M.O. 214 *f.*

METEOROLOGICAL OFFICE.

BRITISH METEOROLOGICAL AND MAGNETIC YEAR BOOK, 1913.

PART IV., SECTION 2.

HOURLY VALUES FROM AUTOGRAPHIC RECORDS:

GEOPHYSICAL SECTION.

1913.

COMPRISING

HOURLY READINGS OF TERRESTRIAL MAGNETISM AT ESKDALE OBSERVATORY

AND

SUMMARIES OF THE RESULTS OBTAINED

IN

TERRESTRIAL MAGNETISM, METEOROLOGY, AND ATMOSPHERIC ELECTRICITY

CHIEFLY BY MEANS OF SELF-RECORDING INSTRUMENTS AT THE OBSERVATORIES OF THE METEOROLOGICAL OFFICE.

IN CONTINUATION OF

The Reports of the National Physical Laboratory, 1900–1909, *and* (*in similar form*) *Summaries of Results of Geophysical and Meteorological Observations*, 1910, *the Reports of the Kew Committee of the Royal Society*, 1872–1899, *and of the Kew Observatory Committee of the British Association*, 1842–1871.

Published by the Authority of the Meteorological Committee.

EDINBURGH:
PRINTED UNDER THE AUTHORITY OF HIS MAJESTY'S STATIONERY OFFICE,
BY NEILL & CO., LIMITED, BELLEVUE.

And to be purchased from
THE METEOROLOGICAL OFFICE, EXHIBITION ROAD, LONDON, S.W.

Price Five Shillings.

1915.

PREFACE.

THE present volume is the third of the series. The tables which are given complete the publication of Hourly Readings by giving those for Terrestrial Magnetic Force at Eskdalemuir, and summarise the results obtained by the self-recording instruments at the various observatories in connection with the Meteorological Office during the year 1913. They represent a continuation in extended form of the tables and summaries giving the results of observations in Terrestrial Magnetism and Atmospheric Electricity which have been included in the Reports of the Committee of Management of the Kew Observatory from 1842 to 1910.

Daily Values at fixed hours of various meteorological and geophysical elements at the three observatories, Kew, Eskdalemuir, Valencia, and of wind at certain Anemograph Stations, have already been published in the *Geophysical Journal*; Hourly Readings of the meteorological elements at the three observatories have also been published. The figures here presented complete the representation in tabular form of the year's work at these observatories, and it has been amplified by the addition of summaries of Hourly Values for the meteorological elements at Falmouth and Aberdeen. The table of magnetic results for the observatories of the globe has been continued.

The tables are followed by notes on the management of the recording magnetic instruments, etc., at Kew Observatory, Eskdale Observatory, and Valencia Observatory, by the Superintendents, Dr C. Chree, F.R.S., Mr L. F. Richardson, and Mr J. E. Cullum. Notes on the meteorological instruments will be found in Section 1 of Part IV. of the Year Book. The notes on the Meteorological Summaries which are included in this section have been drawn up in Captain Gold's absence by the acting Superintendent of the Statistical Division of the Office.

It is proper to add that in all matters concerning the scientific work of the observatories full advantage has been taken of the advice of the Gassiot Committee, which was appointed for that purpose by the President and Council of the Royal Society in 1910, in accordance with the scheme approved by the Lords Commissioners of H. M. Treasury when the transfer of the administration of the observatories at Kew and Eskdalemuir was effected.

In particular reference may be made to one point of great importance, namely, the units employed for the representation of the various quantities.

The letter of the Royal Society, dated 14th April 1910, which conveyed to the Meteorological Committee the information of the appointment of the Gassiot Committee, communicated also the following information as to the proceedings at the first meeting held on 13th April 1910.

> "The question of the units employed in the international publication of meteorological observations was discussed, and it was unanimously resolved—
>
> "(1) That in the opinion of the Gassiot Committee of the Royal Society it is essential that all meteorological returns compiled for international use

Wt. 29993/392—400—11/15. N. & Co., Ltd. Gp. XV.

should be expressed in terms of an international system of units founded on the metric system.

"(2) That a system in which the measure of barometric pressure is expressed in megadynes per square centimetre, and of temperature in absolute degrees Centigrade, would be a satisfactory one."

In furtherance of the views expressed in these resolutions, and therefore departing from the traditional practice of printing meteorological results in Inch-Fahrenheit units in the same volume which gave electrical and magnetic results in C.G.S. units, the meteorological data have been given in C.G.S. units with temperature in absolute degrees. This principle has been carried out, with the advice of the Gassiot Committee, not only as regards the present volume, but also as regards the volume of *Hourly Readings of the Meteorological Elements at the Observatories of the Meteorological Office* (Year Book, Part IV. 1), the *Geophysical Journal* (Year Book, Part III. 2), and in *Daily Readings at Stations of the First and Second Orders* (Year Book, Part III. 1).

In carrying out the arrangement of the tables endeavour has been made to provide (1) that at the head of each column there shall be found an indication of the denomination of the units employed, and (2) that wherever the same quantity is represented the same unit shall be employed, so that the decimal point as regards a particular quantity always has the same meaning.

The difficulties connected with the working of the vertical force magnetograph at Eskdalemuir, referred to in last year's volume, caused such serious trouble in the early months of the year that it was inadvisable to assign hourly values or deduce diurnal inequalities for January, February, and March. Thanks to the kindness of Dr W. Watson, F.R.S., the loan was then obtained of a vertical force "balance" of the well-known type designed by him, and this remained in operation throughout the year.

During June and July the dip circle was under repair, and so base values could not be assigned to the curves. This did not interfere with the determination of the diurnal inequalities, as these depend only on differences derived direct from the curves, but it prevented the deduction of absolute hourly values.

A new feature in the present volume is an analysis of the disturbances at Eskdalemuir by the Superintendent, Mr Richardson. Particulars as to the amplitude, direction, and period of a number of oscillatory movements appear in the Monthly Notes, and some general conclusions are drawn in the Superintendent's summary on the general tabulations. In the tables X has been used to denote the North Component and $-Y$ the West Component, in accordance with the International practice to employ X and Y to denote the North and East Components. In the notes, however, the letters N and W have been generally employed, so as to avoid any confusion between numerical and algebraic increases in the East–West Component.

The exigencies of printing have made it necessary in the tables of diurnal inequalities to reduce the width of the column used to indicate the months and seasons to the space necessary for two letters at most. No difficulty can be experienced by the reduction of the names of the months to their initial letters, J., F., etc., standing for *January, February*, and so on, and in the same way Y. will easily be appreciated as representing *Year*. But "W.," "Eq.," and "S.," standing for *Winter, Equinox*, and *Summer*, require some explanation. The *Winter*, which "W" represents in these

tables, includes the months of *November*, *December*, *January*, *February*, the Summer, *May*, *June*, *July*, *August*, and the Equinox, the remaining four months of the year, viz., *September*, *October*, *March*, and *April*. The division of the year into these seasons is adopted at the suggestion of the Superintendent of Kew Observatory.

It can scarcely be hoped that all the difficulties in the way of adequate presentation and co-ordination of data for different branches of geophysics have been overcome, but, so far as possible, precautions have been taken to enable the reader to know exactly where he stands when he takes up any question which depends upon a comparison of the results of the observatories of the Meteorological Office *inter se*, or with those of other institutions or other countries.

The publication of meteorological and geophysical data for the British Isles in the year 1913, is arranged in accordance with the following scheme of observations and data for stations in the United Kingdom :—

(*a*) DAILY WEATHER REPORT.—

This includes meteorological observations for 7 a.m. and 6 p.m. at thirty stations and supplementary data from about sixty additional stations in the British Isles, together with data from forty foreign stations, and weather charts of North-Western Europe and the Eastern Atlantic. Issued daily, post free to any address in the United Kingdom for 5s. per official quarter.

(*b*) BRITISH METEOROLOGICAL AND MAGNETIC YEAR-BOOK.—

The serial statistical publications of the Meteorological Office which have been grouped together under this title are as follows :—

Part I.—*Weekly Weather Report*, comprising weekly results of observations of the meteorological elements for stations and districts in the British Isles, a table and a map of sea temperature, and daily synoptic charts of the North Atlantic Ocean and adjoining continents, with annual and occasional appendices. Issued on Thursday of each week. Price 6d. per number. Annual subscription (which includes the Monthly Weather Report) 30s., postage paid.

Part II.—*Monthly Weather Report*, with an annual summary. Issued as a supplement to the Weekly Weather Report on the 27th day of each month. Price 6d. per number.

Part III. (in C.G.S. units).—(1) *Daily Readings* at Stations of the First and Second Orders. Issued in monthly parts within about five weeks of the close of each month. Price 6d. each part. Annual Volume 5s.

(2) *Geophysical Journal* of the Observatories of the Meteorological Office. Issued in monthly parts. Price 1s. each part.

Part IV. (in C.G.S. units).—(1) *Meteorological Office Observatories. Hourly Values* from Autographic Records—*Meteorological Section.* Hourly Readings from self-recording meteorological instruments at three observatories in connection with the Meteorological Office.

Issued in monthly parts for each observatory within about six weeks of the end of each month. Price 6d. each part. Annual Volume 20s.

(2) *Meteorological Office Observatories. Hourly Values* from Autographic Records—*Geophysical Section.* Terrestrial Magnetism, Atmospheric Electricity and Meteorology. Issued at the end of each year. Price 5s.

The publications include the results of the work of the observatories in the departments of Meteorology, Terrestrial Magnetism, and Atmospheric Electricity, together with a brief journal of events as recorded on the seismograms at Eskdalemuir. The summary of the seismological data, comprising the times of commencement and amplitudes of the various movements, has been sent to the Seismological Committee of the British Association for the Advancement of Science.

While the sheets of this section of the Year Book were passing through the press, the Superintendent of the Observatory at Eskdalemuir completed the preparation of a report upon the comparison of magnetic standards at Greenwich, Kew, Falmouth, Eskdalemuir, Valencia, Val Joyeux, De Bilt, and Potsdam, which he undertook at my request in the summer of 1913. The report is printed on p. 83 as an appendix to the magnetic portion of this section.

NAPIER SHAW,
Director.

METEOROLOGICAL OFFICE,
SOUTH KENSINGTON, S.W., *8th November* 1915.

TABLE OF CONTENTS.

PAGE

Preface 2

Table of Contents 6

Geographical Position of the Observatories, and Index of Tables 7

Tables of Results of Observations of Terrestrial Magnetism:

Hourly Readings, Eskdalemuir, with absolute observations, base line values, etc. . . 8
Diurnal Inequalities, Eskdalemuir 32
Quiet Days: Diurnal Inequalities, Eskdalemuir 34
„ „ „ Kew 36
Range of Diurnal Inequalities and Non-Cyclic Change 37
Harmonic Components of the Diurnal Inequality, Eskdalemuir 37
Mean Monthly and Annual Values for Meteorological Office Observatories . . . 38
Mean Annual Values for Magnetic Observatories of the Globe 39

Summary of Results in Meteorology:

Monthly Means for each Hour for Five Observatories 40

Summary of Results of Observations of Atmospheric Electricity:

Diurnal Inequality of Potential Gradient at Kew Observatory 62
„ „ „ „ „ Eskdalemuir, (0, *a* days only) . . . 62
„ „ „ „ „ „ (1, *a* and 2, *a* days only) . . 62

Notes on the Management and Manipulation of the Instruments at Kew Observatory, and the corresponding Tables, by Dr C. Chree, F.R.S., Superintendent 63

Notes on the Management and Manipulation of the Instruments at Eskdalemuir . . . 69

Review of Magnetic Disturbance at Eskdalemuir in the year 1913 78

Notes on the Magnetic Observations made at the Valencia Observatory, by J. E. Cullum, Superintendent 82

Appendix to the Magnetic Reports: Report by the Superintendent of the Observatory, Eskdalemuir, upon a visit in 1913 to various Observatories for the purpose of comparing Magnetic Standards 83

Notes on the Meteorological Summaries, including tables for conversion of meteorological data from inch-Fahrenheit units to the C.G.S. absolute units used in this volume . . . 90

Plates at end of the volume:

(1) Graph showing variation in base values of magnetic curves throughout the year.
(2) Copies of magnetic curves, April 6–10.
(3) Form 431, for determination of base values of magnetographs.

LIST OF OBSERVATORIES AND INDEX OF TABLES.

	G.M.T. of Local Mean Noon.	Longitude.	Latitude.	Height above M.S.L. in metres.*
Central Observatory:	h m	° ′	° ′	
KEW Observatory, Richmond, Surrey .	12 1	0 19 W.	51 28 N.	5·5
Magnetic Observatory:				
ESKDALEMUIR, Dumfriesshire . .	12 13	3 12 W.	55 19 N.	242·0
Western Observatory:				
VALENCIA Observatory, Cahirciveen, Co. Kerry	12 41	10 15 W.	51 56 N.	9·1
Auxiliary Observatories:				
ABERDEEN (Meteorology) . . .	12 8	2 6 W.	57 10 N.	14·0
FALMOUTH (Meteorology) . . .	12 20	5 4 W.	50 9 N.	50·9

TERRESTRIAL MAGNETISM.

Tables I.–XLVIII.—HOURLY AND ABSOLUTE MEASUREMENTS of the North, West, and Vertical Components of Magnetic Force at Eskdalemuir for each hour of Greenwich Mean Time, with the magnetic character of each day, the control measurements of absolute horizontal force, declination, inclination, etc., for each month, and a summary of the magnetic history of the month.

Tables XLIX.–LI.—DIURNAL INEQUALITIES of the North, West, and Vertical Components at Eskdalemuir for each month, the seasons, and the year.

Tables LII.–LIV.—DIURNAL INEQUALITIES of the Declination, Inclination, and Horizontal Force at Eskdalemuir for each month, the seasons, and the year.

Tables LV.–LVII.—INTERNATIONAL QUIET DAYS.—DIURNAL INEQUALITIES of the North, West, and Vertical Components at Eskdalemuir for each month, the seasons, and the year.

Tables LVIII.–LX.—INTERNATIONAL QUIET DAYS.—DIURNAL INEQUALITIES of the Declination, Inclination, and Horizontal Force at Eskdalemuir for each month, the seasons, and the year.

Tables LXI.–LXII.—INTERNATIONAL QUIET DAYS.—DIURNAL INEQUALITIES of the Declination and Horizontal Force at Kew Observatory for each month, the seasons, and the year.

Table LXIII.—RANGE of the Mean Diurnal Inequalities of Magnetic Force and NON-CYCLIC CHANGE for the months, year, and seasons of 1913, at two Observatories.

Tables LXIV.—HARMONIC COMPONENTS of the Diurnal Inequality at Eskdalemuir for the months and the year.

Tables LXV.–LXVI.—QUICK RUNS.—No Quick Runs made in 1913 at Kew or Eskdalemuir.

Table LXVII.—MEAN MONTHLY AND ANNUAL VALUES of the Magnetic Elements at the Meteorological Office Observatories.

Table LXVIII.—MEAN ANNUAL VALUES for Magnetic Observatories of the Globe.

METEOROLOGICAL SUMMARY.

Tables LXIX.–LXXIV.—MONTHLY NORMALS FOR EACH HOUR of Pressure, Temperature, Relative Humidity, Wind Velocity, Rainfall, and Sunshine, at the Five Observatories, arranged according to Latitude, with differences between the Normals and the Values for 1913.

ATMOSPHERIC ELECTRICITY.

Table LXXV.—POTENTIAL GRADIENT.—DIURNAL INEQUALITIES at Kew Observatory, from the tabulations of selected "quiet" days for each month.

Tables LXXVI.–LXXVII.—POTENTIAL GRADIENT.—DIURNAL INEQUALITIES at Eskdalemuir, from the tabulations of (0, *a* days only), and (1, *a* and 2, *a* days only).

Notes.—(1) The Hourly Readings of Meteorological Elements for Kew, Eskdalemuir, and Valencia have been printed in the Meteorological Section of this Publication.

(2) Values printed in *italic type* are obtained by interpolation.

* The height given is that of the ground on which the rain gauge is situated.

