.
Eastbourne	0'0	0'0	-0'1	+0'1	—	—	
Epsom	-0'3	+0'1	+0'1	+0'1	—	—	
Parkstone	-0'2	-0'1	0'0	-0'1	0'0	—	
St. Leonards	-0'4	-0'6	+0'1	+0'1	—	—	Earth therm. -0'3.
Southampton	-0'6	-0'2	-0'9	+0'1	+0'1	—	

(Signed) JOHN A. CURTIS.

INSPECTION OF OBSERVATORIES AND ANEMOGRAPHS by the STAFF of
KEW OBSERVATORY.

Glasgow Observatory, visited September 15th–17th.—Since last year's inspection Professor Becker has had a light iron staging fitted to the upper part of the anemometer support, which greatly facilitates the examination of the instrument.

The external parts of the anemometers were examined, and I found that all the bearings were well lubricated, and that the asbestos oil in the direction-well was in very good condition. I thus did not think it necessary to remove it, especially as the sperm oil purchased by the Meteorological Council had not arrived, though this was one of the places selected for its trial during 1896–7.

The cup arms and fans showed no perceptible signs of wear.

After oiling the recording parts and clock, the orientation was tested and found correct.

The rain-gauge was examined, and a Richard pen fitted in place of the ordinary lead pencil which had hitherto been in use. The observer was instructed in its manipulation, and also requested to revolve the cylinder for a zero line, and to make a distinctive mark at the beginning and ending of trace.

The thermograph clock was taken to pieces and cleaned, and a new line fitted to the weight, but the barograph clock only required oiling. All other parts of these instruments were examined, and the mirrors and lenses wiped. In the case of the thermograph I noticed that the dry and wet dots were not exactly one over the other; this was corrected before starting the instrument.

The observer's attention was called to the muslin and threads on the wet-bulb thermometers, which were rather soiled.

The values of the zero lines are as follows:—

Upper zero line, dry	-	-	-	-	82·7
" " wet	-	-	-	-	84·8
Lower zero line, dry	-	-	-	-	12·1
" " wet	-	-	-	-	8·7

The scale values are:—

For dry bulb	-	-	-	10° = 0·634 inch.
For wet bulb	-	-	-	10° = 0·602 "
Barograph	-	-	-	1 inch = 1·551 "

A comparison of the various thermometers was made in water at a temperature of 52° Fahr. with the Kew standard, No. 720, and the following corrections determined:—

Dry bulb, No. 708	-	-	-	-	°	-0·1
Wet " " 711	-	-	-	-	-	-0·1
Maximum, No. 58,846	-	-	-	-	-	0·0
Minimum, " 63,942	-	-	-	-	-	0·0
Grass minimum, No. 59003	-	-	-	-	-	0·0
Barograph thermometer, no number	-	-	-	-	-	-0·8

Fort William, September 18th–20th.—All the instruments here were found in good working order, but I dismantled and cleaned both the barograph and thermograph clocks, and attached new cords to the weights as well as to the winding barrels. Also the lenses, condensers, and mirrors received due attention.

As regards the photography, the intensity of the traces was much improved after the lenses, &c. had been cleaned, the sheets taken off

and developed on the 20th being quite equal to the curves obtained at the other observatories.

The values of the zero lines are as follows :—

Upper zero line, dry	-	-	-	-	-	79 ^o ·3
" " wet	-	-	-	-	-	77·5
Lower zero line, dry	-	-	-	-	-	16·0
" " wet	-	-	-	-	-	17·4

The scale values are:—

For dry bulb	-	-	-	10 ^o = 0·670 inch.
For wet bulb	-	-	-	10 ^o = 0·695 "
Barograph	-	-	-	1 inch = 1·542 "

The thermometers were compared with the Kew standard, No. 720, and found to have the following corrections at 58^o Faht. :—

Dry bulb, No. 671	-	-	-	-	0 ^o ·0
Wet " No. 672	-	-	-	-	-0·2
Maximum, No. 1092	-	-	-	-	+0·1
Minimum, No. 1322	-	-	-	-	+0·8
Barograph thermometer, No. 690	-	-	-	-	-2·1
Attached thermometer (to Standard barometer), No. 72,222	-	-	-	-	-0·3

NOTE.—As the correction to the minimum thermometer was rather large I heated the chamber end over a lamp, and, after standing the tube for some time in a vertical position, determined the following correction :—

Minimum, No. 1322	-	-	-	-	+0 ^o ·5
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The self-recording rain-gauge was examined and the clock oiled, after which a Richard pen was fitted to the instrument in place of the ordinary lead pencil. Mr. Rankin was instructed in its manipulation, and asked to mark the paper at the beginning and end of the trace, and also to revolve the cylinder for a zero line.

As a good deal of rain fell subsequent to starting the gauge, an excellent opportunity was afforded of testing the action of the pen. The curve which came off on the following morning showed the marking to be quite satisfactory.

Deerness, Orkney, September 23rd–25th.—Owing to the inclemency of the weather it was useless to attempt to inspect the anemometer at Deerness on September 23rd, as previously arranged by letter with Mr. Spence. Fortunately there was an improvement on the following day, so that I was able to drive over from Kirkwall and dismount the instrument.

The anemometer was found to be in excellent order, and, as usual, is well attended to. I carefully examined the external parts, and found that the cup, arms, and fans were in good condition. All parts were well lubricated, but the asbestos oil in the direction-bearing was not satisfactory, having become thick and somewhat sticky at the bottom of the reservoir. This I had thoroughly cleaned out and filled with the new sperm oil which had been sent from the Meteorological Office.

The cup at the top of the velocity spindle was also filled with sperm oil, and the other bearings lubricated in the same way. I took the opportunity of fitting a new screw to the oil hole of velocity shaft in place of a wooden plug which had been temporarily used.

The clock was oiled and the registering apparatus generally cleaned.

Afterwards the orientation was tested. At times a slight kink is seen in the velocity trace; this is due to the back-leash existing between the cylinder and clock, but I was afraid to gear up the wheels too tightly for fear of stopping the clock.

Mr. Spence informed me that he estimates the force of the wind according to the Beaufort scale from the anemometer curves.

Aberdeen, September 29th–October 1st.—At this observatory all the instruments were working satisfactorily, and the photography was good. The barograph and thermograph had their clocks, lenses, condensers, and mirrors generally cleaned. In the thermograph the dots of light were not quite vertically over one another; this was rectified, and I attempted to widen the distance between the dry and wet traces, but was not successful, as the metal fittings and screws for this adjustment had become so corroded that I was afraid of using too much force, there being considerable risk of breaking the thermograph tube itself.

The values of the zero lines are—

Upper zero line, dry	-	-	-	-	81 ^o ·4
" " wet	-	-	-	-	79·3
Lower zero line, dry	-	-	-	-	23·0
" " wet	-	-	-	-	15·8

The scale values are—

For dry bulb (summer)	-	-	-	10 ^o = 0·719 inch.
" " (winter)	-	-	-	10 ^o = 0·761 "
" wet-bulb	-	-	-	10 ^o = 0·700 "
Barograph	-	-	-	1 inch = 1·573 "

From a comparison of the various thermometers in water at 50^o with the Kew standard, No. 720, the following corrections were determined :—

Dry bulb, No. 397	-	-	-	-	-0 ^o ·1
Wet " 395	-	-	-	-	-0·6
Maximum, No. 1002	-	-	-	-	+0·1
Minimum, No. 5056	-	-	-	-	+0·1
Barograph thermometer (no number)	-	-	-	-	-2·2
Attached thermometer to the standard barometer, No. 71061	-	-	-	-	-0·1

The anemometer was inspected and found to be well lubricated, the oil in the direction reservoir and velocity cup being in excellent condition. After cleaning the instrument, the various parts were supplied with fresh sperm oil, obtained locally by Mr. Boswell, who informed me that sperm oil with just a dash of paraffin had been used for some years past for the anemometer, and found to answer in every way satisfactorily.

The orientation was duly tested and found correct.

I had the rain-gauge dismounted and oiled, and regulated the clock. A Richard pen was fitted in place of the ordinary lead pencil, and water run through the receiver at intervals to test the pen's action in marking the paper, which was found satisfactory.

The observer was instructed to mark the paper at the beginning and ending of the trace.

Alnwick, October 2nd-3rd.--I visited Alnwick Castle on October 2nd by appointment with H. J. Willyams, Esquire. The anemometer was found in good order and well oiled. This is regularly performed by the resident mechanic, under the direction of Mr. Revall, the architect, who takes a great interest in the working of the instrument.

The registering apparatus was also satisfactory, but I oiled the clutches of both the direction and velocity pencils, as well as the escape wheel of the clock. I did not, however, take the clock to pieces, as it had only quite recently been cleaned by the local watchmaker.

The orientation was examined.

North Shields, October 5th-6th.--The anemograph at this station was found in good action, and is evidently well attended to.

On dismantling the instruments I found everything satisfactory, excepting that the worm of the direction spindle, referred to in Mr. Constable's report of last year, is in a very bad state. I would, therefore, suggest that Captain Harrison be requested to send the direction fans, with the spindle and nuts and *lignum vitæ* bearings, to Mr. Munro for repair. When finished, the mechanic who periodically oils the instrument could quite well remount the fans, &c., as the orientation adjustment will not have been interfered with.

The external parts were cleaned, and the different bearings supplied with fresh asbestos oil. Also the recording apparatus was attended to, and the clock oiled, after which the orientation was examined and found correct.

Yarmouth, October 8th-10th.--Unfortunately the weather on the first day of my visit here was so stormy that it was practically impossible to dismount the exposed parts of the anemometer, but I examined and cleaned the registering apparatus, and oiled the clock.

Mr. Watson called my attention to the action of the velocity cups, which were vibrating a good deal, and also to a grinding noise which could be heard at intervals during their rotation. Fortunately the gale abated during the day, and Friday (October 9th) turned out fine, so that I was able to get the instrument down.

The bearings were well lubricated, with the exception of the velocity cup bearing, which had run quite dry. On examining the velocity shaft, I found that the lower bearing upon which the spindle rests had become worn down on one side, and also that one of the nuts securing the cups to the shaft was loose, which I think would account for the vibration and grinding noise referred to by Mr. Watson.

It was undesirable to remount the instrument in such a condition, so, acting upon telegraphic authority from the Meteorological Office, I sent up the lower bearing of the cup spindle, and also the worm end of the shaft, to Mr. Munro, requesting him to carry out the repairs as early as possible.

I then examined and cleaned the direction part of the apparatus, and oiled the bearings with fresh asbestos lubricant. After adjusting and examining the orientation, which was found correct, the instrument was started for the registration of direction only.

As Mr. Watson did not care to undertake the responsibility of fitting up the repaired portions of the velocity shaft, I revisited Yarmouth on October 20th, and found that, in the meantime, the cups, &c., had been painted, and a new step-ladder placed on the roof of the Sailor's Home, by means of which access is gained to the external parts of the instrument. The repaired portions were duly fitted together, and the anemometer was finally started about 4 p.m., and the sheet which came

off on the morning of October 21st showed that everything was satisfactory.

(Signed) T. W. BAKER.

Holyhead, August 11th-13th.—All three different anemometers at this station were examined.

The *Robinson* was in good order, and apparently well looked after. It was dismantled and cleaned, and the asbestos lubricant, which was found to be clean and fluid, was removed and replaced with sperm oil recently supplied by the Meteorological Office.

Before disturbing the instrument I checked the orientation, and found it satisfactory, and the markings are on anemograph curve No. 224. This was repeated after the inspection, and this set of lines will be found on curve No. 225.

The advantage of frequent examination of the orientation was pointed out, and it was promised that it should be done more regularly in future.

Dines' Pressure-tube Anemometer.—The recording and interior parts of this instrument were dismantled and examined. The water was clean, but there was a whitish deposit on every joint of the float, about $\frac{1}{8}$ inch thick on the bottom of the water vessel and on upper part of brass collar at bottom of float, and was found more or less all over the metal surfaces.

This deposit was not gritty, crumbled when touched, and was black on the under side in contact with the metal surface, and I think it may have been caused by the water acting chemically on the flux where it had exuded from the tinned joints in the copper, and, if so caused, will probably not be found again, or only in a much smaller degree when float is next examined.

It was all removed, and every part of float, water-vessel, tube, &c., thoroughly and carefully cleaned, fresh water put in, and all left in good order.

Mr. Davis, who attends to the anemometers—under the direction of Mr. Cotton—being of opinion that the vane still “hung” in light winds (which was confirmed by my own observation), a long ladder and ropes were procured, and Mr. Davis at some risk reached the top and took off the vane-piece.

The inside of vane and the tube on which it slides was wet, and had a thin greenish covering; this was cleaned off, and vane replaced, and it is now much livelier in light airs.

Mr. Cotton suggests, as a means to prevent this “hanging,” that the present vane tube should be enlarged throughout its length, and be fitted with a narrow collar (about three sixteenths of an inch) of same interior diameter as present tube, at upper and lower ends, so as to make the necessary almost air-tight fitting, but to prevent the whole surface of tube acting as a bearing when covered with any deposit.

As regards the occasional faint trace, the observer states that this is now much less frequent, since he recently ceased to dilute the ink with water.

He has a small shallow water-dish inside cylinder cover to keep air moist.

Bridled Anemometer.—The cup-spindle was dismantled and examined, and two cups—Nos. 1 and 4, counting from finial—were found to be pierced through, presumably by stones thrown by boys. These holes I had soldered up, and the concave surfaces hammered out again.

The cups, spindle, and base need painting, and I asked Mr. Cotton to have this done (and at same time to have a coat of paint put on the Robinson fans).

The friction balls in the exterior platform, carrying the cup-spindle, were dirty and sticky, and the oil rather viscid, and those in the bearing just under roof (which are very difficult to get at) were the same. They were washed in paraffin and freshly lubricated with sperm, and left in good order.

The interior and recording parts seem to be carefully attended to, and appeared to be working satisfactorily.

The present good ink traces are not obtained from the gold pen with iridium point, supplied last March, but from Mr. Curtis' fountain pen, with the addition of a small damper at end of tongue to retard flow of ink.

Stonyhurst, August 14th and 15th.—The barograph and thermograph were in good order, but both clocks required cleaning, and they were accordingly taken to pieces and cleaned.

The crutch of each clock was rusted.

The air-hole of barograph was looked to and found clear.

There has been considerable difficulty with the gas supply, owing to faulty pipes, but the laying of a new main to observatory is now seriously contemplated, and if this can be carried out it is hoped that future loss of trace and faint curves will be prevented. I suggested some minor changes in photographic procedure, which will tend, I hope, to improve the density of the curves.

Anemometer.—The recording part was in excellent condition, and required but slight attention, but the exterior certainly needed overhauling, and was entirely dismantled.

The lubricant (local sperm and paraffin) used for the direction rollers was fluid, but dirty, and had quite dried up in the oil-cup at top of velocity shaft. All parts were thoroughly washed in paraffin and lubricated with fresh sperm.

I pointed out to Rev. Father Sidgreaves the advantage of having an oiling-hole drilled through cover immediately over the worm on fan-axle, as without this it is not easy to keep worm properly oiled, and, in fact, that was dry and rather rusty.

It was promised that this should be done at earliest opportunity, and worm and teeth lubricated at frequent intervals. The orientation was duly checked.

Rain-gauge.—On inspecting the working I found there was too much friction with the pencil employed, which hampered the free action of the float, and this is shown on several curves. The pencil was removed, and a "Richard" pen fitted to replace it, also a little mercury taken out to improve freedom of float, and the working then showed considerable improvement.

The clock was cleaned, and "discharger" examined, and water was then run into the gauge from a filter, and a series of ink traces obtained, which were very satisfactory.

The observer was instructed in the manipulation of the pen, and his notice especially called to the necessity of using the least possible pressure of pen on paper—practically only a mere contact being required.

The following are the corrections required by the thermometers in use in the "Thermograph" screen, obtained by comparison with Kew standard thermometer, No. 720, at 55°:—

Dry standard, 619	-	-	-	-	-	0°	-0·1
Wet „ 382	-	-	-	-	-	-	-0·4
Maximum, M.O. 1525	-	-	-	-	-	-	0·0
Minimum, B.T. 501	-	-	-	-	-	-	+0·2

and corrections to thermometers in "Stevenson" screen are:—

Dry bulb, 553	-	-	-	-	-	0°	-0·3
Wet „ 555	-	-	-	-	-	-	-0·4
Maximum, 7310	-	-	-	-	-	-	-0·5
Minimum, 48587	-	-	-	-	-	-	0·0
Grass minimum, 81514	-	-	-	-	-	-	+0·1

Fleetwood, August 17th–18th.—The anemometer here seemed to be working satisfactorily, but examination showed that it would be improved by cleaning, &c., and it was accordingly dismantled and overhauled. The oil was fluid but rather dirty, and there was a considerable deposit in the direction-rollers sink; this was removed, all left clean, and the old oil replaced with fresh asbestos lubricant.

The pin holding the velocity shafting under platform was very loose, and had almost worked out; this was put right.

Careful drawings were made of the *lignum vitæ* bearings, asked for by Mr. Munro, and were forwarded by Mr. Gaulter, and the shoulders were then lowered a little to improve action.

There is considerable "play" between the worm or fan-axle and the teeth of the fixed tooth-wheel.

The clock and recording parts received necessary attention, and the clock pendulum, which had got "out of beat," was corrected.

I checked the orientation before dismantling instrument, and it seemed satisfactory.

The advantage of regular testing of the orientation was pointed out, and in future endeavours will be made to have it done at more frequent intervals. Mr. Gaulter checked it with me on morning of 18th, and these lines are on the anemograph curve for that date.

Armagh, August 19th and 20th.—The anemometer was di-mounted and cleaned. The oiling seems to be regularly done, and the asbestos lubricant was clean and fluid.

As this is a station selected for trial of the new sperm oil this year, I removed the old lubricant, and replaced it with the sperm. It is worth noting that the oil here was entirely free from the deposit found at Fleetwood, although precisely the same kind of oil.

The bottom spiral of worm at base of cup-spindle, taking into reducing gear, was bent up; this was put right. It may, perhaps, have affected results in low velocities.

The velocity pencil marks faintly in low winds, and this seems a fault peculiar to this particular anemometer, for, although endeavours were made by cleaning, re-adjustment of counterpoise, &c. to improve it, I am afraid it is but very slightly the better. The direction-spiral is not exactly true, the pencil not describing a straight line during a revolution. Orientation tested and was satisfactory.

Several trees to west and north of observatory have been topped, but there are others on neighbouring estate which will, ere long, influence anemometer.

The rain-gauge received due attention, the new "Richard" pen was fitted to it, and instructions given in its manipulation, and a series of artificial discharges obtained.

The "Willesden" papers having arrived, a fresh start was made on August 20th with the pen and "Willesden" sheets.

The hedge to north of gauge is too high, but Dr. Dreyer stated that it would be cut at an early date.

Dublin, Mountjoy Barracks, August 21st-22nd.—The officer now in command here is Major Hellard, R.E. Before inspecting anemometer I examined some curves, and went into the question of the very faint traces which occurred at this station. Corporal Stone, who has had the care of the instrument for some years, is strongly of opinion that it is due to damp, and states that in wet weather the sheets stretch considerably, although every endeavour is made to keep cylinder case, pencils, &c. as dry as possible, but as in this particular type of anemometer the recording portion is necessarily very much exposed, the defect of faint traces at times cannot very well be overcome, except, perhaps, by the adoption of silver helices, as at Scilly.

The balls and the lubricant (local oil) in direction bearings were rather gummy; all parts were cleaned and replenished with asbestos lubricant.

The vane appeared fairly active, but seemed better after the examination.

Clocks, &c., were taken to pieces, oiled, and left in good order.

Orientation was satisfactory. Dublin time is kept at this station.

Valencia, August 25th-28th.—All the recording instruments here evidently receive regular care and attention.

The clocks of barograph and thermograph were cleaned and left in good order, but I found next morning that the barograph light shutter had not acted after midnight.

No cause could be discovered for this failure, but I revolved barrel many times both by hand and by clock, and the shutter dropped each time clean and sharp, and has subsequently worked satisfactorily.

The "air-hole" was examined and found quite clear.

The Inspector last year experienced considerable difficulty with the thermograph clock, and this year its beat had again become faint and irregular, but the crutch shaft is made of very poor steel, and its permanent adjustment to a regular beat is difficult and troublesome, but I managed to considerably improve it, at least for the present.

The *Raingauge* received necessary attention, and some paraffin was floated over the mercury. The new pen was fitted up, and instructions given in its usage, and water run through for a set of discharge traces.

The *Anemometer* was dismantled and cleaned.

The fans are showing evident signs of wear, and are badly corroded, but Mr. Cullum informed me that the provision of new ones has been decided upon.

The oil was found to be clean and fluid, and would have done for some time longer, but I thought it best to have it removed and replaced with fresh asbestos lubricant.

The orientation was duly checked and found satisfactory.

The thermometers in use were compared with Kew standard No. 720, at 56°, and found to require the following corrections:—

Dry bulb, No. 383	-	-	-	-	° -0·5
Wet „, No. 388	-	-	-	-	-0·3
Maximum, No. 104	-	-	-	-	-0·4
Minimum, No. 308	-	-	-	-	+0·2
Thermometer attached to barometer, Adie 1240	-	-	-	-	-0·9

After the comparison, the minimum tube was heated, and placed vertical for some time, and subsequent determination gave the correction as 0·0.

Oxford, October 29th.—The meteorological instruments were in their usual satisfactory condition.

The barograph and thermograph did not require cleaning, this having been done very recently, and both the photography and the definition of curves are very good.

The anemometer is kept well lubricated, but the old asbestoline in the direction-roller bearings had become thick and dirty. The greater portion was removed, and replaced with sperm and paraffin, and the working of the vane improved.

The orientation was examined and found good.

The rain-gauge was furnished with a pen, in lieu of the pencil hitherto used, and water was run into gauge through an aspirator-tube, and a series of discharges obtained which gave very satisfactory ink traces.

The clock pallets, &c., were oiled.

The various thermometers were compared with Kew standard No. 720, and the following found to be the corrections required, agreeing closely with those applied at the Observatory:—

Dry-bulb thermometer, No. 576, in thermograph screen	-	-	-	-	-0°·15
Wet-bulb „ „ 575 „ „	-	-	-	-	-0·20
Dry-bulb „ B.T. 1710, in Stevenson screen	-	-	-	-	-0·25
Wet-bulb „ „ 1709 „ „	-	-	-	-	-0·15
Maximum „ M.O. 356 „ „	-	-	-	-	-0·40
Minimum „ „ 363 „ „	-	-	-	-	+0·15
Grass minimum thermometer, 70852	-	-	-	-	+0·25
Old grass minimum thermometer, 2221	-	-	-	-	+3·30

(Signed) E. G. CONSTABLE.

APPENDIX VI.

METHOD OF DEALING WITH TELEGRAPHIC WEATHER INTELLIGENCE.

The operations connected with the preparation and issue of the Forecasts and Storm Warnings have not undergone any material change. Full details will be found in Appendix X. to the Report for 1891.

DAILY WEATHER REPORT.

The Office receives, when the telegraphic communications are perfect, sixty reports each morning, eighteen each afternoon (except on Sundays), and twenty-nine each evening, the arrangement of which is explained in the Annual Reports for recent years.

The change made in the Daily Weather Report during 1894, by the insertion of Reports from the Azores (forwarded by the courtesy of the Portuguese Meteorological Authorities), is still in force. The Report fills four large quarto pages, as it has for several years past.

The standing portions (maps, &c.) are printed in blue, and the information for each day is in black.

The Monthly "Correction and Addition List" is published as before.

The subscription for the Report is—

<i>For delivery by hand, where feasible,</i>	<i>£2 per annum ;</i>
" <i>by book post</i>	<i>£1</i> "

An early issue of MS. copies of the observations and remarks is supplied to some applicants at the rate of 2*l.* 10*s.* per annum. Arrangements can also be made for the supply of charts drawn from the 8h. a.m. or 6h. p.m. observations, such as appear in the "Times."

WEEKLY WEATHER REPORT.

The Weekly Weather Report, which has appeared since February 1878, and was re-arranged at the commencement of 1890, is prepared for the calendar week, Sunday to Saturday. It is published regularly on Thursdays, and is illustrated by three maps for each day, which, like the Daily Reports, show the outline of the land and sea in blue, while the information is in black. The maps show (1) for 8 a.m., the temperature, weather, and sea disturbance; and (2) for 8 a.m. and 6 p.m., the distribution of pressure, the winds, over, and on the coasts of, Europe, and the sea disturbance when considerable. The information on the first and second pages of each report consists of observations of Temperature and Rainfall made at 78 stations, the individual values for which are given on the second page of the Report. Sunshine records taken at 50 stations are given on pages 2 and 6.

Tables of *Accumulated Temperature*, designed to give persons engaged in agriculture better means of estimating the manner in which vegetation is affected by temperature than that afforded by the more usual methods of treating the readings of the thermometer, are still published on the first and second pages, and show for each week, and for the whole period from the beginning of the year, the weekly and progressive values respectively, of the combined amount and duration of the excess or defect of the air temperature, above or below a suitably fixed standard, or *base temperature*. The base value adopted is 42° Fahr.

Accumulated Temperature is expressed in *Day-degrees*; a Day-degree signifying 1° F. of excess or defect of temperature above or below the base (42° F.) continued for 24 hours, or any other number of degrees for an inversely proportional number of hours.

The following are the rules for computing, for a weekly period, from the observed maxima and minima, the accumulated temperature above or below 42° F. :—

1. Obtain the mean temperature, from the means of the seven observed maxima and minima, suitably corrected for non-periodic changes of temperature.