I.—READINGS OF THE NORTH COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (X.) **January, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
	15,000 γ (·15 C.G.S. unit) +																									
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1 c	1009	1010	1014	1014	1015	1016	1017	1017	1018	1017	1013	1008	1009	1013	1017	1017	1017	1016	1016	1017	1016	1017	1016	1015	1013	1015
2	1013	1012	1013	1014	1015	1016	1016	1015	1016	1015	1013	1015	1018	1013	1002	1009	1010	1018	1006	1005	1015	1017	1017	1016	1014	1013
3 ✲	1013	1015	1017	1023	1010	1043	1005	1010	1005	1001	998	984	976	974	966	982	989	989	983	980	989	1006	1004	1004	1004	998
4	1004	1005	1006	1004	1008	1003	1014	1013	1013	1010	999	990	989	992	997	998	999	1001	998	1008	1005	1007	1007	1007	1010	1003
5	1010	1012	1009	1008	1009	1015	1021	1022	1021	1016	1009	1002	996	1001	1003	1005	1005	1012	1009	1009	1010	1009	1010	1012	1011	1010
6	1010	1012	1010	1009	1012	1015	1018	1018	1016	1013	1002	998	995	996	1002	1005	1011	1012	1012	1010	1010	1011	1011	1012	1011	1009
7 c	1011	1010	1010	1010	1010	1015	1019	1020	1016	1009	1004	998	997	998	1003	1007	1011	1013	1012	1013	1013	1014	1014	1013	1012	1010
8	1011	1012	1011	1012	1015	1018	1021	1021	1020	1014	1010	1007	1010	1011	1006	1005	1012	1019	1017	1015	1016	1016	1015	1014	1014	1014
9	1014	1014	1016	1015	1015	1015	1017	1019	1020	1018	1010	1008	1005	1010	1019	1019	1012	1014	1020	1015	1015	1014	1012	1012	1005	1014
10	1004	1011	1009	1005	1006	1008	1010	1010	1010	1009	1011	1005	1001	1004	978	985	1004	993	1010	1001	1005	1017	1004	1004	1009	1004
11	1009	1006	1006	1007	1008	1008	1007	1010	1010	1010	1006	1002	1000	1001	1002	1004	1006	1010	1011	1012	1012	1009	1008	1006	1008	1007
12 c	1008	1009	1008	1011	1012	1013	1013	1014	1013	1011	1009	1006	1004	1006	1010	1013	1011	1013	1015	1015	1017	1015	1014	1013	1012	1011
13	1011	1010	1009	1011	1012	1015	1017	1017	1016	1013	1012	1007	1004	1007	1011	1012	1011	1013	1014	1017	1021	1019	1018	1016	1014	1013
14	1014	1013	1013	1016	1018	1021	1020	1024	1019	1008	1012	1006	999	1001	1008	1009	1012	1017	1012	1003	1009	1012	1012	1014	1011	1012
15	1010	1008	1009	1009	1011	1015	1018	1018	1017	1015	1007	1006	997	1007	1011	1011	1009	1014	1011	1011	1011	1014	1017	1011	1011	1011
16 c	1011	1011	1011	1010	1010	1011	1013	1015	1013	1010	1004	1000	998	1001	1008	1011	1011	1012	1012	1011	1012	1015	1015	1013	1011	1010
17	1011	1010	1011	1011	1011	1015	1018	1016	1017	1012	1002	1001	1003	1008	1011	1011	1014	1015	1016	1016	1018	1020	1032	1020	1009	1013
18	1008	1008	1008	1005	1004	1008	1010	1013	1009	1008	1001	992	990	1004	1016	1015	995	1015	1013	1011	991	1030	999	997	1033	1007
19	1033	1007	997	998	1002	1010	1017	1014	1010	1008	1008	1004	994	999	997	1002	1005	1008	1006	1003	1009	1010	1010	1012	1011	1006
20	1010	1001	1000	999	1001	1003	1007	1008	1009	1007	1004	1003	1004	1010	1015	1014	1002	1006	1005	1002	1007	1019	1006	999	998	1006
21	998	1002	1001	1001	1006	1005	1009	1008	1008	1005	1001	999	1002	1006	1007	1006	1002	999	1006	1007	1009	1007	1007	1007	1007	1005
22	1007	1004	1006	1009	1010	1009	1013	1009	1010	1009	1003	996	992	993	1004	1001	1007	1008	1006	1009	1009	1009	1012	1011	1009	1006
23	1008	1008	1006	1007	1008	1012	1013	1011	1009	1006	1000	996	997	1003	1008	1009	1011	1009	1008	1009	1011	1011	1012	1014	1008	1008
24 c	1008	1007	1004	1008	1011	1013	1015	1015	1012	1007	1002	1003	1005	1012	1013	1014	1011	1009	1008	1002	1002	1005	1008	1007	1014	1009
25	1013	1008	1006	1007	1011	1014	1007	1010	1007	1006	1007	1003	1007	1011	1007	1006	1000	999	1004	1004	1016	1015	1002	1013	1008	1008
26	1008	1003	1002	1005	1010	1011	1008	1010	1007	1005	1003	1005	1007	1007	1009	1011	1011	1011	1013	1013	1013	1012	1008	1011	1010	1009
27	1010	1007	1008	1009	1014	1014	1017	1015	1015	1009	1002	999	997	1000	1005	1011	1010	1003	1004	1007	1010	1012	1012	1010	1007	1008
28	1006	1010	1006	1006	1009	1011	1013	1013	1012	1009	1005	1005	1002	999	1002	1009	1013	1006	1009	1007	1006	1010	1011	1011	1006	1008
29	1006	1007	1007	1015	1013	1013	1013	1012	1009	1001	995	995	996	1000	1006	1011	1011	1008	1009	1011	1012	1012	1012	1012	1014	1008
30	1013	1012	1011	1012	1012	1018	1027	1023	984	994	997	995	985	996	993	1002	1005	1010	1009	1008	1005	1004	1005	1006	1007	1005
31	1007	1009	1007	1005	1010	1009	1010	1012	1010	1000	992	992	990	995	996	997	1004	1005	1007	1008	1012	1011	1011	1012	1015	1005
Mean	1010	1009	1008	1009	1010	1013	1014	1015	1012	1009	1005	1001	999	1003	1004	1007	1007	1009	1009	1008	1010	1013	1011	1010	1011	1009

II.—READINGS OF THE WEST COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (−Y.) **January, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
	5000 γ (·05 C.G.S. unit) +																									
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1 c	197	197	200	197	199	199	198	198	197	196	198	203	208	208	207	203	201	200	201	201	200	198	200	201	201	200
2	201	201	202	201	201	201	199	200	199	198	201	208	214	214	215	214	212	206	204	197	198	197	197	198	198	203
3 ✲	197	199	202	204	215	200	214	214	207	200	203	214	221	222	225	193	207	205	196	175	180	178	187	194	193	202
4	193	195	195	198	197	204	199	198	197	195	199	203	203	200	212	207	202	202	196	172	191	189	193	195	195	197
5	194	196	198	202	204	204	204	205	199	195	195	198	200	211	215	210	201	200	198	195	195	189	190	192	196	200
6	196	206	205	205	202	201	201	198	195	191	191	197	199	207	209	204	202	201	199	197	196	195	195	197	199	200
7 c	198	199	201	205	206	198	198	198	196	193	197	199	204	210	212	208	204	201	198	196	191	192	192	193	197	200
8	197	200	202	204	204	204	203	203	198	194	198	201	209	211	209	205	204	205	205	203	200	198	198	199	198	202
9	197	198	204	204	201	203	202	202	198	196	196	197	208	213	217	219	220	213	209	204	197	195	193	191	185	203
10	185	175	186	193	195	195	195	198	197	188	192	204	209	221	216	218	209	184	183	198	193	185	196	195	196	196
11	195	194	198	199	199	201	200	196	195	194	196	198	202	206	203	201	201	202	202	201	201	197	195	193	193	199
12 c	193	199	201	199	200	202	201	201	196	195	198	200	203	210	207	203	201	201	201	196	196	198	195	193	198	200
13	197	197	199	200	200	200	200	198	195	195	199	200	206	212	209	204	202	202	198	195	192	197	199	198	199	200
14	199	201	202	202	202	201	200	200	198	191	195	201	206	210	213	208	208	211	204	199	193	191	192	192	193	201
15	192	197	199	200	201	201	201	200	199	201	207	212	208	208	208	201	194	201	201	199	189	187	190	193	196	200
16 c	196	198	199	199	201	201	199	196	195	195	196	200	204	208	208	204	203	201	201	201	199	199	198	197	197	200
17	196	196	197	201	199	200	198	197	194	193	197	202	209	209	209	205	205	204	203	201	193	191	185	174	181	198
18	181	192	190	184	186	194	198	197	196	198	205	208	215	227	216	220	212	206	215	209	189	102	154	185	175	195
19	174	170	183	189	193	199	204	199	198	200	206	214	215	214	208	199	196	199	202	199	189	187	182	182	196	196
20	196	188	192	191	191	192	193	192	191	192	198	205	213	218	209	205	208	206	205	196	183	173	164	170	189	194
21	188	191	191	194	194	198	196	194	190	189	194	198	208	208	207	202	194	194	195	197	193	194	193	191	191	196
22	191	190	194	195	191	195	194	193	191	191	193	194	201	211	213	207	197	206	203	202	197	195	194	190	183	197
23	183	193	192	194	195	194	194	194	191	189	192	198	198	202	202	196	195	197	195	193	191	187	190	190	191	194
24 c	190	193	197	192	195	195	193	193	190	190	197	202	205	213	206	200	200	198	201	201	196	193	193	190	190	197
25	190	193	193	197	193	189	193	194	192	190	195	200	206	213	212	204	197	185	197	197	183	179	189	189	184	194
26	183	191	188	193	195	187	192	192	192	195	201	203	205	204	202	201	199	196	196	195	193	192	189	187	189	195
27	189	193	193	196	195	194	194	191	193	192	194	197	202	204	202	200	197	193	198	197	195	192	192	192	192	195
28	191	191	193	194	194	195	195	194	191	193	195	199	202	204	204	201	200	195	191	194	178	191	190	191	190	194
29	190	191	194	194	188	188	190	190	187	185	191	195	200	203	203	198	196	196	198	197	194	195	195	195	195	194
30	194	194	194	195	195	196	199	198	211	223	209	200	205	205	209	201	199	198	195	193	192	189	180	181	180	198
31	180	193	185	194	197	190	189	191	187	187	199	204	202	208	204	194	194	199	195	182	192	192	191	187	180	193
Mean	192	194	196	197	198	197	198	197	195	194	198	202	206	210	209	204	202	200	200	196	193	188	190	191	192	198

c International quiet day. ✲ Day "proposed for reproduction" by the International Magnetic Commission (single star).

Eskdalemuir. (Z.) III.—VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE. **January, 1913.**

For reasons which are set out in the notes on instruments it has been decided not to publish hourly values of the vertical magnetic force for the months of January, February, March, June, July, 1913. The following table gives for January the values of the downward force deduced from the absolute observations of dip (see Table IV.), by combining them with the curve readings of the north and west components at the time of the dip observation according to the formula $Z=(N^2+W^2)^{\frac{1}{2}} \tan I$. Smoothed base values of N and W were used in the computation. In any value of Z in the following table the uncertainty is of the order of 30 γ.

Date.	Time, G.M.T.	Downward Component Z.
	h m h m	γ
Jan. 4	11 28 to 12 11	45360
9	14 14 to 15 2	45350
17	14 37 to 15 11	45340
24	14 59 to 15 37	45310
29	11 35 to 12 25	45330

IV.—AUXILIARY OBSERVATIONS IN ABSOLUTE MEASURE; DAILY VALUES OF TEMPERATURE IN THE EAST ROOM OF THE MAGNET HOUSE; MAGNETIC NOTES FOR THE MONTH.

Eskdalemuir. **January, 1913.**

Date.	Time, G.M.T.	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0-2).	Date.
Jan.	h m	γ	° ′ ″	° ′	°		
3	11 5		17 59 52		9·9	0	1
,,	11 52	16802			9·9	1	2
					9·9	2	3
					9·8	1	4
4	11 49			69 39·8	9·8	0	5
					9·8	0	6
9	14 38			69 37·1	9·7	0	7
					9·7	0	8
					9·7	0	9
10	11 8		17 59 54		9·7	2	10
,,	11 54	16823					
					9·6	0	11
15	11 45		18 3 43		9·5	0	12
,,	12 22	16818			9·5	0	13
					9·6	0	14
					9·5	1	15
17	12 2		18 0 34				
,,	12 33	16831					
,,	14 54			69 37·7	9·5	0	16
					9·5	1	17
					9·5	2	18
21	11 9		17 59 14		9·5	2	19
,,	11 48	16831			9·4	1	20
24	11 0		18 1 4		9·5	0	21
,,	11 50	16831			9·4	1	22
,,	15 18			69 36·9	9·4	0	23
					9·4	0	24
					9·4	1	25
28	11 39		18 0 52				
,,	12 32	16826					
					9·4	0	26
					9·4	0	27
29	12 0			69 38·7	9·3	1	28
					9·3	0	29
					9·2	2	30
31	10 44		18 0 50				
,,	11 25	16822			9·2	1	31

JANUARY, 1913.

On the 2nd and 3rd there was a small storm ushered in by a sudden commencement at $2^d\ 11^h\ 16^m$ G.M.T., and continuing until midnight on 3rd. The more rapid movements were mostly due to a disturbing field in the quadrants ± (N, W, horizontal), but the largest movements, which were slow ones, were in a variable direction. The sudden commencement was first NE, but changed after a fraction of a minute to NW. Bays occurred near 19^h on 4th and 2^h on 9th. There was another small storm on the 9th and 10th, the slower disturbances being mainly in the direction ± (N, E, down) and the more rapid ones ± (N, W). Subsequently the curves were fairly quiet until $17^d\ 20^h$; the disturbance beginning then died away gradually. There was a large bay (N, E, down) near $18^d\ 21^h$ followed by an oscillation ± (N, W, up) some three hours later. Pulsations occurred near midday on 19th, and slower disturbances on the subsequent night. Then followed a quiet period, broken chiefly in the midnight hours beginning on 20th, 22nd, 25th, and 28th. On the 30th there was a small storm. Pulsations increased in amplitude at $5^h\ 16^m$ and continued until 18^h; there were bays near the following midnight. The direction of the pulsating force was ± (N, W, up) from 23^h on 29th right on to 6^h on the 31st. Its period varied from 2 to 8 minutes. Its amplitude (half the total range) reached 10γ on N and W, but only about 1γ on V. Superposed on the pulsations was a slower larger disturbance in a variable azimuth.

* Mean of the Corrected Readings of the Thermometers in the N, W, and V Magnetograph Boxes.

V.—READINGS OF THE NORTH COMPONENT OF TERRESTRIAL MAGNETIC FORCE

Eskdalemuir. (X.) AT EACH HOUR OF GREENWICH MEAN TIME. **February, 1913.**

Hour G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
											15,000 γ (·15 C.G.S. unit) +															
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	1015	1010	1009	1005	1008	1010	1011	1012	1011	1005	1005	1005	1008	1006	1004	1007	1010	1009	1010	1011	1010	1009	1011	1013	1010	1009
2	1009	1009	1008	1009	1010	1013	1012	1012	1011	1012	1004	999	1002	1002	1004	1004	1002	1001	1005	1009	1009	1008	1008	1014	1012	1007
3 c	1012	1010	1010	1011	1011	1011	1012	1012	1012	1011	1008	1007	1007	1007	1005	1010	1011	1011	1011	1011	1012	1012	1011	1011	1011	1010
4 c	1010	1010	1010	1010	1011	1012	1012	1014	1013	1010	1005	1003	1005	1008	1010	1010	1013	1016	1016	1015	1012	1010	1010	1008	1010	1011
5	1010	1008	1009	1009	1011	1016	1017	1018	1017	1014	1005	999	999	1002	1007	1010	1008	1004	1005	1009	1010	1008	1010	1009	1009	1009
6	1008	1007	1008	1008	1010	1014	1015	1018	1016	1012	1007	1002	1002	1003	1010	1015	1015	1015	1016	1016	1008	1001	999	1002	1008	1009
7	1008	1010	1008	1008	1009	1009	1010	1013	1015	1009	1007	1004	999	1000	1006	1005	1003	991	990	1003	1008	1009	1006	1009	1009	1006
8	1009	1009	1009	1009	1011	1015	1017	1016	1016	1015	1010	1005	1008	1004	1009	1009	1005	995	1002	1009	1009	1010	1007	1010	1009	1009
9	1008	1007	1009	1010	1011	1013	1012	1013	1011	1011	1008	1003	1001	1005	1008	1001	992	989	1007	1014	1013	1009	1008	1008	1009	1007
10	1009	1005	1003	1007	1008	1008	1010	1008	1008	1006	1002	997	997	1001	1002	1001	1003	1006	1006	1007	1007	1006	1007	1014	1015	1005
11	1015	1008	1008	1008	1009	1011	1013	1014	1017	1014	1008	1005	1010	997	1001	1005	1008	1012	1016	1017	1016	1016	1013	1016	1014	1010
12	1013	1013	1016	1015	1010	1008	1028	1022	1017	1013	1005	999	993	992	993	1002	1009	1008	1009	1011	1013	1013	1010	1015	1020	1010
13	1020	1000	1002	1001	1003	1007	1007	1013	1002	995	1005	1000	996	992	993	1003	1005	1006	1000	1003	1008	1017	1009	1008	1008	1004
14✲	1007	1006	1006	1006	1006	1013	1013	1025	1027	1014	1009	972	953	972	953	990	996	999	1000	1002	1002	1003	1003	1002	1002	999
15	1002	1009	999	992	997	999	996	995	995	999	992	986	981	987	971	989	989	999	997	1012	1017	999	1002	1008	1010	997
16	1010	1002	999	992	993	999	1004	1005	1004	1000	997	988	986	986	986	987	994	1003	1005	999	1012	1011	1008	995	996	998
17	995	999	998	998	998	1001	1004	1005	1005	996	989	985	986	991	997	999	994	986	999	999	1013	1001	1000	1003	1008	998
18	1008	1008	1002	1004	999	1000	1005	1005	1003	999	992	978	980	996	1005	1006	1008	1004	1004	1011	1012	1007	1005	1005	1005	1002
19	1005	1007	1006	1005	1007	1011	1010	1011	1004	1000	997	995	998	994	997	997	998	1002	1007	1006	1006	1001	998	999	1003	1003
20	1002	1002	1003	1005	1005	1004	1006	1004	1002	995	981	981	984	994	998	998	999	1000	997	999	1007	1007	1007	1008	1009	1000
21	1009	1006	1005	1003	1006	1008	1013	1011	1006	1002	994	989	990	994	998	1003	1005	1005	1005	1005	1006	1014	1005	1006	1004	1004
22	1004	1006	1001	1002	1004	1010	1013	1011	1008	1005	998	992	989	995	999	1004	1005	1002	1001	1008	1014	1009	1003	1013	1011	1004
23 c	1010	1009	1005	1004	1006	1009	1009	1010	1011	1013	1006	992	988	992	996	999	1006	1009	1010	1010	1009	1009	1009	1009	1008	1005
24 c	1008	1007	1008	1009	1009	1009	1010	1010	1009	1009	1004	1001	1001	1002	1004	1003	1005	1008	1011	1010	1009	1009	1009	1007	1007	1007
25	1007	1009	1021	1020	1031	1023	1017	1017	1027	1024	1003	974	966	975	990	999	1003	996	998	990	994	996	1003	1003	1015	1004
26	1014	1005	1010	1015	1022	1025	1021	1015	1018	1012	978	997	998	993	993	990	1004	1005	1006	1002	998	1014	1000	1003	1005	1006
27	1005	1003	1000	1001	1005	999	1006	1007	1008	1007	996	992	993	994	998	1003	1004	1006	1008	1008	1005	1003	1002	1003	1004	1002
28 c	1004	1003	1004	1004	1005	1007	1008	1008	1011	1009	1002	995	988	988	990	995	1001	1006	1007	1008	1008	1009	1008	1008	1008	1003
Mean	1008	1007	1006	1006	1008	1009	1011	1012	1011	1008	1001	994	993	995	997	1002	1003	1003	1005	1007	1009	1008	1006	1007	1009	1005

VI.—READINGS OF THE WEST COMPONENT OF TERRESTRIAL MAGNETIC FORCE

Eskdalemuir. (−Y.) AT EACH HOUR OF GREENWICH MEAN TIME. **February, 1913.**

Hour G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
											5000 γ (·05 C.G.S. unit) +															
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	179	191	188	188	189	189	190	189	189	188	193	200	200	200	200	198	200	200	198	197	194	192	189	187	189	193
2	189	193	194	196	197	193	192	189	188	189	193	198	200	201	201	198	194	193	193	191	189	188	189	189	187	193
3 c	186	190	191	192	191	191	190	190	187	185	192	198	200	199	200	198	196	195	193	192	191	192	191	191	192	193
4 c	192	194	195	196	196	193	192	192	191	188	192	199	204	205	204	199	195	195	193	193	190	188	187	188	188	194
5	187	189	191	190	190	190	189	190	189	189	192	197	203	206	208	203	198	198	196	191	188	191	186	186	191	193
6	191	191	190	194	195	195	195	192	193	192	193	194	198	199	201	198	195	194	194	192	190	182	174	184	187	192
7	186	184	187	190	190	190	190	190	190	190	194	198	200	205	209	207	208	208	205	195	194	191	189	186	190	195
8	190	194	194	195	196	197	195	193	193	191	195	198	206	204	207	205	201	193	204	197	192	188	189	190	190	196
9	189	184	189	189	193	191	192	190	190	192	193	197	199	205	206	200	192	196	201	196	193	190	183	178	184	193
10	184	185	194	195	193	193	190	191	190	188	189	193	197	203	204	199	196	196	197	195	195	188	187	185	184	193
11	183	188	188	190	193	193	194	193	192	188	188	195	202	203	202	198	196	196	198	197	195	191	189	189	189	194
12	189	193	195	194	188	190	194	192	200	195	199	203	205	214	213	207	202	197	196	196	195	193	190	177	166	196
13	165	165	183	183	182	187	188	190	194	195	189	194	201	206	205	202	201	199	198	170	194	187	187	188	189	190
14✲	189	191	191	191	197	191	195	201	205	187	201	194	211	220	198	197	206	202	195	194	191	189	188	189	183	196
15	182	200	194	159	175	171	184	186	188	189	190	195	200	210	206	195	201	193	195	177	178	193	192	189	191	189
16	191	187	190	184	188	188	189	188	186	186	188	195	202	212	216	213	201	195	193	188	164	166	175	182	186	190
17	186	193	193	193	191	191	191	190	187	186	188	194	204	212	207	213	207	191	201	198	179	184	191	193	200	195
18	199	190	187	181	185	186	188	186	183	182	186	192	206	210	207	202	196	195	197	193	186	190	191	191	191	192
19	191	193	194	193	193	192	191	188	185	185	185	194	215	214	215	197	195	196	194	192	186	172	162	188	192	192
20	191	193	193	195	193	192	191	187	183	175	179	184	195	208	210	206	199	197	198	196	185	191	192	191	192	193
21	192	193	196	200	199	196	189	190	184	180	185	193	200	206	208	207	203	199	197	194	186	184	188	191	193	194
22	192	193	202	203	195	193	187	186	183	180	183	192	198	202	205	207	201	194	193	194	183	186	186	168	171	191
23 c	171	189	192	195	194	197	195	194	191	187	186	190	201	210	210	206	202	198	190	195	191	190	190	187	190	194
24 c	189	191	193	194	193	192	192	190	191	188	189	197	208	212	213	211	201	198	197	197	196	194	193	193	192	196
25	192	190	187	199	179	188	192	191	191	189	187	200	218	226	225	221	218	218	213	213	200	189	189	186	188	200
26	188	185	196	197	196	195	195	191	191	185	207	201	209	211	211	210	204	197	196	190	189	169	187	191	197	196
27	196	203	191	187	188	195	194	190	190	187	185	190	196	198	200	200	196	194	194	195	194	191	187	194	193	193
28 c	193	188	190	191	193	193	191	192	191	190	194	198	205	208	207	205	200	197	198	197	196	196	194	195	195	196
Mean	188	190	192	191	191	191	191	190	190	187	191	195	203	207	207	204	200	197	197	193	189	187	187	187	189	194

c International quiet day.

✲ Day "proposed for reproduction" by the International Magnetic Commission (single star).

VII.—VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE.

Eskdalemuir. (Z.) **February, 1913.**

The following table gives for February the values of Z deduced from the observations of dip. *See note under January, Table III.*

Date.	Time, G.M.T.	Downward Component Z.
	h m h m	γ
Feb. 1	11 23 to 11 53	45290
11	14 30 to 14 57	45300
17	12 30 to 12 54	45220
21	15 15 to 15 49	45270

VIII.—AUXILIARY OBSERVATIONS IN ABSOLUTE MEASURE; DAILY VALUES OF TEMPERATURE IN THE EAST ROOM OF THE MAGNET HOUSE; MAGNETIC NOTES FOR THE MONTH.

Eskdalemuir. **February, 1913.**

Date.	Time, G.M.T.	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
Feb.	h m	γ	° ′ ″	° ′	°		
1	11 38			69 36·8	9·1	0	1
					9·0	0	2
					9·0	0	3
					9·0	0	4
8	11 58		18 0 49				
,,	12 37	16826					
					9·0	0	5
					9·0	0	6
					9·0	1	7
					9·0	1	8
11	14 44			69 37·2	8·9	1	9
					8·9	0	10
15	11 20		18 3 5		8·9	0	11
,,	11 56	16805			8·9	1	12
					8·9	1	13
					8·9	2	14
17	12 42			69 35·8			
					8·9	2	15
					8·9	1	16
					8·9	1	17
					8·9	1	18
18	11 26		18 0 17		8·9	1	19
,,	11 58	16804					
					8·9	0	20
					8·9	0	21
					8·9	0	22
21	11 51		18 0 35		8·9	0	23
,,	12 42	16816			8·8	0	24
,,	15 32			69 36·4			
					8·8	1	25
					8·8	1	26
28	11 34		18 1 9		8·8	0	27
,,	12 32	16810			8·7	0	28

* Mean of the Corrected Readings of the Thermometers in the N, W, and V Magnetograph Boxes.

FEBRUARY, 1913.

The first ten days were quiet, except for some irregularities in the evenings.

From the 11th to 17th there was a good deal of disturbance of very variable "period of vibration," culminating in a change of 100γ near 14^h on 14th in the direction S down followed by E down. The direction varied as follows. On the 12th it was ± (N, W, horizontal) except at the bay near midnight 12th to 13th, where it was (N, E, down). On the afternoon of 13th it was ± (N, W, up). In the early hours of 14th mainly ± (N, E horizontal), but changed to ± (N, W) by 8^h, and continued so until the following midnight 14th–15th, except near 14^d 14^h. Shortly after midnight the direction became variable. During the middle of the 15th it was ± (N, W), and so on into 17th, with a marked exception near 19^h on 15th and 22^h on 16th. In these two days the relation of the up and down disturbance to the horizontal one was not at all simple. On 17th and 18th N, E, down, went more or less together for slow disturbances, by which is meant those which remained of the same sign for an interval comparable with an hour, while in the pulsations, which reversed sign every few minutes, N and W went together. The same phenomenon occurred on the night of 19th to 20th.

After a quiet period, broken only by slow horizontal disturbances near midnight, there followed a small storm with pulsations beginning at 0^h on 25th and continuing to 28th. Throughout the whole of this storm the pulsations were in the quadrants ± (N, W); the slow disturbances were not in any markedly constant direction.

The last day of the month was very quiet.

IX.—READINGS OF THE NORTH COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (X.) **March, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
													15,000 γ (·15 C.G.S. unit) +													
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1 c	1007	1007	1007	1007	1009	1010	1012	1012	1015	1011	1007	1000	999	999	1002	1005	1007	1011	1012	1011	1007	1007	1007	1009	1008	1008
2 c	1008	1008	1008	1009	1010	1011	1011	1014	1014	1007	1005	1001	998	999	1001	1007	1010	1009	1011	1011	1010	1008	1012	1011	1011	1008
3	1011	1011	1010	1010	1011	1011	1011	1011	1011	1009	1005	998	998	999	1004	1005	1006	1012	1012	1007	999	1002	1008	1002	1008	1007
4	1007	1005	1006	1006	1007	1007	1009	1010	999	998	998	995	993	1000	1002	1005	1004	1007	1007	1008	1010	1007	1008	1006	1005	1004
5	1005	1004	1001	1005	1006	1006	1006	1008	1008	998	990	993	992	989	995	1001	1006	1008	1008	1008	1007	1011	1007	1006	1006	1003
6	1006	1006	1006	1007	1007	1006	1004	1005	1005	1002	994	988	985	984	998	1004	1008	1008	1009	1012	1011	1014	1015	1007	1010	1004
7	1010	1008	1006	1009	1014	1012	1012	1006	1008	1006	1000	992	988	994	1001	1004	1005	1005	1007	1013	1014	1013	1013	1012	1011	1006
8	1010	1010	1011	1012	1013	1014	1013	1013	1010	1003	997	988	985	988	992	1003	1011	1010	1009	1012	1013	1014	994	1004	1005	1005
9	1005	1006	1005	1006	1009	1010	1012	1013	1011	1008	1002	996	991	993	992	997	1006	1012	1012	1014	1013	1011	1010	1009	1008	1006
10 c	1008	1007	1009	1009	1011	1012	1012	1012	1008	999	988	983	987	989	994	1003	1008	1009	1010	1011	1010	1009	1008	1008	1005	
11	1008	1005	1006	1005	1008	1010	1010	1009	1008	1005	1001	1003	993	996	1000	1005	1013	1010	1015	1013	1015	1013	1012	1009	1023	1007
12	1023	1005	998	1008	1011	1013	1014	1016	1012	1006	997	990	986	987	995	998	1002	1007	1010	1014	1014	1013	1012	1014	1009	1006
13	1008	1008	1008	1009	1012	1011	1014	1015	1013	1004	993	987	991	999	1002	1004	1005	1004	1005	1012	1013	1017	1018	1015	1014	1007
14✲	1014	1016	1014	1013	1014	1031	1020	1005	1010	1009	1003	994	989	991	969	981	1000	996	998	997	1011	1039	1025	998	991	1005
15	991	999	1000	998	997	1001	1005	992	994	991	978	959	958	985	1001	1001	1000	998	1001	992	1011	1017	1009	1000	1001	995
16✲	1001	986	983	996	986	992	998	998	999	991	992	991	991	994	997	1001	1009	985	992	996	1001	993	993	1006	997	995
17✲	997	1020	984	1005	998	1004	1002	1002	991	971	981	981	984	981	986	995	991	989	1004	1029	995	1001	998	998	998	995
18	997	996	996	996	997	995	997	999	1000	997	990	984	982	977	990	994	1000	1005	1005	1005	1004	1008	1005	1010	1005	997
19	1005	998	995	997	1007	1005	1005	1002	1003	995	985	985	990	994	997	1003	1005	1005	1004	1002	1003	1004	1003	1002	1003	1000
20	1003	1001	1000	1001	1001	1003	1007	1010	1005	991	981	983	983	990	997	998	1002	1005	1003	1003	1004	1005	1008	1010	1008	1000
21	1008	1006	1004	1003	1011	993	1010	1022	1010	1003	997	987	988	982	990	984	1002	1007	1001	1005	1003	992	1008	1006	1004	1001
22	1004	1003	1004	1002	1003	1008	999	1003	1000	990	977	977	979	987	995	1004	1008	1001	997	1003	1003	1003	1010	1008	1014	999
23	1014	1005	1006	1008	1012	1012	1017	1018	1011	1002	993	988	983	990	997	997	986	988	999	1005	1005	1009	1009	1008	1010	1003
24	1009	1013	1002	1002	1003	1003	1002	1005	1003	993	981	976	979	987	995	996	1007	1007	1008	1008	1008	1007	1009	1008	1003	1000
25	1003	1005	1006	1008	1009	1009	1009	1008	1004	995	981	970	972	983	992	1002	1000	1005	1011	1011	1010	1009	1009	1010	1011	1001
26 c	1011	1010	1008	1009	1009	1009	*1009*	*1009*	*1009*	*996*	986	972	976	982	984	994	1002	1004	1004	1009	1010	1008	1008	1009	1009	1001
27 c	1009	1011	1009	1008	1006	1006	1007	1009	1009	996	981	978	972	982	991	999	1008	1012	1016	1016	1018	1017	1019	1015	1013	1004
28	1013	1012	1012	1012	1016	1020	1020	1018	1019	1007	991	978	972	975	987	995	999	1006	1009	1008	1009	1009	1008	1009	1018	1004
29	1018	1015	1016	1007	1012	1014	1014	1015	1013	1009	996	996	994	996	1003	1002	1003	995	995	999	1001	1003	1009	1017	1008	1006
30	1008	1006	1002	995	1004	1012	1009	1009	1002	1000	988	984	981	984	987	989	998	1001	1009	1011	1009	1004	1022	1005	1003	1001
31	1002	1001	1001	1002	1002	1001	1001	1001	1001	1001	992	988	985	989	997	990	995	993	1004	995	1002	1008	1011	1021	1008	999
Mean	1007	1006	1004	1005	1007	1008	1009	1009	1007	1000	992	987	985	989	994	999	1003	1004	1006	1008	1008	1009	1009	1008	1007	1003

X.—READINGS OF THE WEST COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (−Y.) **March, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
													5000 γ (·05 C.G.S. unit) +													
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1 c	194	193	194	195	195	194	192	192	191	187	191	201	208	209	210	209	202	199	199	198	195	194	195	195	195	197
2 c	195	194	194	193	193	194	193	193	190	186	187	198	208	208	207	204	196	195	196	195	196	196	191	193	195	196
3	195	194	193	192	193	192	191	190	188	187	191	200	209	215	217	212	202	201	201	197	199	200	187	188	180	197
4	179	183	185	185	184	185	191	189	186	188	194	206	213	214	216	214	205	198	195	194	196	194	184	186	190	195
5	190	190	189	191	185	185	187	186	186	185	192	199	210	215	216	210	201	195	193	194	193	190	195	194	194	195
6	193	193	193	192	190	187	187	189	187	186	191	200	212	215	215	207	198	193	194	195	195	181	177	185	187	194
7	187	188	185	186	159	171	185	190	193	188	191	198	208	217	215	207	201	199	198	199	197	197	196	195	196	194
8	196	195	196	196	196	194	192	191	183	178	185	195	211	221	214	208	203	200	200	202	201	185	182	165	178	195
9	177	184	187	189	191	192	193	192	189	184	184	195	203	212	208	205	199	195	194	194	193	192	192	192	192	193
10 c	192	192	193	193	192	192	191	190	185	182	187	193	207	216	216	207	204	199	199	199	195	194	192	192	190	196
11	189	191	194	193	193	192	191	190	185	184	188	202	205	209	208	206	203	199	205	202	198	194	189	187	172	195
12	172	182	191	193	194	193	191	190	184	180	184	192	205	213	214	208	201	198	197	197	198	197	195	194	191	195
13	191	193	193	196	193	193	194	191	187	181	181	192	205	214	213	211	206	201	203	201	198	197	198	191	191	197
14✲	190	190	190	191	191	187	181	187	196	185	194	194	208	229	240	205	212	206	197	190	172	140	146	166	187	191
15	187	196	183	179	193	187	183	186	190	183	196	203	213	217	215	210	203	196	194	185	173	170	170	167	183	191
16✲	183	175	201	188	190	194	187	182	179	181	185	194	204	211	213	204	205	177	197	184	170	159	204	175	196	190
17✲	195	160	177	172	175	180	181	179	179	181	190	197	208	216	222	209	208	197	185	150	170	187	186	191	190	187
18	190	190	189	189	189	184	188	183	179	174	177	183	197	204	208	202	195	189	189	189	189	188	189	183	187	189
19	186	182	184	195	180	178	179	179	180	173	188	198	208	213	209	205	196	189	188	180	180	189	191	193	194	189
20	194	190	188	188	188	184	182	180	172	170	178	195	214	217	218	214	206	198	195	193	192	189	188	185	188	192
21	188	187	191	187	188	205	199	188	178	172	187	203	217	219	232	217	205	199	196	168	177	183	180	180	190	194
22	189	188	200	183	184	176	179	179	174	178	179	194	205	215	216	210	204	196	187	189	187	187	184	187	192	190
23	192	195	201	188	187	187	185	179	176	174	186	203	214	216	223	223	215	205	192	178	187	189	189	188	189	195
24	189	188	187	184	188	188	187	183	178	177	186	199	212	220	218	209	201	189	188	191	192	191	190	189	189	193
25	188	190	187	188	189	188	186	182	176	173	181	193	205	215	217	210	202	193	193	193	193	191	190	189	190	192
26 c	190	189	192	192	189	189	*186*	*182*	*176*	*172*	180	188	203	214	214	208	200	193	184	188	192	192	191	192	191	192
27 c	191	193	191	186	184	186	186	181	175	174	178	194	208	215	214	208	202	197	196	198	197	194	195	193	191	193
28	190	189	188	190	182	179	178	184	185	177	178	186	201	211	214	207	200	194	192	180	188	194	192	192	193	191
29	193	185	189	185	183	182	185	182	178	178	186	199	207	214	217	216	211	188	195	192	188	185	179	175	176	191
30	176	185	188	183	195	174	177	177	177	179	187	195	207	214	218	209	202	192	192	192	189	186	176	169	180	189
31	179	187	187	186	184	180	176	176	177	176	184	198	212	224	225	219	211	204	203	196	192	191	173	141	179	191
Mean	188	188	190	189	188	187	187	185	183	180	186	196	208	215	216	209	203	196	195	190	190	188	187	184	188	193

c International quiet day.

✲ Day "proposed for reproduction" by the International Magnetic Commission (single star).

XI.—VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE.

Eskdalemuir. (Z.) **March, 1913.**

The following table gives for March the values of Z deduced from the observations of dip. *See note under January, Table III.*

Date.	Time, G.M.T.	Downward Component Z.
	h m h m	γ
March 7	15 10 to 15 41	45270
14	14 27 to 15 1	45380
22	11 46 to 12 18	45280
28	11 38 to 12 1	45290

XII.—AUXILIARY OBSERVATIONS IN ABSOLUTE MEASURE; DAILY VALUES OF TEMPERATURE IN THE EAST ROOM OF THE MAGNET HOUSE; MAGNETIC NOTES FOR THE MONTH.

Eskdalemuir. **March, 1913.**

Date.	Time, G.M.T.	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
Mar.	h m	γ	° ′ ″	° ′	°		
4	11 16		18 3 20		8·7	0	1
,,	11 35	16839					
					8·7	0	2
					8·6	0	3
					8·7	0	4
7	12 28		17 59 47		8·7	0	5
,,	12 56	16828			8·5	0	6
,,	15 25			69 36·7			
					8·5	0	7
					8·5	1	8
					8·5	0	9
12	8 10	16836			8·5	0	10
					8·5	0	11
					8·5	0	12
14	11 15		17 59 42		8·5	0	13
,,	14 44			69 41·7	8·5	2	14
					8·5	2	15
					8·5	2	16
15	12 7		18 3 47		8·5	2	17
,,	12 39	16820			8·5	0	18
					8·4	0	19
					8·4	0	20
					8·4	1	21
21	15 5		18 3 38				
,,	15 33	16817			8·3	1	22
					...	1	23
					8·3	0	24
					8·3	0	25
					8·4	0	26
22	12 2			69 38·2			
					8·4	0	27
					8·4	0	28
28	11 18		18 3 7		8·3	1	29
,,	11 30	16796			8·3	1	30
,,	11 50			69 39·2	8·3	1	31

MARCH, 1913.