2. In obtaining the accumulated temperature four cases may occur, to which the following rules will apply :—

Conditions of Temperature.	To obtain the daily Accumulated Temperature	
	Above 42° F.	Below 42° F.
If the minimum is <i>above</i> 42° F. or <i>equal to</i> 42° F.	Subtract 42° F. from the mean.	There is none.
If the minimum is <i>below</i> 42° F., but the mean for the day is <i>above</i> 42° F.	From the difference between the mean for the day and the minimum deduct the accumulated temperature below 42° F., calculated as stated in the next column.	The required quantity is the excess of 42° F. over the minimum, multiplied by the coefficient 0·4.
If the mean for the day is <i>below</i> 42° F., but the maximum is <i>above</i> 42° F.	The required quantity is the excess of the maximum over 42° F., multiplied by the coefficient 0·4.	From the difference between the mean for the day and the minimum deduct the accumulated temperature above 42° F., calculated as stated in the preceding column.
If the maximum is <i>below</i> 42° F., or <i>equal to</i> 42° F.	There is none.	Subtract the mean from 42° F.

In each of the above cases the result will be the *average daily* value, and must be multiplied by 7 in order to obtain the value for the whole week.

The coefficient varies with the duration of the period, and also with the base temperature.

The coefficient given above, in Rules 2 and 3, is for a weekly period, and for the base temperature 42° F. The following are its values for other base temperatures,—for 32° F., 0·4; for 52° F., 0·33; for 62° F., 0·25.*

In addition to the reports from the Telegraphic Reporting Stations, and the returns from certain self-recording Observatories, weekly schedules from 56 volunteer observers are used, the names of the stations and observers being given in Appendix XI., p. 76.

An early copy of the MS. of the report is prepared on Tuesday in every week, and the summary on its first page is sent to several papers on that evening; the printed copies of the complete report are ready for sale on Thursday afternoon.

* A full explanation of the principles on which these rules are based will be found in Appendix II. to the Quarterly Weather Report for 1878.

Appendices, &c. to the Weekly Weather Reports.

Two Appendices, I. and II., have appeared, similar to those for several recent years. The Monthly Summary Supplement gives the average values for Pressure, Temperature, Rainfall, and Bright Sunshine of the current month, and the difference between these values and the means for the corresponding months in a long series of years, together with the number of days on which rain, snow, hail, thunder &c., &c. occurred, and the number of days on which the wind blew from the eight principal points of the compass.

For the Weekly Weather Report 1896, the following information has been completed and issued :—

Appendix III.—Showing for each District, during each of the three Lustra and the whole period comprehended in the 15 years, 1881–95—the mean values for each week, for Rainfall, Accumulated Heat, and Bright Sunshine.

Appendix IV.—Showing for the same Districts and period the Mean Temperature of the Air for each week.

In the *Preface* three important Tables have been included, showing for each Station for each of the calendar months and for the whole year :—

1. The Means of Temperature—Minima, Daily, and Maxima, for the 25 years, 1871–95.
2. Rainfall in inches, for the 30 years, 1866–95.
3. Bright sunshine (number of hours recorded and per-centage of possible duration), for the 15 years, 1881–95.

ISSUE OF FORECASTS.

REMARKS on the actual state of the weather, and FORECASTS for not more than one day in advance, are prepared at the Meteorological Office as under :—

*On Week Days.**

- (1.) At 11 a.m. (from the morning reports), for the 24 hours ending at Noon on the day following the date of issue. These are intended especially for the early editions of the evening papers, for the clubs, and for exhibition at certain selected stations (see page 10).
- (2.) At 3.30 p.m. (from the morning and afternoon reports), for the day following that of issue. This set of forecasts is supplied to a few newspapers and a copy is exhibited regularly at the door of the Meteorological Office. During the Hay Harvest they are telegraphed to about 28 well-known agriculturists, to be made known in their neighbourhoods (see p. 12).
- (3.) At 8.30 p.m. (from the 8 a.m., 2 p.m., and 6 p.m. reports), for the civil day following that of issue. These are supplied gratis to any newspaper or news agency which may apply for them, and send for them regularly. A very large number of the more important papers and news agencies avail themselves of this advantage.

* Good Friday, Christmas Day, and Bank Holidays are reckoned as Sundays.

The forecasts are made for the following districts :—



0. SCOTLAND, NORTH.
1. SCOTLAND, EAST.
2. ENGLAND, N.E.
3. ENGLAND, EAST.
4. MIDLAND COUNTIES.
5. ENGLAND, SOUTH (and English Channel).
6. SCOTLAND, WEST (with Isle of Man).
7. ENGLAND, N.W. (with North Wales).
8. ENGLAND, S.W. (with South Wales).
9. IRELAND, NORTH.
10. IRELAND, SOUTH.

The remarks and forecasts are posted at the doors of the Meteorological Office, 63, Victoria Street, S.W., on week days,* for the inspection of the public. Copies, or extracts from them, are communicated under the conditions stated below, but no information which is not substantially included in them can be supplied.

A series of boards is exhibited on the front of the Office showing in large type the state of the wind, weather, and sea disturbance at six stations, situated on our S.E., S., and W. coasts. The stations selected are Yarmouth, Dungeness, The Needles, Scilly, Holyhead, and Valencia (Ireland), and the observations posted up are those for 8 a.m. and 2 p.m. daily, except on Sundays,* the boards being changed at about 9h. 45m. a.m. and 3h. p.m. The information can be easily read from the street.

FORECASTS FOR SUBSCRIBERS.—Any person can be supplied with a copy of the Forecasts, once on each week day,* on payment of a subscription of ten shillings per annum, or 2s. 6d. per official quarter, or any part thereof, *in addition to the cost of transmission*; the charges will therefore be, by *letter post*, 9s., by *book post*, 5s. 9d., per quarter.

The forecasts for any individual district and for any of the hours mentioned above can be forwarded daily, on payment of 3d. per day for any definite period, in addition to the cost of transmission.

FORECASTS FOR CLUBS.—These are drawn up at 11 a.m., for all the districts, and are supplied to Clubs, for a subscription of ten shillings per annum. They are delivered by hand to Clubs situated in or near Pall Mall. Special arrangements can be made for delivery at a greater distance by hand or by post.

FORECASTS FOR HAY AND CORN HARVESTS, OR FOR PUBLIC USE.—Special facilities are offered for the transmission of Forecasts for these purposes, a nominal fee of 2s. 6d. being charged for an official quarter or any part thereof, in addition to the cost of the telegrams.

EXHIBITION OF TELEGRAPHIC FORECASTS AT LOCAL POST OFFICES.—The Post Office has sanctioned the exhibition of Forecasts at Local Post Offices, provided space is available, if the persons to whom they are addressed desire them to be so exhibited instead of being delivered to themselves.

Unless otherwise arranged, all forecasts transmitted by post are sent by book post, not as letters.

* Good Friday, Christmas Day, and Bank Holidays are reckoned as Sundays.

INQUIRIES AS TO THE WEATHER.

INQUIRIES PERSONALLY OR BY MESSENGER.—Any person applying at the Meteorological Office between 11 a.m. and 8 p.m. on week days, and between 7 p.m. and 8 p.m. on Sundays,* can be supplied, in writing, with the latest information in the possession of the Office, with regard to the weather in any district, or the latest forecast issued for any specified district, on payment of one shilling for each inquiry.

INQUIRIES BY LETTER.—Application may be made by letter, enclosing thirteen pence in stamps if the reply is to be *by post*, and one shilling in stamps, *in addition to the cost of the reply* (consisting of ten words, exclusive of the address) if the reply is to be *by telegraph*.

INQUIRIES BY TELEGRAPH.—Any person may obtain *by telegraph* from the Meteorological Office the latest information as to the weather in, or the latest forecast for any district of the United Kingdom by payment of a fee of one shilling *in addition to the cost of a telegram and reply to any post office*. The telegram containing the inquiry must be addressed as follows :

To
WEATHER,
LONDON.

The payment for the reply should be for at least ten words in addition to the address.

Application may also be made for similar information to be sent either *by telegraph* or *post* on any future specified day.

CHECKING OF FORECASTS AND STORM WARNINGS.

The forecasts and storm warnings issued by the Office are carefully checked by being compared with the conditions actually experienced during the time to which they refer. The method adopted was fully explained in the Annual Report for 1891, and the results for 1896 will be found on pp. 14 and 15.

In order to render the information in the possession of the Office as to the weather experienced on our coasts still more complete, the Council have, as in preceding years, obtained from the various Lighthouse Boards the original log-books from some of the most exposed light-ships and lighthouses. They again express their cordial thanks for the co-operation so readily granted to them by these Boards.

* Good Friday, Christmas Day, and Bank Holidays are reckoned as Sundays.

APPENDIX VIII.

STORM WARNINGS.

The Meteorological Office issues notices of atmospherical disturbances on or near the coasts of the British Islands (free of charge) to ports and fishing stations recommended by responsible local authorities.

The fact that one of these notices has been received at any station is made known by hoisting a black canvas cone, 3 feet high and 3 feet wide at base, which has the appearance of a triangle when hoisted. The telegram directing the cone to be hoisted should be exhibited near the signal staff.

At dusk, whenever a signal ought to be flying if it were daylight, a night signal, consisting of three lanterns hung on a triangular frame, may be hoisted in place of the cone.

The Meteorological Office supplies the canvas cone, but does not undertake to supply the lanterns. In all cases the local authorities must undertake the charges incidental to the hoisting of the signal, such as flagstaff and gear, oil, &c., and also as to the keeping of the apparatus in repair, painting, &c.

The following is a list of the stations to which storm-warning telegrams are sent :—

NORTHERN.	WESTERN.	SOUTHERN.	EASTERN.
SCOTLAND, N.E.	IRELAND, S.W.	ENGLAND, S.W.	ENGLAND, N.E.
Lerwick.	Tuskar L.H.	Scilly.	Berwick - on -
Scalloway.	New Ross.	St. Sennen.	Tweed.
Dunrossness.	Dunmore East.	Newlyn, West.	Cullercoats.
Stromness.	Dungarvan.	Penzance.	Tynemouth.
Kirkwall.	Minehead L.H.	The Lizard.	South Shields.
Cantick Head L.H.	Youghal.	Falmouth.	Souter Point L.H.
Holborn Head.	Queenstown.	Pendennis.	Sunderland.
Dunnet Head.	Cork.	Mevagissey.	Hartlepool.
Wick.	Passage.	Mount Batten.	Middlesborough.
Tarbet Ness L.H.	Kinsale.	Plymouth.	Redcar.
Avoch.	Do. (Old Head).	Devonport.	Flamborough Hd.
Inverness.	Galley Head L.H.	Prawle Point.	Whitby.
Nairn.	Castletownshend.	Teigumouth.	Filey.
Burghead.	Brow Head.	Exmouth.	Bridlington.
Lossiemouth.	Tralee.		Hull.
Buckie.	Limerick.		Goole.
Port Knockie.	Loophead L.H.		Grimsby.
Cullen.	Galway.		Boston.
Portsoy.			
Banff.	IRELAND, N.W.		
Fraserburgh.	Tory Island L.H.		
Peterhead.	Rathmullan.		
Aberdeen.	Malin Head.		
Girdleness L.H.	Portrush.		
	Port Ballintrae.		

[Continued]

NORTHERN.	WESTERN.	SOUTHERN.	EASTERN.
SCOTLAND, E.	IRISH SEA.	ENGLAND, S.	ENGLAND, E.
Stonehaven.	Belfast.	Guernsey.	Sutton Bridge.
Montrose.	Donaghadee.	St. Helier's (Jersey).	Lynn.
Scurdy Ness L.H.	Burr Point.	Gorey "	Sheringham.
Broughty Ferry.	Howth.	Weymouth.	Cromer.
Dundee.	Kingstown.	Anvil Point L.H.	Yarmouth.
St. Andrews.	Pt. of Ayre (I. of M.)	Poole.	Southwold.
Anstruther.	Ramsey "	Southampton.	Orford Ness L.H.
Pittenweem.	Douglas "	Hamble.	Ipswich.
Buckhaven.	Castletown "	Yarmouth.	Harwich.
Wemyss, West.	Silloth.	Cowes.	Gunfleet L.H.
Burntisland.	Maryport.	Ryde.	
Grangemouth.	Workington.	St. Catherine's Pt.	
Bo'ness.	Whitehaven.	Portsmouth.	
Granton.	Barrow.	Littlehampton.	
Newhaven.	Morecambe.	Brighton.	
Leith.	Fleetwood.	Newhaven.	
Fisherrow.	Blackpool.		
Dunbar.	Lytham.		
Cockburnspath.	Southport.		
St. Abb's Head.	Formby.		
Eyemouth.	Liverpool.		
	Runcorn.	ENGLAND, S.E.	
	Hoylake.	Eastbourne.	
	New Brighton.	Hastings.	
	Connaught's Quay.	Rye.	
	Penmaenmawr.	Sandgate.	
	Port Penrhyu.	Folkestone.	
	Point Lynas L.H.	Dover.	
	Holyhead.	Deal.	
	South Stack L.H.	Ramsgate.	
	Caernarvon.	North Foreland.	
	Port Dinorwic.	Margate.	
	ST. GEORGE'S	Faversham.	
	CHANNEL.	Sheerness.	
	Aberystwyth.	Chatham.	
	Milford.		
	BRISTOL CHANNEL.		
	Pembrey.		
	Llanelli.		
	Swansea.		
	Briton Ferry		
	Porthcawl.		
	Nash L.H.		
	Penarth.		
	Cardiff.		
	Do. (Bute Dock).		
	Do. (Barry Dock).		
	Newport.		
	Weston-super-Mare.		
	Burnham.		
	Bridgewater.		
	Lundy Island.		
	Ilfracombe.		
	Bull Point L.H.		
	Barstaple.		
	Appledore.		
	Hartland Pt. L.H.		
	Boscastle.		
	Port Isaac.		
	Newquay.		
	Hayle.		
	St. Ives.		
SCOTLAND, W.			
Glasgow.			
Greenock.			
Rothesay.			
Lamlash.			
Campelton.			
Mull of Cantire			
L.H.			
Ardrossan.			
Girvan.			
Ballantrae.			
Cairn Ryan.			
Corsewall Point			
L.H.			
Mull of Galloway			
L.H.			

NORTHERN.	WESTERN.	SOUTHERN.	EASTERN.
SCOTLAND, E.	IRISH SEA.	ENGLAND, S.	ENGLAND, E.
Stonehaven.	Belfast.	Guernsey.	Sutton Bridge.
Montrose.	Donaghadee.	St. Helier's (Jersey).	Lynn.
Scurdy Ness L.H.	Burr Point.	Gorey "	Sheringham.
Broughty Ferry.	Howth.	Weymouth.	Cromer.
Dundee.	Kingstown.	Anvil Point L.H.	Yarmouth.
St. Andrews.	Pt. of Ayre (I. of M.)	Poole.	Southwold.
Anstruther.	Ramsey "	Southampton.	Orford Ness L.H.
Pittenweem.	Douglas "	Hamble.	Ipswich.
Buckhaven.	Castletown "	Yarmouth.	Harwich.
Wemyss, West.	Silloth.	Cowes.	Gunfleet L.H.
Burntisland.	Maryport.	Ryde.	
Grangemouth.	Workington.	St. Catherine's Pt.	
Bo'ness.	Whitehaven.	Portsmouth.	
Granton.	Barrow.	Littlehampton.	
Newhaven.	Morecambe.	Brighton.	
Leith.	Fleetwood.	Newhaven.	
Fisherrow.	Blackpool.		
Dunbar.	Lytham.		
Cockburnspath.	Southport.		
St. Abb's Head.	Formby.		
Eyemouth.	Liverpool.	ENGLAND, S.E.	
	Runcorn.	Eastbourne.	
	Hoylake.	Hastings.	
	New Brighton.	Rye.	
	Connah's Quay.	Sandgate.	
	Penmaenmawr.	Folkestone.	
	Port Penrhyn.	Dover.	
	Point Lynas L.H.	Deal.	
	Holyhead.	Ramsgate.	
	South Stack L.H.	North Foreland.	
	Caernarvon.	Margate.	
	Port Dinorwic.	Faversham.	
	ST. GEORGE'S	Sheerness.	
	CHANNEL.	Chatham.	
	Aberystwyth.		
	Milford.		
	BRISTOL CHANNEL.		
	Pembrey.		
	Llanely.		
	Swansea.		
	Briton Ferry		
	Porthcawl.		
	Nash L.H.		
	Penarth.		
	Cardiff.		
	Do. (Bute Dock).		
	Do. (Barry Dock).		
	Newport.		
	Weston-super-Mare.		
	Burnham.		
	Bridgewater.		
	Lundy Island.		
	Ilfracombe.		
	Bull Point L.H.		
	Barnstaple.		
	Appledore.		
	Hartland Pt. L.H.		
	Boscastle.		
	Port Isaac.		
	Newquay.		
	Hayle.		
	St. Ives.		
SCOTLAND, N.W.			
Fair Isle L.H.			
C. Wrath L.H.			
Stourhead L.H.			
Port of Ness.			
Stornoway.			
Portnaguairan.			
SCOTLAND, W.			
Glasgow.			
Greenock.			
Rothsay.			
Lamlash.			
Campbelton.			
Mull of Cantire			
L.H.			
Ardrossan.			
Girvan.			
Ballantrae.			
Cairn Ryan.			
Corsewall Point			
L.H.			
Mull of Galloway			
L.H.			

APPENDIX IX.

FISHERY BAROMETERS.

LIST of PLACES supplied with FISHERY BAROMETERS.

Shetland Isles.—Balta Sound, Uya Sound, Burravoe, Nesting, Lerwick, Sandwick, Scalloway, Symbister.

Orkney Isles.—Westray, Papa Westray, Burray, Kirkwall.

Scotland, east coast.—Duncansbay, Freswick, Auchengill, Keiss, Ackergill, Staxigoe, Wick, Lybster, Dunbeath, Inver, Portmahomack, Ballintore, Cromarty, Avoch, Nairn, Burghead, Portessie, Port Knockie, Portsoy, Whitehills, Gardenstown, Roseheart, Pitullie, Fraserburgh, Inverallochy, Pointlaw, Findon, Portlethen, Skateraw, Stonehaven, Arbroath, Broughty Ferry, St. Andrews, Crail, Cellardyke, St. Monance, Burntisland, Newhaven.

England, east coast.—Berwick, North Shields, South Shields, Sunderland, West Hartlepool, Staithes, Scarborough, Filey, Flamborough, Bridlington Quay, Withernsea, Hull, Lynn (2), Wells, Gorleston, Lowestoft, Orford Haven, Felixstowe, Harwich, Brightlingsea, West Mersea, Maldon, Leigh, Margate, Deal, Kingsdown, Dover.

England, south coast.—Bognor, Ryde, Bembridge, Brixton, Atherfield, Ventnor, Yarmouth (Isle of Wight), Gorey (Jersey), Haslar Hospital, Poole, Weymouth, Portland, Budleigh Salterton, Exmouth, Cawsand, Mevagissey, Gorranhaven, Devoran, Portsatho, Penryn, Durgan, Porthallow, Falmouth, Coverack, Newlyn (2), Mousehole, Penberth, Porth Guarra.

England, south-west coast.—St. Ives, Hayle, Port Isaac, Boscastle, Bideford, Burnham, Highbridge, Weston-super-Mare.

Wales.—Briton Ferry, Swansea, Angle, Milford, Aberystwyth, Nevin, Carnarvon.

England, north-west coast.—Fleetwood, Morecambe, Maryport.

Isle of Man.—Douglas, Port St. Mary, Peel (2).

Scotland, south-west coast.—Port Patrick, Stranraer.

Ireland, east coast.—Cushendall, Belfast, Bangor, Groomsport, Donaghadee, Ardglass, Warren Point, Carlingford, Greenore, Dundalk, Malahide, Howth, Kingstown (2), Bray, Wicklow.

Ireland, south coast.—Dunmore East, Dungarvan, Crosshaven, Kinsale, Union Hall, Castletownsend, Baltimore, Schull (2), Crookhaven, Castletown (Berehaven), Lawrence Cove, Ballydonegan, Ballycrovane.

Ireland, west coast.—Valencia, Dingle, Tralee, Ballyheigue, Tarbert, Kilcredane, Kilonan, Galway, Spiddal, Cleggan, Elly Bay, Ballyglass, Ballycastle (Co. Mayo), Donegal, Tribane, Killybegs, Teelin, Malinmore, Portnoo, Burton Port, Kincaslugh, Bunbeg.

Ireland, north coast.—Dunfanaghy, Rathmullen, Buncrana, Malin Head, Moville, Greencastle, Portstewart, Portrush, Port Ballintrae, Ballycastle (Co. Antrim).

Scotland, west coast.—Tarbert (Loch Fyne), Loch Ranza, Campbeltown, Carradale, Portree, Armadale (Isle of Skye), Isle of Soay, Plockton, Shieldaig, Gruinard, Ullapool, East Mey, Gills, Stroma (2).

Hebrides.—Stornoway, Portnaguran, Obb, Valtos, Carloway, Ness.

APPENDIX X.

METHODS FOLLOWED IN DEALING WITH METEOROLOGICAL RETURNS FROM LAND STATIONS IN THE BRITISH ISLES.

These stations are of seven classes, as stated on page 16.

I.—*Observatories continuously observing all the Meteorological Elements.*

Returns from observatories.

Hourly measurements of the curves obtained from the self-recording instruments at the observatories of the Office are made by the observers at each station, on printed forms supplied for the purpose, which, together with the curves, are forwarded to the Office weekly. They comprise measurements of the barograms, of the dry-bulb and wet-bulb thermograms, of the anemograms, and of the rain-gauge curves.

Examination of returns.

The measurements are subjected to a careful examination in order to ensure as far as possible their accuracy, and the revised regulations which have been adopted to secure this end will be found in the Report of the Office for 1890. They comprise rules for the guidance of observers, as well as of the assistants charged with the examination of the work at the Office. Attention need be called here to only two of these rules, viz., (a) the use of subsidiary sheets on which are entered the results of a second set of measurements of the curves made after, and quite independently of, the first set, and with a different form of scale, the two sets of measurements being afterwards compared together, and any differences found inquired into and set right; and (b) the re-measurements of the curve made by the assistants at the Meteorological Office, and which always amount to 40, and in doubtful cases to many more, per month, for each element. The attention of the observers is always drawn to such errors as may be detected, and to any failures in the continuity of the curves arising from failure of the light, stoppage of the clock, defective photography, faulty action of the wet-bulb thermometer, &c.; a report containing the results of the examination of each observatory being also submitted to the Council periodically. The tabulations are eventually bound and stored with the curves in the Office.

Results of examination and report to Council.

General supervision of observatory work.

In connexion with this work should be mentioned the general watch which has to be kept over the working of the observatories and of the instruments, not only to secure uniformity amongst them and observance of rules, but also to guard against small changes which are liable to occur at certain times, especially with the thermographs, and which may affect the scale-values of the instrument or the datum lines used for the tabulation of the curves. About twice a year this work calls for special examination, entailing some considerable time, and occasionally the engraving of new scales, for measuring the curves.

METHOD OF DEALING WITH THE NUMERICAL RESULTS FROM THE SELF-RECORDING OBSERVATORIES.

Interpolations.

In dealing with the tabulations the first step is to go over the sheets and fill up by interpolation, wherever possible, any gaps or breaks in the continuity of the record.

The records having been made as complete as possible, are then used for the calculation of daily and hourly mean values, for periods of five days, calendar months, and for the year; which, together with other data obtained from the same source, are published under the title of "Hourly Means of the Readings obtained from the Self-recording Instruments at the Five Observatories under the Meteorological Council." The volume for 1894 is in the press. See p. 18.

It will be noticed that this publication includes results from only five observatories, while on page 17 seven observatories are mentioned. This is owing to the fact that since the year 1884 the records at Stonyhurst and Glasgow have not been fully published by the Office (although the stations are partially subsidized by it, in order to maintain the record established in 1868 and published for the years 1869 to 1883), where, however, the curves are stored for future use if required.

Returns from both these observatories are published in "Returns from Stations of the Second Order," and meteorological results for Stonyhurst are printed independently by the college authorities.

II.—Anemographic Stations at which the Wind is recorded continuously.

The anemograms received from Alwick Castle, Deerness, Dublin, Fleetwood, Holyhead, North Shields, Scilly, and Yarmouth are regularly examined and tabulated in the Office, and the sheets bound up in volumes. Besides special inquiries on legal and other points that from time to time arise, and in which these documents are of high importance, the tabulations are always employed in the preparation of the various Reports issued by the Office. They are also regularly used in the checking of the Storm Warnings.

Anemographs.

III.—Barographic Stations at which the Atmospheric Pressure is continuously recorded.

These stations are for the most part either telegraphic reporting stations or stations of the second order. The instrument in most general use is Richard's self-recording aneroid. At the telegraphic stations the record is first used to inform the observers as to the changes which have occurred since the last observing hour, and these changes, when large, are reported by wire to London, and are used in preparing the forecasts. The curves themselves are forwarded to the Office weekly and are stored for future use.

Barographs.

IV.—Sunshine Stations at which the duration of Bright Sunshine is continuously recorded.

The daily records of sunshine which are now received from 49 Stations in the British Islands are examined generally, to guard against accidental changes in the adjustment of the instruments. Notes explaining any omission or accidental defect are added to the cards, if required, and after their receipt has been acknowledged, they are duly stamped, dated and then stored in the Office.

Sunshine records.

A tabulation of these curves is published as part of the Weekly Weather Report, mentioned in Appendix VI., and for those stations, which are also Stations of the Second Order, the monthly totals of bright sunshine in hours, together with the per-centages of its possible duration, are published as Part IV. of "Returns from Stations of the Second Order." Hourly tabulations are made in the Office of the returns from the observatories, and the mean hourly amounts are published in the volumes of "Hourly Means." A table showing the daily amount of sunshine at Bunhill Row, one of the London stations, is also prepared quarterly, for the Royal Meteorological Society.

Weekly totals.

V.—Telegraphic Reporting Stations.

These are 30 in number in these islands, and the particulars as to the observations taken at them, and the methods adopted in dealing with them, will be found fully detailed in Appendix VII. to the Report for 1888-89, and in Appendix VI. to the present volume.

VI.—Land Stations.

Ever since the year 1866 returns of more or less completeness have been received from land stations in the United Kingdom. In that year there was only one station, but by 1871 the number had increased to 15, and five years later to 49, including 14 stations belonging to the Royal Meteorological Society, copies of the returns from which were sent to the Office under a special arrangement with the Society.

At the end of March 1897 the total number of stations was 140, including 17 belonging to the Royal Meteorological Society and 19 belonging to the Scottish Meteorological Society.

The Stations of the Second Order are distributed as follows: 42 in England, 2 in Wales, 24 in Scotland, and 11 in Ireland.

The methods followed with regard to the examination and publication of these returns have been fully detailed in previous reports, and need not now be repeated. The changes introduced into the volume for 1886 have been continued in those for later years. These refer to the barometer readings, which are now given at station-level instead of being reduced to the mean sea-level; and to the humidity, where the depression of wet bulb is shown, the international forms A and B being modified accordingly.

The volume of "Returns from Stations of the Second Order" for 1893 contained returns from 71 stations, while that for 1894, now in the Press, contains returns from 72 stations.

Arrangements have been made under which it is hoped that the arrears of this publication will be rapidly reduced.

Reports from the Irish stations are regularly supplied to the Registrar-General for Ireland for his Weekly and Quarterly Returns.

When an application for the adoption of a new station is received, a schedule is forwarded to the observer containing a series of questions as to the outfit of the station, the exposure of the instruments, and the influence likely to be exerted on their indications by surrounding objects, such as houses and trees. Only mercurial barometers are accepted, and only such as have been duly verified. All thermometers must have been tested at Kew. A plan of the station, showing the positions of the instruments with regard to neighbouring objects, is also required.

On the return of this schedule the answers are considered, and, where necessary, alterations are advised.

If, however, the existing arrangements are satisfactory, tables for reducing the barometer readings to 32° Fahrenheit at mean sea-level are prepared and duplicates sent to the observer, together with a set of Hygrometrical Tables, and a copy of "Instructions in the Use of Meteorological Instruments."

The first returns are compared and examined with special care, and a report of the result of the examination is forwarded to the observer, with instructions how best to improve and complete the returns.

There are still many parts of the British Islands very poorly represented by the existing stations; for instance, Wales, the northern coasts of Cornwall and Devon, Somersetshire, Essex, the south-east of Ireland, &c., and any information for these districts would be valuable.

Origin and progress of system.

New stations.

VII.—*Land Stations of the Third Order.*

These are 61 in number. The information supplied from them is, in some cases, similar to that supplied by a station of the second order, but taken only once daily, or at irregular hours, or perhaps less complete. At other stations less detail is given; for instance, 31 stations furnish only the daily rainfall. All the information thus afforded is utilised in some way or other, though it is not all included in the Office publications. The rainfall values are copied and supplied to Mr. Symons, F.R.S., for publication in "British Rainfall."

INSPECTION.

The Stations of the Second Order are regularly inspected, the attention of the inspector being directed by the Office to any special point which may require investigation.

LIST OF STATIONS.

In Appendix XI., page 76, is given a complete list of the stations supplying information to the Office.

APPENDIX XI.

LIST of STATIONS in the BRITISH ISLANDS from which INFORMATION has been received at the METEOROLOGICAL OFFICE during the year ending March 31st, 1897.

The Stations marked "S" are in connexion with the Scottish Meteorological Society, and those marked "M" are in connexion with the Royal Meteorological Society. The returns from these Stations are received by the Office under an arrangement which will be found detailed in previous reports.

In certain cases where the actual station at which the Observations have been taken is not generally known, and could not be readily identified, the name of some village or town near has been inserted following the name of the station, within brackets.

The nature of the information received from each station is indicated by letters as follows :—

A. *Observatories*.—Continuous record of pressure, temperature, wind, sunshine and rain, with eye observations of the amount, form, and motion of the clouds, and notes on the weather.

B. *Anemographic Stations*.—Continuous record of the direction and velocity (or force) of the wind.

C. *Barographic Stations*.—Continuous record of pressure.

D. *Second Order Stations*.—Regular observations at 9 a.m. and 9 p.m. each day, local time, of pressure, temperature (dry bulb and wet bulb), wind, cloud, and weather, with the daily maxima and minima of temperature, the daily rainfall, and general remarks on the weather.

E. *Second Order Stations*.—Monthly means and summaries on Form B. of observations taken at 9 a.m. and 9 p.m., each day as above.

F. *Climatological Stations*.—The maximum and minimum temperature and the rainfall for each day, with remarks on the weather. This information is received in the Meteorological Office each week for use in the "Weekly Weather Report."

G. *Third Order Stations*.—Observations of the same kind as at Second Order Stations, but either :—

(a) less full.

(b) taken only once daily.

(c) taken at irregular hours.

R. *Rainfall Stations*.—Daily observations of the amount of rainfall, with remarks on the weather.

S. *Sunshine Stations*.—Continuous record of bright sunshine.

T. *Telegraphic Stations*.—Regular observations at 8 a.m. and 6 p.m. G.M.T. (and from some stations at 2 p.m. in addition), of pressure, temperature, wind and weather, with the daily maxima and minima of temperature, the daily rainfall, and, where possible, the sea-disturbance at 8 a.m. each day and the daily amount of bright sunshine. This information is received at the Meteorological Office each day by telegraph, for use in the "Daily Weather Report" and, as required, for use in the "Weekly Weather Report."

W. *Sea-temperature*.—Daily observations of the temperature of the sea water.

Station.	Lat.	Long.	Height in feet above M.S.L.	Observer.	Nature of Infor- mation supplied.	Page where Inspector's Report for 1896 will be found.
Aberdeen Observatory	57 10	2 6 W.	46	Prof. C. Niven	A. T. C.	36, 55
" Cove Bay	57 9	2 5 "	—	Coastguard	W.	
Alnwick Castle	55 25	1 43 "	210	Humphry Wilyams, for the Duke of Northumberland.	B. F.	46, 56
Ardrossan, Ayrshire	55 38	4 50 "	15	J. W. Mayes	T.	35
Arley Cottage (Mount Nugent).	53 50	7 18 "	262	The Lord Farnham	D. S.	
Arlington Court, Barn- staple.	51 8	3 53 "	613	W. Stewart, for Lady Chichester.	F.	37
Armagh Observatory	54 21	6 39 "	196	J. L. E. Dreyer	B. D. F. S.	59
Arran, North, Galway	53 6	9 40 "	—	Coastguard	G. W.	
Aysgarth Vicarage, Yorks	54 18	1 58 "	646	Rev. F. W. Stow	D.	
Bahama Bank Lightship	54 20	4 13 "	—	Light-keepers	W.	
Ballantrae, Ayrshire	55 6	5 0 "	—	Coastguard	W.	
Ballydonegan, Co. Cork	51 38	10 3 "	—	"	W.	
Ballyglass, Co. Mayo	54 17	9 52 "	—	"	W.	
Baltimore, Co. Cork	51 28	9 22 "	—	"	G.	
Bantry	51 41	9 27 "	—	R. Brennan	R.	
Belmullet, Co. Mayo	54 13	9 59 "	40	Miss E. Tolan	T.	40
Belvoir Castle, Grantham	52 54	0 47 "	259	W. H. Divers (for the Duke of Rutland).	D.	47
§ Ben Nevis	56 48	5 0 "	4,406	R. T. Omond, for Directors Ben Ne- vis Observatory.	S. E.	
¶ Bennington, Herts.	51 54	0 5 "	407	Rev. J. D. Parker	E.	
¶ Berkhamsted	51 46	0 34 "	400	E. Mawley	E.	
¶ Bidston Observatory, Liver- pool.	53 24	3 4 "	188	W. E. Plummer	D. T.	38
¶ Birr Castle, Parsonstown	53 6	7 55 "	175	O. Boeddicker, for Earl of Rosse.	D. S. T.	
¶ Blackpool	53 48	3 3 "	31	A. J. Anderson	F. S.	
Blacksod Point, Co. Mayo	54 6	10 4 "	—	Coastguard	W.	
Bolton, Chadwick Museum	53 35	2 27 "	389	W. W. Midgley	G.	
Bournemouth	50 43	1 53 "	—	Messrs. Primavesi, for Town Council.	S.	50
§ Braemar	57 0	3 24 "	1,111	J. Aitken	D. F. S.	
Bramley, Surrey	51 11	0 33 "	148	J. Bartlett	D.	40
Bray, Co. Wicklow	53 12	6 6 "	—	Coastguard	G.	
Brighton	50 49	0 8 "	—	A. Newsholme	S.	50
Burnmouth, Ayton, Berwick	55 51	2 4 "	—	Coastguard	W.	
Burntisland	56 4	3 14 "	—	"	W.	
¶ Buxton	53 14	1 54 "	987	E. A. Dent	E.	
Caernarvon Bay Lightship	53 6	4 45 "	—	Light-keepers	W.	
Cambridge	52 13	0 6 E.	88	Miss A. Walker	T. S.	43
Cardigan Bay Lightship	52 25	5 1 W.	—	Light-keepers	W.	
§ Cargen	55 2	3 37 "	72	P. Dudgeon (the late) and A. Peacock.	E.	35
Carrigallen, Co. Leitrim	53 58	7 38 "	‡ 350	Mrs. J. Godley and Miss Morrow.	R.	
Castletownshend, Co. Cork	51 32	9 11 "	—	Coastguard	G.	
Chatham	51 23	0 32 E.	136	The Instructor in Surveying.	G.	51
¶ Cheadle	52 58	1 57 W.	646	J. C. Philips	E. F.	
¶ Cheltenham	51 54	2 3 "	184	R. Tyrer	E.	
¶ Chester	53 12	2 54 "	59	Rev. J. Cairns Mitchell.	D.	38
Churchill, Oxon	51 56	1 34 "	509	Giles Edmonds	R.	42
¶ Churchstoke	52 31	3 5 "	533	P. Wright	D. F. S.	
Cirencester	51 43	1 57 "	446	Prof. Ohm	F. S.	42
Cleggan, Co. Galway	53 33	10 8 "	—	Coastguard	W.	
Clifton	51 27	2 37 "	230	D. Rintoul	F.	37
Colly Weston	52 37	0 31 "	280	Miss A. Tasker	R.	43
Colwyn Bay	53 17	3 43 "	—	R. E. Lord	S.	38
Coningbeg Lightship	52 2	6 40 "	—	Light-keepers	W.	
Cooper's Hill, Egham	51 26	0 34 "	279	Prof. H. McLeod	G.	
Cromarty	57 41	4 0 "	—	Coastguard	W.	
Cronkbourne (Douglas)	54 10	4 29 "	137	A. W. Moore	D. F. S.	38
Crookhaven	51 28	9 43 "	—	Coastguard	G.	
Crosshaven	51 48	8 18 "	—	"	G.	
Cuckfield, Sussex	51 1	0 9 "	389	John Howe	R.	51
¶ Cullompton	50 51	3 23 "	202	T. Turner	F. S.	
¶ Currygrane (Edgeworths- town), Co. Longford.	53 45	7 39 "	267	J. M. Wilson	D. F.	
Daunt's Rock Lightship	51 43	8 16 "	—	Light-keepers	W.	
Deerness, Orkney Islands	58 56	2 45 "	169	M. Spence	B. D. S.	36 54
Dolmelynlyn (Dolgelly)	52 47	3 53 "	—	W. Simonds, for C. R. Williams.	R.	

Station.	Lat.	Long.	Height in feet above M.S.L.	Observer.	Nature of Infor- mation supplied.	Page where Inspector's Report for 1896 will be found.
Donaghadee -	54 38	8 32 W.	26	T. MacGowan	T.	
Doneraile, Co. Cork	52 13	8 34 "	266	Captain Evans	R.	
Dover, Waterworks	51 7	1 18 E.	198	H. E. Stilgoe	R.	51
Dublin, Botanic Gardens	53 23	6 18 W.	67	F. W. Moore	D.	33
" City	53 20	6 15 "	47	J. W. Moore	D. F.	33
" Mountjoy Obs., Phoenix Park.	53 22	6 21 "	155	Maj. R. C. Hellard, R.E.	B. D. S.	60
Duddington -	52 36	0 32 "	152	Fred Coventry	R.	43
♠ Dundee	56 28	2 56 "	160	J. Carnochan	D. S.	
Dunfanaghy (Sheephaven)	55 11	7 58 "	—	Coastguard	W.	
Dungeness	50 55	0 59 E.	26	W. Batton	T.	48
♠ Dunrobin Castle	57 59	3 56 W.	12	D. Melville, for the Duke of Sutherland.	D.	36
Durham	54 46	1 35 "	336	H. J. Carpenter	D. F. S.	46
Dursley (Farnley), Glos.	51 41	2 21 "	250	R. W. Pinney	R.	42
Eastbourne	50 46	0 17 E.	38	R. Sheward	D. S.	49
East Goodwin Lightship	51 13	1 36 "	—	Light-keepers	W.	
East Dereham	52 41	0 57 E.	158	G. H. Cooper	R.	
Edgbaston (Birmingham)	52 28	1 56 W.	534	Alf. Cresswell	D.	
Edinburgh	55 57	3 12 "	253	R. C. Mossman	D. S.	36
English and Welsh Grounds Lightship.	51 27	3 0 "	—	Light-keepers	W.	
Ennis, Co. Clare	52 51	8 59 "	18	P. L. K. Dobbin	R.	
" Roslevan	52 51	8 59 "	38	Miss A. L. Scott	R.	
Epsom, R. Med. College	51 20	0 14 "	271	W. T. N. Spivey and H. E. Gardner.	D.	49
Falmouth	50 9	5 4 "	167	E. Kitto	A. F.	61
Fleetwood	53 56	3 1 "	—	M. S. Gaulter	B.	59
Forquardenny, Perth	56 21	3 29 "	175	C. L. Wood	C.	
♠ Fort Augustus	57 8	4 40 "	68	Rev. M. Wall	E. F. S.	35
Fort William	56 48	5 6 "	31	R. T. Omond, for Directors, Ben Nevis Observatory.	A. F.	35, 53
Foynes, Co. Limerick	52 37	9 7 "	108	Lord Monteaigle	F.	
Fredville (Dover)	51 7	1 18 E.	173	H. W. Plumtre	R.	51
Fulbeck, Lincolnshire	53 3	0 37 W.	185	Rev. Vere F. Willson	D.	47
Geldeston (Beccles)	52 28	1 31 E.	37	E. T. Dowson	D. F. S.	43
Gilcrux (Maryport)	54 44	3 23 W.	261	J. Monkhouse	D. F. S.	40
Glasgow	55 53	4 18 "	180	Prof. L. Becker	A. D. F.	53
♠ Glencarron	57 30	5 14 "	489	D. D. Munro	E. F.	
Glenlee	55 5	4 12 "	203	W. Melville	E. F.	35
♠ Gordon Castle	57 37	3 5 "	101	C. Webster (for the Duke of Richmond and Gordon, K.G.).	E.	
Gorleston, Suffolk	52 35	1 43 E.	—	R. J. C. Day	G.	
Guernsey (St. Peter's)	49 32	2 32 W.	—	F. E. Carey	S.	37
Harpenden, Herts.	51 49	0 20 "	419	T. Wilson	G.	
Harrogate	54 0	1 33 "	344	G. Farrah	F. S.	
Haslar Hospital, Hants	50 47	1 7 "	—	T. Rogers	G.	
Hawes Junction	54 19	2 18 "	1135	W. H. Bunce	G.	
Hesley Hall (Bawtry)	53 26	1 2 "	65	B. I. Whitaker	F.	47
♠ Hereford	52 5	2 45 "	274	T. A. Chapman	F.	
Heysham Hall, Lancashire	54 3	2 54 "	95	S. Lomas, for Miss L. Grafton.	D.	39
♠ Hillington	52 48	0 33 E.	88	Rev. H. E. B. Ffolkes	D. F. S.	
Holyhead, Harbour Office	53 18	4 39 W.	57	F. M. Cotton	B. W.	57
" Sailors' Home	53 18	4 39 "	48	T. Chope	T.	33
Hurdlestown, Broadford, Co. Clare.	52 48	8 38 "	167	Maj. W. O. Bentley, R.A.	R.	
Hurst Castle	50 42	1 33 "	12	E. T. Tremble	T.	48
Kearsney Abbey, Dover	51 8	1 17 E.	?100	C. W. Curtis	R.	51
Ketton, Stamford	52 38	0 32 W.	—	F. Coventry	F. G.	43
Kew Observatory	51 28	0 19 "	18	C. Chree	A.	
Kilcredane, Co. Clare	52 35	9 47 "	—	Coastguard	W.	
Kilkenny	52 39	7 14 "	212	H. Carlton, for the Marquis of Or- monde.	C. F.	
♠ Killarney	52 4	9 30 "	86	Ven. Archdeacon Wynne.	E. F.	
Killiney (Clonevin), Co. Dublin.	53 16	6 7 "	249	B. O'Brien Furlong	R.	
Kirkwall	58 59	2 57 "	—	Coastguard	W.	
Kish Bank Lightship	53 19	5 55 "	—	Light-keepers	W.	

Station.	Lat.	Long.	Height in feet above M.S.L.	Observer.	Nature of Infor- mation supplied.	Page where Inspector's Report for 1896 will be found.
Ladylaw (Hawick) -	55 28	2 47 W.	447	T. Wilson -	C. D.	35
Lahinch -	52 55	9 21 "	52	Miss J. Bowes -	R.	36
S Lairg -	58 1	4 22 "	335	Rev. D. Macree -	E.	
Lamlash, Isle of Arran, Scotland.	56 32	5 8 "	—	Coastguard -	W.	
Laudale, Argyleshire -	56 41	5 41 "	14	A. Fletcher, for T. H. G. Newton.	D. F.	35
S Lednathie -	56 45	3 7 "	710	W. Morrison (for Stormonth Dar- ling).	E.	36
Leith -	55 58	3 10 "	20	T. Richardson -	T.	
Leman and Ower Lightship	53 8	2 2 E.	—	Light-keepers -	W.	
Lerwick -	60 9	1 8 W.	—	Coastguard -	W.	
Limerick -	52 39	8 36 "	—	A. W. Shaw -	R.	
Liscannor, Co. Clare -	52 56	9 23 "	—	Coastguard -	W.	
S Lissan, Co. Tyrone -	54 41	6 45 "	300	Sir N. Staples, Bt. -	E.	
Llandinam, Montgomery -	52 29	3 26 "	500	Edward Davies -	R.	
Llandoverly -	51 59	3 48 "	217	J. Watkins -	F.	
FR Llandudno -	53 21	3 50 "	88	J. Nicol -	E. F.	
" -	53 21	3 51 "	20	J. McMaster -	S.	
London, Brixton -	51 29	0 7 "	77	F. Gaster -	T.	
" City -	51 32	0 5 "	80	Messrs. de la Rue -	S.	
" Pall Mall -	51 32	0 8 "	—	Athenæum Club -	C.	
" Westminster -	51 31	0 8 "	76	The Staff of the Met. Office.	C. G.	
" Westminster Training College.	51 31	0 8 "	—	H. A. Reatchlous -	S.	
Londonderry -	55 0	7 19 "	67	J. Conroy -	D. F.	40
Loughborough -	52 47	1 12 "	169	W. Berridge -	T.	43
Lowestoft -	52 29	1 44 E.	—	J. Moore -	G.	
FR Lowestoft -	52 29	1 44 "	85	S. H. Miller -	E.	
Malin Head, Co. Donegal -	55 23	7 24 W.	230	J. Williams -	T. C.	40
Manchester -	53 29	2 13 "	190	J. Niven -	G. S.	39
S Marchmont -	55 44	2 25 "	498	J. A. Wood -	E. F. S.	50
FR Margate -	51 24	1 24 E.	83	J. Stokes -	S.	
Market Rasen -	53 23	0 20 W.	83	W. B. Jevons -	R.	
Markree Castle, Co. Sligo -	54 11	8 27 "	122	A. Marth, for Col. Cooper.	D. F. S.	47
Minard, Co. Kerry -	52 7	10 8 "	—	Coastguard -	W.	
Nairn -	57 36	3 52 "	84	Miss Penny -	T.	35
Newcastle-on-Tyne -	54 59	1 36 "	152	N. H. Martin -	G. S.	46
Newarp Lightship	52 45	1 53 E.	—	Light-keepers -	W.	
Newport, Monmouth -	51 35	3 0 W.	—	F. W. Houghton -	R.	
Newquay, Cornwall -	50 25	5 4 "	250	J. Pearce -	S.	46
" -	50 25	5 5 "	—	Coastguard -	W.	
Northallerton -	54 20	1 26 "	129	W. Stead -	R.	
North Foreland -	51 23	1 27 E.	115	A. Cox and Jenkins -	T.	48
North-West Lightship, Liverpool.	53 31	3 31 W.	—	Light-keepers -	W.	
FR Norwood -	51 26	0 6 "	220	W. Marriott -	E.	
S Ochtertyre -	56 23	3 53 "	329	G. Croucher, for Sir P. K. Murray, Bt.	E. F.	40
Omagh (Edenfel) -	54 36	7 19 "	300	Col. Buchanan -	F.	
Oswaldkirk, Yorks. -	54 12	1 3 "	—	R. Thompson -	S.	46
Outer Dowsing Lightship -	53 27	1 5 E.	—	Light-keepers -	W.	
Owers Lightship -	50 39	0 41 W.	—	" -	W.	
Oxford -	51 46	1 16 "	208	W. Wickham, for the late E. J. Stone.	T. S.	41, 62
Parkstone, Dorset -	50 43	1 56 "	197	R. H. Barnes -	D.	49
Penbedw, Mold -	53 12	3 11 "	650	H. W. Buddicom -	C.	
Pennant Bay, Aberdour -	57 40	2 16 "	—	Coastguard -	W.	
S Pinnore, Girvan -	55 12	4 49 "	187	P. Donald, for Capt. Hamilton.	E.	
Plymouth, The Hoe -	50 22	4 8 "	116	H. Victor Prigg -	D. F. S.	37
" Freedom Fields -	50 24	4 8 "	207	" -	R.	
S Poltalloch -	56 8	5 30 "	132	J. Russell, for Lord Malcolm.	E.	35
Portrush -	55 13	6 40 "	—	Coastguard -	W.	
Prawle Point -	50 12	3 43 "	332	M. Holmes -	T.	37
Prestwich -	53 32	2 17 "	320	T. R. H. Clunn -	D. F. S.	39
Rede Court, (Rochester) -	51 24	0 29 E.	224	W. H. Tingey -	D.	49
Roche's Point, Co. Cork -	51 47	8 19 W.	42	W. Kennedy -	T.	

Station.	Lat.	Long.	Height in feet above M.S.L.	Observer.	Nature of Infor- mation supplied.	Page where Inspector's Report for 1896 will be found.
Rocheford, Tenbury	52 18	2 36 W.	316	Rev. John Tomson	C. R.	42
Rosewell	55 51	3 7 "	690	R. W. D. Cameron	E.	
Rothamsted	51 48	0 22 "	368	Sir J. B. Lawes and Sir J. H. Gilbert.	F. S.	
Rothsay	55 50	5 4 "	115	J. Kay	E.	35
Rounton, Yorkshire	54 24	1 18 "	249	Sir I. L. Bell, Bart.	E.	
Rousdon, Devon	50 43	3 0 "	515	C. E. Peek	E.	
Roxborough, Co. Limerick	52 35	8 36 "	111	A. W. Shaw	R.	
Royal Sovereign Light- ship.	50 43	0 27 E.	—	Light-keepers	W.	
Rugby	52 22	1 15 W.	379	E. Kitchener	G.	42
St. Ann's Head, Pembroke	51 41	5 11 "	150	H. T. Knott	T. S. W.	
St. Aubin's, Jersey	49 12	2 11 "	25	J. Fisher	T.	38
St. David's, Pembroke	51 53	5 16 "	215	W. P. Propert	D.	
St. Helen's, Lancashire	53 28	2 45 "	151	J. Robertson	G.	39
St. Heliers, Jersey	49 11	2 6 "	—	Signal Officer, Fort Regent.	S.	38
St. Leonards	50 51	0 33 E.	171	H. Colborne	D. F. S.	49, 50
Salcombe, Devon	50 14	3 46 W.	—	Coastguard	W.	
Sandgate, Kent	51 4	1 9 E.	56	A. Robert Bowles	R.	51
Scarborough	54 17	0 23 W.	159	E. W. Ellerbeck	D. F.	
Schull	54 17	0 23 "	—	Coastguard	W.	
Scilly Islands, St. Mary's	51 32	9 32 "	—	G.	G.	
Seafeld, Miltown Malbay Co. Clare.	49 56	6 18 "	80	A. Hicks	B.S.T.W.	44, 45
Seaham Harbour	54 50	1 19 "	148	G. H. Aird	D.	46
Sedburgh	54 19	2 32 "	400	A. P. Burra	E.	39
Seven Stones Lightship	50 4	6 5 "	—	Light-keepers	W.	
Shambles Lightship	50 31	2 20 "	—	"	W.	
Sheffield	53 23	1 29 "	429	E. Howarth	D.	47
Shields, North	55 0	1 27 "	97	J. W. Irvine	T.	45
Shields, North, High Light- house.	55 0	1 27 "	—	Captain Harrison	B.	56
Shipwash Lightship	52 2	1 38 E.	—	Light-keepers	W.	
Shirley, near Birmingham	52 25	1 49 W.	460	B. Boothroyd	F.	42
Skipton	53 58	2 9 "	567	W. Ecroyd	G.	40
Solway Lightship	54 48	3 32 "	—	Light-keepers	W.	
Southampton	50 55	1 24 "	78	J. T. Cook, for Dir. Gen. of Ordnance Survey.	D.F.S.	49, 50
Southport	53 39	2 59 "	—	J. Baxendell	S.	39
South Rock Lightship	54 25	5 22 "	—	Light-keepers	W.	
Spidall, Co. Galway	53 15	9 17 "	—	Coastguard	G.	
Spurn Head	53 34	0 7 E.	19	G. Freeman	T.	45
Spurn Lightship	53 34	0 13 "	—	Light-keepers	W.	
Stokesay, Craven Arms	52 26	2 52 W.	370	Miss M. A. Digges La Touche.	D.	
Stonyhurst College	53 51	2 28 "	375	Rev. W. Sidgreaves	A.D.F.	58
Stornoway	58 11	6 22 "	28	J. Mackenzie	T.S.C.	
"	58 11	6 22 "	—	Coastguard	W.	
Stowell, Sherborne, Dorset	50 57	2 31 "	376	Rev. H. J. Poole	F.	
Stranraer	54 54	5 2 "	—	Coastguard	G.	
Strathfield Turgiss, Hants	51 20	1 0 "	195	The late Rev. C. H. Griffith.	F.	
Strathpeffer-Spa, N.B.	57 37	4 28 "	253	J. Tregelles Fox	D. S.	35
Sumburgh Head (Shet- lands)	59 51	1 17 "	126	Rev. W. Brand	T. C.	36
Sunderland	54 54	1 23 "	—	Coastguard	W.	
Symbister, Shetlands	60 14	1 25 "	—	J. S. Nicolson	G.	
Syston, Leicester	52 43	1 5 "	178	S. K. Daniels	R.	43
Tavistock	50 33	4 8 "	391	E. E. Glyde	D.	
Tealby, Lincolnshire	53 24	0 16 "	251	Rev. S. Lewin	D.	47
Teelin, Co. Donegal	54 38	8 39 "	—	Coastguard	W.	
Tenby	51 41	4 42 "	79	W. T. Bahner	S.	
Thurcaston, Leicester	52 42	1 10 "	253	Rev. T. A. Preston	S.	43
Torquay	50 28	3 31 "	—	A. Chandler	S.	
Totland Bay, Isle of Wight	50 41	1 33 "	84	J. Dover	G.	
Union Hall, Co. Cork	51 33	9 8 "	—	Coastguard	G.	
Uppingham	52 35	0 44 "	484	Rev. G. H. Mullins	D.	
Uzon (Montrose)	56 40	2 28 "	—	Coastguard	W.	
Valencia Observatory, Ca- hireiveen.	51 56	10 15 "	30	J. B. Cullum	A. T. C.	60
Island, Glanleam	51 56	10 20 "	—	Miss E. FitzGerald	R.	
Knightstown	51 55	10 20 "	—	Coastguard	G.	