The first five days were quiet. On the night of 6th to 7th there was a slow disturbance. The 9th and 10th were calm. On 8th near 11^h and 13^h there were two sharp teeth of about 30γ in a direction ± (azimuth N 45° W, elevation 3° up) followed by bays at night in a variable direction more or less ± (N, E, up). A pair of teeth and subsequent bays were repeated in a very similar manner $3^d\ 3^h$ later.

There were pulsations near 14^h on 12th and near 18^h on 13th. Otherwise these two days were quiet.

On the 14th there was a sudden commencement beginning at $4^h\ 27^m$ and reaching a maximum of +25γ N, +25γ W, +3γ up, at $4^h\ 32^m$. From here on, the trace is disturbed until 17th. Pulsations are scattered throughout the whole interval, intermingled with slower disturbances. The pulsations of periods less than 5 minutes are most in evidence in the 12 hours following the sudden commencement and least in evidence in the early hours of 15th, 16th, and 17th. Wherever visible they were in the octants ± (N, W, up), which also included the sudden commencement; the amplitude of the pulsation was very much smaller in the vertical than in the horizontal directions. The slower horizontal disturbances were in a variable azimuth. The vertical force changes, of the order of 30γ, were very gradual and "smooth"; they were not all similar to those of N and W. There was a decided resemblance between the vertical force changes on the evening of 14th and those just 48 hours later. The same cannot be said of either N or W.

The 18th, 19th and 20th were moderately quiet. On the 21st there was a slow disturbance on all three components from 4^h to 7^h, followed by pulsations from 7^h onwards throughout the day. A sharp disturbance of about 40γ in the octant + (N, W, up) occurred at $13^h\ 36^m$. Bays occurred in the night 21st to 22nd. The middle of 22nd was quiet. In the small hours of 23rd there was a slow disturbance which changed direction in the following way:—

$0^h\ 10^m$	$0^h\ 30^m$	$0^h\ 50^m$	$1^h\ 15^m$	$1^h\ 30^m$
(N, W, up);	(N, up);	(N, E, up);	zero;	(S, W, down);

Between 12^h and 18^h on 23rd there was a serrated disturbance, all serrations, whether lasting 3 minutes or 1 hour, being due to a force in the same direction, which, measured on the largest, was (azimuth N 41° W, elevation 2° up). On the 24th there was a bay at 2^h. From then on to 28th the curves were quiet. On 29th, 30th, and 31st there was disturbance chiefly in the night; the movements were irregular in N and W, but smooth in V.

* Mean of the Corrected Readings of the Thermometers in the N, W, and V Magnetograph Boxes.

XIII.—READINGS OF THE NORTH COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (X.) **April, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
	15,000 γ (·15 C.G.S. unit) +																									
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	1008	1010	997	1001	999	1006	1001	1001	996	989	981	975	974	979	988	991	1002	998	1003	1013	1012	1005	1002	1006	1018	998
2	1018	1011	1009	1001	998	1001	1001	1001	996	987	975	973	975	980	989	1000	1002	1004	1006	1005	1006	1006	1005	1005	1006	998
3	1006	1009	1009	1004	1002	1004	1008	1011	1010	998	988	980	976	983	985	993	999	1008	1013	1015	1015	1015	1014	1015	1013	1003
4	1013	1010	1010	1010	1013	1012	1015	1012	1007	995	982	975	972	976	986	996	1014	1003	1011	1009	1012	1010	1010	1014	1027	1003
5	1027	1018	1003	1007	1005	1008	1009	1006	999	986	969	968	968	977	986	994	999	1005	1008	1010	1011	1010	1011	1011	1011	999
6 c	1011	1011	1010	1008	1008	1008	1010	1010	1002	990	978	972	976	985	993	1001	1006	1006	1011	1013	1014	1014	1016	1015	1013	1003
7	1013	1012	1013	1013	1013	1012	1013	1013	1005	990	974	972	975	981	995	1002	1009	1012	1012	1013	1012	1012	1012	1012	1012	1004
8	1012	1011	1010	1010	1011	1011	1013	1006	995	984	978	979	986	994	1002	1005	1011	1016	1013	1028	1033	1028	1022	1017	1007	
9✲✲	1017	1015	1013	1021	1019	1022	1011	1001	994	989	982	976	981	985	1003	1003	1008	997	1023	1001	984	988	1003	997	977	1001
10	977	994	984	986	992	981	973	977	981	967	953	970	967	968	975	982	992	1003	1002	1005	1007	1024	1010	1003	1000	987
11	1000	992	995	998	1008	1000	1005	1004	1001	995	977	963	969	982	991	992	996	1005	1007	1015	1007	1002	1008	1007	1000	997
12	1000	997	997	993	997	1000	1005	1001	994	981	975	969	968	977	988	990	1002	1004	1009	1017	999	1001	1006	977	1002	994
13	1002	992	984	992	999	999	1001	998	987	981	969	961	959	968	984	996	1006	1007	1009	1009	1008	1008	1002	1004	1003	993
14	1003	1004	1000	1003	1003	1002	1001	1000	994	973	964	970	980	988	993	1003	1006	1013	997	1004	1004	1008	1006	1005	1007	997
15	1007	1006	998	997	994	1000	1016	1008	996	982	977	973	974	981	995	1001	1007	1009	1016	1012	1005	1010	1013	998	995	999
16	995	1001	997	1003	1001	1007	1007	995	988	983	980	981	982	979	979	1003	1004	1001	1010	1010	1008	1011	1031	1006	1005	999
17	1005	1002	1003	1006	1007	1003	997	1001	1002	996	985	978	983	982	984	990	1004	1003	1014	1014	1011	1014	1011	1011	1012	1000
18	1012	996	1001	1003	1002	1003	1001	998	991	984	977	973	978	989	999	1007	1010	1010	1010	1008	1008	1010	1013	1009	1006	1000
19	1006	1004	1006	1005	1001	999	1002	1000	995	986	976	978	981	988	990	997	1002	1007	1016	1015	1017	1016	1012	1012	1012	1001
20 c	1012	1010	1010	1010	1009	1008	1006	1007	1004	995	984	980	980	987	994	1001	1006	1009	1012	1014	1012	1012	1013	1014	1012	1004
21 c	1012	1010	1010	1009	1009	1009	1010	1009	1007	1001	992	986	988	989	992	1001	1006	1008	1012	1020	1021	1013	1013	1021	1018	1006
22 c	1018	1012	1007	1007	1009	1011	1016	1015	1009	1000	986	981	978	979	982	989	1001	1009	1014	1014	1013	1014	1014	1015	1016	1004
23	1016	1017	1008	1008	1012	1010	1002	1013	1009	1002	991	983	983	980	990	1000	1004	1008	1014	1015	1013	1011	1016	1016	1010	1005
24	1010	1009	1008	1009	1009	1010	1008	1007	1001	994	980	973	975	983	996	1001	1009	1013	1021	1022	1015	1015	§	§	§	—
25	§	§	§	§	§	§	§	§	§	§	989	982	981	988	995	1001	1009	1019	1020	1018	1010	1013	1012	1011	1010	—
26 c	1010	1010	1011	1010	1009	1008	1009	1012	1012	1007	1006	986	983	988	995	1004	1008	1015	1023	1021	1014	1013	1015	1016	1013	1008
27	1013	1011	1011	1012	1011	1011	1013	1011	1008	1001	997	991	983	992	985	989	1004	1021	1026	1031	1016	1007	1010	1014	1014	1007
28	1014	1015	1006	1012	1015	1010	995	1000	1001	997	981	968	971	983	997	1004	1011	1021	1020	1018	1015	1013	1011	1020	1012	1004
29	1012	1007	1008	1008	1005	1004	1007	1008	1000	995	985	985	986	992	995	1003	1010	1014	1020	1015	1012	1008	1009	1008	1006	1004
30	1006	1006	1006	1005	1006	1006	1004	1002	998	989	979	976	985	990	996	1000	1008	1014	1019	1015	1010	1006	1008	1014	1012	1002
Mean †	1009	1007	1004	1005	1006	1006	1005	1005	1000	991	980	976	977	983	990	998	1005	1008	1013	1013	1011	1011	1012	1010	1009	1001

XIV.—READINGS OF THE WEST COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (−Y.) **April, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
	5000 γ (·05 C.G.S. unit) +																									
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	179	169	176	176	185	187	175	169	167	174	182	189	203	213	220	211	201	193	186	184	166	169	180	190	189	185
2	189	184	190	180	177	176	176	171	166	167	177	194	210	216	217	208	200	187	185	186	188	190	190	189	191	188
3	190	190	191	183	183	183	182	175	168	165	175	190	203	216	212	209	198	191	191	190	190	190	189	183	190	189
4	190	190	185	184	183	190	177	170	161	163	175	189	207	212	214	201	198	184	183	184	181	185	190	192	188	187
5	188	183	182	183	183	183	181	174	167	165	173	183	193	207	209	203	195	192	191	188	187	188	186	189	186	186
6 c	185	189	189	188	185	184	182	173	163	156	165	179	197	208	210	201	196	189	183	187	185	186	189	190	191	186
7	191	191	190	190	188	184	182	174	164	164	173	185	201	211	216	206	200	191	187	189	189	189	189	190	191	189
8	191	191	190	189	190	184	182	174	163	155	164	178	198	211	211	206	194	191	191	190	184	192	190	189	181	187
9✲✲	180	182	181	182	172	166	173	169	161	160	178	191	221	257	245	250	246	246	207	162	171	163	171	164	137	191
10	137	163	188	173	166	165	166	173	174	174	173	177	188	199	200	196	192	178	182	183	175	166	172	171	173	177
11	173	173	177	181	165	173	174	172	164	159	165	175	190	196	205	203	192	193	181	173	173	180	171	179	176	179
12	175	176	178	176	180	183	188	183	172	167	169	176	194	201	211	207	198	197	187	144	164	164	135	121	152	176
13	152	167	182	180	170	167	165	162	161	161	168	182	192	201	204	199	195	188	187	183	180	174	185	183	181	179
14	181	180	180	177	183	173	172	167	162	160	174	186	202	216	215	207	202	193	184	185	186	186	184	185	187	185
15	186	184	184	172	193	184	178	178	173	165	173	183	193	202	203	195	192	186	181	174	178	183	156	147	181	181
16	181	165	168	171	171	172	165	165	165	164	174	191	213	225	216	217	213	199	175	186	184	175	165	178	186	183
17	186	184	183	179	174	171	174	190	180	180	186	191	206	215	215	197	201	189	184	174	179	174	171	167	186	185
18	185	170	171	170	172	172	173	169	165	164	170	179	196	207	205	195	189	185	185	184	185	186	185	179	180	181
19	180	182	181	177	176	176	170	163	158	160	170	181	192	203	202	199	192	190	189	188	185	171	175	176	180	181
20 c	180	184	185	181	178	177	173	167	163	162	169	180	193	200	198	194	192	189	186	185	183	184	184	182	181	182
21 c	180	183	182	179	179	177	176	171	168	167	169	177	189	201	210	210	206	201	195	192	190	184	180	177	171	185
22 c	171	172	177	177	176	171	169	169	164	162	163	174	193	209	211	201	196	192	190	187	185	184	183	184	179	182
23	179	176	179	178	180	180	198	187	169	162	166	177	193	199	201	200	198	199	195	189	185	181	176	177	179	184
24	179	182	183	180	180	178	172	168	162	161	162	176	189	197	197	190	190	189	189	188	185	176	§	§	§	—
25	§	§	§	§	§	§	§	§	§	§	172	179	190	200	202	201	203	202	197	192	183	184	184	183	183	—
26 c	183	183	183	182	177	175	174	171	168	166	172	175	185	194	195	194	196	198	197	191	188	187	186	181	182	183
27	182	179	176	176	174	169	167	166	162	162	165	172	182	198	197	204	201	201	197	191	183	175	183	179	175	181
28	175	173	193	182	164	160	161	173	163	161	166	175	183	192	198	197	194	193	189	188	183	183	180	173	177	179
29	176	178	180	178	178	176	173	167	169	169	174	179	189	200	200	192	186	182	181	182	182	182	182	182	182	181
30	182	180	179	174	173	168	164	163	161	163	169	180	199	204	198	189	185	187	189	187	180	178	184	188	178	180
Mean †	180	179	182	179	178	176	175	172	166	164	171	182	197	208	209	203	198	193	188	183	182	180	179	178	180	183

† Mean 28 days. 24th and 25th omitted. c International quiet day. § Clock stopped.

✲✲ Day "recommended for reproduction" by the International Magnetic Commission (double star).

XV.—READINGS OF THE VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (Z.) **April, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
													45,000 γ (·45 C.G.S. unit) +													
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	284	276	280	286	286	278	283	288	288	287	284	282	279	281	285	291	295	299	298	299	299	297	296	293	286	288
2	287	286	283	285	289	291	292	294	294	291	289	286	284	285	289	293	296	298	296	295	295	295	295	295	295	291
3	296	294	292	291	293	293	293	293	291	288	287	286	286	287	291	294	296	297	296	295	295	295	295	295	294	292
4	295	295	295	295	294	294	292	295	295	292	288	287	287	289	292	295	297	301	303	302	300	298	296	295	289	295
5	290	285	289	291	293	293	294	297	298	296	294	291	288	288	293	295	296	297	295	295	294	294	294	294	294	293
6 C	294	294	294	294	293	293	294	295	295	294	291	285	279	279	284	289	293	294	293	292	292	292	291	291	292	291
7	292	292	292	291	291	291	291	291	290	290	288	285	281	279	283	288	291	292	292	291	291	291	291	291	291	289
8	291	292	292	292	291	291	291	292	291	288	285	281	277	278	284	290	292	294	293	292	292	289	290	289	291	289
9 ✲✲	292	293	293	288	286	286	288	291	293	290	287	283	276	283	303	312	330	355	390	362	332	323	278	249	261	302
10	261	268	267	279	289	293	291	289	289	289	291	292	289	289	295	303	310	316	312	308	306	296	291	290	289	292
11	290	284	284	289	288	292	294	297	297	295	291	290	289	287	291	295	301	301	303	308	307	302	299	295	292	295
12	292	292	292	293	293	292	291	290	292	292	290	288	284	285	290	299	310	310	312	322	312	305	293	269	251	295
13	252	275	286	287	290	292	293	294	296	295	294	293	290	289	293	297	300	301	301	301	301	300	298	298	298	294
14	298	298	298	297	294	292	294	296	296	297	294	287	284	284	289	297	299	304	308	306	304	301	302	301	300	297
15	300	298	299	296	288	278	275	279	283	288	289	289	288	288	289	301	303	316	318	319	317	310	305	299	284	296
16	285	281	291	296	298	299	298	300	300	298	297	293	288	292	298	299	302	307	316	316	313	308	295	294	296	299
17	296	298	298	298	298	297	295	287	283	284	286	286	287	289	298	303	307	309	309	310	307	302	296	283	269	296
18	269	277	284	288	291	291	292	291	290	290	288	287	281	281	288	292	295	297	298	297	295	294	292	290	290	290
19	290	291	292	292	292	292	292	293	293	290	287	287	283	282	285	290	295	297	297	297	297	295	295	294	293	292
20 C	293	294	294	294	293	293	293	294	293	289	287	285	284	284	286	289	291	292	292	292	292	292	293	293	293	291
21 C	293	294	293	293	293	292	292	293	292	292	292	290	284	279	281	287	292	294	294	292	293	294	295	294	293	291
22 C	293	291	292	292	292	291	290	289	287	286	286	285	278	281	288	292	294	296	296	296	296	295	294	294	293	291
23	293	292	293	294	294	293	288	283	286	287	290	290	289	291	292	293	293	293	295	297	297	296	294	292	291	292
24	291	291	293	293	293	294	294	294	294	291	289	285	280	282	288	292	293	296	296	295	296	295	293	292	292	292
25	292	292	292	293	293	293	291	290	289	289	289	288	283	290	292	293	294	296	298	299	298	297	296	295	295	293
26 C	295	295	294	294	294	294	293	292	291	291	291	291	291	291	291	292	292	293	294	295	295	294	293	293	293	293
27	293	293	293	293	293	293	293	292	291	290	283	277	274	276	284	289	290	291	292	294	297	303	296	294	290	290
28	290	288	279	269	271	278	282	277	277	277	276	275	276	276	280	287	293	298	301	302	300	298	297	294	292	285
29	291	291	292	292	292	291	290	289	287	284	285	278	267	264	273	282	289	294	297	296	296	296	295	294	294	288
30	293	291	291	292	293	293	293	293	290	288	283	279	272	275	281	285	288	291	295	297	300	301	298	294	292	290
Mean †	289	289	290	291	291	291	291	291	291	290	288	286	283	283	289	293	297	301	303	302	300	298	295	291	289	292

XVI.—AUXILIARY OBSERVATIONS IN ABSOLUTE MEASURE; DAILY VALUES OF TEMPERATURE IN THE EAST ROOM OF THE MAGNET HOUSE; MAGNETIC NOTES FOR THE MONTH.

Eskdalemuir. **April, 1913.**

Date.	Time, G.M.T.	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
Apr.	h m	γ	° ′ ″	° ′	°		
1	11 55		18 1 34		8·3	1	1
,,	12 31	16810			8·3	0	2
					8·3	0	3
2	8 6			69 38·3	8·3	1	4
					8·3	1	5
4	11 34		18 1 26				
,,	12 31	16800			8·2	0	6
,,	15 3			69 37·3	8·3	0	7
					8·3	0	8
8	11 11		17 56 50		8·4	2	9
,,	11 29	16800			8·3	2	10
,,	11 47			69 40·4			
15	12 18		18 1 14		8·3	1	11
,,	12 54	16807			8·3	2	12
,,	15 49			69 36·7	8·3	2	13
					8·3	1	14
					8·3	1	15
18	10 55		17 57 32				
,,	11 13	16789			8·3	2	16
,,	11 32			69 41·1	8·3	2	17
					8·3	1	18
					8·3	0	19
22	11 34		17 57 36		8·3	0	20
,,	12 12	16805					
,,	14 56			69 36·7	8·4	0	21
					8·4	0	22
					8·4	1	23
25	11 57		18 0 58		8·4	0	24
,,	12 27	16808			8·4	—	25
,,	15 28			69 36·7			
					8·4	0	26
					8·4	1	27
29	11 55		17 59 32		8·5	1	28
,,	12 16	16818			8·4	0	29
,,	15 40			69 35·0	8·5	0	30

APRIL, 1913.