Station.	Lat.	Long.	Height in feet above M.S.L.	Observer.	Nature of Information supplied.	Page where Inspector's Report for 1896 will be found.
Wakefield	53° 41'	1° 30' W.	95	H. Clarke	E.	
Waterford	52 66	7 7 "	—	Harbour Authorities	C.	
Watergate (Emsworth)	50 56	0 55 "	—	R. Christy	S.	50
Westbourne, Sussex	50 52	0 55 "	—	Rev. L. B. Birkett	S.	51
Westray, Orkney	59 17	3 0 "	—	J. Hewison	G.	
Wick	58 27	3 6 "	80	J. Sinclair	T.	36
"	58 27	3 6 "	—	Coastguard	W.	
Wolfelee	55 23	2 39 "	587	W. Cockburn	D.	
Woolacombe	51 10	4 12 "	59	E. Henshall	D.	
Workop	53 18	1 8 "	—	H. Mellish	S.	47
Yarmouth	52 37	1 43 E.	10	G. T. Watson	B.T.C.	43, 56
" Isle of Wight	50 42	1 29 W.	—	Coastguard	G.	
Ynis-y-bro, Newport	51 38	3 3 "	115	D. Morgan	R.	
York, Bootham	53 57	1 5 "	—	J. E. Clark	S.	46
" The Museum	53 57	1 5 "	56	H. M. Platnauer	D. T.	45

In addition to those already mentioned, reports are received daily from the following Continental Stations.

Station.	Authority.	Station.	Authority.		
Haparanda	} Meteorological Office, Stockholm.	†The Helder	} Bureau Central Météorologique Paris.		
Hernösand		Brussels			
†Stockholm		Cape Gris Nez			
Wisby		†Brest (St. Mathieu)			
Karlstad	Lorient (Ile de Groix)	†Rochefort (Ile d' Aix)			
Bodö	} Meteorological Institute, Christiania.	†Biarritz		} Cent. Met. Inst. of Germany.	
†Christiansund		†Paris			
†Skudesuaes		Belfort			
Færder		Lyons			
†The Scaw	} Meteorological Institute, Copenhagen.	Nice			} Observatory, Lisbon.
Fanø		Perpignan			
Cuxhaven		Berlin			
		Wiesbaden			
	} Deutsche Seewarte, Hamburg.	Munich	} Cent. Met. Inst. of Germany.		
		Corunna			
		†Lisbon			
		Azores (P. Delgada)			

Note.—The stations marked with an asterisk (*) report also at 2h. p.m., and those with dagger (†) at 6h. p.m.; Lisbon reports at 4h. p.m. instead of 6h. p.m.
The Helder does not send reports at 6 p.m. on Sundays.

LIST OF DOCUMENTS—continued.

Place.	Observer.	Nature of Observations.
Teneriffe (Sitio de Callen)	A. F. Perry	Two observations daily, 1896, March to December; 1897, January, February.
"	"	Continuous record of pressure, 1896, February to August, November, December; 1897, January, February.
"	"	Continuous record of temperature, 1896, February to August, November, December; 1897, January, February.
Tobago	Quinten H. Spicer	Two observations daily, 1896, February to May, July to October.
Tongoa (New Hebrides)	A. Cronstedt	" " " " February to September.
Trinidad	J. H. Hart, Supt. Botanic Gardens	" " " " January to December.
"	"	Daily record of sunshine, 1896, February to December.

APPENDIX XIII.

ADDITIONS TO THE LIBRARY DURING THE YEAR ENDING
31ST MARCH 1897.

Aachen, Meteorologische Station.—Deutsches meteorologisches Jahrbuch für 1895. Meteorologische Station I. Ordnung in Aachen. Ergebnisse der meteorologischen Beobachtungen. Herausgegeben . . . von P. Polis. Jahrg. 1. la. 4°. Aachen, 1896.

——— Ergebnisse der 1896 in Aachen von der meteorologischen Station Aachen des Königl. Preuss. Meteorologischen Instituts angestellten Beobachtungen. sm. f°. Sheet.

Abels, H.—[On the density of snow at Ekaterinburg.] la. 4°. St. Pétersbourg, 1896. (*Mém. Acad. Imp. Sc. St. Pétersb., 8e. série, Cl. Phys.-Math., iii., No. 9.*) In the Russian language.

Abercromby, Hon. R.—Three essays on Australian weather. 8°. Sydney, 1896.

Contains—

Moving anticyclones in the southern hemisphere. By H. C. Russell. (*Quart. Journ. R. Meteor. Soc., xix., 1893, p. 24.*)

An essay on southerly bursters. By H. A. Hunt. (*Journ. R. Soc. N.S.W., xxviii., 1894.*)

Types of Australian weather. By H. A. Hunt.

* || ——— First report of the thunderstorm committee. On the photographs of lightning flashes received by the Royal Meteorological Society. la. 8°. (*Quart. Journ. R. Meteor. Soc., xiv.*)

* || ——— On visibility. la. 8°. (*Quart. Journ. Meteor. Soc., 1877, Jan.*)

* || ——— On the general character, and principal sources of variation, in the weather at any part of a cyclone or anticyclone. la. 8°. (*Quart. Journ. Meteor. Soc., 1877, Jan.*)

* || ——— On the application of harmonic analysis to the reduction of meteorological observations, and on the general methods of meteorology. (*Quart. Journ. Meteor. Soc., 1878, July.*)

* || ——— On a method of sometimes determining the amount of the variation of the barometer on any particular day. la. 8°. (*Quart. Journ. Meteor. Soc., 1878, Oct.*)

|| **Aitken, John.**—Notes on clouds. 8°. (*Proc. R. Soc. Edinb., 1895-96, p. 93.*)

|| **Albert Ier., Prince de Monaco.**—Sur la troisième campagne scientifique de la Princesse Alice. 4°. (*Compt. rend. acad. sc. Paris, 123, 1896, p. 1043.*)

[**Algiers, Service Météorologique du Gouvernement Général de l'Algérie.**]—Bulletin météorologique de l'Algérie. 1896, Jan. 1-Dec. 31. sm. f°. Sheets.

[**Allahabad, Meteorological Office.**]—Brief sketch of the meteorology of the North-Western Provinces and Oudh and adjacent parts of Rajputana and the Panjab. 1895. sm. f°. s.l.e.a.

American Meteorological Journal.—A monthly review of meteorology. Vol. xii., 1895-96. la. 8°. Boston, s.a.

Amsterdam, Kon. Nederlandsch Aardrijkskundig Genootschap.—Tijdschrift. Tweede serie. Deel xiii. 8°. Leiden, 1896.

|| **Angelitti, F.**—Determinazioni assolute della declinazione magnetica nel R. Osservatorio di Capodimonte eseguite negli anni 1893-96. la. 8°. (*Rend. R. Accad. Sc. Fis. Mat. Napoli, Fasc. 12°, Dio., 1896.*)

NOTE.—Books marked * have been acquired by purchase; the others are donations from institutions, societies, or authors. Those marked || are excerpt papers, extra copies of which have been separately printed.

In some cases additional publications have been received besides those specified, but only completed volumes or years are given here.

"Antarctic."—Journal, notes and addresses on the voyage of the Norwegian S.S. "Antarctic" to the South Polar Seas in the years 1894–95. 1a. 8°. Melbourne, s.a. (*Advance Sheets Trans. R. Geogr. Soc. Australasia*.)

Archibald, E. D.—The height of the neutral plane of pressure and depth of monsoon currents in India. 1a. 8°. (*Quart. Journ. R. Meteor. Soc.*, N.S., x., 1884, p. 123.)

Azambuja, G. A. de.—Anuario do Estado do Rio Grande do Sul, 1897. Anno. 13. sm. 8°. Porto Alegre, 1896.

Baltimore, Maryland State Weather Service.—The climatology and physical features of Maryland. Second biennial report of the Maryland State Weather Service for the years 1894 and 1895. 1a. 8°. Baltimore, 1896.

——— Monthly report, v., 1895–96. 4°. s.l.e.a.

[Bangalore, Mysore Government Meteorological Department.]—Meteorological results of the observations taken at the Bangalore, Mysore, Hassan, and Chitaldroog Observatories, for the years 1893 and 1894. By J. Cook. 1a. 4°. Bangalore, 1896.

Batavia, Magnetical and Meteorological Observatory.—Observations. Vol. xvii., 1894. f°. Batavia, 1895.

[Batavia, Observatorium.]—Regenwaarnemingen in Nederlandsch-Indië. xvi., Jaarg., 1894. 8°. Batavia, 1895.

Title and preface in the English language also.

Bathurst, Gambia.—Comparative rainfall, Colony of the Gambia, 1892–96, and meteorological observations, 1896. sm. f°. Sheet.

* Bebber, W. J. van.—Die Beurtheilung des Wetters auf mehrere Tage voraus. 8°. Stuttgart, 1896.

* ——— Katechismus der Meteorologie. Dritte Auflage, gänzlich umgearbeitet von W. J. van Bebber. sm. 8°. Leipzig, 1893.

Belize, Public Hospital.—Meteorological observations. 1896, Jan.–Dec. sm. f°. Sheets.

——— St. Joseph's Observatory.—Summary of meteorological observations. 1896, Jan.–Dec. 4°. Sheets. (*The Angelus, Belize*, 1896–97.)

|| Bergmann, R.—Observations météorologiques faites par M. le Baron Toll et M. le lieutenant de la marine Chileiko en 1893, pendant l'expédition aux îles de la Nouvelle Sibérie et le long du littoral de l'océan glacial. 1a. 4°. St. Pétersbourg, 1895. (*Mém. Acad. Imp. Sc. St. Pétersb.*, viii. sér., Cl. phys.-math., ii., No. 3.)

In the Russian language.

Berlin, Deutsche Meteorologische Gesellschaft.—Berliner Zweigverein der Deutschen meteorologischen Gesellschaft. 13. Vereinsjahr, 1896. 8°. Berlin, 1896.

|| ——— Königlich Preussisches Meteorologisches Institut.—Witterung nach den Beobachtungen des königlichen meteorologischen Instituts. 1896, Jan.–Dec. 1a. 4°. (*Statist. Korresp.*)

Bermuda, Registrar General's Office.—Report of the Registrar General for the year 1895. sm. f°. s.l.e.a.

|| Birmingham, Observatory of the Birmingham and Midland Institute.—Records of meteorological observations taken at the Observatory of the Birmingham and Midland Institute. By A. Cresswell. Jan. 1891 to June 1892. July 1893 to Dec. 1895. 3 vols. 8°. (*Proc. Birmingham Nat. Hist. Phil. Soc.*, 7. and ix., 1895, x., 1896.)

* Bixby, W. H.—Wind pressures in engineering construction. f°. (*Engineering News, New York*, xxxiii., 1895, *Mch.* 14, p. 175.)

|| Blasius, W.—In which direction should cities in our latitude extend in order to secure to their populations pure air and thereby health. Read before the Amer. Phil. Soc., Philadelphia, 1884. 8°.

——— Seeschiffe im Kampfe mit Orkanen. Eine Vertheidigung gegen eine Kritik im "Globus" von G. Schott (Deutsche Seewarte). 8°. Braunschweig, 1894.

|| ——— The U.S. Signal Service Bureau: Its methods and results. 8°. (*Proc. Amer. Phil. Soc.*, 1887, p. 179.)

|| ——— Was sind eigentlich Cyclone und wie entstehen sie? 8°. Braunschweig, 1897. (*Jahresb. Ver. Naturw. Braunschweig*, 1896, p. 133.)

Bolton.—Annual report of the Museums and Meteorological Observatory for 1896. 8°. Bolton, s.a.

[**Bombay, Meteorological Office.**]—Brief sketch of the meteorology of the Bombay Presidency in 1895–96. f°. s.l.e.a.

——— **Government Observatory.**—Magnetical and meteorological observations at the Government Observatory, Bombay, 1895. f°. Bombay, 1896.

——— Report on the condition and proceedings of the Government Observatory, Colaba, for the year 1895–96. f°. (Bombay), s.a.

|| [**Boston, Mass., Weather Bureau.**]—Observations of the New England Weather Service for the year 1895. la. 4°. (*Ann. Astr. Obs. Harvard Coll.*, xli., No. 4, p. 95.)

* **Bouquet de la Grye, [A.]**.—Observations météorologiques [à l'île Campbell.] 4°. (*Recueil de Mém. relatifs à l'obsn. du Passage de Vénus sur le Soleil*, iii., 1^{re} partie, 1882, p. 299.)

Boyer, H. B.—Atmospheric circulation in tropical cyclones, as shown by movements of clouds. la. 8°. s.l.e.a.

Bremen, Meteorologische Station I. Ordnung.—Deutsches meteorologisches Jahrbuch für 1895. Ergebnisse der meteorologischen Beobachtungen im Jahre 1895 und in dem Lustrum 1891–95. Herausgegeben von Dr. P. Bergholz. Jahrg. vi. la. 4°. Bremen, 1896.

Brisbane, Post and Telegraph Department, Meteorological Branch.—Brisbane Observatory, Wickham Terrace. Meteorological synopsis. 1895–96, Jan.–Dec. f°. Sheets. (*Suppl. Queensland Gov. Gazette.*)

——— Climatological table. 1895, Jan.–Dec. sm. f°. Sheets.

——— Table of rainfall. 1895, Jan.–Dec. f°. Sheets.

Brussels, Observatoire Royal.—Bulletin météorologique. 1896, Jan. 1–Dec. 31. f°. Sheets.

Bucharest, Institutul Meteorologic al Romaniei.—Analele . . . de S. C. Hepites. Tom. xi., 1895. la. 4°. Bucuresti, 1896.

In the French language also.

——— Buletin meteorologic. Anul ii., 1896. Jan. 1–Dec. 31. la. 4°. Sheets.

——— Buletinul observatiunilor meteorologice din Romania de S. C. Hepites. Anul iv., 1895. sm. f°. Bucuresti, 1896.

Budapest, Kön. Ung. Naturwissenschaftliche Gesellschaft.—Erdmagnetische Messungen in den Ländern der Ungarischen Krone in den Jahren, 1892–94. Im Auftrage der Ung. Akad. der Wissensch. ausgeführt von Ignatz Kürländer. la. 4°. Budapest, 1896.

Caffero, F.—Sul clima di Riposto.

See RIPOSTO, OSSERVATORIO METEOROLOGICO DEL R. ISTITUTO NAUTICO.

Cairo, Ministère de l'Intérieur. Administration des Services Sanitaires et d'Hygiène Publique.—Bulletin hebdomadaire. 11^{me} année, 1896, Nos. 1–52. Suppl. au Journ. Officiel, 1896–97. la. 4°.

[**Calcutta, Meteorological Office, Bengal.**]—Bay of Bengal weather chart. 1896, Jan. 1–April 30, Nov. 1–Dec. 31. sm. f°. Sheets.

——— May to October are included in the "Bay of Bengal and Bengal Daily Weather Report."

——— Bay of Bengal and Bengal daily weather report. May 1–Oct. 31, 1896. sm. f°. Sheets.

These reports are only published during the rainy season.

(———) Meteorological and rainfall table of the Province of Bengal for the months of January to December, 1896, with annual tables. sm. f°. Sheets.

——— Meteorological summary for the monsoon period of 1896. sm. f°. s.l.e.a.

[———] Summary of the meteorology of Bengal for the year 1895. sm. f°. s.l.e.a.

——— **India.**—Abstract of the results of meteorological observations taken at the Alipore Observatory in the months of Jan.–Dec. 1896. sm. f°. Sheets.

——— Abstract of the results of the barometric and thermometric observations taken at the Meteorological Office, Chowringhee. 1896, Jan.–Dec. sm. f°. Sheets.

——— Administration report of the Meteorological Reporter to the Government of Bengal for the years 1893–96. f°. s.l.e.a.

Calcutta, Meteorological Office, India.—India daily weather report. 1896, Jan. 1–Dec. 31. f°. Sheets.

[———] The India weather review for the year 1895. f°. Calcutta, 1896.

[———] Memorandum on the snowfall in the mountain districts bordering Northern India, and the abnormal features of the weather in India during the past year, with a forecast of the probable character of the south-west monsoon rains of 1896. f°. (Simla, 1896.)

(———) Rainfall of India. Fifth year. 1895. sm. f°. Calcutta, 1896.

(———) Report on the administration of the Meteorological Department of the Government of India in 1895–96. f°. s.l.e.a.

———— Results of the meteorological observations taken at the Alipore Observatory, from 5th January 1896 to 2nd January 1897. sm. f°. Sheets.

———— Results of the barometrical and thermometrical observations taken at the Meteorological Office, Chowringhee, from 5th January 1896 to 2nd January 1897. sm. f°. Sheets.

[———] Weather chart of the Indian monsoon area. 1895, Jan. 1–Dec. 31. f°. Sheets.

[——— **Surveyor-General of India.**]—General report on the operations of the Survey of India Department . . . during 1894–95. sm. f°. Calcutta, 1896.

|| **Callendar, H. L.**—Preliminary results of observations of soil temperatures with electrical resistance thermometers, made at the McDonald Physics Building, McGill University, Montreal. la. 8°. (*Trans. R. Soc. Canada, 2nd series, i., section iii.*, 1895.)

Cambridge (Mass.), Astronomical Observatory of Harvard College.—Annals. Vol. xxx., Part iv. Observations made at the Blue Hill Meteorological Observatory, Mass., U.S.A., under the direction of A. L. Rotch. Discussion of the cloud observations by H. H. Clayton. la. 4°. Cambridge, Mass., 1896.

———— Annals. Vol. xl., Part v. Observations made at the Blue Hill Meteorological Observatory, Mass., U.S.A., in the year 1895. Under the direction of A. L. Rotch. la. 4°. Cambridge, 1896.

* **Capron, J. R.**—Aurora: their characters and spectra. 4°. London, 1879.

Carlsruhe, Centralbureau für Meteorologie und Hydrographie.—Deutsches meteorologisches Jahrbuch. Grossherzogthum Baden. Die Ergebnisse der meteorologischen Beobachtungen im Jahre 1895. Zugleich ii. Theil des Jahresb. . . . la. 4°. Karlsruhe, 1896.

———— Jahresbericht . . . mit den Ergebnissen der meteorologischen Beobachtungen und der Wasserstandsaufzeichnungen am Rheiu und an seinen grössern Nebenflüssen für das Jahr 1895. la. 4°. Karlsruhe, 1896.

———— Niederschlagsbeobachtungen der meteorologischen Stationen im Grossherzogthum Baden. 1896, 1–2 Halb. 1896, 1–2 Halb. 4 vols. la. 4°. Karlsruhe, 1895–97.

———— Uebersicht der Ergebnisse der an den badischen meteorologischen Stationen angestellten Beobachtungen, nebst Wasserstandsaufzeichnungen an den wichtigsten Hauptpegeln des Rheins. 1896, Jan.–Dez. f°. Sheets.

* **Chambers, G. F.**—The story of the weather: simply told for general readers. sm. 8°. London, 1897.

|| **Chemnitz, K. Sächsisches Meteorologisches Institut.**—Abhandlungen. Heft 1. Vier Abhandlungen über Periodizität des Niederschlages, theoretische Meteorologie und Gewitterregen von P. Schreiber. la. 4°. Leipzig, 1896. (*Civilingenieur*, 1892–96.)

———— Jahrbuch . . . für das Jahr 1894. Jahrg. xii. der neuen Reihe. Zugleich Deutsches Meteorologisches Jahrbuch für 1894. Beobachtungssystem des Königreiches Sachsen. la. 4°. Chemnitz, 1895.

|| **Chree, C.**—Applications of physics and mathematics to seismology. 8°. (*Phil. Mag.*, 1897, *Mch.*, p. 173.)

|| ——— Comparison and reduction of magnetic observations. Report of the Committee . . . drawn up by the Secretary (Dr. C. Chree). 8°. (*Rep. Brit. Assoc. Advanc. Sc.*, 1896.)

(Chree, C.)—Description of the Kew Observatory. 8°. (*From the "Record" of the R. Soc.*)

|| ——— Observations on atmospheric electricity at the Kew Observatory. 8°. (*Proc. R. Soc.*, 60, 1896, p. 96.)

Christiania, Norsk Meteorologisk Institut.—Oversigt over Luftens Temperatur og Nedbøren i Norge. 1890-92, 1894, 1895. 5 parts. 8°. s.l.e.a.

——— **Norwegisches Meteorologisches Institut.**—Jahrbuch . . . für 1894, 1895. Herausgegeben von H. Mohn. 2 vols. sm. f°. Christiania, 1896.

* **Ciel et Terre.**—Revue populaire d'astronomie, de météorologie, et de physique du globe. xviii^e année; 1896-97. 8°. Bruxelles, s.a.

Coimbra, Observatorio Meteorologico [e Magnetico da Universidade].—Observações meteorológicas e magneticas. Vols. xxxiii.—xxxiv. 1894-95. 2 vols. f°. Coimbra, 1896.

|| **Colombo, Surveyor General's Office.**—Report on the meteorology of Ceylon for 1895. sm. f°. (*Ceylon Administr. Rep.*, 1895, Part ii.)

|| ——— Results of meteorological observations in Ceylon during the months of January to December 1895. f°. Sheets. (*Suppl. Ceylon Gov. Gazette*, 1895-96.)

|| ——— Return of rainfall in Ceylon during 1895, and the means during different periods. 1a. f°. Sheet. (*Suppl. Ceylon Gov. Gazette*, 1896, May 22.)

* **Colonial Office List** for 1896: comprising historical and statistical information respecting the Colonial dependencies of Great Britain, . . . Compiled by John Anderson. 8°. London, s.a.

Constantinople, Observatoire Impérial Météorologique.—Bulletin météorologique et séismique. 1895, Jan.—Dec. sm. f°. Constantinople, 1895.

Copenhagen, Dansk Meteorologisk Institut.—Bulletin météorologique du Nord, publié par les Instituts météorologiques de Norvège, de Danemark et de Suède. Année 1896. oblong 8°. Copenhagen, s.a.

——— Maanedsoversigt over Vejrforholdene. 1896, Jan.—Dec. f°.

——— Meteorologiske observationer i Kjøbenhavn, bearbejdede af V. Willaume-Jantzen, med et résumé des observations météorologiques de Copenhague. 4°. Kjøbenhavn, 1896.

——— **Kongelige Danske Videnskabernes Selskab.**—Oversigt over det . . . Forhandlinger og dets Medlemmers Arbejder i Aaret 1895. 1a. 8°. Kjøbenhavn, 1895-96.

* ——— und Hamburg, **Dänisches meteorologisches Institut und Deutsche Seewarte.**—Tägliche synoptische Wetterkarten für den nordatlantischen Ozean und die anliegenden Theile der Kontinente. x. Jahrg., 1-4 Quart., Dez. 1890-Nov. 1891. 4 vols. f°. Copenhagen et Hambourg, 1895.

In the French language also.

Cordoba, Academia Nacional de Ciencias.—Boletín. Tom. xiv. 1894-95. 1a. 8°. Buenos Aires, 1894.

|| **Cracow, C. K. Akademii Umiejętności w Krakowie.**—Materiały do klimatografii Galicyi zebrane przez sekcję meteorologiczną komisji fizyograficznej . . . 1895. 1a. 8°. Kraków, 1896. (*Odbitek ze Sprawozd. Kom. fizyogr.*)

——— **K. K. Sternwarte.**—Meteorologische Beobachtungen. 1896. 1a. 8°. Krakau, 1896.

Croydon Microscopical and Natural History Club.—[Daily rainfall at stations in Kent and Surrey.] 1896, Jan.—Dec. 4°. Sheets.

|| ——— Report of the Meteorological Sub-Committee for 1895. 8°. (*Proc. and Trans. Croydon Microsc. Nat. Hist. Club*, 1895-96, p. 203.)

|| **Curtis, R. H.**—The exposure of anemometers. 1a. 8°. (*Quart. Journ. R. Meteor. Soc.*, xxii., 1896, p. 237.)

|| ——— An attempt to determine the velocity equivalents of wind-forces estimated by Beaufort's scale. 1a. 8°. (*Quart. Journ. R. Meteor. Soc.*, xxiii., 1897, p. 24.)

|| **Cyprus.**—Meteorological observations. 1895. sm. f°. [*Cyprus Blue Book.*]

Davos.—Davoser Wetterkarte. Nach dem Schema von Herrn C. Wetzel, Ingenieur, herausgegeben im Auftrag des Curvereins Davos-Platz vom Amtl. Beobachter der Schweiz. meteor. Station Davos. 1896, Jan.—Dec. 1a. f°. Sheets.

In the French and English languages also.

|| **Devon.**—Report of the Committee on the climate of Devon. Edited by P. F. S. Amery and A. Chandler. 11th to 13th, 2nd series; 14th, 3rd series. 1892–95. 4 vols. 8°. (*Trans. Devon. Assoc. Advanc. Sc.*, xxv.–xxviii., 1893–96.)

Doberck, W.—On the rainfall and temperature of Markree, Sligo. 1a. 8°. (*Quart. Journ. R. Meteor. Soc., N.S.*, x., 1884, p. 158.)

Dorpat, (Jurjew), Meteorologisches Observatorium der Kaiserlichen Universität.—Exponate des meteorologischen Observatoriums der Kaiserlichen Universität in Jurjew (Dorpat) auf der Allrussischen Ausstellung 1896 in Nishnij-Nowgorod. 1a. 8°. (Jurjew), 1896.

—— **Kaiserliche livländische gemeinnützige und ökonomische Sozietät.**—Bericht über die Ergebnisse der Beobachtungen an den Regenstationen. 1895. 1a. 4°. Dorpat, 1896.

Dublin, General Register Office.—Quarterly returns of the marriages, births, and deaths registered in . . . Ireland; . . . 1896. 1st–4th quarters, Nos. 129–132. 1a. 8°. Dublin, 1896–97.

—— Weekly returns of births and deaths in Dublin (including its suburban districts), and in fifteen of the principal urban sanitary districts in Ireland, 1896. 1a. 8°. Dublin, 1897.

—— **Royal Irish Academy.**—Proceedings. Third series. Vol. iii. 8°. Dublin, 1893–96.

|| **Dufour, H.**—Note sur une forme rare d'arc-en-ciel. 8°. (*Bull. soc. Vaud. sc. nat.*, 24 [? 25], 1889, p. 100.)

|| ——— Étude sur les orages de grêle dans le Canton de Vaud. 1^{er} Mémoire, année 1881. 8°. Lausanne, 1883. (*Bull. soc. Vaud. sc. nat.*, xviii., p. 153.)

|| ——— La recoloration des Alpes après le coucher du soleil. 8°. (*Arch. sc. phys. nat.*, 3^e période, xxxiv., 1895.)

|| ——— Observations sur le phénomène de la recoloration des Alpes après le coucher du soleil. 8°. (*Arch. sc. phys. nat.*, 4^e période, ii., 1896.)

|| ——— Note sur un appareil simple pour la mesure de l'évaporation. 8°. (*Bull. soc. Vaud. sc. nat.*, xxv.)

|| ——— Note sur une nouvelle forme d'hygromètre à condensation. 8°. (*Bull. soc. Vaud. sc. nat.*, xxiv.)

|| ——— Contribution à l'étude de l'électricité atmosphérique. 4°. Lausanne, 1892. (*Recueil inaugural Univ. Lausanne.*)

—— et **Amstein, H.**—Mémoire sur le nouveau baromètre enregistreur de l'observatoire météorologique de Lausanne. 8°. Genève, 1882. (*Arch. sc. phys. nat.*, 1882, vii., p. 19.)

Durand-Gréville, E.—Les aurores boréales, d'après des publications récentes. 4 papers. 4°. (*Rev. Scient.*, 4^e ser., iv., 1895, p. 557; v., 1896, p. 557; vi., 1896, pp. 103, 173.)

—— Böen und Tornados. sm. f°. (*Meteor. Zeitschr.*, 1897, Jan., p. 8.)

—— Le vent dans les grains. 1a. 8°. Auvers, 1895.

|| ——— Les grains et les tornades. 1a. 4°. (*Ann. Bureau Centr. Météor. Fr.*, 1893, i.)

Durban, Natal Observatory.—Report of the Superintendent. For the six months ended December 31, 1895, and for the year 1894–95. 2 vols. sm. f°. Pietermaritzburg, 1896.

Eastbourne.—Annual report of meteorological observations for the year 1896. (By R. Sheward.) 1a. 8°. Eastbourne, s.a.

|| **Eaton, H. S.**—Returns of rainfall, &c. in Dorset. 1894, 1895. 2 vols. 8°. Dorchester, 1895–96. (*Proc. Dorset Nat. Hist. Antiq. Field Club*, 16, 1895, p. 195; 17, 1896.)

[Eberswalde, Hauptstation des forstlichen Versuchswesen in Preussen.]—Beobachtungs-Ergebnisse der von den forstlichen Versuchsanstalten des Königreichs Preussen, des Herzogthums Braunschweig, der Reichslande und dem Landesdirectorium der Provinz Hannover eingerichteten forstlich-meteorologischen Stationen. Herausgegeben von A. Müttrich. xxii. Jahrg. 1896, Jan.-Dec. 8°. Berlin, 1896.

[— — —] Jahresbericht über die Beobachtungs-Ergebnisse der von den forstlichen Versuchsanstalten des Königreichs Preussen, des Herzogthums Braunschweig, der Reichslande und dem Landesdirectorium der Provinz Hannover eingerichteten forstlich-meteorologischen Stationen. Herausgegeben von Dr. A. Müttrich. xxi. Jahrg., 1895. 8°. Berlin, 1896.

Edinburgh, Royal Scottish Geographical Society.—The Scottish Geographical Magazine. Vol. xii., 1896. 1a. 8°. Edinburgh, 1896.

— Royal Society.—Proceedings. Vol. xx. 1892-95. 8°. Edinburgh, 1895.

— Scottish Meteorological Society.—Journal. Third series. Vol. x. 1a. 8°. Edinburgh and London, 1896.

|| Ekman, G., und Pettersson, O.—Vorschlag zu einer internationalen hydrographischen Durchforschung des nördlichen Theiles des Atlantischen Oceans, der Nordsee und der Ostsee. sm. f°. (*Meteor. Zeitschr.*, 1896, Aug., p. 318.)

|| Ellis, W.—Report on the International Meteorological Conference, held at Paris, September 17 to 23, 1896. 1a. 8°. (*Quart. Journ. R. Meteor. Soc.*, 23, 1897, Jan.)

Emden, Naturforschende Gesellschaft.—Jahresbericht. 80. 1894-95. 8°. Emden, 1896.

|| Falmouth Observatory.—Meteorological and magnetical tables and reports for the year 1895, with notes by W. L. Fox. 8°. Falmouth, 1896. (*Ann. Rep. R. Cornw. Polyt. Soc.*, 1895.)

— Royal Cornwall Polytechnic Society.—Annual report. 63rd. 1895. 8°. Falmouth, s.a.

|| Fayer, Sir J.—On Falmouth as a winter resort. Presented to . . . the Brit. Med. Assoc. in Carlisle, July, 1896. 8°. (*Brit. Med. Journ.*, 1896, Aug. 29.)

Fiume, K. K. Marine-Akademie.—Meteorologische Beobachtungen. 1896, Jan.-Dec., and Results. 1a. 8°. Sheets.

|| Fowler, T. W.—Observations with aneroid and mercurial barometers and boiling-point thermometers. Read 10th Oct. 1895. 8°. (*Proc. R. Soc. Victoria*, viii., new series, p. 169.)

|| ——— Observed variations in the dip of the horizon. Abstract of paper read . . . 13th June 1895. 8°. (*Proc. R. Soc. Victoria*, viii., new series, p. 180.)

Frankfurt am Main, Physikalischer Verein.—Das Klima von Frankfurt am Main. Eine Zusammenstellung der wichtigsten meteorologischen Verhältnisse von Frankfurt a. M. nach vieljährigen Beobachtungen im Auftrag des Physikalischen Vereins bearbeitet von J. Ziegler und W. König. sm. f°. Frankfurt a. M., 1896.

— — — Jahresbericht . . . für das Rechnungsjahr, 1894-95. 8°. Frankfurt am Main, 1896.

Fréjlach, G. [J.]—Sulle condizioni anemometriche di Praga. 1a. 8°. (*Sitzungsb. k. böhm. Gesellsch. Wissensch., math.-naturw. Cl.*, 1895, i.)

— O intenzitě srážek vodních v Čechách. 1a. 8°. (*Sitzungsb. k. böhm. Gesellsch. Wissensch., math.-naturw. Cl.*, 1895, i.)

Über die Intensität der Niederschläge in Böhmen.

— Zur Kenntniss der anemometrischen Verhältnisse von Prag. 1a. 8°. (*Sitzungsb. k. böhm. Gesellsch. Wissensch., math.-naturw. Cl.*, 1895, i.)

* Gaimard, P.—Voyage en Island et au Groënland exécuté pendant les années 1835 et 1836 sur la corvette La Recherche commandée par M. Tréhouart, dans le but de découvrir les traces de La Lilloise. Publié par ordre du Roi sous la direction de P. Gaimard. Physique par V. Lottin. 1a. 8°. Paris, 1838.

|| Garrigou-Lagrange, P. — L'action luni-solaire et les grands mouvements atmosphériques. (Étude générale du gradient barométrique sur l'hémisphère nord.) 1a. 8°. (*Assoc. Fr. avanc. sc., Congr. de Bordeaux*, 1895.)

|| **Garrigou-Lagrange, P.**—Des effets des révolutions tropiques du Soleil et de la Lune sur la pression barométrique. 4°. (*Compt. rend. acad. sc., Paris*, 121, 1895.)

|| ——— Sur les ondes barométriques lunaires et la variation séculaire du climat de Paris. 4°. (*Compt. rend. acad. sc., Paris*, 122, 1896, p. 166.)

|| ——— Sur l'onde diurne lunaire et sur la variation séculaire du baromètre. 4°. (*Compt. rend. acad. sc., Paris*, 122, 1896, p. 846.)

|| **Gaster, F.**—Weather forecasts and storm warnings: how they are prepared and disseminated. 1a. 8°. (*Quart. Journ. R. Meteor. Soc.*, 22, 1896, p. 212.)

Geneva, Société de Géographie.—Le Globe. Journal géographique. Tome xxxv. 1a. 8°. Genève, 1896.

Georgetown, Demerara.—Meteorological observations taken at the Botanic Gardens, Georgetown. April 1895 to March 1896. sm. f°. (*British Guiana Blue Book*, 1895-96, p. H. II. 1.)

————— **Government Botanist's Office.**—Report on the Botanic Gardens and their work, for the year 1894-95. sm. f°. Georgetown, 1896.

* **Gerland, G.**—Beiträge zur Geophysik. Zeitschrift für physikalische Erdkunde. 3. Bd. Heft 1, 2. 2 vols. 1a. 8°. Leipzig, 1896-97.

Greenwich, Royal Observatory.—Reduction of Greenwich meteorological observations, Part iii. Temperature of the air as determined from the observations and records of the 50 years, 1841 to 1890, made at the Royal Observatory, Greenwich. 1a. 4°. London, 1895.

————— Report of the Astronomer Royal to the Board of Visitors . . . read . . . 1896, June 6. 1a. 4°. s.l.e.a.

————— Results of the magnetical and meteorological observations made at the Royal Observatory, Greenwich, in the year 1893; under the direction of W. H. M. Christie. 1a. 4°. London, 1896.

Grenada, Richmond Hill Observatory.—Meteorological report. 1896, Jan.-Dec. sm. f°. Sheets.

Halle, Kaiserliche leopoldino-carolinische deutsche Akademie der Naturforscher.—Leopoldina. Heft xxxi., 1896. 1a. 4°. Halle, 1896.

|| **Hamberg, H. E.**—Om skogarnes inflytande på Sveriges klimat. (De l'influence des forêts sur le climat de la Suède.) iv.-v. 2 vols. 1a. 4°. Stockholm, 1896. (*Bihang till Domänstyrelsens berättelse för år 1895.*)

In the French language also.

Hamburg, Deutsche Seewarte.—Annalen der Hydrographie und maritimen Meteorologie. xxiv. Jahrg., 1896. 1a. 8°. Berlin, s.a.

————— Aus dem Archiv der Deutschen Seewarte. xviii. Jahrg., 1895. 1a. 4°. Hamburg, 1896.

————— Bemerkungen und Vorschläge zum Programm für die internationale meteorologische Konferenz in Paris im September d. J. 1a. 8°. Dated, Hamburg, 1896.

————— Deutsches meteorologisches Jahrbuch für 1895. Beobachtungssystem der Deutschen Seewarte. Ergebnisse der meteorologischen Beobachtungen . . . Jahrg. xviii. sm. f°. Hamburg, 1896.

————— Deutsche ueberseeische meteorologische Beobachtungen. Heft vii. sm. f°. s.l.e.a.

————— Ergebnisse der meteorologischen Beobachtungen im Systeme der Deutschen Seewarte für das Lustrum 1891-95. f°. Hamburg, 1896.

————— Vierteljahrs - Wetter - Rundschau an der Hand der täglichen synoptischen Wetterkarten für den nordatlantischen Ocean des Dänischen meteorologischen Instituts und der Deutschen Seewarte. Bd. vii., 1889-90. 1a. 8°. Berlin, 1895.

————— Wetterbericht. Jahrg. xxi. 1896, Jan. 1.-Dec. 31. f°. Sheets.

* **Hann, J., Bruckner, E., und Kirchhoff, A.**—Allgemeine Erdkunde. Fünfte, neu bearbeitete Auflage. I. Abteilung. Die Erde als Ganzes, ihre Atmosphäre und Hydrosphäre von J. Hann. 1a. 8°. Wien, 1896.

|| **Harries, H.**—Arctic hail and thunderstorms. 1a. 8°. (*Quart. Journ. R. Meteor. Soc.*, xxii., 1896, p. 251.)

* ——— Atmospheric pressure. 8°. [*Longman's Mag.*, xxviii., 1896, p. 373.]

Havana, Real Colegio de Belen de la Compañia de Jesus en la Habana.—Observaciones magnéticas y meteorológicas. 1892, 1893. 2 vols. f°. Habana, 1896-97.

|| **Heinrichs, A., et Biese, E.**—Météorologie et magnétisme terrestre. 1a. 8°. (Helsingfors, 1895.) (*Fennia*, 13, p. 40.)

* **Hellmann, G.**—Neudrucke von Schriften und Karten über Meteorologie und Erdmagnetismus. Herausgegeben von G. Hellmann. No. 5. Die Bauern-Praktik, 1508. Facsimiledruck mit einer Einleitung. 4°. Berlin, 1896.

* ——— Neudrucke von Schriften und Karten über Meteorologie und Erdmagnetismus. Herausgegeben von G. Hellmann. No. 6. George Hadley. Concerning the cause of the general trade-winds. London, 1735. Facsimiledruck mit einer Einleitung. 4°. Berlin, 1896.

* ——— Neudrucke von Schriften und Karten über Meteorologie und Erdmagnetismus. Herausgegeben von G. Hellmann. No. 7. Evangelista Torricelli. Esperienza dell' argento vivo. Accademia del Cimento. Istrumenti per conoscer l'alterazioni dell' aria. Mit einer Einleitung. 4°. Berlin, 1897.

* ——— Neudrucke von Schriften und Karten über Meteorologie und Erdmagnetismus. Herausgegeben von G. Hellmann. No. 8. E. Halley, A. von Humboldt, E. Loomis, U. J. Le Verrier, E. Renou. Meteorologische Karten, 1688, 1817, 1846, 1863, 1864. Sechs Tafeln in Lichtdruck mit einer Einleitung. 4°. Berlin, 1897.

* ——— Neudrucke von Schriften und Karten über Meteorologie und Erdmagnetismus. Herausgegeben von G. Hellmann. No. 9. Henry Gellibrand. A discourse mathematical on the variation of the magneticall needle. London, 1635. Facsimiledruck mit einer Einleitung. 4°. Berlin, 1897.

Helsingfors, Finska Vetenskaps-Societeten.—Öfversigt af Finska Vetenskaps-Societetens förhandlingar. Fxxxvii., 1894-95. 1a. 8°. Helsingfors, 1895.

——— **Institut Météorologique Central.**—Observations. Vol. xiv., 1895. f°. Helsingfors, 1896.

——— Observations météorologiques. 1881-1890. Tome suppl. f°. Kuopio, 1896.

Hentschel, W.—Ueber die wahrscheinlichen Ursachen der Regenbildung. Offener Brief an die deutschen Electro-Techniker. 8°. (Leipzig, s.a.)

|| **Hepites, St. C.**—Materiale pentru climatologia Romaniei. III. Durata de strălucire a soarelui la București. IV. Clima Sinaiei. V. Plouă în România. 4°. București, 1896. (*Anal. Acad. Romane, seria II., xviii., Mem. Sect. Sc.*)

|| **Herrmann, E.**—The motions of the atmosphere, and especially its waves. Address delivered before the Meteor. Section of the Assoc. of German Naturalists and Physicians . . . Vienna, Sept. 25, 1894. Translated from Verhandl. Gesellsch. Deutscher Naturf. und Aerzte, pp. 42-50 and 323-324, by Professor C. Abbe. 1a. 8°. (*Bull. Amer. Math. Soc., 2nd Ser., II., 1896, p. 285.*)

|| ——— Neue Gesichtspunkte für die Wetterprognose. Zur Analyse der Luftdruckverteilung. 1a. 4°. (*Globus, lxx., Nr. 13.*)

Hildebrandsson, H., Riggenbach, A., Teisserenc de Bort, L.—Atlas international des nuages, publié conformément aux décisions du Comité Météorologique International. 1a. 4°. Paris, 1896.

In the English and German languages also.

* **Himmel und Erde.**—Illustrirte naturwissenschaftliche Monatsschrift. Herausgegeben von der Gesellschaft Urania. Redacteur: M. W. Meyer. 8 Jahrg, 1895-96. 1a. 8°. Berlin, 1896.

Hobart, Royal Society of Tasmania.—Papers and proceedings . . . for 1894-95. 8°. Hobart, 1896.

Hong-Kong Observatory.—China coast meteorological register, 1896. sm. f°. s.l.e.a.

——— Observations and researches. 1895. f°. Hong-Kong, 1896.

Hoskins, [S.E.] and Collenette, A.—Mean results of meteorological observations taken in Guernsey during the period of fifty years, 1843-92. oblong 18°. Sheet.

* **Hübler, M.**—Zur Klimatographie von Kamerun. Münchener geographischen Studien, herausgegeben von S. Günther. Erstes Stück. 1a. 8°. München, 1896.

India.—Statistical Atlas of India, Second edition, 1895. oblong sm. f°. Calcutta, 1895.

Innsbruck, Meteorologisches Observatorium der K. K. Universität.—[Meteorologische] Beobachtungen, 1893. 8°. (*Ber. naturw.-med. Ver. Innsbruck*, xxii., 1893-94.)

Ithaca, New York State Weather Bureau.—Report. Vol. viii. 1896, Jan.-Dec. 1a, 4°. s.l.e.a.

Jackson, R.—Ocean passages: compiled from the various Admiralty sailing directions. 8°. Portsmouth, 1896.

——— The principal winds and currents of the globe; also rainy seasons, ice limits, fogs and rollers, and revolving storms. 8°. Portsmouth, 1896.

Jamaica.—The Kingston anemometer, or record of observations upon the hourly velocity and force of the wind throughout the three years—March 1892 to February 1895 -- with other notes, including tables and diagrams. f°. Kingston, 1896.

Forms No. 200 of Jamaica Weather Report.

|| ——— Weather report for the months of Jan.-Dec., 1896. sm. f°. Kingston, 1896-97. (*From the Jamaica Gazette.*)

* **James, Sir H.**—Abstracts from the meteorological observations taken in the years 1860-61 at the Royal Engineer Office, New Westminster, British Columbia. Edited by Colonel Sir H. James. 1a, 4°. London, 1862.

* **Kamerun.**—Meteorologische Beobachtungen aus Lolodorf, Süd-Kamerun. 1a, 8°. (*Mitth. von Forschungsreisenden u. Gelehrten aus den deutsch. Schutzgebieten*, viii., Heft 4.)

|| **Kammermann, A.**—Résumé météorologique de l'année 1895 pour Genève et le Grand Saint-Bernard. 8°. Genève, 1896. (*Arch. Sc. Phys. Nat.*, 1896, Mai et Juin.)

Karlinski, [F.]—Stan Wody na rzekach Galicyjskich oraz opad atmosferyczny 1893, 1894. 2 vols. 8°. Lwów, 1895.

|| **Kew Observatory.**—Report of the Kew Observatory Committee of the Royal Society. 1895. 8°. London, 1896. (*Proc. R. Soc.*, 1896.)

Kidderminster, Medical Officer of Health.—Reports on the health of the Borough by the Medical Officer of Health and Sanitary Inspector, 1896. 1a, 8°. Kidderminster, s.a.

Kiel und Helgoland, Kommission zur wissenschaftlichen Untersuchung der deutschen Meere in Kiel und der Biologischen Anstalt auf Helgoland.—Wissenschaftliche Meeresuntersuchungen. Neue Folge. Bd. 1. Kiel und Leipzig, 1896.

(**Kiersnowsky, I.**)—Liste systématique des travaux imprimés dans les 23 volumes du "Repertorium für Meteorologie" publiés par l'Académie Impériale des Sciences de St. Pétersbourg depuis 1869 jusqu'à 1894. 1a, 4°. St. Pétersbourg, 1895. (*Mém. Acad. Imp. Sc. St. Petersb.*, 8^e sér., *Cl. phys.-math.*, iii., No. 4.)

In the Russian language also.

|| **Kiersnowsky, I. A.**—Ueber die Richtung und Stärke der Winde im Russischen Reiche. With Atlas. 2 vols. 1a, 4° and 1a, f°. St. Pétersbourg, 1895. (*Mém. Acad. Imp. Sc. St. Petersb.*, 8^e sér., *Cl. phys.-math.*, ii., No. 4.)

In the Russian language. Title of Atlas in German.

Kitto, E.—Cornwall as a winter resort. Third edition. Revised by E. Kitto. 8°. s.l., 1896.

* **Klein, H. J.**—Jahrbuch der Astronomie und Geophysik. vii. Jahrg., 1896. 8°. Leipzig, 1897.

|| **Knipping, E.**—Ein Führer durch die meteorologischen Schifstagebücher der Seewarten oder die Veröffentlichung von Auszügen daraus. 1a, 4°. Hamburg, 1896. (*Archiv. Deutsch. Seewarte*, xix., 1896, No. 1.)

|| **König, H.**—Dauer des Sonnenscheins in Europa. 1a, 4°. Halle, 1896. (*Nova Acta. Abh. k. Leop.-Carol. deutsch. Akad. Naturf.*, 67, Nr. 3, p. 311.)

Körösi, J.—Statistik der infectiösen Erkrankungen in den Jahren 1881-1891, und Untersuchung des Einflusses der Witterung. Publ. statist. Bureaus der Hauptstadt Budapest, Nr. xix. Uebersetzung aus dem Ungarischen, 1a, 8°, Berlin, 1894.

Krasno, agrarmeteorologisches Observatorium des Neutrathaler landwirtschaftlichen Vereines.—Der Laubfrosch. 9. Jahrg., 1896. xiii. Jahrg. der populären meteor. Abhandlungen . . . Redigirt durch Frh. G. Friesenhof. la. 4°. O Széplak, 1896.

|| **Kremsmünster Sternwarte.**—Ueber die bisber in Oberösterreich ange-stellten meteorologischen und geophysikalischen Beobachtungen. 8°. Linz, 1896. (*Jahresb. Ver. Naturk. Oberöst. Linz.*)

Kürlander, I.—Erdmagnetische Messungen in den Landern der Ungarischen Krone in den Jahren 1892-94.

See BUDAPEST, KÖN. UNG. NATURWISSENSCHAFTLICHE GESELLSCHAFT.

Lagos, Colonial Surgeon.—Meteorological observations taken at Lagos. 1896, Jan.-Dec. f°. Sheets. (*Gov. Gazette*, 1896.)

La Guardia, Observatorio Meteorológico del Colegio de la Compañia de Jesus.—[Cuadernos publicados, No. IV.] 8°. Tuy, 1897.

Lahore, Meteorological Reporter to Government, Punjab.—Summary of meteorological conditions prevailing over the Punjab. 1896, Jan.-Dec. f°. Sheets.

——— **Sanitary Commissioner.**—Report on the Sanitary Administration of the Punjab for the year 1895. f°. Lahore, 1896.

Lamprecht, G.—Wetterperioden. Wissensch. Beilage zum Jahresb. des Gymnasiums zu Bautzen. Ostern, 1897. 4°. Bautzen, s.a.

Láska, V.—Beiträge zur Klimatologie von Prag. la. 8°. (*Sitzungsb. k. böhm. Gesellsch. Wissensch., math.-naturw. Cl.*, 1895. i.)

Leal, M.—Resumen general de algunas de las principales observaciones meteorológicas practicadas en la Escuela de Instrucción Secundaria del Estado, en Leon, E. de Guanajuato, México, del 1°. de Enero de 1878 al 31. de Diciembre de 1896 sm. f°. Sheet. Contains also Resumen for 1896.

Leon, Observatorio Meteorológico.—Boletín mensual. 1896, Mch.-Dec. f°. Leon, 1896.