There were slow disturbances during the nights 31st March to 1st April, and 1st to 2nd April, including marked minima of downward force near 1h and 5h on 1st. Except for occasional pulsations and bays, the following days up to 8th were quiet, the 6th and 7th especially so. The small slow disturbance between 0h and 2h on 3rd is interesting because isolated. It was due to a force which changed direction as follows:—

0h 40m.	1h 0m.	1h 30m.	1h 35m.	1h 40m.	2h 0m.
(W),	(N, W, up),	(N, up),	(N, E, up),	(S, W, down)	(W) (N, W, up)

the magnitude of the force reached 30 γ.

Near 18h on 7th there were rapid pulsations of period 1 to 2 minutes in the quadrants ± (N, W).

On 8th there was a sudden disturbance of about 40 γ N, 15 γ W, 3 γ up, reaching its maximum at 19h 57m. Pulsations of period 10 minutes or less in the octants ± (N, W, up) were present before the disturbance, but increased in magnitude after it, and by noon on 9th a large slow horizontal disturbance in a varying azimuth began to be superposed on the pulsations, accompanied by a gradual increase in the downward force. Between 18h and 19h remarkable changes occurred. Between 18h and 18h 17m the downward force increased by 70 γ, then fell again as rapidly, to rise in a second smaller peak 42 minutes later. Sharp motions on W synchronised with these peaks, E and down going together. The first peak does not show clearly on N, but the second was + (N, E, down). After these peaks the horizontal disturbance took a new character. Pulsations disappeared for the most part. A smooth irregular oscillation of periods 20 minutes to 3 hours set in on N and W and lasted until 1h. It had the unusual property that if the N curve were moved forward 10 minutes in advance of the W, the resemblance between the two became conspicuous, + N and + W then going together. During the interval 19h on 9th, to 1h on 10th, the downward force at first decreased in a gradual irregular manner, fell suddenly near 22h, and gradually increased during subsequent 2 hours. Apart from the two peaks, there is no resemblance between the horizontal and vertical disturbances; except that, if all but those changes which remain of one sign for 2 hours or more be smoothed out of the west, the residue was related, on the whole, so that E and down went together, as was also the case at the peaks.

There were smaller disturbances on the subsequent nights from 11th to 17th, those on V being smooth, those on N and W agitated. Minima of downward force occurred near midnight on the following occasions:—

9d 22h 35m and 23h 5m	16d 0h 22m
12d 23h 38m	18d 0h 12m

In the early hours of 12th there were small oscillations of period about 12 minutes in the unusual direction ± (N, E).

From 18th to the end of the month the field was on the whole quiet except for a small disturbance beginning near noon on 27th and continuing until after midnight.

* Mean of Corrected Readings of the Thermometers in the N, W, and V Magnetograph Boxes.

† Mean 30 days.

XVII.—READINGS OF THE NORTH COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (X.) **May, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
											15,000 γ (·15 C.G.S. unit) +															
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	1012	1010	1011	1012	1013	1012	1011	1009	1007	1001	988	981	981	995	1001	1013	1008	1015	1013	1014	1013	1014	1013	1016	1015	1006
2	1015	1015	1014	1012	1015	1011	1011	1008	1001	995	988	989	983	994	1005	1012	1018	1021	1024	1023	1018	1017	1015	1019	1023	1009
3	1023	1021	1015	1014	1015	1014	1009	1008	1006	998	973	975	981	995	1005	1003	1008	1014	1015	1018	1013	1013	1012	1014	1012	1007
4	1012	1013	1012	1011	1015	1015	1016	1018	1010	986	989	1000	998	995	998	1008	1000	1001	1039	1021	1016	1019	1012	1010	1016	1009
5✲	1016	1012	999	989	1013	1005	996	981	975	990	976	971	969	980	991	1000	1008	1023	1017	1015	1012	1015	1023	1017	1026	1000
6	1026	1015	1006	1007	989	1008	1007	1006	996	971	995	993	986	982	1008	1015	1015	1021	1017	1012	1021	1005	1008	1006	1002	1004
7	1002	1016	989	1010	988	993	995	1000	992	984	970	975	978	991	1000	1000	1003	1018	1019	1038	1027	1014	1014	1018	1015	1002
8	1015	1008	1003	1000	998	997	1001	995	991	988	984	982	988	991	998	1004	1007	1016	1021	1036	1015	1011	1008	1005	1009	1002
9	1009	1006	1008	1005	1005	1008	1006	1002	997	992	986	990	989	991	995	1001	1008	1017	1012	1015	1012	1012	1009	1022	1015	1004
10	1015	1001	997	1006	1004	996	1008	1008	1003	995	988	977	975	980	1001	1001	1013	1017	1015	1012	1010	1008	1007	1009	1012	1002
11	1013	1011	1009	1006	1010	1012	1013	1012	1008	998	988	982	978	985	993	1008	1015	1020	1022	1016	1010	1013	1015	1020	1006	1006
12	1006	1007	1004	1007	1010	1011	1007	1000	995	991	982	980	982	990	1002	1009	1012	1019	1023	1025	1016	1008	1008	1008	1006	1004
13	1006	1008	1005	1004	1001	1009	1009	1003	999	998	988	989	994	999	1009	1014	1016	1017	1030	1024	1015	1009	1010	1012	1014	1007
14 c	1014	1020	1014	1009	1010	1010	1007	1003	996	989	988	989	1000	1008	1013	1016	1016	1014	1015	1018	1016	1016	1016	1016	1016	1009
15	1016	1015	1013	1009	1013	1015	1012	1004	997	990	995	996	994	1000	1008	1002	1012	1014	1021	1025	1026	1009	1009	1010	1013	1008
16	1013	1006	1002	1002	1002	1003	995	996	998	997	997	992	989	989	998	1002	1006	1015	1019	1020	1017	1016	1014	1011	1011	1004
17	1011	1012	1013	1011	1009	1012	1013	1008	1007	1002	1002	1001	996	1002	1002	1002	1007	1009	1017	1019	1022	1019	1016	1016	1014	1010
18	1014	1012	1011	1011	1013	1016	1009	1005	1006	1009	1009	1002	1001	1004	1010	1015	1006	1013	1017	1028	1023	1021	1017	1017	1017	1012
19	1017	1018	1017	1016	1015	1014	1013	1013	1009	997	987	987	995	1000	1009	1017	1016	1015	1016	1016	1016	1017	1016	1011	1016	1010
20 c	1016	1013	1008	1009	1009	1008	1006	1006	1004	996	984	979	985	994	1001	1007	1011	1015	1016	1018	1018	1017	1014	1012	1009	1006
21 c	1009	1009	1006	1001	1008	1010	1009	1005	1000	994	985	979	979	989	1003	1009	1013	1024	1024	1021	1015	1013	1011	1011	1010	1005
22 c	1010	1009	1009	1009	1010	1012	1012	1010	999	993	980	974	978	984	993	1000	1001	1010	1018	1020	1018	1015	1013	1012	1011	1004
23 c	1011	1011	1011	1011	1014	1016	1013	1004	991	980	976	975	979	991	1004	1010	1011	1013	1016	1016	1019	1021	1022	1023	1023	1006
24	1023	1020	1020	1020	1019	1019	1016	1009	996	984	972	978	993	1002	1001	1000	1005	1014	1018	1027	1022	1017	1017	1017	1016	1009
25	1016	1016	1013	1020	1015	1013	1009	1008	1001	999	998	993	987	983	991	1000	1009	1010	1016	1022	1021	1017	1020	1019	1011	1008
26	1012	1012	1009	1009	1011	1014	1010	1006	1003	997	992	985	983	992	994	997	1009	1016	1028	1031	1029	1025	1023	1020	1017	1009
27	1017	1015	1014	1013	1016	1017	1015	1009	1004	997	990	977	990	995	977	1005	1021	1024	1027	1029	1024	1023	1025	1026	1020	1010
28	1020	1016	1012	1013	1016	1016	1015	1010	1002	990	977	967	981	999	1005	1008	1016	1024	1028	1024	1025	1016	1016	1015	1013	1009
29	1013	1011	1010	1009	1011	1014	1009	1001	992	987	981	983	995	999	999	1014	1010	1015	1023	1024	1034	1029	1013	1014	1011	1008
30	1011	1010	1012	1013	1015	1016	1011	1001	994	990	990	985	983	995	997	999	1003	1011	1016	1021	1020	1017	1015	1015	1016	1006
31	1016	1010	1010	1010	1013	1015	1012	1009	1005	1001	1000	1002	1007	1011	1011	1010	1011	1013	1016	1023	1025	1024	1020	1020	1027	1012
Mean	1014	1012	1009	1009	1010	1011	1009	1005	999	993	987	985	987	994	1001	1006	1010	1016	1020	1022	1019	1016	1015	1015	1014	1007

XVIII.—READINGS OF THE WEST COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (−Y.) **May, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
											5000 γ (·05 C.G.S. unit) +															
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	178	178	174	175	173	168	167	167	168	172	179	189	197	204	204	208	201	203	195	191	186	186	186	185	185	185
2	184	182	181	180	176	167	164	161	160	165	174	192	204	207	203	196	189	186	186	185	183	185	184	186	185	183
3	185	181	178	175	174	172	171	167	167	169	181	194	202	208	204	195	190	185	183	181	181	181	182	182	182	183
4	182	181	181	181	178	171	166	159	152	159	174	187	198	203	199	198	196	190	169	159	169	174	172	174	180	178
5✲	180	175	181	218	183	152	150	147	156	164	169	180	193	203	206	203	193	194	186	179	178	177	166	166	187	179
6	186	148	157	173	164	173	160	157	155	158	172	179	194	202	218	225	213	206	198	189	187	147	134	145	149	176
7	149	152	180	155	158	172	163	162	161	164	169	182	193	194	202	207	204	205	196	186	173	180	168	187	177	178
8	177	168	173	176	180	177	171	165	160	161	172	186	195	199	198	194	190	189	186	181	176	173	176	176	176	179
9	175	174	175	175	178	169	163	162	162	167	177	186	190	199	198	194	192	189	185	183	182	171	168	172	170	178
10	170	164	176	157	153	157	157	151	156	160	168	179	192	195	204	192	188	183	179	179	178	179	179	179	178	174
11	178	176	172	175	174	172	171	165	160	162	170	179	186	194	195	193	188	185	185	183	178	172	176	164	166	177
12	166	174	174	174	171	164	158	155	153	159	167	179	191	196	200	200	195	193	188	180	172	173	175	172	167	176
13	167	163	162	162	179	160	159	157	160	164	174	183	193	196	192	188	187	189	190	186	179	183	181	179	184	177
14 c	183	171	164	164	164	158	153	154	161	164	174	183	191	190	189	187	188	186	185	185	185	185	184	183	179	176
15	179	178	173	173	165	154	152	156	162	165	177	188	200	200	199	189	188	185	179	178	167	171	178	178	171	176
16	171	168	168	169	170	161	163	163	166	169	178	185	191	191	190	187	183	180	179	177	176	179	178	176	177	176
17	177	178	178	169	166	169	160	158	167	174	184	195	202	205	205	199	193	191	187	185	185	184	182	180	178	182
18	177	177	175	174	171	165	160	160	160	161	171	187	201	206	206	203	191	191	182	182	180	179	178	179	178	180
19	178	177	182	169	167	164	167	166	160	162	170	184	191	194	198	195	190	181	177	179	179	180	180	170	172	177
20 c	172	176	174	176	170	164	160	155	155	159	170	183	196	202	197	192	182	172	171	175	177	176	179	180	180	176
21 c	180	178	177	181	172	165	160	156	152	151	158	175	192	199	199	192	185	179	175	171	171	173	176	177	177	175
22 c	176	176	176	176	170	161	154	151	145	149	159	176	189	194	194	190	182	176	171	169	172	176	176	176	176	172
23 c	176	177	176	176	171	163	156	148	144	148	160	176	195	209	211	204	195	186	182	179	179	178	179	180	179	177
24	179	178	177	176	172	169	162	159	155	157	171	186	201	211	211	204	197	189	184	184	177	176	181	181	180	181
25	180	188	187	177	163	158	154	149	154	164	170	179	193	199	198	193	194	184	180	180	178	179	177	169	172	177
26	172	170	171	169	166	159	151	154	160	164	168	179	189	194	190	190	193	190	190	185	183	181	181	183	179	176
27	179	176	177	176	172	169	167	161	158	161	176	187	210	214	204	198	196	187	184	183	177	180	185	176	176	181
28	175	178	175	174	168	162	158	153	155	153	168	176	191	200	196	190	182	176	172	173	178	177	179	179	178	175
29	178	175	174	172	168	163	155	151	148	156	169	186	196	194	186	185	182	180	176	179	186	175	175	182	178	175
30	178	175	177	172	167	160	153	152	155	157	163	181	197	203	197	194	188	181	178	180	180	181	182	181	181	176
31	181	178	175	173	169	160	158	157	160	167	178	187	188	194	189	185	180	178	179	182	184	183	183	184	184	177
Mean	176	174	175	174	170	164	160	157	158	161	171	183	195	200	199	196	191	187	182	180	179	177	177	177	177	178

c International quiet day.

✲ Day "proposed for reproduction" by the International Magnetic Commission (single star).

XIX.—READINGS OF THE VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (Z.) **May, 1913.**

Hour G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
	45,000 γ (·45 C.G.S. unit)+																									
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	292	292	292	292	293	293	291	289	287	284	281	279	276	275	281	286	293	296	298	300	299	298	297	296	296	290
2	295	295	295	295	294	296	296	295	292	288	286	281	285	285	289	293	295	296	297	299	300	299	298	297	294	293
3	293	293	294	294	295	295	294	294	292	288	287	283	284	284	286	291	295	296	297	298	297	296	295	295	295	292
4	295	295	295	295	294	295	293	292	289	285	282	276	275	278	281	286	298	310	331	334	328	319	315	308	302	298
5	301	294	295	246	236	242	251	259	267	272	274	270	270	275	284	296	303	307	312	313	310	305	300	285	231	280
6	230	246	270	277	275	267	276	281	281	281	279	274	273	279	285	294	320	331	326	316	309	314	307	298	290	288
7	289	268	238	243	266	270	278	280	283	285	292	291	289	293	295	298	300	301	302	301	298	295	295	285	273	284
8	273	282	287	288	287	287	289	291	290	284	280	279	279	281	286	292	295	295	297	295	297	297	296	296	295	288
9	294	294	294	293	292	292	292	292	290	283	281	281	281	285	287	288	292	298	302	301	302	302	300	293	283	291
10	282	283	284	282	287	291	286	286	285	282	282	283	281	285	288	293	300	306	307	305	303	300	298	298	296	291
11	295	294	294	296	298	298	298	297	296	293	290	285	285	289	294	296	300	304	306	306	304	302	298	295	294	296
12	293	293	295	296	298	298	298	299	299	296	290	288	286	287	290	294	297	299	296	305	308	306	303	301	300	296
13	300	297	297	297	294	293	296	296	294	289	287	287	285	285	287	292	294	295	298	304	309	305	301	300	297	295
14	296	291	291	293	296	299	299	296	293	291	290	288	286	286	290	291	294	297	298	297	297	297	297	296	296	293
15	296	296	295	295	294	295	294	293	289	288	286	283	283	287	291	294	297	299	300	300	301	300	296	294	290	293
16	289	288	289	290	291	292	289	286	286	285	283	280	278	281	284	287	289	291	292	295	294	292	291	290	290	288
17	289	288	286	285	287	288	287	284	278	276	276	273	272	277	281	285	291	295	296	296	295	292	291	290	290	285
18	289	288	288	287	288	289	289	286	283	277	274	271	268	270	272	276	284	286	286	285	286	286	286	286	286	282
19	286	286	284	283	285	285	284	282	279	275	270	270	271	277	283	290	297	299	299	296	294	292	291	293	290	285
20	289	288	289	289	290	290	289	290	290	285	273	268	265	271	279	285	291	294	293	290	289	289	288	287	287	285
21	286	287	287	287	285	286	287	285	283	278	276	276	274	278	285	292	295	295	294	292	289	288	288	288	288	285
22	288	289	290	291	293	295	293	294	291	282	272	269	270	272	277	287	292	293	295	294	291	288	287	286	286	286
23	285	285	285	286	288	290	292	293	291	283	271	263	261	266	273	281	290	294	293	292	288	287	286	286	285	283
24	284	285	285	286	288	288	287	290	290	283	276	270	269	273	282	285	289	292	295	295	295	295	292	290	290	286
25	289	287	282	277	282	287	287	284	283	279	275	275	275	281	285	291	295	298	299	298	297	294	292	289	289	286
26	288	288	289	290	292	294.	291	289	291	288	281	275	276	277	283	290	293	297	300	301	298	295	293	291	291	289
27	290	289	289	291	293	295	294	294	291	286	281	278	274	278	282	285	289	294	299	295	294	292	291	291	290	289
28	289	289	290	291	291	292	295	296	290	281	268	264	264	271	281	289	292	297	300	299	294	294	292	292	292	287
29	292	292	292	294	295	296	296	295	292	290	286	279	278	285	288	292	299	301	301	298	297	298	298	296	295	293
30	294	294	294	294	296	297	296	297	296	293	290	290	287	286	290	297	303	305	304	301	300	299	298	297	296	295
31	295	295	295	296	296	297	296	295	295	292	287	285	285	285	290	292	294	296	298	297	298	299	300	299	295	294
Mean	289	288	288	287	288	289	290	290	288	285	281	278	277	280	285	290	295	299	300	300	299	297	295	293	289	290

XX.—AUXILIARY OBSERVATIONS IN ABSOLUTE MEASURE; DAILY VALUES OF TEMPERATURE IN THE EAST ROOM OF THE MAGNET HOUSE; MAGNETIC NOTES FOR THE MONTH.