* **Linn, T.**—The health resorts of Europe. By T. Linn. With a preface by A. E. Sanson. sm. 8°. London, 1893.

Lisbon, Observatorio do Infante D. Luiz.—Annuaire. 1889-92. vols. xxvii.-xxx. 4 vols. f°. Lisboa, 1893-95.

——— Boletim meteorológico. 1896, Jan. 1-Dec. 31. f°. Sheets.

Liverpool Observatory.—Report of the Director of the Observatory to the Marine Committee, and meteorological results deduced from the observations taken . . . in the year 1895. la. 8°. Liverpool, 1896.

Lloyd's Seaman's Almanac.—1897. 8°. London, [1896].

London, Admiralty.—Tide tables for the British and Irish Ports, for the year 1897; also the times and heights of high water at full and change for the principal places on the Globe. la. 8°. London, s.a.

——— **Hydrographic Department.**—Catalogue of Admiralty charts, plans, and sailing directions, 1897. la. 8°. London, s.a.

——— The Baltic pilot, Part II., comprising directions for the Baltic Sea, including the Gulf of Finland and Gulf of Bothnia. Third edition. la. 8°. London, 1896.

——— The China Sea Directory, vol. i. 4th ed. la. 8°. London, 1896.

——— List of oceanic depths and serial temperature observations received at the Admiralty during the year 1896, from H.M. Surveying Ships, Indian Marine Survey, and British Submarine Telegraph Companies. sm. f°. London, 1897.

——— Monthly current charts for the Indian Ocean. From information collated and prepared in the Meteorological Office. la. f°. London, 1895-96.

——— Reports of proceedings in connexion with investigations into the physical conditions of the water of the Faeroe Channel. By Captain W. U. Moore, R.N., H.M.S. "Research." sm. f°. London, 1896.

——— Sailing directions for the west coasts of Central America and the United States. la. 8°. London, 1896.

London, Army Medical Department.—Annual abstract of meteorological observations taken at Netley and stations abroad in the year 1895. 1a. 8°. (*Army Med. Dep. Rep.*, 1895, p. 406.)

—— **Board of Trade.**—Abstracts of the returns made to the Board of Trade of shipping casualties . . . from the 1st July 1894 to the 30th June 1895 . . . with charts and appendices. sm. 8°. London, 1896.

—— **British Association for the Advancement of Science.**—Report. Liverpool, 1896. 8°. London, 1896.

* —— **Edinburgh, and Dublin Philosophical Magazine and Journal of Science.** Fifth series. Vols. xli.–xlii., 1896. 2 vols. 8°. London, s.a.

—— **General Register Office.**—Annual report of the Registrar-General of births, deaths, and marriages in England. 1895. 58th. 1a. 8°. London, 1897.

—— Annual summary of births, deaths, and causes of death in London and other great towns. 1896. 1a. 8°. London, 1897.

—— Quarterly returns of marriages, births, and deaths registered in . . . England, Nos. 189–192, 1896. 1a. 8°. London, 1896–97.

—— Weekly return of births and deaths in London and . . . other great towns. Vol. lvii., 1896. 1a. 8°. London, 1896.

—— **Meteorological Office.**—A barometer manual for the use of seamen; with an appendix on the thermometer, hygrometer, and hydrometer. Third edition. 1a. 8°. London, 1896.

—— Daily weather report. 1896, Jan. 1–Dec. 31. 2 vols. 1a. 4°. s.l.e.a.

—— Meteorological observations at stations of the second order for the year 1892. 1a. 4°. London, 1896.

—— Monthly current charts for the Indian Ocean.

See LONDON, ADMIRALTY, HYDROGRAPHIC DEPARTMENT.

—— Hourly means of the readings obtained from the self-recording instruments at the five observatories under the Meteorological Council. 1893. 1a. 4°. London, 1896.

—— Report of the Meteorological Council for the year ending 31st of March 1896. 1a. 8°. London, 1896.

—— The weekly weather report of the Meteorological Office for the year 1896 (vol. xiii., 3rd series), containing synoptic charts, and descriptive summaries of the weather for each day; also tabular summaries of temperature, rainfall, and bright sunshine for each week, with monthly supplements and two appendices. 1a. 4°. London, 1897.

* —— **(Nautical Almanac Office.)**—The nautical almanac and astronomical ephemeris for the year 1897, for the meridian of the Royal Observatory at Greenwich. 1a. 8°. London, s.a.

—— **Royal Astronomical Society.**—Monthly notices. Vol. lvi., 1895–96. 8°. London, 1896.

—— General index to volumes xxx. to lii. of the monthly notices, 1869–92. 8°. London, 1896.

—— **Royal Geographical Society.**—The geographical journal. Including the proceedings of the Royal Geographical Society. Vols. vii.–viii. 1896. 2 vols. 1a. 8°. London, 1896.

—— **Royal Institution of Great Britain.**—Notices of the proceedings at the meetings of the members . . . with abstracts of the discourses delivered at the evening meetings. Vol. xiv., 1893–95. 8°. London, 1896.

—— **Royal Meteorological Society.**—The meteorological record. Monthly results of observations made at the stations of the R. Meteor. Soc., with remarks on the weather for the year 1895. By W. Marriott. Vol. xv. 1a. 8°. London, 1896.

Contains also "Meteorology of England during the quarters ending March to December 1895." By J. GLAISHER.

—— Quarterly Journal. Vol. xxii., 1896. 1a. 8°. London, 1896.

—— **Royal Society.**—Proceedings. Vols. lix.–lx., 1896–97. 2 vols. 8°. London, 1896–97.

—— **Royal United Service Institution.**—Journal. Vol. xl. 1896. 2 vols. 8°. London, 1896.

- London, Society of Arts.**—Journal. Vol. xlv., 1895–96. 1a. 8°. London, 1896.
- * **McAdie, A.**—Fog possibilities. 1a. 8°. (*Harper's Monthly Mag.*, 1897, Jan., p. 263.)
- || **Macklin, T. T.**—The climate of the Isles of Scilly: with special reference to their suitability as a health resort. 8°. Glasgow, 1895. (*Glasgow Med. Journ.*, 1895, Sept.)
- Madras Observatory.**—Daily meteorological means. By C. M. Smith. 1a. 4°. Madras, 1896.
- Madrid, Instituto Central Meteorológico.**—Boletín. 1896, Jan. 1–Dec. 31. sm. f°. Sheets.
- **Observatorio.**—Resumen de las observaciones meteorológicas efectuadas en la Península y algunas de sus islas adyacentes durante los años 1893 y 1894. 8°. Madrid, 1896.
- Observaciones meteorológicas efectuadas en el observatorio de Madrid durante los años 1894 y 1895. 8°. Madrid, 1896.
- Manchester Literary and Philosophical Society.**—Complete list of the members and officers of the Manchester Literary and Philosophical Society from its institution on February 28th, 1781, to April 28th, 1896. And bibliographical lists of the manuscript volumes dealing with the affairs of the Society, and of the volumes of the memoirs and proceedings published by the Society. With two appendices. 8°. Manchester, 1896.
- Memoirs and proceedings. 4th series. Vol. x. 8°. Manchester, 1896.
- **Public Health Office.**—Quarterly returns of the Medical Officer of Health. 1896. 1a. 8°. Manchester, s.a.
- Weekly returns of the Medical Officer of Health. 1896. 1a. 8°. Manchester, s.a.
- **Sheffield, and Lincolnshire Railway.**—Monthly statement of rain fallen in the year ending 31st December 1896. sm. f°. Sheet.
- Manila, Observatorio Meteorológico.**—Observaciones. 1894. sm. f°. Manila, 1894–1895.
- Manson, M.**—The circulation of the atmosphere of planets. 8°. (*Publ. Astr. Soc. Pacific, San Francisco*, viii., 1896, p. 47.)
- * **Marcuse, A.**—Die atmosphärische Luft. Eine allgemeine Darstellung ihres Wesens, ihrer Eigenschaften und ihrer Bedeutung. 1a. 8°. Berlin, 1896.
- Marseilles, Commission de Météorologie du Département des Bouches-du-Rhône.**—Bulletin annuel. Année 1894. 13^{me} année. 4°. Marseille, 1895.
- || **Marvin, C. F.**—Kite experiments at the Weather Bureau. W. B. N°. 110. 1a. 8°. (*Reprinted from the Monthly Weather Rev.*, beginning April, 1896.)
- Mauritius, Royal Alfred Observatory.**—Annual report of the Director . . . for the year 1894. sm. f°. s.l.e.a.
- || ——— Results of Meteorological observations taken during the year 1895, at the Royal Alfred Observatory, Mauritius. sm. f°. (*Mauritius Blue Book*, 1895.)
- Melbourne Observatory.**—Record of results of observations in meteorology and terrestrial magnetism, made at the Melbourne Observatory, and at other localities in the colony of Victoria, Australia. 1894, Jan.–Dec. 1a. 8°. Melbourne, s.a.
- Report of the Board of Visitors to the Observatory; together with the report of the Government Astronomer. 30th. 1895–1896. sm. f°. Melbourne, s.a.
- (**Mellish, H.**)—The weather of 1896, at Hodsock Priory, Worksop. 8°. s.l.e.a.
- Meteorologische Zeitschrift.**—Herausgegeben im Auftrage der Oesterreichischen Gesellschaft für Meteorologie und der Deutschen Meteorologischen Gesellschaft. xiii. Jahrg. (xxxi. Bd. d. Zeitschr. oesterr. Gesellsch. Meteor.) 1896. 1a. 8°. Wien, s.a.
- Mexico, Observatorio Meteorológico Central.**—Boletín mensual. 1896. sm. f°. México, 1896.
- * **Millin, G. F.**—How weather forecasts are prepared. 1a. 8°. (*Windsor Mag.*, 1896, Sept., p. 284.)

|| **Mohn, H.**—Klima-Tabeller for Norge. ii. Lufttryk. la. 8°. Christiania, 1896. (*Vidensk.-selskabets Skrift., I. math.-naturv. Kl., 1896, No. 1.*)

* **Mont Blanc, Observatoire Météorologique.**—Annales . . . publiées sous la direction de J. Vallot. ii. 4°. Paris, 1896.

Moscow, Observatoire Météorologique de l'Université Impériale.—Observations. 1895, Jan.-Dec. la. 8°.

In the Russian language.

|| **Mossman, R. C.**—On the diurnal range of temperature variability at the summit and base of Ben Nevis, Lady Franklin Bay, and Hong-Kong. First Paper. la. 8°. (*Journ. Scott. Meteor. Soc., 3rd ser., x., p. 150.*)

|| ——— On sunshine, with different winds, at Edinburgh. la. 8°. (*Journ. Scott. Meteor. Soc., 3rd ser., x., p. 159.*)

|| ——— On the number of auroras observed over the N.E. of Scotland from 1773 to 1894, during each day of the year. la. 8°. (*Journ. Scott. Meteor. Soc., 3rd ser., x., p. 161.*)

|| ——— The frost of 1895 in Scotland. la. 8°. (*Journ. Scott. Meteor. Soc., 3rd ser., x., p. 163.*)

Müller, P. A.—Über die Temperatur und Verdunstung der Schneeoberfläche und die Feuchtigkeit in ihrer Nähe. la. 4°. St. Pétersbourg, 1896. (*Mém. Acad. Imp. Sc. St. Pétersb., 8^e série, Cl. phys.-math., v., No. 1.*)

|| **Munich, K. b. meteorologische Central-Station.**—Uebersicht über die Witterungsverhältnisse im Königreiche Bayern. 1896, Jan.-Dec. la. f°. Sheets, (*Separat-Abdruck aus der "Augsburger-Abendzeitung."*)

————— Wetterkarte und Wetterbericht. 1896, Jan. 1-Dec. 31. oblong f°. Sheets.

Naples, R. Osservatorio di Capodimonte.—Osservazioni meteoriche. 1886, 1887, 1889-1896. 8 vols., la. 4°. 2 vols. la. 8°. s.l.e.a.

1886 and 1887 have title pages, the title being "Bullettino Meteorologico."

|| ——— Riassunti decadici e mensuali delle osservazioni meteoriche fatte nel R. Osservatorio di Capodimonte, del F. Brioschi, F. Contarino, F. Angelitti, e V. Alberti. 1887-1895. 7 vols., la. 4°. 2 vols., la. 8°. (*Rend. R. Accad. Sc. Fis. Mat. Napoli, 1888-96.*)

* **Nature.**—A weekly illustrated journal of science. Vols. liii.-liv., 1895-96. 2 vols. la. 8°. London and New York, s.a.

* **Nature, La.**—Revue des sciences et de leurs applications aux arts et à l'industrie. Journal hebdomadaire illustré. xxiv^e année, 1895-96. 1^{re} et 2^e Semestres. 2 vols. sm. f°. Paris, s.a.

Nautical Magazine and Journal of the Royal Naval Reserve. Enlarged series. Vol. lxx., 1896. la. 8°. London, s.a.

New York, American Geographical Society.—Journal. Vol. xxviii., 1896. la. 8°. New York, s.a.

————— **Meteorological Observatory.**—Report, 1896. 4°. New York, 1896.

Nice, Société de Médecine et de Climatologie de Nice.—Nice-Médical, 20^e année, 1895-96, Nos. 1-12. la. 8°. Nice, 1895-96.

Odessa, Observatoire Météorologique de l'Université Impériale.—Annales. 1895. la. 4°. Odessa, 1896.

In the Russian language, with French text in separate volume.

[———] **Revue météorologique.** Travaux du réseau météorologique du sud-ouest de la Russie. Dix ans d'existence, 1886-95. Par A. Klossovsky. la. 4°. Odessa, 1896.

In the Russian language, with French text in separate volume.

O-Gyalla, Meteorologisches-Magnetisches Central-Observatorium.—Beobachtungen. 1896, Jan.-Dec. la. 8°. Budapest, 1896.

In the Hungarian language also.

Oña, Observatorio.—Observaciones meteorológicas hechas en el Colegio Máximo de la Compañía de Jesus en Oña, Provincia de Burgos. 1895. la. 8°. Oña, 1896.

Ottawa, Geological Survey of Canada.—Annual report. New series. Vol. vii., 1894. With maps. 2 vols. la. 8°. Ottawa, 1896.

Oxford, Radcliffe Observatory.—Results of meteorological observations made at the Radcliffe Observatory, Oxford, in the years 1888–89, under the superintendance of E. J. Stone. Vol. xlvi. 1a. 8°. Oxford, 1896.

Paris, Académie des Sciences.—Comptes rendus hebdomadaires des séances. . . . Tomes cxxii.–cxxxiii. 1896. 2 vols. 4°. Paris, 1896.

——— **Bureau Central Météorologique de France.**—Annales publiées par E. Mascart. Année, 1894. i.–iii. 3 vols. 1a. 4°. Paris, 1896.

——— Bulletin international. xl°. Année, 1896. Jan. 1–Dec. 31. 4°.

——— **Ministère de la Marine et des Colonies.**—Revue maritime et coloniale. Tomes cxxviii.–cxxx. 4 vols. 1a. 8°. Paris, 1896.

——— **Observatoire Municipal de Montsouris et Annexe Tour-Saint-Jacques.**—Note sur la trombe du 10 septembre 1896. Présentée à l'acad. sc., 14 Sept. 1896. 4°. (Paris, 1896.)

——— **Service Hydrographique de la Marine.**—Annales hydrographiques. 2^e sér. Tome xviii., 1896. 1a. 8°. Paris, 1896.

——— **Service Hydrométrique du Bassin de la Seine.**—Observations sur les cours d'eau et la pluie centralisées pendant l'année 1894 . . . 7 plates. f°. Versailles, s.a.

|| ——— Résumé des observations centralisées . . . pendant l'année 1894 . . . 1a. 8°. Versailles, 1895. (*Ann. Soc. Météor. Fr.*, xliii., 1895.)

Paris, Société Météorologique de France.—Annuaire. Tome xliii., 1895. 1a. 8°. Paris, s.a.

|| **Paulsen, A.**—Régime magnétique de l'île de Bornholm. 1a. 8°. (*Bull. Acad. R. Sc. Danemark*, 1896, p. 246.)

|| **Payne, F. F.**—The seasons, Hudson's Strait. 1a. 8°. (*Trans. Canadian Inst.*, v., 1895–96.)

* **Peary, J. Diebitsch.**—My Arctic journal: a year among ice-fields and Eskimos. By J. Diebitsch-Peary; with an account of the great white journey across Greenland by R. E. Peary. 8°. London, 1893.

Peek, C. E.—Meteorological observations for the year 1895. Rousdon Observatory, Devon. Vol. xii. 4°. London, 1896.

Peking, Inspectorate General of Customs.—Medical reports for the year ended 30th September 1895. 49th and 50th issues. 4°. Shanghai, 1896.

* || **Penck, A.**—Untersuchungen über Verdunstung und Abfluss von grösseren Landflächen. 1a. 8°. Wien, 1896. (*Geogr. Abhandl.*, Bd. 5, Heft 5, p. 461.)

|| **Pernter, J. M.**—Die allgemeine Luftdruckvertheilung und die Gradienten bei Föhn. 1a. 8°. (*Sitzungsber. K. Akad. Wissensch. Wien, math.-naturw. Cl.*, cv., Abth. 2, 1896, p. 117.)

|| ——— Über die Häufigkeit, die Dauer und die meteorologischen Eigenschaften des Föhns in Innsbruck. 1a. 8°. (*Sitzungsber. K. Akad. Wissensch. Wien, math.-naturw. Cl.*, civ., Abth. ii., 1895, p. 427.)

(**Perpignan, Commission Météorologique Départementale des Pyrénées-Orientales.**)—Bulletin météorologique annuel . . . par le Dr. Fines. 22–23, 1893, 1894. 2 vols. 4°. Perpignan, 1894, 1896.

Pesth, Königl. Ung. Central-Anstalt für Meteorologie und Erdmagnetismus.—Jahrbücher. xxiii.–xxiv, Bd., Jahrg. 1893–94. 2 vols. 4°. Budapest, 1895, 1897.

In the Hungarian language also.

Petermann's (Dr. A.) Mitteilungen aus Justus Perthes' geographischer Anstalt. Herausgegeben von A. Supan. 42 Bd., 1896. 4°. Gotha, s.a.

——— Herausgegeben von A. Supan. Ergänzungsband, 25. 1a. 8°. Gotha, 1896.

|| **Petterson, O.**—Ueber die Beziehungen zwischen hydrographischen und meteorologischen Phänomenen. sm. f°. (*Meteor. Zeitschr.*, 1896, Aug., p. 285.)

——— Om möjligheten af väderleksförutsägelser för längre tid. Föredrag. . . . 21 Okt. 1895. 1a. 8°. (*K. Landtbruks-Akad. Handl. och Tidskr.*, 1896, p. 131.)

Philadelphia, Franklin Institute.—The journal of the Franklin Institute, devoted to science and the mechanic arts. Vols. 141–142, 1896. 2 vols. 8°. Philadelphia, 1896.

Plymouth.—Annual meteorological report by H. V. Frigg. 3rd. 1895. 8°. Plymouth, 1896.

Pola, hydrographisches Amt der k. k. Kriegsmarine.—Meteorologische Termin-Beobachtungen in Pola und Sebenico. 1896, Jan.–Dec., and year. Oblong la. 8°.

— **K. K. hydrographisches Amt.**—Mittheilungen aus dem Gebiete des Seewesens. Jahrg., 1896. xxiv. Band. la. 8°. Pola, 1896.

Prague, K. K. Sternwarte.—Magnetische und meteorologische Beobachtungen . . . 1895. 56 Jahrg. la. 4°. Prag, 1896.

— **Technisches Bureau des Landesculturrathes für das Königreich Böhmen.**—Ergebnisse der Wasserstands Beobachtungen an den Flüssen Böhmens. 1894. 4°. Prag, 1895.

In the Czek language also.

Prince, C. L.—The summary of a meteorological journal kept . . . at Crowborough Hill, Sussex. 1896. sm. f°. s.l.e.a.

Puebla, Observatorio Meteorológico del Colegio del Estado de Puebla.—Resúmen correspondiente a cada día. 1896, Jan.–Dec. sm. f°.

Quito, Observatorio Astronomico y Meteorológico.—Resumen de las observaciones meteorológicas verificadas en el año 1896–1896. Octubre–Setiembre. Año 1°. sm. f°. Quito, s.a.

Radford, W. T.—Climate of Sidmouth. 1896, Jan.–Dec. Slips.

|| **Ravenstein, E. G.**—The climatology of Africa. Fifth report of a committee . . . drawn up by the Chairman (Mr. E. G. Ravenstein). 8°. (*Rep. Brit. Assoc. Advanc. Sc.*, 1896.)

|| **Riccò, A.**—Riassunto delle osservazioni meteorologiche fatte all'osservatorio Etneo. la. 8°. Roma, 1896. (*Rend. R. Accad. Lincei., Cl. sc. fis. mat. nat.*, v., ser. 5^a, 1896, p. 306.)

|| ——— Righe spettrali atmosferiche osservate sull' Etna, a Nicolosi, in Catania. sm. f°. (*Mem. Soc. Spettroscop. Ital.*, xxv., 1896.)

|| **Riccò, A., e Saija, G.**—Saggio di meteorologia dell' Etna. sm. f°. Roma, 1896. (*Ann. Ufficio Centr. Meteor. Geodinam.*, xvii., Parte i, 1895.)

|| **Richard, J.**—Sur un appareil destiné à démontrer que la quantité des gaz dissous dans les grandes profondeurs de la mer est indépendante de la pression. 4°. (*Compt. rend. acad. sc. Paris*, 123, 1896, p. 1088.)

Rikatcheff, M.—Types of cyclone tracks in Europe from observations made in 1872–1887. la. 4°. St. Pétersbourg, 1896. (*Mem. Acad. Imp. Sc. St. Pétersb.*, 8^e série, *Cl. phys.-math.*, iii., No. 3.)

In the Russian language.

|| ——— Les variations du niveau de la partie supérieure du Volga en connexion avec les précipitations. la. 4°. St. Pétersbourg, 1895. (*Mém. Acad. Imp. Sc. St. Pétersb.*, viii^e sér., *Cl. phys.-math.*, ii., No. 8.)

In the Russian language.

Rio de Janeiro, Observatorio.—Anuario. 1896. Anno xii. sm. 8°. Rio de Janeiro, 1895.

Riposto, Osservatorio Meteorologico del R. Istituto Nautico.—Bollettino mensile. Anno xxii., 1896. Fasc. 1–12. sm. f°. Riposto, 1896.

— — — Sul clima di Riposto. Nota del Prof. F. Cafiero. la. 8°. Riposto, 1896.

* (**Rochefort, E.**)—Observations météorologiques recueillies à l'île Saint-Paul, 4°. (*Récueil de Mém. &c. du Passage de Vénus sur le Soleil du 9 Déc. 1874.* ii., 2^e partie.)

Rome, Ufficio Centrale di Meteorologia e di Geodinamica.—Bollettino meteorico. Anno xviii., 1896. Jan. 1–Dec. 31. la. 4°. Sheets.

— — — Rivista Meteorico-Agraria. Anno xvii., 1896, N. 1–36. sm. f°. (Roma, 1896–97.)

* || **Roscoe, H. E.**—On the opalescence of the atmosphere. 8°. (*Proc. R. Inst.*, iv. 1866, p. 651.)

|| **Rotch, A. L.**—The exploration of the air. Read May 13, 1896. la. 8°. (*Appalachia*, viii., No. 1, p. 179.)

|| **Rotch, A. L.**—The International Meteorological Conference at Paris, September 1896. la. 8°. (*Monthly Weather Rev., Washington, 1896, Oct.*)

|| ——— The new meteorological observatory on the Brocken. la. 8°. (*Amer. Meteor. Journ., 1896, Apl.*)

* **Royal Commission on Land in Wales and Monmouthshire.**—Report. sm. f°. London, 1896.

* ——— Bibliographical, statistical, and other miscellaneous memoranda, being appendices to the Report of the Royal Commission on Land in Wales and Monmouthshire. sm. f°. London, 1896.

|| **Rücker, A. W.**—A summary of the results of the recent magnetic survey of Great Britain and Ireland, conducted by Professors Rücker and Thorpe. la. 8°. (*Terrestr. Magn., i., 1896, p. 105.*)

Russell, Hon. F. A. R.—The sunsets and sunrises of November and December 1883, and January 1884. la. 8°. (*Quart. Journ. R. Meteor. Soc., N.S., x., 1884, p. 139.*)

|| **Russell, H. C.**—A map showing the average monthly rainfall in New South Wales. 8°. (*Journ. R. Soc. N.S.W., xxviii., 1894.*)

|| ——— On periodicity of good and bad seasons. 8°. (*Proc. R. Soc. N.S.W., xxx., 1896.*)

* || **Ruyarac, Vasa.**—Die Abfluss- und Niederschlagsverhältnisse von Böhmen. la. 8°. Wien, 1896. (*Geogr. Abhandl., Bd. 5, Heft 5, p. 429.*)

St. Helena.—Meteorological observations, 1895. Newspaper cutting. (*St. Helena Guardian, 1896, July 23.*)

[**St. Petersburg, Central Physical Observatory.**—Monthly meteorological bulletin.] 1896, iv. la. 4°. [Sanktpeterburgh,] 1897.

In the Russian language.

—— **Observatoire Physique Central.**—Annales . . . publiées par M. Rykatchew. 1895, Parties i.–ii. 2 vols. sm. f°. St. Pétersbourg, 1896.

—— **Observatoire Physique Météorologique.**—Bulletin météorologique. 1896, Jan. 1–Dec. 31. f°. Sheets.

In the Russian language also.

—— **Physikalisches Central-Observatorium.**—Jahresbericht . . . für 1889–1894. Der Akademie abgestattet von H. Wild. 6 vols. sm. f°. St. Petersburg, 1890–95.

[—— **Scientific Department of the Naval Technical Committee.**]—Naval Repertory. 1896. Nos. 1–6, 10–12. la. 8°. St. Petersburg, 1896.