Eskdalemuir. **May, 1913.**

Date.	Time, G.M.T.	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
May	h m	γ	° ′ ″	° ′	°		
2	11 31		18 2 28		8·4	1	1
,,	11 47	16816			8·5	0	2
,,	12 34			69 37·2	8·5	0	3
					8·5	2	4
					8·5	2	5
6	11 13		17 58 17				
,,	11 44	16808			8·5	2	6
,,	16 7			69 36·2	8·5	2	7
					8·5	1	8
					8·5	1	9
9	11 28		17 59 45		8·6	1	10
,,	11 52	16817					
,,	12 16			69 37·9	8·6	0	11
					8·7	0	12
					8·7	1	13
13	12 7		18 1 21		8·8	0	14
,,	12 32	16827			8·8	1	15
,,	15 39			69 37·4			
					8·8	0	16
					8·8	0	17
16	11 39		17 59 58		8·7	1	18
,,	12 7	16813			8·9	0	19
,,	15 54			69 36·6	8·9	0	20
					8·9	0	21
20	12 5		18 1 7		8·9	0	22
,,	12 22	16826			8·9	0	23
,,	14 43			69 39·6	9·0	1	24
					9·0	1	25
23	14 50			69 37·3	9·0	0	26
					9·1	1	27
					9·1	1	28
					9·1	1	29
27	12 19		18 4 12		9·1	0	30
,,	12 43	16822					
,,	15 13			69 38·6	9·1	0	31

* Mean of the Corrected Readings of the Thermometers in the N, W, and V Magnetograph Boxes.

MAY, 1913.

MAY was on the whole a quiet month. The largest disturbance occurred on the 4th, 5th, 6th, and 7th. There were smaller disturbances daily until about 15th, and again on 18th and 27th. The remaining days were calmer, the 16th, 22nd, 23rd, and 30th especially so.

The vertical force disturbances during the stormy days 4th to 7th took the form of an increase in the downward force during the afternoon and evening, followed by a pronounced minimum near midnight, thus recalling those in April. The changes were smooth. The directions of the disturbing field, near the times of the minima, are set out below. An asterisk indicates the time of the minimum of downward force.

5th	G.M.T.	2h 20m	3h	4h 20m*	6h
	direction	(S, W, horiz.)	(N, W, up)	(N, W, up)	(N, W, up)
5th to 6th	G.M.T.	23h 30m	0h 10m*	1h 15m	
	direction	(S, W, horiz.)	(N, W, up)	(N, E, up)	...
7th	G.M.T.	1h 20m	1h 50m	2h 10m*	2h 50m
	direction	(N, E, up)	(S, W, up)	(W, up)	(N, W, up)
7th to 8th	G.M.T.	22h 15m	23h 10m	23h 50m*	24h 30m
	direction	(S, E, down)	(N, W, up)	(N, W, up)	(up).

The slower horizontal disturbances have no fixed azimuth. Pulsations of periods 2 to 15 minutes occurred throughout the month, but were most pronounced on those days on which slower disturbances were also in progress. Pulsations of shorter period than 2m, indicated by a blurring of the trace, occurred occasionally. An analysis of some of the more distinctly recorded pulsations is set out below. The small vertical component of the pulsations has been obtained from the records of the Watson balance, which during May had a sensitivity of 0·91 γ per mm. The period and amplitude were in no case constant, so that the figures given for these must be taken to have an uncertainty of 50%. The direction was more nearly constant.

Date and G.M.T. to nearest Hour.		Complete Period.	Phase Advances necessary to make W and V fit the N Component.		Approximate Direction of the Vector after these Advances had been made.	Amplitude = ½ Total Movement.
			W.	Up.		
d	h	minutes	minutes	minutes		γ
1	19	19	?	?	± (N, W, up)	7
3	1	10	−1	<1	± (N 30° W; 5° up)	3
3	4	11	?	?	± (N, W, up)	...
3	5	2 to 3	<0·5	indistinct	± (NW up); mainly ± W.	2
3	12	6 to 10	−0·5?	<1	± (N 35° W; 3° up)	7
3	19	8 to 10	0	?	± (N 45° W; 5° up)	7
4	8	5 to 6	−0·5	−1	± (N, W, up); variable.	15
4	13	about 5	−1	?	± (N 15° W; horiz.)	4
5	7	15	<1	<2	± (N, W, up)	8
5	13	9 to 12	0	<2	± (N 35° W; 3° up)	3
8	7	6	<1	<2	± (N 55° W; 4° up)	5
8	17	8	+1	<2	± (N 30° W; 2° up)	12
13	17	12	0	<2	± (N 25° W; 5° up)	10
18	16 to 17	2	?	?	nearly ± N	2
23	23	solitary wave	−2	−2	+ (N 34° W; 4° up)	7
25	23	3	?	?	nearly ± N	2
27	14	2 to 15	<1	?	{ rapid nearly ± N; slower NW; 4° up	1 8
29	13	12	0	<2	± (N 40° W; 2° up)	20
31	14	8	<2	...	± (N 25° W; horiz.)	2

XXI.—READINGS OF THE NORTH COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (X.) **June, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
											15,000 γ ('15 C.G.S. unit) +															
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1✲	1027	1024	1023	1019	1026	1030	1030	1003	997	1003	1008	1005	999	1009	994	997	1021	1030	1030	1028	1033	1031	1030	1018	1023	1017
2	1023	1015	1023	999	1010	998	988	987	988	976	980	987	990	993	997	1010	1016	1019	1014	1014	1026	1035	1015	1008	1007	1004
3	1007	1006	1007	1003	1003	1003	1008	1000	979	984	997	992	991	998	985	998	1005	1017	1023	1023	1023	1016	1011	1011	1010	1004
4	1010	1007	1006	998	1003	1010	1006	998	991	988	988	976	974	985	996	1005	1012	1023	1017	1027	1026	1031	1012	1010	1004	1004
5	1004	1010	1002	1003	1005	1007	1001	993	987	977	966	962	969	982	990	1001	1008	1019	1020	1017	1015	1012	1010	1012	1011	999
6	1012	1012	1011	1011	1005	1008	1012	1006	992	976	963	968	973	977	993	1008	1013	1019	1023	1021	1021	1015	1013	1010	1010	1003
7 c	1010	1009	1010	1010	1012	1014	1013	1005	995	986	976	971	972	984	995	999	1004	1012	1019	1022	1023	1017	1011	1010	1009	1003
8 c	1009	1008	1009	1010	1011	1012	1010	1005	995	987	984	978	982	992	1000	1005	1008	1011	1017	1020	1018	1026	1023	1022	1019	1006
9	1019	1018	1019	1015	1014	1016	1010	1004	996	990	979	978	983	992	1004	1014	1022	1024	1023	1021	1018	1020	1022	1020	1021	1009
10	1021	1018	1017	1017	1022	1021	1021	1016	1008	1003	999	991	991	999	1008	1022	1018	1025	1022	1017	1014	1013	1012	1011	1012	1013
11 c	1012	1013	1011	1011	1011	1008	1004	1004	1004	1004	998	987	990	991	1004	1012	1018	1027	1029	1021	1015	1012	1011	1015	1018	1009
12 c	1019	1018	1016	1014	1016	1018	1012	1002	996	992	988	989	994	1004	1007	1012	1019	1024	1023	1024	1019	1017	1013	1014	1013	1010
13	1013	1012	1011	1011	1012	1012	1008	1002	999	999	998	1000	1000	1002	1012	1017	1013	1024	1028	1025	1023	1017	1015	1014	1015	1011
14	1015	1017	1014	1013	1015	1014	1010	1005	1003	*999*	996	995	998	1005	1012	1018	1028	1027	1020	1025	1026	1028	1027	1025	1023	1014
15	1023	1023	1023	1021	1019	1011	1003	1001	994	985	981	985	995	998	1007	1025	1015	1016	1018	1017	1018	1017	1015	1014	1013	1009
16	1013	1012	1014	1019	1018	1018	1015	1011	998	990	988	993	992	1000	1006	1013	1013	1015	1018	1019	1024	1019	1018	1014	1014	1010
17	1014	1014	1013	1011	1012	1009	1002	993	989	985	983	988	992	999	1007	1013	1014	1019	1023	1019	1018	1013	1011	1009	1008	1006
18	1008	1009	1010	1012	1014	1014	1009	1001	992	985	972	971	980	992	1000	1005	1013	1015	1018	1019	1018	1015	1012	1011	1011	1004
19 ‡	1012	1011	1012	1013	1015	1015	1010	1000	993	989	981	977	985	993	1007	1016	1013	1020	1039	1047	1032	1022	1012	1014	1017	1010
20 ‡	1017	1018	1026	1019	1020	1017	1015	1011	1006	993	985	984	989	989	992	1000	1010	1015	1020	1026	1028	1022	1017	1013	1009	1010
21	1010	1007	1013	1014	1016	1018	1014	1014	1007	999	980	972	972	979	990	1000	1012	1023	1017	1026	1031	1029	1025	1021	1018	1008
22	1018	1021	1017	1014	1014	1014	1010	1002	995	987	981	978	981	986	998	1010	1019	1014	1021	1027	1021	1017	1016	1016	1014	1007
23	1014	1012	1013	1012	1012	1014	1014	1008	1000	994	985	979	975	982	1001	1017	1029	1028	1026	1026	1022	1025	1016	1028	1025	1010
24	1025	1023	1021	1021	1025	1021	1020	1015	1011	1001	994	982	985	989	998	1003	1010	1021	1027	1027	1024	1025	1024	1021	1021	1013
25	1021	1019	1017	1016	1023	1026	1019	1010	1006	1001	*994*	*983*	*987*	992	999	1005	1009	1016	1027	1027	1021	1020	1016	1017	1019	1011
26	1020	1019	1018	1018	1020	1026	1023	1018	1007	996	987	978	978	987	976	992	1008	1010	1022	1027	1024	1017	1013	1012	1011	1008
27 c	1011	1012	1012	1008	1011	1013	1012	1008	1003	999	994	987	987	985	993	*995*	*1003*	1008	1014	1020	1019	1013	1012	1012	1013	1006
28	1013	1012	1012	1008	1008	1008	1006	1001	988	977	972	973	980	987	1001	1003	1009	1013	1022	1030	1017	1026	1035	1013	1011	1005
29	1011	1008	1012	1008	1001	1011	1000	995	991	985	975	970	979	986	994	1002	1009	1018	1029	1022	1018	1013	1015	1017	1008	1003
30	1009	1005	1009	1012	1008	1004	992	996	993	987	982	982	981	990	995	1006	1007	1016	1015	1022	1020	1015	1004	1004	1005	1002
Mean †	1015	1014	1014	1012	1013	1014	1010	1004	997	991	985	982	985	992	999	1007	1013	1019	1022	1023	1021	1020	1016	1015	1014	1007

XXII.—READINGS OF THE WEST COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (−Y.) **June, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
											5000 γ ('05 C.G.S. unit) +															
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1✲	184	182	175	171	168	159	147	158	168	172	184	196	203	212	204	202	207	202	193	185	182	185	156	141	158	180
2	158	138	140	131	149	143	144	145	150	157	168	177	190	196	195	194	194	195	185	185	181	168	163	175	176	168
3	175	174	170	166	159	158	155	157	158	167	167	184	196	205	200	196	189	186	179	170	174	174	175	173	167	175
4	167	169	166	179	169	157	149	146	151	157	168	179	196	200	197	198	196	190	180	179	178	160	165	166	176	174
5	176	175	159	167	166	158	152	156	157	162	171	185	195	201	202	201	196	186	178	176	176	177	175	174	177	176
6	177	174	174	173	174	167	157	152	152	154	168	175	189	200	204	203	198	189	181	176	174	177	177	176	176	177
7 c	176	175	173	170	167	159	151	150	148	152	166	181	196	205	211	208	197	188	185	181	178	178	178	177	175	177
8 c	175	174	174	173	168	164	157	152	148	147	158	173	190	199	202	201	193	183	180	180	181	185	182	179	177	176
9	177	174	178	168	157	156	155	155	153	156	165	180	191	196	198	200	200	196	192	189	186	185	183	173	164	177
10	163	156	150	158	149	147	152	158	165	161	165	173	181	190	195	195	191	191	184	182	181	179	176	173	173	172
11 c	173	173	173	173	166	161	159	158	157	158	163	172	186	193	203	201	193	188	185	183	185	183	181	180	177	177
12 c	177	175	173	172	166	158	154	147	141	144	158	173	188	195	195	191	192	190	185	184	181	178	178	176	169	174
13	169	170	171	170	166	158	151	151	153	157	166	182	193	197	202	202	194	190	188	186	179	179	180	176	177	176
14	177	173	173	171	166	157	151	147	*153*	*161*	171	178	188	198	207	206	201	200	196	195	192	192	185	179	177	180
15	177	176	177	167	167	168	166	157	151	158	178	198	212	216	220	216	200	187	180	176	177	179	181	180	176	182
16	175	173	173	173	166	155	146	143	144	151	161	178	189	198	201	201	199	193	187	182	181	181	180	178	177	175
17	177	177	175	169	165	161	158	159	158	162	170	186	201	209	204	195	187	179	179	179	179	177	178	178	177	178
18	177	176	174	173	168	160	152	150	154	159	169	187	204	210	208	204	202	192	188	186	182	179	176	177	176	179
19	176	174	173	172	169	164	155	155	158	164	172	184	203	207	201	194	187	190	197	‡	‡	‡	‡	‡	‡	...
20	‡	‡	‡	‡	‡	‡	‡	‡	‡	153	163	176	190	194	194	195	195	189	188	190	188	183	179	179	174	...
21	174	175	175	172	172	169	172	165	160	157	160	170	182	200	209	212	204	199	190	189	189	187	185	182	180	181
22	179	179	174	172	168	163	155	155	155	156	164	178	191	199	203	202	196	191	186	188	183	182	182	181	178	178
23	178	178	175	171	172	171	165	161	154	154	163	173	185	200	203	203	202	193	190	189	185	188	180	184	178	180
24	178	179	178	173	168	162	157	153	153	158	164	181	200	206	209	207	201	198	193	186	182	184	183	181	179	181
25	179	176	174	171	165	156	153	154	155	159	*166*	*173*	*181*	186	188	189	189	186	185	184	183	183	181	180	179	175
26	179	178	177	176	172	163	156	152	154	161	165	172	186	196	197	197	194	186	185	187	185	182	180	178	178	177
27 c	178	180	180	175	171	157	149	149	145	148	157	167	180	184	184	*183*	*181*	180	179	179	180	177	178	178	178	172
28	178	175	169	163	162	163	154	154	154	157	160	168	186	202	208	200	192	189	190	191	184	183	150	145	160	174
29	160	163	160	157	188	165	142	138	140	141	146	158	173	181	185	189	186	187	187	183	180	179	173	172	167	168
30	167	162	172	164	157	149	155	156	155	153	156	170	183	191	189	193	186	186	180	184	181	183	175	173	173	162
Mean †	174	172	171	169	166	159	154	153	153	156	165	177	191	199	201	200	195	190	185	183	181	180	176	174	174	176

c International quiet day.

† Mean 28 days. 19th and 20th omitted.

✲ Day "proposed for reproduction" by the International Magnetic Commission (single star).

‡ Light failed on W instrument.

XXIII.—VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE.

Eskdalemuir. (Z.) **June, 1913.**

The following table gives for June the values of Z deduced from the observations of dip. *See note under January, Table III.*

Date.	Time, G.M.T.	Downward Component Z.
	h m h m	γ
June 3	14 10 to 14 54	45280
6	14 30 to 15 8	45220
10	15 26 to 15 59	45300
11	15 35 to 16 23	45340

XXIV.—AUXILIARY OBSERVATIONS IN ABSOLUTE MEASURE; DAILY VALUES OF TEMPERATURE IN THE EAST ROOM OF THE MAGNET HOUSE; MAGNETIC NOTES FOR THE MONTH.

Eskdalemuir. **June, 1913.**

Date.	Time, G M.T.	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
June	h m	γ	° ′ ″	° ′	°		
3	14 32			69 38·0	9·2	2	1
					9·2	2	2
4	12 14		18 1 40		9·2	1	3
,,	14 52	16829			9·2	1	4
6	11 52		17 59 39				
,,	12 17	16798			9·3	1	5
,,	14 49			69 35·3	9·4	0	6
					9·4	0	7
10	8 0	16824			9·4	0	8
,,	15 43			69 36·5	9·5	0	9
11	8 0	16814					
,,	15 59			69 37·5	9·5	1	10
					9·6	0	11
13	7 37		17 50 33		9·6	0	12
,,	7 59	16807			9·7	0	13
					9·7	0	14
14	7 52	16818					
16	7 49	16804			9·8	1	15
					9·8	0	16
17	7 59	16805			9·7	0	17
					9·8	0	18
18	8 12	16798			9·8	1	19
19	14 45	16834					
					9·9	0	20
					9·9	1	21
20	7 22		17 48 35		9·9	1	22
,,	8 7	16814			9·9	1	23
,,	15 46		17 57 49		9·9	0	24
,,	16 11	16828					
23	15 9	16841			10·0	0	25
24	7 56	16827			10·0	1	26
					10·1	0	27
					10·0	2	28
25	12 2		17 58 5		9·9	2	29
27	11 53		17 56 50				
,,	12 17	16809			10·0	1	30

* Mean of the Corrected Readings of the Thermometers in the N, W, and V Magnetograph Boxes.

JUNE, 1913.

JUNE began with a storm, lasting, with intervals, until 4th. There were smaller disturbances on 10th, 14th, 15th, 19th, 21st, 28th and 29th.

The storm began to be noticeable on N and W at 7^h on 1st. Pulsations intermingled with slower disturbances continued throughout the day. The downward force remained comparatively quiet during the first fourteen hours of horizontal disturbance until $1^d\ 21^h\ 0^m$, when it began very suddenly to fall, reaching a minimum at $21^h\ 40^m$ followed by lower minima at $2^d\ 0^h\ 57^m$ and at $2^d\ 2^h\ 0^m$. During the early part, when V was quiet, the disturbances of all periods less than an hour, were, at least for the most part, in the octants ± (N, W, up), the vertical component being small. At the time, $1^d\ 21^h\ 0^m$, of the first sudden decrease of downward force, there was a change in the relation of the three components, for the slower disturbances, which thenceforth ran as follows:—

$21^h\ 5^m$ (N, W, up)	$21^h\ 10^m$ (W, up)	$21^h\ 20^m$ (S, up)	$21^h\ 30^m$ (N, W, up)	22^h (N, E, up)	$22^h\ 40^m$ (N, E)
$23^h\ 20^m$ (S, E, down)	$0^h\ 10^m$ (W)	$0^h\ 40^m$ (N, W, up)	$1^h\ 20^m$ (S, E, down)	$1^h\ 50^m$ (N, W, up)	$2^h\ 10^m$ (N, E, up).

After this the slower disturbances subsided and pulsations reappeared in the quadrants ±(N, W). A few of the larger pulsations, which occurred during the month, have been measured with the following results:—

Date and G.M.T. to nearest Hour.		Complete Period.	Approximate Direction of the Oscillating Field.	Amplitude = ½ Total Movement.
d	h	minutes		γ
14	17	10	± (N 30° W; 2° up)	12
14	19	3	± (N 10° W) inclination < 1°	5
18	16	10	± (N 33° W) inclination not determined	10
28	18	10	± (N 30° W; up)	12
28	$18\frac{3}{4}$	2·5	± (N 25° W)	20

Also some slow movements which have a curious resemblance to pulsations:—

2	21	28	mean ± (N 20° W; 1° up)	10
11	17	28	± (N 30° W; 3° up)	5
17	15 to 20	85	± (NNW horiz. ?)	5
21	13 to 16	95	± (N 20° W; 8° up)	13
23	12 to 22	148	± (NW). No V trace	7

XXV.—READINGS OF THE NORTH COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (X.) **July, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
	15,000 γ (·15 C.G.S. unit) +																									
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	1005	1008	1005	1003	1004	1007	1003	999	992	991	982	978	976	976	989	998	1005	1010	1023	1029	1028	1016	1012	1008	1007	1002
2	1007	1004	1005	1003	1003	1003	1003	999	996	993	984	981	983	984	994	1000	1007	1012	1020	1023	1022	1018	1016	1011	1015	1003
3	1016	1014	1012	1007	1010	1006	1003	1002	992	984	974	977	978	992	995	995	999	1010	1016	1020	1021	1018	1014	1013	1012	1003
4 c	1012	1012	1010	1010	1008	1008	1007	1008	1007	1001	992	985	986	987	990	999	1006	1015	1020	1020	1020	1017	1017	1014	1015	1006
5	1015	1011	1009	1009	1009	1012	1010	1005	999	995	988	987	984	990	997	1004	1008	1017	1022	1027	1025	1021	1020	1023	1018	1008
6	1019	1013	1008	1012	1015	1017	1019	1015	1004	995	982	972	974	984	992	996	1005	1009	1023	1027	1027	1020	1028	1034	1031	1008
7	1031	1018	1018	1017	1019	1022	1023	1017	1009	996	980	976	984	979	987	999	1011	1015	1011	1016	1024	1022	1019	1018	1017	1009
8	1017	1017	1016	1013	1013	1016	1018	1012	1005	992	978	973	979	985	992	998	1006	1011	1015	1025	1024	1021	1017	1016	1013	1007
9 c	1014	1012	1012	1012	1016	1018	1015	1011	1005	997	986	983	987	987	987	992	1009	1022	1031	1032	1028	1026	1025	1019	1022	1010
10	1022	1016	1013	1012	1013	1013	1010	1010	1007	996	979	977	979	992	997	1006	1009	1017	1029	1026	1020	1016	1013	1014	1014	1008
11	1015	1015	1014	1014	1015	1014	1010	1006	1000	993	982	981	987	995	998	1000	1002	1008	1019	1018	1019	1015	1015	1013	1014	1006
12	1014	1014	1013	1018	1015	1015	1016	1015	1009	1003	1002	1001	993	1006	987	1028	1035	1040	1027	1025	1040	1015	1012	1008	1016	1015
13	1016	1013	1007	1004	995	1000	1001	1000	999	994	992	992	993	993	1009	1009	1014	1014	1034	1036	1028	1023	1027	1028	1033	1010
14	1034	1020	1021	1008	1001	998	1001	1003	989	981	989	983	982	982	997	1009	1016	1019	1021	1041	1025	1019	1016	1021	1016	1007
15	1016	1011	1013	1009	1011	1014	1008	1001	1007	1007	995	982	990	985	998	1005	1019	1014	1022	1025	1023	1016	1013	1010	1008	1008
16	1009	1007	1004	1009	1013	1013	1010	1009	1004	995	992	985	980	975	983	998	1007	1016	1022	1026	1019	1017	1016	1018	1019	1006
17 c	1019	1011	1012	1012	1009	1008	1009	1008	1005	1001	997	991	982	981	985	991	998	1007	1013	1018	1022	1021	1015	1015	1010	1005
18 ‡	1010	1009	1009	1009	1009	1009	1009	1007	994	986	976	981	982	992	1008	1001	1013	1019	1023	1020	1022	1018	1017	1016	1016	1006
19 c	1017	1014	1012	1011	1010	1011	1010	1008	1003	1002	993	992	993	993	1002	1008	1016	1023	1025	1019	1020	1013	1014	1011	1016	1009
20	1016	1013	1010	1008	1012	1012	1010	1015	1010	1014	1004	986	964	984	990	1011	1008	1018	1010	1013	1017	1016	1011	1011	1019	1007
21	1019	1016	1018	1020	1017	1010	1016	1018	1010	1006	994	990	982	983	989	994	1004	1016	1022	1021	1020	1017	1016	1015	1017	1009
22	1018	1018	1017	1018	1019	1019	1012	1006	1004	1002	995	987	984	992	1001	1005	1005	1012	1017	1023	1026	1023	1021	1020	1018	1010
23	1018	1019	1020	1012	1011	1012	1010	1005	1001	998	991	988	989	991	994	996	1004	1017	1023	1024	1020	1017	1017	1013	1014	1008
24	1014	1012	1012	1015	1017	1017	1011	1007	1004	998	989	989	994	1003	1004	1011	1004	1008	1014	1028	1026	1022	1024	1021	1019	1010
25	1020	1021	1019	1018	1018	1022	1014	1013	998	1002	994	984	989	994	995	995	1007	1012	1012	1011	1017	1018	1015	1012	1007	1008
26	1007	1005	1011	1011	1012	1012	1009	1003	995	987	985	983	978	985	1004	1020	1012	1003	1011	1013	1018	1019	1018	1018	1015	1005
27	1015	1011	1007	1005	1007	1005	1007	1005	1003	1001	998	995	994	994	996	998	996	1000	1010	1015	1018	1018	1015	1016	1019	1005
28 c	1020	1015	1013	1013	1014	1019	1017	1013	1013	1012	999	994	993	998	1001	1007	1015	1019	1023	1028	1029	1026	1021	1020	1014	1013
29	1014	1015	1015	1018	1019	1013	1020	1013	1004	993	986	985	993	998	1002	1009	1015	1013	1021	1024	1026	1021	1014	1014	1020	1010
30	1021	1014	1015	1014	1013	1014	1014	1014	1014	1008	992	984	985	992	998	1007	1007	1014	1027	1024	1023	1023	1021	1017	1018	1011
31	1018	1020	1014	1014	1015	1014	1012	1008	1006	997	987	980	986	995	999	1009	1018	1021	1021	1021	1018	1016	1015	1016	1017	1009
Mean †	1017	1014	1013	1012	1012	1012	1011	1008	1003	998	989	985	985	989	995	1003	1009	1014	1020	1023	1023	1019	1017	1016	1016	1008

XXVI.—READINGS OF THE WEST COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (−Y.) **July, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18	19.	20.	21.	22.	23.	Midt.	Mean.
	5000 γ (·05 C.G.S. unit) +																									
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	173	173	170	169	164	155	148	140	146	151	161	174	186	189	192	192	186	178	178	174	161	168	167	164	164	169
2	164	163	162	158	163	156	142	142	149	157	164	174	187	188	189	185	182	177	176	177	179	178	174	174	176	169
3	176	173	167	156	154	154	149	147	148	149	159	173	177	189	193	186	177	173	171	174	174	174	173	173	172	168
4 c	172	173	171	165	159	156	149	148	145	147	153	164	177	186	196	196	191	182	179	179	176	175	175	175	171	170
5	170	171	170	164	163	158	149	148	148	148	154	169	185	193	200	201	199	192	186	182	175	175	177	174	170	173
6	170	167	155	155	160	157	155	157	155	155	161	166	179	194	205	205	199	190	188	183	179	174	175	170	166	173
7	166	163	164	157	153	150	148	148	148	148	155	168	187	197	204	209	199	192	182	177	177	176	174	172	173	172
8	173	171	170	167	165	163	154	153	152	151	153	165	179	189	195	192	191	184	179	178	174	174	175	174	171	172
9 c	172	172	171	167	164	157	154	153	150	153	159	171	186	193	194	196	189	185	189	188	184	177	171	170	173	174
10	173	171	171	170	165	159	157	152	149	154	163	170	184	195	206	203	197	189	190	187	181	176	176	175	174	176
11	174	171	171	171	167	161	151	152	154	158	167	174	186	189	186	184	183	185	184	176	176	175	176	175	175	173
12	175	175	175	174	160	157	149	144	145	149	163	178	183	186	193	194	208	209	201	180	171	170	163	165	178	174
13	178	167	164	162	176	156	148	146	143	147	155	165	179	181	187	193	200	199	189	193	190	184	182	182	165	173
14	165	164	155	154	162	168	158	155	146	152	159	168	181	184	189	185	179	185	190	186	180	181	179	178	176	171
15	176	172	170	164	164	161	159	162	160	161	170	183	200	208	208	203	203	192	183	182	184	180	170	170	174	179
16	174	179	179	172	168	158	153	147	145	153	162	174	190	197	198	192	187	184	180	176	175	174	174	173	168	173
17 c	168	168	168	171	168	164	163	153	147	144	147	159	170	184	192	193	189	186	179	171	172	174	171	170	171	170
18	171	‡	‡	‡	‡	‡	‡	‡	‡	‡	‡	‡	173	190	200	205	200	190	184	179	179	180	178	171	171	175	...
19 c	175	171	172	171	166	160	155	156	165	161	171	178	183	185	189	193	192	187	183	180	180	177	168	174	174	175
20	174	171	171	182	178	168	157	156	154	156	165	179	190	211	215	216	207	193	171	173	179	178	157	171	170	178
21	170	167	174	158	157	165	161	152	158	165	174	178	183	187	188	189	188	181	178	175	176	177	175	176	171	173
22	171	171	171	173	170	167	164	156	155	154	160	165	175	189	198	208	203	196	186	181	179	178	174	173	171	176
23	171	180	173	173	166	164	162	159	149	147	151	161	174	183	192	190	183	176	173	173	175	175	175	172	174	171
24	174	169	168	169	167	170	164	165	161	164	170	178	188	198	205	204	200	193	193	193	186	181	181	179	177	180
25	177	177	174	169	169	161	148	149	149	171	185	189	199	203	207	204	200	200	187	182	182	178	175	162	163	179
26	163	166	168	171	165	157	154	155	157	159	163	171	186	200	198	192	183	178	179	178	177	170	175	173	170	173
27	170	168	180	175	165	156	161	156	153	148	150	164	178	186	191	191	186	183	179	177	174	173	171	170	169	171
28 c	169	167	164	165	164	158	156	154	156	160	168	173	186	192	191	189	189	184	179	178	180	179	173	174	172	173
29	172	171	167	166	158	158	147	149	149	159	173	181	189	191	189	183	180	172	177	181	180	172	170	175	171	171
30	172	168	172	169	165	158	150	151	157	165	172	185	196	202	194	188	173	172	179	177	179	174	170	173	176	173
31	176	167	161	168	167	157	148	149	150	157	169	178	189	199	198	196	190	177	174	172	175	175	173	173	173	172
Mean †	172	170	169	167	164	160	154	152	151	155	163	173	184	192	196	195	191	186	182	179	178	176	173	173	172	173

c International quiet day. † Mean 30 days. 18th omitted. ‡ Light failed on W instrument.

XXVII.—VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE.

Eskdalemuir. (Z.) **July, 1913.**

No dip observations were obtained during July, because the instrument was in London for adjustment. *See also note under January, Table III.*

XXVIII.—AUXILIARY OBSERVATIONS IN ABSOLUTE MEASURE; DAILY VALUES OF TEMPERATURE IN THE EAST ROOM OF THE MAGNET HOUSE; MAGNETIC NOTES FOR THE MONTH.

Eskdalemuir. **July, 1913.**

Date.	Time, G.M.T.	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0-2).	Date.
	h m	γ	° ′ ″	° ′	°		
July 4	12 41	16807			10·0	1	1
,,	16 49		17 57 25		10·1	0	2
					10·1	0	3
					10·1	0	4
					10·1	0	5
					10·1	0	6
					10·1	0	7
					10·2	0	8
					10·2	0	9
					10·2	1	10
					10·3	0	11
					10·3	2	12
					10·4	1	13
					10·4	1	14
July 8	14 50		17 57 10		10·4	1	15
,,	15 32	16829			10·4	0	16
					10·5	0	17
					10·4	0	18
					10·5	0	19
					10·6	2	20
					10·6	1	21
					10·7	0	22
					10·7	1	23
					10·7	1	24
					10·7	1	25
					10·8	1	26
					10·7	1	27
					10·8	0	28
					10·8	0	29
July 23	15 20		17 59 5				
,,	15 49	16818			10·9	0	30
					10·9	1	31

* Mean of the Corrected Readings of the Thermometers in the N, W, and V Magnetograph Boxes.

JULY, 1913.

The disturbances were small until 12th. On that day a considerable horizontal agitation began about noon and continued through the afternoon and evening. The downward force meanwhile increased irregularly to a maximum at $19^h\ 32^m$. The direction of the disturbing field was (S, E, down) just before and (N, E, down) just after this maximum. The downward force then decreased to a decided minimum at $13^d\ 0^h\ 25^m$, followed by a smaller minimum at $4^h\ 13^m$. On each of these two occasions the disturbance had a positive west component while the force was changing from down to up, and on the first occasion a minimum of S force coincided with the minimum of downward force. The storm then subsided. It reappeared on the afternoons of 13th, 14th, 15th, and 19th. In each repetition the downward force rose gradually to a maximum before midnight, and fell to two successive minima after midnight, but the times of the turning points differed by an hour or two on different days. In each repetition the horizontal force was irregularly agitated during the afternoon. The remaining days of the month were fairly quiet.

Pulsations of 2 to 3 minutes' period were clearly recorded in the afternoons or evenings of 3rd, 4th, 5th, 9th, 10th, and 30th; the amplitude was greatest on the N–S component. Thus on 9th, the oscillating field had an azimuth of ± (N 17° W) at 14^h, and ± (N 25° W) at 20^h. Pulsations of similar period also occurred in the early hours of 11th and 12th, but the amplitude was then greatest on the E–W component; thus the azimuth was ± (N 60° E) near 2^h on 12th. On 23rd, near 2^h, the azimuth was ± (N 65° E) for about 6 minutes, and afterwards more nearly north. These small rapid oscillations were indistinguishable on the rather thick trace given by the vertical force magnetograph at this time. Pulsations of 4 minutes' period in the octants ± (N, E, up) occurred near $25^d\ 8^h$. Pulsations of longer period, 5 to 15 minutes, were scattered throughout the month, and wherever examined proved to be in the octants ± (N, W, up) at all times of day. There were some possible exceptions to this statement, in which N and E went together, between 0^h and 8^h, but they were ill-defined.

A search was made in July for oscillations of long periods in which the force was directed ± (N, W, up), with the following results. Many of the waves were partly obscured by rapid motions, and the measurements must be accepted with caution.

Date and G.M.T.		Complete Period.	Date and G.M.T.			Complete Period.
d	h	minutes	d	h	h	minutes
20	17	13·5	5	13 and	16	38
29	22	18·5	12	13 to	18	66
30	13	19	18	11 to	17	74
15	13	23	9	15 to	19	78
2	16	26	10	14 to	18	80
7	15	27	15	14 to	19	100
28	16	30	25	14 to	19	109

XXIX.—READINGS OF THE NORTH COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (X.) **August, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
													15,000 γ (·15 C.G.S. unit) +													
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1 c	1017	1019	1020	1018	1020	1020	1015	1009	1000	994	987	989	1001	1000	1000	1010	1015	1014	1017	1022	1022	1020	1019	1018	1016	1011
2	1017	1016	1017	1018	1021	1023	1024	1021	1014	1004	997	997	998	999	1006	1012	1015	1016	1023	1031	1035	1033	1031	1031	1028	1017
3	1028	1022	1020	1020	1021	1023	1015	1008	1000	995	990	990	998	1001	1004	1008	1007	1012	1021	1023	1025	1023	1021	1018	1015	1012
4	1016	1016	1016	1016	1018	1018	1016	1013	1009	1003	§	§	§	§	§	§	§	§	§	§	§	§	§	§	§	...
5 c	§	§	§	§	§	§	§	§	§	§	993	984	987	987	995	1012	1022	1026	1030	1030	1028	1026	1026	1029	1031	...
6	1031	1029	1019	1020	1019	1020	1022	1016	1009	1005	989	985	988	992	998	1002	1012	1020	1022	1028	1029	1024	1022	1019	1020	1013
7	1020	1016	1013	1015	1016	1018	1017	1016	1010	1002	994	989	987	1005	1007	1000	1014	1017	1020	1025	1027	1025	1022	1019	1017	1012
8	1018	1017	1016	1017	1016	1016	1016	1015	1011	1002	988	983	986	988	990	996	1005	1012	1024	1025	1023	1018	1018	1017	1016	1009
9	1016	1018	1020	1017	1019	1013	1015	1015	1003	994	981	978	983	986	986	996	999	1015	1018	1018	1028	1023	1017	1015	1010	1007
10	1011	1022	1013	1009	1014	1016	1006	1008	1011	1004	997	993	969	977	1001	1013	1026	1013	1021	1023	1019	1015	1014	1015	1016	1009
11	1016	1015	1009	1015	1023	1014	1012	1000	1002	1001	995	991	965	983	1004	1006	1018	1026	1025	1030	1031	1024	1024	1025	1018	1011
12	1018	1018	1023	1014	1016	1003	1009	1008	1000	989	980	979	992	998	999	1005	1009	1015	1014	1017	1023	1025	1033	1015	1013	1008
13	1013	1018	1012	1019	1011	1026	1031	1022	1011	997	991	979	978	988	994	1003	1016	1018	1019	1020	1019	1018	1018	1015	1013	1010
14	1014	1012	1010	1010	1015	1016	1011	1004	991	985	981	983	985	994	1005	1012	1015	1022	1022	1023	1019	1018	1016	1017	1018	1008
15	1018	1017	1018	1019	1016	1015	1016	1011	1002	998	990	982	987	997	1006	1023	1019	1019	1013	1023	1021	1020	1020	1021	1019	1011
16	1019	1016	1019	1019	1020	1027	1012	1001	1004	1000	992	991	994	999	1006	1009	1015	1015	1019	1025	1026	1023	1019	1022	1018	1012
17	1018	1015	1013	1014	1015	1015	1012	1009	1000	992	990	990	989	995	1002	1008	1012	1017	1024	1027	1021	1021	1019	1020	1020	1010
18	1021	1022	1020	1017	1013	1013	1014	1007	998	982	974	973	981	987	995	1004	1008	1011	1020	1025	1022	1020	1019	1016	1016	1007
19	1016	1023	1013	1009	1011	1011	1004	1006	999	984	974	970	968	978	993	1010	1019	1022	1020	1020	1019	1019	1016	1017	1016	1005
20 c	1016	1015	1014	1015	1015	1016	1016	1013	1003	993	984	980	988	994	997	1010	1013	1019	1021	1024	1023	1023	1022	1023	1023	1010
21	1023	1021	1021	1021	1019	1017	1015	1013	1008	1000	989	983	984	988	1000	1010	1008	1016	1021	1027	1026	1028	1024	1020	1020	1012
22	1020	1020	1021	1020	1019	1020	1018	1009	1001	991	981	988	997	1002	1010	1016	1019	1021	1023	1025	1026	1025	1024	1021	1021	1013
23	1021	1021	1020	1020	1017	1017	1016	1011	1009	1001	988	986	985	1001	999	1017	1020	1015	1026	1027	1022	1025	1016	1015	1011	1012
24	1012	1021	1018	1019	1016	1015	1015	1014	1001	992	981	979	986	993	999	1003	1011	1018	1023	1024	1022	1026	1024	1018	1016	1010
25	1016	1015	1017	1018	1018	1016	1014	1009	1001	994	990	987	995	1006	1014	1020	1022	1014	1018	1022	1023	1023	1021	1021	1021	1012
26	1021	1018	1020	1019	1021	1021	1017	1011	1004	994	988	988	994	1005	1009	1017	1020	1019	1023	1030	1031	1030	1029	1027	1023	1015
27	1023	1022	1020	1015	1014	1013	1012	1005	1001	995	994	1001	1003	1010	1014	1014	1016	1021	1025	1029	1022	1020	1020	1019	1019	1014
28	1019	1019	1019	1019	1014	1013	1014	1011	1001	994	994	999	1001	1005	1009	1016	1021	1021	1019	1025	1021	1020	1019	1020	1014	1013
29 c	1014	1017	1016	1015	1014	1010	1006	1002	997	994	992	990	994	1002	1008	1014	1014	1018	1015	1018	1019	1018	1017	1014	1018	1009
30 c	1018	1017	1016	1017	1018	1016	1014	1007	1001	993	990	992	997	1001	1010	1016	1018	1019	1019	1022	1021	1022	1022	1021	1021	1012
31	1021	1021	1021	1019	1016	1015	1013	1007	1003	995	990	995	999	1002	1009	1013	1016	1017	1021	1026	1027	1024	1022	1023	1022	1013
Mean †	1018	1019	1017	1017	1017	1016	1015	1010	1003	995	988	987	989	996	1003	1010	1015	1017	1021	1024	1024	1023	1021	1019	1018	1011