In the Russian language.

St. Vincent, Botanic Garden.—Meteorological return. 1895. Jan.–Dec. sm. f°. Sheets.

* **Salazar, A. E., i Newman, Q.**—Estudios ijiénicos del aire. la. 8°. Santiago de Chile, 1895. (*Actes Soc. Sc. Chili, iv., 1894.*)

Salonica, Gymnase Bulgare des Garçons “St. Cyrille et Method.”—Bulletin annuaire de la station météorologique près du gymnase. oblong sm. 8°. s.l.e.a.

In the Bulgarian language also.

San Fernando, Instituto y Observatorio de Marina.—Anales. Sección 2ª. Observaciones meteorológicas y magnéticas. Año, 1894. f°. San Fernando, 1895.

San José de Costa Rica, Instituto Físico Geográfico Nacional.—Anales. Tomo vi., 1893. f°. San José, 1895.

Sarajevo, Bosnisch-Hercegovinische Landesregierung.—Ergebnisse der meteorologischen Beobachtungen an den Landesstationen in Bosnien und der Hercegovina im Jahre 1895. la. 4°. Wien, 1896.

|| **Schoenrock, A.**—Die Bewölkung des Russischen Reiches. la. 4°. St. Pétersbourg, 1895. (*Mém. Acad. Imp. Sc. St. Pétersb., viii. sér., Cl. phys.-math., i., No. 9.*)

Schreiber, P.—Vier Abhandlungen über Periodizität des Niederschlages, theoretische Meteorologie und Gewitterregen.

See CHEMNITZ, K. SÄCHSISCHES METEOROLOGISCHES INSTITUT.

Schück, A.—Magnetische Beobachtungen an der Kieler Förde und Eckernförder Bucht, übertragen auf 1895, 5. la. 8°. (*Schriften Naturw. Verh. Schleswig-Holstein*, xi., 1897, p. 74.)

——— Magnetische Beobachtungen auf den West-Inseln und einigen Punkten der West- und Südküste Schleswig-Holsteins, übertragen auf 1895, 5. la. 8°. (*Schriften Naturw. Verh. Schleswig-Holstein*, xi., 1896, p. 36.)

|| **Schultheiss, C.**—Ueber die Durchsichtigkeit höherer Luftschichten nach den Beobachtungen der Alpenaussicht am südlichen Schwarzwald. Theilweiser Abdruck Verh. Naturw. Ver. Karlsruhe, Bd. xii. sm. 8°. (*Meteor. Zeitschr.*, 1896, Dec., p. 445.)

——— Ueber einige Eigenthümlichkeiten des Klimas von Freiburg i. B. la. 8°. (*Das Wetter*, 1896, Heft. 6/7.)

* **Science Progress.**—A monthly review of current scientific investigation. Conducted by H. C. Burdett, edited by J. B. Farmer. Vol. 5., 1896. la. 8°. London, 1896.

* **Scott, R. H.**—International Meteorological Conferences. la. 8°. (*Naut. Mag.*, lxx., 1896, p., 1097.)

|| ——— Notes on the unusually high barometer readings in the British Isles, January, 1896. la. 8°. (*Quart. Journ. R. Meteor. Soc.*, xxii., 1896, p. 152.)

Seeland, F.—Magnetische und meteorologische Beobachtungen zu Klagenfurt, 1896, Jan.-Dec. and year. 8°. s.l.e.a.

Shanghai Meteorological Society.—Fourth annual report for the year 1895. Essay on the variations of the atmospheric pressure over Siberia and Eastern Asia, during the months of January and February 1890. By the Rev. S. Chevalier. la. 8°. Zi-ka-wei, 1896.

Singapore, Principal Medical Officer, Straits Settlements.—Annual meteorological report, Straits Settlements, for the year 1895. sm. 8°. s.l.e.a.

|| **Snellen, M.**—Télé-météorographie. sm. 8°. (*Météor. Zeitschr.*, 1896, Okt., p. 365.)

Sofia, Station Central Météorologique de Bulgarie.—Bulletin mensuel, 1896, Jan.-Dec. and year. oblong la. 8°. Sheets.

In the Bulgarian language also.

Southport, Fernley Observatory.—Abstracts of observations at the Southport meteorological observatory for the weeks ending Jan. 11, 1896, to Jan. 2, 1897. Slips.

——— Report and results of observations, for the year 1895. By J. Baxendell. 4°. Southport, 1896.

[**Sresnewskij, B.**]—Appareil servant à démontrer les courbes périodiques. la. 8°. s.l.e.a.

——— Cyclonenbahnen in Russland für die Jahre 1887-1889. la. 4°. St. Pétersbourg, 1895. (*Mém. Acad. Imp. Sc. St. Pétersb.*, 8^e sér., Cl. Phys.-Math., ii., No. 6.)

|| ——— Ueber starke Schwankungen des Luftdrucks im Jahre 1887. la. 8°. (*Bull. Soc. Imp. Nat. Moscou*, 1895, No. 3.)

|| **Stelling, E.**—Magnetische Beobachtungen auf einer Reise nach Urga im Sommer 1893 nebst Bemerkungen über die Aenderungen der erdmagnetischen Elemente in Ost-Sibirien. la. 4°. St. Pétersbourg, 1895. (*Mém. Acad. Imp. Sc. St. Pétersb.*, viii. sér., Cl. phys. math., ii., No. 9.)

Stockholm, Kongl. Svenska Vetenskaps-Akademie.—Meteorologiska iakttagelser i Sverige utgifna af Kongl. Svenska Vetenskaps-Akademien, anställda och utarbetade under insende af meteorologiska Central-Anstalten. Bd. 33. 2dra ser., Bd. 19, 1891. la. 4°. Stockholm, 1895.

In the French language also.

——— **Meteorologiska Central-Anstalt.**—Månadsöfversigt af väderleken i Sverige till landbrukets tjänst utgifven under meteorologiska Central-Anstaltens insende af Dr. H. E. Hamberg. Årgång xvi. 1896. 8°. Stockholm, 1897.

Stonyhurst College Observatory.—Results of meteorological, magnetical, and solar observations. By the Rev. W. Sidgreaves. 1895, 1896. 2 vols., sm. 8°. Clitheroe, 1896-97.

The Appendix contains "Results of meteor. obsns. taken at St. Ignatius' College, Malta, by the Rev. J. F. Dobson. 1895-96."

- * **Storms, Great.**—8°. [*Cornhill*, xxxv., 1877, p. 182.]
- Straits Settlements.**—Annual report on the State of Perak for the year 1895. sm. 8°. Taiping, [1896].
- Strassburg, Meteorologischer Landesdienst.**—Ergebnisse der meteorologischen Beobachtungen im Reichsland Elsass-Lothringen im Jahre 1894. Herausgegeben . . . von H. Hergesell. la. 4°. Strassburg, 1896.
- Uebersicht über die Witterungs-Verhältnisse Elsass-Lothringens. 1896. Jan.—Dec. Beilage der Strassburger Correspondenz, 1896–97. 4°.
- Studnicka, F. J.**—Über die Bedeutung der sogenannten Wärmesumme in der floristischen Phaenologie. la. 8°. (*Sitzungsb. k. böhm. Gesellsch. Wissensch., math.-naturw. Cl.*, 1895, ii.)
- Stuttgart, Kgl. Statistisches Landesamt. Meteorologische Zentralstation.**—Veröffentlichungen des K. Statistischen Landesamts. Witterungsübericht . . . nach den Beobachtungen der württemb. meteor. Stationen. 1896, Jan.—Dec., year. 8°. Sheets. (*Sonderabdruck aus Staats-Anzeigers für Württemb.*, 1896–97.)
- || **Supan, A.**—Regentafeln von China und Korea. 4°. (*Petermann's Mitteil.*, 1896, *Heft 9*, p. 205.)
- [**Sydney Observatory.**]—Meteorological observations at Sydney. 1895, Jan.—Dec. 8°. s.l.e.a.
- Weather chart. 1895, Jan.—Dec. 8°. Sheets.
- **Royal Society of New South Wales.**—Journal and proceedings. Vol. xxix., 1895. 8°. Sydney, s.a.
- Symons's Monthly Meteorological Magazine.**—Vol. xxxi., 1896. 8°. London, 1897.
- Symons, G. J.**—Scientific weather forecasting. la. 8°. (*Science Progress, n.s.*, i., 1896, p. 1.)
- and **Wallis, H. S.**—British rainfall, 1895. On the distribution of rain over the British Isles, during the year 1895 . . . 8°. London, 1896.
- Tacubaya, Observatorio Astronómico Nacional.**—Anuario. 1897. Año xvii. Formado bajo la dirección del Ingeniero A. Anguiano. sm. 8°. México, 1896.
- Boletín. Tomo 1. sm. 8°. México, 1890.
- Tebbutt, J.**—Report of Mr. Tebbutt's Observatory, the Peninsula, Windsor, New South Wales, for the year 1895. 8°. Sydney, 1896.
- Teisserenc de Bort, L.**—Rapport sur les mesures des hauteurs et des mouvements des nuages par la photographie, à Trappes. la. 4°. (Paris, s.a.)
- Thevenet, A.**—Recherches sur les influences de la chaleur, du vent et de la vapeur d'eau sur la pression barométrique. 4°. Mustapha-Alger, 1896.
- Tifis, Physikalisches Observatorium.**—Beobachtungen. 1894. la. 4°. (Tifis), 1896.
- In the Russian language also.
- Beobachtungen der Temperatur des Erdbodens. 1890. la. 8°. (Tifis), 1895.
- In the Russian language also.
- Tokio, Central Meteorological Observatory.**—Annual report. 1892, Parts 1 and 2. 2 vols., la. 8°. Tokio, s.a.
- In the Japanese language also.
- Weather chart. 1896, Jan.—Dec. 4°. Sheets.
- In the Japanese language also.
- Toronto, Magnetical Observatory.**—General meteorological register for the years 1895, 1896. 2 parts. 8°. s.l.e.a.
- **Meteorological Service, Dominion of Canada.**—Monthly weather review. 1895, Jan.—Dec. la. 4°. s.l.e.a.
- Weather map. 1896, Jan.—Dec. Charts showing the mean temperature and the difference from mean average temperature, also total rain and snowfall for the month, and depth of snow on the ground on the last day of the month. 8°. Sheets.
- Torquay.**—Meteorological report. By A. Chandler. 1895–96. 2 vols. 8°. s.l.e.a.

Trieste, I. R. Accademia di Commercio e Nautica.—Osservazioni meteorologiche instituite all' Osservatorio Marittimo. 1896, Jan.–Dec., and Results. oblong la. 8°. Sheets.

Trinidad, Royal Botanic Gardens.—Meteorological returns. 1896, Jan.–Dec. sm. f°. Sheets.

————— [Meteorological observations.] 1896. sm. f°.

Tyndall, W. H.—Meteorology, Oxford Road, Redhill, for the year 1896. sm. 8°. s.l.e.a.

Utrecht, Koninklijk Nederlandsch Meteorologisch Instituut.—Magnetische Beobachtungen in der Schweiz im Jahre 1895 ausgeführt durch Dr. van Rijckevorsel und Dr. W. van Bemmelen. 8°. Utrecht, s.a.

————— Mededeelingen uit de journalen betreffende bijzondere meteorologische verschijnselen in sommige gedeelten van den oceaan. 2°. geheel omgewerkte druk. la. 4°. Utrecht, 1896.

————— Meteorologisch jaarboek. 1894. xvi. Jaarg. oblong 8°. Utrecht, 1896.

In the French language also.

————— Onweders in Nederland. Deel xvi., 1895. la. 8°. Amsterdam, 1896.

* **Vaillant, —.**—Voyage autour du monde exécuté pendant les années 1836 et 1837 sur la corvette La Bonite commandée par M. Vaillant. Physique par B. Darondeau et E. Chevalier. Observations météorologiques. la. 8°. Paris, 1840.

Vaughan, J. D. W.—Meteorological observations taken at Suva during 1895. sm. f°. Suva, 1896.

|| **Vienna, Hydrographischer Dienst in Oesterreich.**—Ergebnisse der Beobachtungen über die Gewitterregen vom 1 August 1896 in Nieder-Oesterreich. Herausgegeben vom k. k. hydrographischen Central-Bureau. f°. Wien, 1896. (*Oesterr. Monatschr. für den öffentl. Baudienst*, 1896, *Heft ix.*)

————— Grundsätzliche Bestimmungen für die Durchführung hydrometrischer Erhebungen. Herausgegeben . . . vom k. k. hydrographischen Centralbureau. la. 8°. Wien, 1896.

————— Jahrbuch des k. k. hydrographischen Central-Bureaus. 2 Jahrg., 1894. f°. Wien, 1896.

————— Regulation für die hydrometrische Prüfungsanstalt des k. k. hydrographischen Centralbureau in Wien. Herausgegeben . . . vom k. k. hydrographischen Centralbureau. la. 8°. Wien, 1896.

————— Vorschrift über die Verfassung, Sammlung und Evidenzhaltung von Situations-, Längenprofils- und Querprofils-Plänen der Binnengewässer. Herausgegeben . . . vom k. k. hydrographischen Centralbureau. la. 8°. Wien, 1896.

|| ——— **Kais. Akademie der Wissenschaften.**—Berichte der Commission für Erforschung des Östlichen Mittelmeeres. Fünfte Reihe. la. 4°. (*Denkschr. k. Akad. Wissensch. Wien*, lxiii.)

————— **K. K. Central-Anstalt für Meteorologie und Erdmagnetismus.**—Beobachtungen. 1896, Jan.–Dec. and Results. 8°.

————— Telegrafischer Wetterbericht. Jahrg. 20, 1896. Jan. 1–Dec. 31. la. 4°. Sheets.

————— **K. K. österr. Central-Bureau für den hydrographischen Dienst.**—Wocheberichte über die Schneebeobachtungen im österreichischen Rhein-, Donau-, Oder- und Adriagebiete für den Winter, 1895–96. f°. Wien, 1895.

————— **K. K. geographische Gesellschaft.**—Mittheilungen. 1895. xxxviii. Bd. (der neuen Folge xxviii.). la. 8°. Wien, 1895.

————— **Oesterr. Gesellschaft für Meteorologie.**—Namen- und Sachregister zu den Bänden I.–XX., 1866–1885, der Zeitschrift der oesterr. Gesellschaft für Meteorologie. Bearbeitet von Dr. St. Kostlivy. sm. f°. Wien, 1896.

————— **Sonnblick Verein.**—Jahres-Bericht des Sonnblick-Vereines für das Jahr 1895. sm. f°. Wien, 1896.

|| **Vincent J.**—Examen critique de la carte pluviométrique de la Belgique de M. A. Lancaster. la. 8°. (*Bull. Soc. Belge Astron.*, 1^{re} année, No. 7-8.)

- Waldo, F.**—Elementary meteorology for high schools and colleges. sm. 8° New York [1896].
- Ward, R. De C.**—Meteorological observations in Schools. Connecticut School Document, No. 10, 1896. 8°. s.l., 1896.
- || ——— The teaching of climatology in medical schools. sm. 8°. Boston 1897. (*Boston Med. Surg. Journ.*, 1897, Feb. 4.)
- || [**Warsaw, Oddział Warszawski Towarzystwa popierania Przemysłu i Handlu.**]—Sprawozdania meteorologiczne, 1893. Bulletins météorologiques publiés par la 6^me section de la Soc. d'encouragement de l'industrie et du commerce, à Varsovie. la. 8°. Warszawa, 1895. (*Odbitka z Pamiętnika Fizyograf.*, xiv.)
- Washington, Department of Agriculture, Weather Bureau.**—Bulletin No. 12. Report on the condensation of atmospheric moisture. By Carl Barus. 8°. Washington, 1895.
- Bulletin No. 13. Temperatures injurious to food products in storage and during transportation, and methods of protection from the same. By H. E. Williams. 8°. Washington, 1894.
- Bulletin No. 14. Report of the third annual meeting of the American Association of State Weather Services, coöperating with the Weather Bureau, U.S. Department of Agriculture. 8°. Washington, 1894.
- Bulletin No. 19. W. B., No. 97. Report on the relative humidity of Southern New England and other localities. By A. J. Henry. la. 8°. Washington, 1896.
- Monthly weather review. Vol. 23, 1895. 4°. Washington, 1896.
- Report of the Chief of the Weather Bureau, 1894. la. 4°. Washington, 1895.
- Responses to the programme of questions proposed for discussion at the International Meteorological Conference, to be held in Paris, September 1896. la. 8°. Washington, 1896.
- Weather map, 1896, Jan. 1–Dec. 31. la. f°. Sheets.
- **Hydrographic Office.**—Pilot charts of the North Atlantic Ocean. 1896, Jan.–Dec. Charts. la. f°.
- Pilot charts of the North Pacific. 1896, Jan.–Dec. Charts. la. f°.
- **Smithsonian Institution.**—Annual Report. 1894. la. 8°. Washington, 1896.
- Smithsonian contributions to knowledge. Vols. 30–32. 3 vols la. 4°. Washington, 1895.
- || ——— **United States Naval Observatory.**—Magnetic observations at the United States Naval Observatory. 1894. la. 4°. Washington, 1895. (*Washington Observations*, 1894, App. 1.)
- Magnetic observations not recorded during 1893.
- || ——— Meteorological observations and results. United States Naval Observatory. 1890. la. 4°. Washington, 1894. (*Washington Observations*, 1890.)
- Wellington, Meteorological Department.**—[Meteorological observations in New Zealand.] 1895. sm. f°. (*Statist. New Zealand*, 1895.)
- || ——— **Meteorological Office.**—Rainfall. 1893, 1894–96, Jan.–Dec. sm. f°. Sheets. (*New Zealand Gazette*.)
- * **Wershoven, F. J.**—Technical vocabulary. English and German. sm. 8°. Leipzig, 1885.
- * **Wetter, Das.**—Meteorologische Monatsschrift für Gebildete aller Stände. Herausgegeben von R. Assmann. xiii. Jahrg., 1896. la. 8°. Berlin, 1896.
- || **Wheeler, W. H.**—The effect of wind and atmospheric pressure on the tides. Report of the Committee . . . drawn up by the Secretary (Mr. W. H. Wheeler). 8°. (*Rep. Brit. Assoc. Advanc. Sc.*, 1896.)
- Westman, J.**—Quelques tableaux de réduction pour les mesures photogrammétriques des nuages. la. 8°. Upsala, 1896.
- * **Widenmann, —.**—Bericht über die klimatischen und gesundheitlichen Verhältnisse von Moshi am Kilimandjaro. la. 8°. (*Mitth. Forschungsreisenden u. Gelehrten aus den deutsch. Schutzgebieten*, viii., Heft. 4.)

|| **Wiesener, J.**—Beiträge zur Kenntniss des tropischen Regens. 1a. 8°. (*Sitzungsber. K. Akad. Wissensch. Wien, math.-naturw. Cl., civ.*, 1895, p. 1397.)

|| **Wild, H.**—Verbesserte Constructionen magnetischer Unifilar-Theodolithe. 1a. 4°. St. Pétersbourg, 1896. (*Mém. Acad. Imp. Sc. St. Pétersb., 8^e sér., Cl. phys.-math., iii., No. 7.*)

|| ——— Neue vierjährige und fünfjährige Mittel der Niederschlagsmengen und der Zahl der Tage mit Niederschlag für das Russische Reich. 1a. 4°. St. Pétersbourg, 1895. (*Mém. Acad. Imp. Sc. St. Pétersb., 8^e sér., Cl. phys.-math., iii. No. 1.*)

In the Russian language, with Introduction in German.

Willaume-Jantzen, V.—Meteorologiske observationer i Kjøbenhavn.

See COPENHAGEN, DANSK METEOROLOGISK INSTITUT.

Williams, H. E.—Temperatures injurious to food products in storage, &c.

See WASHINGTON, DEPARTMENT OF AGRICULTURE, WEATHER BUREAU.

Bulletin No. 13.

* || **Willis, R.**—On the pressure produced on a flat plate when opposed to a stream of air issuing from an orifice in a plane surface. 4°. (*Trans. Cambridge Phil. Soc., iii.*, 1828, p. 129.)

|| **Woeikof, A.**—Das Klima Centralasiens nach den Beobachtungen von Prschewalsky. 2 parts. sm. f°. (*Meteor. Zeitschr.*, 1896, Feb., p. 49; März, p. 90.)

|| ——— Das neue meteorologische Observatorium der Universität Odessa. sm. f°. (*Meteor. Zeitschr.*, 1895, Juni, p. 214.)

|| ——— Zum Klima des Amurlandes. sm. f°. (*Meteor. Zeitschr.*, 1895, Juni, p. 210.)

|| ——— Zur Frage der Erstreckung des Eisbodens und geothermische Beobachtungen in Sibirien. sm. f°. (*Meteor. Zeitschr.*, 1895, Juni, p. 212.)

|| ——— Zur Verbreitung des Eisbodens in Transbaikalien. sm. f°. (*Meteor. Zeitschr.*, 1895, Juni, p. 211.)

* **Woglom, G. T.**—Parakites: a treatise on the making and flying of tail-less kites for scientific purposes and for recreation. 4°. New York and London, 1896.

|| **Wollny, E.**—Forstlich-meteorologische Beobachtungen. Fünfte Mittheil. vi. Untersuchungen über den Einfluss der Pflanzendecken auf den Kohlensäuregehalt der Bodenluft. 8°. (*Forschungen auf dem Geb. Agrik.-phys., Heidelberg*, 19, Heft 1, 2.)

|| ——— Untersuchungen über das Verhalten der atmosphärischen Niederschläge zur Pflanze und zum Boden. 8. Der Einfluss der atmosphärischen Niederschläge auf die chemischen Eigenschaften des Bodens. 8°. (*Forschungen auf dem Geb. Agrik.-phys., Heidelberg*, 19 Bd., Heft 3.)

|| **Wragge, C. L.**—Meteorology of Tasmania. Mr. Wragge's Report. 1a. 8°. Launceston, 1896. (*Launceston Examiner.*)

York, Yorkshire Philosophical Society.—Annual report . . . for 1895. 1a. 8°. York, 1896.

Zi-ka-wei, Observatoire Magnétique et Météorologique.—Bulletin mensuel. Tome 20., année 1894. sm. f°. Chang-hai, 1896.

——— Supplement aux Bulletins Mensuels de 1873 à 1892. Observations de température, hygrométrie et actinométrie. Discussion et correction par le P. S. Chevalier. sm. f°. Chang-Hai, 1897.

Zürich, Schweizerische Meteorologische Central-Anstalt.—Annalen, 1894. "Der Schweiz. meteor. Beob." 31 Jahrg. 4°. Zürich, s.a.

——— Wetterbericht. 1896, Jan. 1-Dec. 31. sm. f°. Sheets.

APPENDIX XIV.

ACCOUNT OF RECEIPTS AND PAYMENTS for the year ending 31st March 1897.

RECEIPTS.		PAYMENTS.		
	£ s. d.		£ s. d.	£ s. d.
Balance from year 1895-96 -	1,172 2 11	ADMINISTRATION:	£ s. d.	£ s. d.
Parliamentary Vote -	15,300 0 0	Payment of Council -	991 5 0	
Repayment of expenses charged under—		Secretary -	800 0 0	
(1.) Incidental expenses -	36 13 9	Salaries and wages -	945 8 0	
(2.) Observatories -	25 2 9	Rent, fuel, and lighting	716 16 7	
		Incidental and contingent expenses -	227 19 3	
		Furniture and fittings	87 19 9	
		Expenses incidental to International Meteorological Congress -	23 10 8	
		Pensions -	144 0 0	
	61 16 6			3,936 19 3
SUPPLY OF INFORMATION:		SPECIAL RESEARCHES:		
Daily Weather Charts and Forecasts -	261 17 4	Salaries and other charges -	- - -	820 18 5
6 p.m. Charts -	25 0 0	LAND METEOROLOGY:		
Reports for Press Agencies, &c. -	111 18 6	Observatories and stations, including remuneration of observers -	2,217 6 5	
Telegrams sent abroad -	201 14 1	Salaries:—Discussion and reduction of observations, &c. -	1,373 7 6	
	600 9 11			3,590 13 11
SALE OF INSTRUMENTS, &c.:		WEATHER INFORMATION AND FORECASTS:		
Royal Navy account -	7 5 9	Telegraphic reports and storm warnings, remuneration of observers, &c. -	2,685 2 6	
Mercantile Marine account -	16 6 0	Salaries:—Preparation and issue of reports and forecasts -	1,874 4 6	
M.O. (Stations) account -	35 2 0			4,559 7 0
	58 13 9	INSPECTIONS:		
Repayment of Miscellaneous Commissions executed for Colonial and Foreign Institutions, &c. -	198 6 8	Salaries and travelling expenses -	- - -	445 17 0
Commission charged on work done for Colonies, &c. -	12 1 8	OCEAN METEOROLOGY:		
		Salaries:—Discussion and reduction of observations -	1,607 1 2	
		Expenses incidental to the supply of instruments:—		
		Proportion for care and issue of instruments -	200 0 0	
		Royal Navy -	378 10 8	
		Mercantile Marine -	224 13 7	
		Distant island and coast stations -	10 10 0	
				2,420 15 5
		Miscellaneous Commissions executed for Colonial and Foreign Institutions, &c. -	- - -	199 15 2
		BALANCE:		
		Cash at Bank -	1,372 0 5	
		„ at Office -	57 4 10	
				1,429 5 3
	£ 17,403 11 5			£ 17,403 11 5

In the year 1896-97 the sum of 1,725*l.* 8*s.* 7*d.* was paid to the Post Office on account of inland and foreign telegrams, allowances to telegraph clerks, rental of private wires, &c.

APPENDIX XV.

LIST OF THE PRINCIPAL PAPERS PRINTED IN VARIOUS REPORTS
ISSUED BY THE OFFICE FROM THE YEAR 1866.

I.—DAILY WEATHER REPORT.

Year.	Page.	
1896 (July to Dec.).	1	Mean Values of Barometric Pressure for each Month and for the Whole Year, derived from Observations made at 8 a.m. daily during the 25 Years 1871-95.
1896	2 and 3	Mean Values of the Dry Bulb and Wet Bulb Temperatures for each Month and for the Whole Year, derived from Observations made at 8 a.m. daily during the 25 Years 1871-95.
"	4 and 5	Mean Values of the Daily Maximum and Minimum Temperatures, and of the Maximum and Minimum combined, for each Month and for the Whole Year, derived from Observations extending over the 25 Years 1871-95.
"	6 and 7	Extremes of the Daily Maximum and Minimum Temperatures for each Month and for the Whole Year, derived from Observations extending over the 25 Years 1871-95.
"	8	Mean Rainfall for each Month and for the Whole Year—derived from Observations extending over the 30 Years 1866-95.
"	9	Mean Numbers of Hours of Bright Sunshine, with the Percentages of Possible Duration, derived from Observations extending over the 15 Years 1881-95.

II.—WEEKLY WEATHER REPORT.

Year.	Page.	
1884	V.	Table A.—Showing for each Degree of Latitude, from 49° N. to 58° N. the Total Number of Hours during which the Sun is above the Horizon, in each Month of the Four Quarters of the Year.
"	VI.	Table B.—Showing for each Degree of Latitude, from 49° N. to 58° N. the Total Number of Hours during which the Sun is above the Horizon, in each Week of the Year.
1889	[1-9]	Summaries of Rainfall and Mean Temperature, for the First, Second, Third, and Fourth Quarters, and for the Whole Year, during the 24 Years 1866 to 1889. [Contains Separate Yearly Values from the year 1866.]
1895	VI.-VII.	Mean Values of the Daily Maximum and Minimum Temperatures, and of the Maximum and Minimum combined, for each Month and for the Whole Year, derived from Observations extending over the 25 Years 1871-95.
"	VIII.	Mean Rainfall for each Month and for the Whole Year, derived from Observations extending over the 30 Years 1866-95.
"	IX.	Mean Numbers of Hours of Bright Sunshine, together with the Percentages of the Possible Duration, for each Month and the Whole Year, derived from Records extending over the 15 Years 1881-95. [For Separate Yearly Values for 1866-89, see 1889 [1-9].]
"	[17]	Table I.—Showing for each District, during each of the Three Lustra, and the whole Period comprehended in the 15 Years 1881-95, the Mean Aggregate numbers of rainy days from the beginning of the Year to the end of each week in the Year.

Year.	Page.	
1895	[23]	Table II.—Showing for each District, during each of the Three Lustra, and the whole Period comprehended in the 15 Years 1881-95, the Mean Aggregate Amounts of Rainfall, from the beginning of the Year to the end of each week in the Year.
"	[27]	Table III.—Showing for each District, during each of the Three Lustra, and the whole Period comprehended in the 15 Years 1881-95, the Mean Aggregate Values for Accumulated Heat above 42° F., from the beginning of the Year to the end of each week in the Year.
"	[32]	Table IV.—Showing for each District, during each of the Three Lustra, and the whole Period comprehended in the 15 Years 1881-95, the Mean aggregate Values for Accumulated Heat below 42° F., from the beginning of the Year to the end of each week in the Year.
"	[37]	Table V.—Showing for each District, during each of the Three Lustra, and the whole Period comprehended in the 15 Years 1881-95, the Mean Aggregate Numbers of Hours of Bright Sunshine from the beginning of the Year to the end of each week in the Year.
"	[42]	Table VI.—Showing for each District, during each of the Three Lustra, and the whole Period comprehended in the 15 Years 1881-95, the Mean Per-centages of the possible amount of Bright Sunshine, from the beginning of the Year to the end of each week in the Year.
"	[47]	Table showing in Degrees Fahrenheit for each District, during each of the Three Lustra, and the whole Period comprehended in the 15 Years 1881-95, the Mean Temperature of the Air, for each week in the Year.
1896	[1-9]	Summaries of Rainfall and Mean Temperature for the First, Second, Third, and Fourth Quarters, and for the Whole Year, during the 31 Years 1866-96. [For Separate Yearly Values for 1866-89, see 1889 [1-9].]

III.—MONTHLY WEATHER REPORT.

Year.	Page.	
1884	[iii.]	Table showing for each Month and for each Degree of Latitude from 18° N. to 49° N. the Total Number of Hours during which the Sun is above the Horizon.
"	[i.]	On London Rain. By W. J. Russell, Ph.D., F.R.S.
"	[ii.]	On the Amount of Carbonic Acid in London Air. By W. J. Russell, Ph.D., F.R.S.
1885	[i.]	On the Impurities in London Air. By W. J. Russell, Ph.D., F.R.S.
"	[ii.]	Table showing the Mean Monthly and Annual Rainfall at the Weekly and Monthly Weather Report Stations for the 20 Years 1866 to 1885.

IV.—QUARTERLY WEATHER REPORT.

Year.	Page.	
1869	43	Factors for Calculation of Gradients.
"	[1]	Notes on Easterly Gales, by R. H. Scott.
1870	iii.	Description of Observatories, with illustrations of thermometer screens.
"	[7]	Mean Barometrical Pressure at Telegraphic Reporting Stations, 1866-70.

Year.	Page.	—
1870	[23]	Bessel's Paper on the Determination of the Law of a Periodical Phenomenon. Translated from the <i>Astronomische Nachrichten</i> , 186, for May, 1828.
1871	[7]	Discussion of Anemometrical Results for Orkney, 1863-68.
"	[59]	Constants for the Determination of the Monthly March of Atmospherical Pressure, &c. at the Seven Observatories for 1869-70.
1872	[13]	Discussion of the Anemometrical Results at Bermuda from 1st April 1859 to 31st March 1863.
1873	[13]	Rainfall of the London District for Sixty Years, 1813-72. By G. Dines, F.M.S. [with diagram].
1874	[26]	On the Winds at Liverpool, by W. W. Rundell.
1875	[1]	Observations taken at Nine Stations of the Second Order, [1875].
"	[89]	Mean Monthly Results for the Seven Observatories for the Lustrum, 1871-75.
1876	[13]	Report on the Reduction of Greenwich Curves for 1875 to a Common Standard with those of Kew [with 25 plates].
"	[20]	Results of Observations made at the Pagoda, Kew Gardens, to Determine the Influence of Height on Temperature, &c. By R. H. Scott, F.R.S. [4 plates.]
"	[39]	Comparison of Results obtained by means of the Harmonic Analyser, with similar Results got from Measurement and Numerical Calculation for the Seven Observatories.
1877	[13]	On the Diurnal Range of Rainfall at the Seven Observatories in connexion with the Meteorological Office, 1871-80. By R. H. Scott, F.R.S. [5 plates.]
"	[35]	Report on Evaporimeters. By W. N. Shaw, M.A. [2 plates.]
1878	[13]	On the Computation of the Quantity of Heat in excess of any Fixed Base Temperature, received at any place during the course of the Year, &c. By Lieut.-Gen. Strachey, R.E., F.R.S.
1879	[41]	Report on Hygrometric Methods, &c. Part I. By W. N. Shaw, M.A.
1880	[13]	Report on Experiments made at the Kew Observatory with Thermometer Screens of different patterns during 1879, 1880 and 1881, by G. M. Whipple, Superintendent.
"	[19]	Tables and Diagrams illustrating the Diurnal Range of Barometric Pressure in the British Isles during the Years 1876-80. By F. C. Bayard, L.L.M., F.R. Met. Soc. [5 plates.]

V.—REPORT of the METEOROLOGICAL COMMITTEE of the ROYAL SOCIETY.

Year.	Page.	—
1867	27	A Description of the Self-Recording Instruments recently erected by the Meteorological Committee of the Royal Society in various parts of the United Kingdom [with plates].
1869	25	Note upon a Self-registering Thermometer adapted to Deep-Sea Soundings, by W. A. Miller, M.D., Treasurer and V.P.R.S., extracted from Proceedings of Royal Society, vol. XVII., p. 482.
"	32	On the Principle of the Pantagraph, designed by F. Galton.
"	36	Description of a Self-Recording Rain-gauge, invented by Robert Beckley, of the Kew Observatory; made by James Hicks, London.
1870	25	Description of the Process by which the Traces of the Self-registering Instruments are reduced suitably for publication.
"	31	Description of the Pantagraph, designed by Mr. Galton.
1871	24	" " Trace Computer, designed by Mr. Galton.

Year.	Page.	
1872	27	A Summary of the Results obtained from the Discussion of the Information for Square 3, being the Region of the Doldrums in the Atlantic. By Capt. H. Toyntee, Marine Superintendent.
1873	26	Summary of the General Course of Action taken at the Meteorological Congress at Vienna in 1873.
1874	33	The International Maritime Conference.
1876-77	31	Index of the Information existing in the Office for the entire Ocean [with charts].

VA.—REPORT of the METEOROLOGICAL COUNCIL.

Year.	Page.	
1877-78	21	Account of the Experiments on Atmospheric Electricity conducted at Kew Observatory. By Prof. J. D. Everett.
1879-80	28	On the Effect of Sluggishness on the Readings of Marine Barometers on Shore, by Prof. Stokes.
"	32	Description of the Card Supporter for Sunshine Recorders adopted at the Meteorological Office, by Prof. Stokes.
"	43	On the Methods available for the Determination of the Humidity of the Atmosphere, by Mr. W. N. Shaw.
"	46	Memorandum as to the Employment of the Harmonic Analyser in the Meteorological Office, by Prof. Stokes.
1880-81	25	On the Working of the Harmonic Analyser. [Prof. Stokes.]
"	27	Report on Fogs. [W. J. Russell.]
"	28	" " Hygrometers and Evaporimeters, presented to the Meteorological Council, May 10, 1881. [W. N. Shaw.]
"	33	Preliminary Report on the Photo-Nephograph. [W. de W. Abney.]
1881-82	25	On Fogs. [W. J. Russell.]
"	25	Preliminary Report on Hygrometry. [W. N. Shaw.]
"	29	Report on the Results of a Tentative Reduction of a Year's Electrograms at the Kew Observatory. [G. M. Whipple.]
1882-83	27	On the Results obtained by the use of the Harmonic Analyser.
1884-85	22	Note on Work done with the Harmonic Analyser.
1885-86	22	Memorandum on Cloud Photography, by Prof. Stokes, F.R.S.
1886-87	21	On the Distribution of Gales round the Coasts of the British Isles [for the 15 years, 1871-85].
"	23	Report on Occasional Telegrams received from Ben Nevis. [F. Gaster.]
"	24	Report on the Daily Weather Messages received from the United States (viâ Paris) during the three months January to March 1887. [F. Gaster.]
1887-88	22	On the History of the Severe Storms which visited the British Isles between August 1, 1882, and September 3, 1883, as traceable from the Atlantic Charts published by the Office. By Robert H. Scott, F.R.S., Secretary.
"	30	Abstract of Report on Hygrometric Methods, by W. N. Shaw, M.A., reprinted from the "Proceedings of the Royal Society," No. 262.
1888-89	22	Notes of some Results of an Examination of Atlantic Charts published by the Office, by R. H. Scott, F.R.S., Secretary.
"	27	Memorandum on the Measurement of Squalls shown on the Traces yielded by Robinson Anemometers of the "Standard" Pattern, by R. H. Curtis.
1889-90	24	Code of Regulations, &c. for conducting the work at the First Class Observatories, and the Examination thereof. [See also Report, 1868.]

Year.	Page.	—
1889-90	36	Note on Experiments on Pressure of Wind made by Mr. W. H. Dines.
"	46	Experiments with Violle's Actinometer Apparatus.
"	47	On the Work done with the Harmonic Analyser at the Meteorological Office.
1890-91	22	On Mr. Dines's Anemometer Experiments.
1891-92	23	On Anemometer Comparisons carried out by the aid of a Grant from the Meteorological Council, by W. H. Dines, B.A.
1892-93	21	On the Construction of the Anemometer recently erected for trial on the roof of the Meteorological Office, by W. H. Dines, B.A.
"	27	On the Harmonic Analysis of Hourly Observations of Air Temperatures at British Observatories, by Lieut.-Gen. R. Strachey, F.R.S.
1893-94	20	Report on the Performance of the Pressure-Tube Anemometer on the Roof of the Meteorological Office, by Mr. R. H. Curtis.
1894-95	22	Report to the Council of the University Extension College at Reading on Hay Harvest Forecasts during the Hay Harvest of 1894, by H. N. Dickson.
"	27	Report on the Comparisons made between two Pressure Tube Anemometers on the roof of the Meteorological Office, by Mr. R. H. Curtis.
1895-96	24	Note on Anemometer Experiments, by Mr. R. H. Curtis.

VI.—HOURLY READINGS of the SELF-RECORDING INSTRUMENTS of the OBSERVATORIES in connexion with the METEOROLOGICAL OFFICE.

Year.	Page.	—
1883	[1]	Constants of formulæ expressing the mean daily range of temperature obtained by the use of the Harmonic Analyser.
1884	[1]	Tables and formulæ to facilitate the computation of harmonic coefficients. By Lieut.-General Strachey, R.E.

VII.—HOURLY MEANS of the READINGS obtained from the SELF-RECORDING INSTRUMENTS at the FIVE OBSERVATORIES under the METEOROLOGICAL COUNCIL.

Year.	Page.	—
1891	[1]	Tables of Hourly Sunshine Values, with Plates, for the Ten years 1881-90, for Seven Observatories.

VIII.—METEOROLOGICAL OBSERVATIONS at STATIONS of the SECOND ORDER.

Year.	Page.	—
1891	[186]	Results of Observations at Stations of the Second Order for the Fifteen years, 1876-1890.

APPENDIX XVI.

LIST OF PUBLICATIONS issued under the Authority
of the Meteorological Council.

OFFICIAL.

- No. 1. Report of the Meteorological Committee for 1867. 1s.
2. Instructions for Meteorological Telegraphy. New Edition, 1891. Prepared for the use of observers exclusively.
3. Fishery Barometer Manual. (New edition, 1887.) 6d.
4. Charts showing the Surface Temperature of the South Atlantic Ocean in each Month of the Year. 2s. 6d.
5. Report of the Meteorological Committee for 1868. 5d.
6. Report of the Meteorological Committee for 1869. 10d.
7. Quarterly Weather Report for 1869.—Parts I. to IV. 5s. each.
8. Barometer Manual. (Out of print. See Nos. 3, 24, 40, 60, and 61.)
9. Quarterly Weather Report for 1870.—Parts I. to IV. 5s. each.
10. Report of the Meteorological Committee for 1870. 10d.
11. Contributions to our Knowledge of the Meteorology of Cape Horn and the West Coast of South America. 2s. 6d.
12. Currents and Surface Temperature of the North Atlantic Ocean, from the Equator to Lat. 40° N., for each month of the year, with a General Current Chart. 2s. 6d.
13. A Discussion of the Meteorology of that Part of the Atlantic lying North of 30° N., for the Eleven Days ending 8th February 1870. With Book of Charts, 5s.
14. Quarterly Weather Report for 1871.—Parts I. to IV. 5s. each.
15. Report of the Meteorological Committee for 1871. 10d.
16. Quarterly Weather Report for 1872.—Parts I. to IV. 5s. each.
17. Report of the Meteorological Committee for 1872. 1s.
18. Contributions to our Knowledge of the Meteorology of the Antarctic Regions. 2s.
19. Quarterly Weather Report for 1873.—Parts I. to IV. 5s. each.
20. Charts of Meteorological Data for Square 3. Lat. 0°—10° N. Long. 20°—30° W., and Remarks to accompany the Monthly Charts, which show the Best Routes across the Equator for each Month, &c. 20s.
21. Report of the Proceedings of the Meteorological Congress at Vienna. 1873. 1s.
22. Report of the Meteorological Committee for 1873. 4d.
23. Report of the Proceedings of the Conference on Maritime Meteorology held in London, 1874. 2s.
24. Instructions in the Use of Meteorological Instruments. [Reprinted 1892.] (New edition in course of preparation.) 2s. 6d.
25. Quarterly Weather Report for 1874.—Parts I., II., and IV.; 5s. each. Part III., 5s. 9d.

LIST OF PUBLICATIONS—continued.

- No. 26. Report of the Meteorological Committee for 1874. 6*d*.
27. Charts of Meteorological Data for the Nine 10° Squares of the Atlantic which lie between 20° N. and 10° S., and extend from 10° to 40° W., with accompanying Remarks, ending with the Best Routes across the Equator. 24*s*.
28. Contribution to the Meteorology of Japan. By Staff-Commander Thomas H. Tizard, H.M.S. *Challenger*. 1*s*.
29. Report of the Meteorological Committee for 1875. 4*d*.
30. Quarterly Weather Report for 1875.—Parts I.—IV. 5*s*. each.
31. Report of the Meteorological Committee for 1876–7. 3*s*. 5*d*.
32. The Meteorology of the North Atlantic during August 1873, with 31 Synoptic Charts. With Book of Charts. 15*s*.
33. Quarterly Weather Report for 1876 (New Series).—Part I., 6*s*.; Parts II., III., and IV., 5*s*. each.
- *33A. Meteorological Observations at Stations of the Second Order for the year 1876.
- 33B. Meteorological Observations at Stations of the Second Order for the year 1877.
34. Contributions to our Knowledge of the Meteorology of the Arctic Regions.—Vol. I. : Part I., 2*s*.; Part II., 10*s*.; Part III., 6*s*.; Part IV., 5*s*.; Part V., 6*s*.
35. Report of the Meteorological Council for 1877–8. 1*s*.
36. Report of the Proceedings of the Second International Meteorological Congress at Rome, 1879. 1*s*. 6*d*.
37. Report on the Meteorology of Kerguelen Island. By Rev. S. J. Perry, S.J., F.R.S. 3*s*.
38. Report of the Meteorological Council for 1878–9. 5*d*.
39. Meteorological Observations at Stations of the Second Order for the year 1878. 20*s*.
40. Aids to the Study and Forecast of Weather, by W. Clement Ley, M.A. 1*s*.
41. Report of the Meteorological Council for 1879–80. 1*s*.
42. Report of the Meteorological Council for 1880–81. 1*s*. 2*d*.
43. Meteorological Charts for the Ocean District adjacent to the Cape of Good Hope, with accompanying Remarks. Charts, 25*s*.; Remarks, 7*s*.
44. Report on the Gales experienced in the Ocean District adjacent to the Cape of Good Hope, between Lat. 30° and 50° S., and Long 10° and 40° E., by Capt. H. Toynebee, F.R.A.S. 7*s*. 6*d*.
45. Meteorological Observations at Stations of the Second Order for the year 1879. 20*s*.
46. Report on the Storm of October 13–14, 1881. By Robert H. Scott, F.R.S. 1*s*. 6*d*.
47. Rainfall Tables of the British Isles for 1866–80. Compiled by G. J. Symons, F.R.S. 7*s*. 6*d*.
48. Report of the Meteorological Council for 1881–2. 1*s*.
49. Quarterly Weather Report for 1879. (New Series.) Parts I., II., and III., 6*s*. each; Part IV., 5*s*. 6*d*. Appendices and Plates. 27*s*.
50. Quarterly Weather Report for 1880. (New Series.) Parts I. and II., 6*s*. each; Part III., 4*s*.; Part IV., 6*s*. Appendices and Plates. 28*s*.

* The Observations at Stations of the Second Order for the years 1873–1875 will be found in the Quarterly Weather Reports for the respective years.

- No. 51.* Hourly Readings from the Self-Recording Instruments at the Seven Observatories under the Meteorological Council, 1881. (New Series.) Part I., 10s. 6d. Parts II., III., and IV., 21s. each.
52. Quarterly Weather Report for 1877. (New Series.) Part I., 10s.; Part II., 5s.; Part III., 4s. 6d.; Part IV., 6s. Appendices and Plates. 27s.
53. Meteorological Atlas of the British Isles. 5s. 6d.
54. Hourly Readings from the Self-Recording Instruments at the Seven Observatories under the Meteorological Council, 1882. Parts I. and II., 20s. each; Part III., 22s. 6d.; Part IV., 26s.
55. Quarterly Weather Report for 1878. (New Series.) Parts I., II., III., and IV., 6s. each. Appendices and Plates. 28s.
56. Sunshine Records of the United Kingdom for 1881. 4s.
57. Meteorological Observations at Stations of the Second Order for the year 1880. 34s. 6d.
58. Report of the Meteorological Council for 1882-3. 10½d.
59. Charts showing the Surface Temperature of the Atlantic, Indian, and Pacific Oceans. 21s.
60. Principles of Forecasting by means of Weather Charts. By the Hon. Ralph Abercromby, F.R.Met.Soc. (Second edition.) 2s.
61. A Barometer Manual for the Use of Seamen. (Second edition.) 1s. 3d.
62. Monthly Weather Reports for 1884. Jan., Feb., March, May—Nov., 1s. 6d. each. April (with 2 Appendices), 2s. 6d. Dec., 1s. 9d.
63. Hourly Readings from the Self-Recording Instruments at the Seven Observatories under the Meteorological Council 1883. Parts I., II., and III., 21s. each; Part IV., 30s.
64. Report of the Meteorological Council for 1883-4. 1s. 2d.
65. Monthly Weather Reports for 1885. Jan. to Dec., 1s. 6d. each.
66. Meteorological Observations at Stations of the Second Order for the year 1881. 35s.
67. Report of the Meteorological Council for 1884-5. 4s. 4d.
68. Monthly Weather Reports for 1886. Jan. to Dec., 1s. 6d. each.
69. Meteorological Observations at Stations of the Second Order for the year 1882. 35s.
70. Hourly Readings from the Self-Recording Instruments at the Four Observatories under the Meteorological Council, 1884. Part I., 12s.; Part II., 10s.; Part III., 10s. 6d.; Part IV., 15s.
71. Synchronous Weather Charts of the North Atlantic and the adjacent Continents. Aug. 1, 1882, to Sept. 3, 1883. Parts I. to IV. (33 sheets each.) 17s. each.
72. Report of the Meteorological Council for 1885-86. 8d.
73. Meteorological Observations at Stations of the Second Order for the year 1883. 30s.
74. Hourly Readings from the Self-Recording Instruments at the Four Observatories under the Meteorological Council, 1885. Parts I. and II., 11s. each; Part III., 10s. 6d. Part IV., 12s.

* For the years 1874-1880 the Hourly Readings were issued in lithographed form. Price 20s. per annum.

LIST OF PUBLICATIONS—continued.

- No. 75. Report of the Meteorological Council for 1886–87. 8*d.*
76. Charts showing the Mean Barometric Pressure over the Atlantic, Indian, and Pacific Oceans. 10*s.* 6*d.* Supplementary Chart, 6*d.*
- *77. Monthly Weather Reports for 1887. January to April, 1*s.* 6*d.* each. May to December, in wrapper, 12*s.*
78. Meteorological Observations at Stations of the Second Order for the year 1884. 32*s.*
79. Report of the Meteorological Council for 1887–88. 1*s.*
80. Daily Weather Charts for the period of six weeks ending June 25, 1885, to illustrate the tracks of two cyclones in the Arabian Sea. 10*s.*
81. Hourly Readings from the Self-Recording Instruments at the Four Observatories under the Meteorological Council, 1886. Parts I., II., and III., 10*s.* 6*d.* each. Part IV., 12*s.* 6*d.*
82. Meteorological Observations at Stations of the Second Order for the year 1885. 31*s.*
83. Meteorological Observations at the Foreign and Colonial Stations of the Royal Engineers and the Army Medical Department. 1852–1886. 23*s.*
84. Report of the Meteorological Council for 1888–89. 5½*d.*
- †85. Weekly Weather Report for the year 1888. Vol. V. Second Series. 4*d.* per week. With Appendices and Monthly Supplements, priced separately. Annual subscription, including Supplements and Appendices, post paid, 21*s.* 2*d.*
86. Weekly Weather Report for the year 1889. Vol. VI. Second Series. 6*d.* per week. With Appendices and Monthly Supplements, priced separately. Annual subscription, including Supplements and Appendices, post paid, 30*s.*
87. Weekly Weather Report for the year 1890. Vol. VII. Third Series. (For Price, &c., see No. 86.)
88. Meteorological Observations at Stations of the Second Order for the year 1886. 25*s.*
89. Meteorological Observations made at Sanchez, Samaná Bay, St. Domingo. 1886–88. By the late W. Reid, M.D. 8*s.* 6*d.*
90. Cyclone Tracks in the South Indian Ocean. From information compiled by Dr. Meldrum, C.M.G., F.R.S. 7*s.*
91. Report of the Meteorological Council for 1889–90. 7½*d.*
92. Meteorological Charts of the portion of the Indian Ocean adjacent to Cape Guardafui and Ras Hafún. 6*s.*
93. Harmonic Analysis of Hourly Observations of Air Temperature and of Pressure at British Observatories. 12*s.*
94. Hourly Means of the Readings obtained from the Self-Recording Instruments at the Four Observatories under the Meteorological Council, 1887. 16*s.*
95. Meteorological Observations at Stations of the Second Order for the year 1887. 24*s.*
96. Weekly Weather Report for the year 1891. Vol. VIII., Third Series. (For Price, &c., see No. 86.)

* Publication continued after this year as a Supplement to the Weekly Weather Report.

† The publication of the Weekly Weather Report began in February 1878, Annual subscription, 1878–1883, 12*s.* 6*d.*; 1884–1887, 21*s.* 2*d.*

- No. 97. Hourly Means of the Readings obtained from the Self-Recording Instruments at the Four Observatories under the Meteorological Council, 1888. 20s.
98. Ten Years Sunshine in the British Isles, 1881-90. 2s.
99. Report of the Meteorological Council for 1890-91. 5½d.
100. Weekly Weather Report for the year 1892. Vol. IX., Third Series. (For Price, &c., see No. 86.)
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125. Meteorological Observations at Stations of the Second Order for the Year 1893. 27s.

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 17. Report of the Fourth Meeting of the International Meteorological Committee, held at Zürich, September 1888. 4d.
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