XXX.—READINGS OF THE WEST COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (−Y.) **August, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
													5000 γ (·05 C.G.S. unit) +													
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1 c	173	166	158	168	166	157	149	149	150	157	168	181	197	211	210	203	191	181	177	178	177	175	175	174	172	175
2	172	171	171	168	166	159	154	155	158	164	173	184	194	208	210	203	190	178	176	177	179	179	180	177	171	177
3	170	170	165	171	167	156	154	150	151	157	168	179	185	193	194	188	180	178	173	174	171	172	172	171	166	171
4	166	164	166	166	164	162	158	156	156	158	§	§	§	§	§	§	§	§	§	§	§	§	§	§	§	...
5 c	§	§	§	§	§	§	§	§	§	§	163	171	183	196	206	205	193	179	173	174	177	175	175	176	172	...
6	172	169	166	164	164	159	157	154	155	158	169	180	192	197	200	193	185	178	174	175	175	174	172	172	173	173
7	173	167	168	167	166	164	163	162	160	159	161	171	191	208	199	183	183	184	182	180	178	177	174	172	170	175
8	170	166	164	164	163	160	161	155	148	149	156	163	178	191	196	197	193	188	186	178	172	174	167	165	164	171
9	164	171	158	157	155	153	154	149	142	147	162	176	189	192	202	204	184	180	175	172	178	167	157	149	160	168
10	160	162	158	156	157	157	162	152	149	154	157	170	180	186	186	182	182	175	176	174	157	161	170	171	170	167
11	170	171	166	163	156	157	149	156	156	158	166	177	178	193	196	193	189	187	171	172	175	176	174	168	171	172
12	171	177	169	163	164	161	157	156	152	154	161	167	178	187	187	179	172	171	167	171	174	171	147	155	156	167
13	155	160	162	155	164	177	152	156	157	154	164	179	186	191	189	184	180	170	165	166	170	166	166	169	170	169
14	170	170	170	166	164	157	154	149	145	149	160	177	187	192	193	189	177	171	168	166	170	162	162	170	170	168
15	170	165	163	162	169	171	163	150	144	150	171	186	198	201	196	192	187	183	173	177	173	174	174	168	165	173
16	164	172	169	180	166	159	153	155	154	162	175	189	197	198	198	191	180	174	172	173	174	170	164	162	163	173
17	163	165	161	164	162	161	154	153	153	155	167	176	187	189	189	182	176	175	173	172	170	169	170	169	167	169
18	167	171	178	176	163	158	154	147	142	151	167	179	192	197	198	189	177	169	167	168	170	171	171	170	171	171
19	170	163	164	163	164	154	154	145	142	147	158	171	189	200	199	191	180	170	166	166	168	157	165	169	169	167
20 c	169	168	168	164	165	161	154	151	148	149	156	170	187	199	200	199	186	175	173	174	170	172	170	170	171	171
21	171	168	168	168	164	156	151	151	151	153	161	169	186	198	202	194	181	173	171	173	175	173	168	171	169	171
22	169	168	166	164	161	157	151	146	144	149	167	188	202	208	200	188	179	172	173	173	175	174	173	172	169	172
23	168	167	164	165	159	157	151	149	146	156	175	194	204	211	200	190	184	169	171	172	161	152	158	164	167	170
24	167	160	152	157	157	155	146	141	145	149	160	176	187	194	193	183	172	167	167	168	170	167	163	163	167	165
25	167	167	167	167	165	161	155	151	150	153	164	178	196	201	195	189	185	171	167	174	175	174	172	171	165	171
26	164	166	166	163	159	152	150	150	149	151	156	168	180	193	192	188	183	174	170	175	174	171	166	166	166	168
27	166	165	165	162	162	159	156	153	153	157	169	184	194	196	191	180	174	171	172	176	173	171	170	168	168	170
28	168	168	163	161	159	158	158	157	157	159	167	180	188	188	185	178	170	167	166	174	171	161	155	162	159	167
29 c	159	160	157	156	158	156	151	151	156	160	172	182	189	195	187	176	165	161	163	169	171	169	169	167	162	167
30 c	161	161	164	165	163	159	157	151	148	148	158	174	182	187	183	176	169	165	167	171	170	170	169	165	166	166
31	166	167	165	164	161	157	150	147	150	155	165	186	200	201	194	179	167	161	165	168	168	169	168	167	166	168
Mean †	167	167	165	164	162	159	154	151	150	154	165	178	189	197	195	188	180	174	171	173	172	170	168	167	167	170

c International quiet day. † Mean 29 days. 4th and 5th omitted. § Clock stopped.

XXXI.—READINGS OF THE VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (Z.) **August, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
	45,000 γ (·45 C.G.S. unit)+																									
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1 c	278	279	278	278	278	278	278	278	280	279	276	273	264	265	271	274	277	280	280	279	277	277	277	278	279	276
2	277	277	277	277	278	280	279	279	278	275	272	272	272	272	274	276	279	280	280	278	276	275	275	276	276	276
3	274	276	277	276	276	278	279	278	275	273	269	267	266	267	271	275	279	279	280	283	285	283	283	283	283	277
4	282	282	282	282	282	282	282	280	279	276	§	§	§	§	§	§	§	§	§	§	§	§	§	§	§	...
5 c	§	§	§	§	§	§	§	§	§	§	274	270	268	272	277	278	281	285	285	281	278	277	277	276	276	...
6	273	275	276	276	278	279	280	280	279	276	272	270	263	263	267	271	276	281	285	282	280	280	280	280	278	276
7	276	277	277	279	279	280	279	279	279	278	274	271	267	270	275	279	277	281	284	282	281	280	280	281	280	278
8	278	279	279	279	281	282	281	281	281	280	275	271	270	270	273	275	278	282	284	286	286	283	282	281	280	279
9	278	276	275	276	277	279	278	278	274	273	271	271	267	272	275	278	286	286	286	286	282	284	282	278	271	278
10	269	263	268	274	277	278	277	278	277	277	277	275	274	273	274	277	279	284	282	284	286	285	282	281	278	277
11	276	276	276	276	276	276	276	280	279	276	272	268	268	269	275	279	280	283	287	285	284	282	281	280	277	278
12	275	275	272	275	275	275	276	277	278	275	274	269	263	261	268	276	283	283	283	283	283	282	281	279	278	276
13	277	275	274	267	264	247	253	258	263	267	271	268	266	267	270	278	281	286	288	287	284	283	282	281	280	272
14	278	279	279	280	281	281	282	283	283	280	276	270	267	272	277	286	292	292	290	289	287	286	286	284	282	282
15	280	282	282	282	282	279	277	280	280	275	269	268	268	270	273	278	282	285	286	285	283	282	281	281	280	279
16	279	277	275	274	274	276	278	277	276	273	272	275	276	283	288	289	290	288	287	284	283	283	284	282	281	280
17	279	278	278	278	279	280	280	280	282	278	271	269	265	266	271	278	282	282	282	282	281	281	281	281	281	278
18	279	279	278	274	274	278	281	281	281	279	274	273	272	274	278	284	287	288	286	282	280	281	280	281	280	279
19	279	277	278	279	279	281	281	282	281	281	278	272	268	269	273	278	283	286	287	285	284	284	283	281	281	280
20 c	280	280	280	280	280	281	282	282	280	280	279	275	267	268	275	279	280	284	282	280	280	280	280	280	279	279
21	277	279	279	279	280	280	280	279	278	277	274	271	270	271	272	275	280	283	283	280	279	279	278	277	277	278
22	276	276	276	276	278	278	278	278	275	273	266	263	259	258	264	270	274	274	274	274	274	274	274	274	274	272
23	272	274	273	273	274	275	278	278	276	273	268	269	273	273	277	282	286	286	284	282	284	283	281	280	280	277
24	279	275	273	274	276	277	277	277	277	276	272	267	264	264	270	277	280	281	281	280	279	279	277	277	277	275
25	275	276	276	276	277	278	280	280	280	278	275	271	268	268	271	275	276	280	281	279	278	278	278	278	277	276
26	276	276	275	275	275	277	278	277	276	274	272	271	270	267	270	274	275	276	278	277	277	277	277	277	276	275
27	275	275	275	276	276	277	277	277	276	273	267	267	267	271	271	275	275	276	275	275	275	276	277	277	276	274
28	275	274	274	274	274	274	274	274	274	275	269	265	264	265	269	272	273	275	277	278	278	278	278	275	274	273
29 c	273	274	275	275	274	275	275	273	272	271	273	269	265	264	272	273	277	277	275	273	273	275	275	277	277	273
30 c	276	275	275	275	274	274	275	276	274	271	265	261	263	267	272	276	276	276	274	270	271	272	272	273	274	272
31	274	274	274	274	274	273	274	275	274	272	270	267	262	268	271	272	273	274	272	271	271	271	273	272	273	272
Mean †	276	276	276	276	277	277	277	278	277	275	272	270	267	269	273	277	280	282	282	281	280	280	279	279	278	276

c International quiet day. † Mean 29 days. 4th and 5th omitted. § Clock stopped.

XXXII.—AUXILIARY OBSERVATIONS IN ABSOLUTE MEASURE; DAILY VALUES OF TEMPERATURE IN THE EAST ROOM MAGNET HOUSE; MAGNETIC NOTES FOR THE MONTH.

Eskdalemuir. **August, 1913.**

Date.	Time, G.M.T.	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
Aug.	h m	γ	° ′ ″	° ′	°		
1	13 5			69 36·7	10·9	0	1
,,	15 50		17 57 24		11·0	0	2
,,	16 10	16839			10·9	0	3
					11·1	...	4
					11·0	...	5
5	12 0		17 57 57		11·0	0	6
,,	12 30	16804			11·0	1	7
,,	14 0	16818			11·1	0	8
,,	16 19	16845					
					11·1	1	9
					11·1	2	10
8	11 54		17 56 25		11·2	2	11
,,	12 19	16804			11·1	1	12
					11·2	2	13
					11·2	0	14
12	12 8		17 56 50		11·2	1	15
,,	12 32	16815			11·3	1	16
,,	14 35			69 37·3	11·3	0	17
					11·3	0	18
15	11 15		17 58 47		11·4	0	19
,,	11 39	16803			11·4	0	20
,,	15 5			69 34·8	11·4	0	21
					11·4	0	22
					11·4	1	23
18	11 52		17 59 50				
,,	12 21	16811			11·5	1	24
					11·4	0	25
					11·5	0	26
					11·5	0	27
22	11 57		18 1 0		11·5	1	28
,,	14 43			69 35·6			
					11·5	0	29
					11·5	0	30
26	12 17			69 37·8	11·5	0	31

* Mean of Corrected Readings of the Thermometers in the N, W, and V Magnetograph Boxes.

AUGUST, 1913.

AUGUST was a quiet month. A few of the more conspicuous disturbances have been selected at random for measurement. They divided themselves naturally into two groups: in the first the disturbing field kept a more or less fixed direction during repeated changes of sign; in the second the direction wandered about more freely.

Disturbances to and fro along a Fixed Direction arranged in order of Period.

Date and G.M.T. to nearest Hour.	Complete Period (usually Variable.)	Amplitude = ½ Total Movement.	Azimuth to nearest 22°.	Inclination to the N.W.
d h	mins.	γ	±	
16 22	2	5	NW	?
15 19	2 to 2·5	2	NNW	Vertical Component small and difficult to measure.
9 1	2·5	3	NW	
27 21	3	4	NNW	
1 21	4	4	NW	
2 23	4	4	NNW	
5 24	5	5	N	
11 14	2 to 10	20	quadrant	1½° up
	mixed		N, W	
30 18	8	8	NNW	4° up
2 19	7 to 15	...	NNW	3° up
21 13	10	6	N 35° W	3° up
6 14	12	7	NNW	2° up
23 afternoon	2 to 30	...	NW to NNW	up
3 3	15	6	NE	5° up to NE
24 14	30	10	NW	2° up
28 18	60	25	NNW	6° up
9 15	80	20	NNW	½° up
11 11 to 15	180	40	N 16° W	6° up
7 10 to 16	155	20	NW	5° up

The period and amplitude often varied rapidly, but on all components together, so as to leave the direction more or less fixed. It is noticeable that most of these conspicuous examples of this type of disturbance occurred during the afternoon and evening, and that one occurring at 3h is in the unusual direction ± N.E.

Larger Disturbances in a Wandering Direction.

These had no definite period. The quantity T is twice the interval during which the disturbance remained of one sign. It is uncertain to 50% or more.

T.	Approximate Range.	Successive Directions.	Date and G.M.T. to nearest Hour.
			d h
mins.	γ		
15	20	(W) (S, W, down); (N, E, up); (S, W, down); (N, W, up); (S, E)	3 7
30	20		28 22
120	60	(E, down) (N, E, horiz.)	12 22
120	70	(W) (N, W, up)	13 5
120	40	(S, E, down); (S, down); (S, W, down); (N, E, up)	23d 23h to 24d 2h
60 to 180	40?	N and up go together, W wanders independently	12 0 to 6
240	40	Mainly N.	10 12

The inclination of the disturbing field was very small in the example in which T = 15 minutes, but quite steep in some of the others.

XXXIII.—READINGS OF THE NORTH COMPONENT OF TERRESTRIAL MAGNETIC FORCE

Eskdalemuir. (X.) AT EACH HOUR OF GREENWICH MEAN TIME. **September, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
	15,000 γ (·15 C.G.S. unit) +																									
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	1022	1023	1022	1024	1021	1021	1020	1016	1004	994	989	991	1003	1008	1012	1020	1017	1021	1013	1019	1021	1023	1021	1019	1021	1014
2	1021	1018	1015	1013	1017	1017	1013	1005	994	980	979	982	993	1002	1010	1016	1018	1020	1016	1020	1021	1020	1021	1021	1016	1010
3 ‡	1016	1020	1017	1013	1024	1008	1013	1012	1006	989	980	979	983	991	1001	1011	1022	1020	1018	1012	1021	1022	1022	1022	1021	1009
4 c	1021	1014	1017	1018	1018	1019	1020	1012	1000	989	977	974	981	993	997	1010	1021	1021	1014	1021	1026	1025	1022	1021	1022	1010
5	1022	1021	1017	1016	1017	1015	1013	1009	1000	989	984	981	989	996	1003	1014	1014	1021	1022	1023	1025	1026	1026	1022	1024	1011
6	1024	1026	1026	1019	1018	1022	1023	1017	1012	997	974	973	983	1001	987	1006	998	1021	1009	1024	1015	1021	1029	1038	1018	1011
7	1018	1017	1014	1006	1015	1015	1011	1003	983	983	989	988	986	987	990	991	1009	1014	1013	1014	1020	1020	1021	1020	1014	1005
8✲	1014	1019	1023	1037	1012	1008	1022	991	1001	974	982	955	955	978	987	1019	1014	1016	1011	1016	1020	1021	1017	1021	1020	1005
9	1020	1018	1020	1022	1014	987	1024	1016	1003	977	940	964	964	988	1009	1007	1008	1011	1012	1012	1012	1014	1018	1014	1010	1003
10	1010	1005	999	1000	1014	1006	1001	1005	991	986	984	981	981	994	1003	1007	1008	1007	1013	1026	1022	1007	1007	1015	1014	1003
11	1014	1007	1007	1011	1008	1004	994	987	988	982	975	984	995	1001	1004	994	1000	1008	1013	1011	1009	1010	1014	1014	1010	1001
12	1009	1013	1011	1013	1014	1008	1009	1013	1007	999	981	987	988	996	1006	1007	1006	1012	1013	1013	1013	1016	1013	1012	1020	1007
13	1020	1012	1008	1006	1009	1011	1011	1005	1000	993	988	980	988	998	1004	1008	1010	1003	1007	1010	1009	1016	1013	1011	1011	1005
14 c	1011	1009	1008	1006	1006	1003	1006	1006	1001	997	987	981	982	985	992	993	1000	1007	1012	1017	1020	1019	1019	1019	1014	1004
15	1014	1020	1011	1010	1013	1004	1001	1003	1001	990	984	984	987	986	987	993	998	1008	1013	1015	1016	1016	1017	1020	1020	1004
16	1020	1020	1013	1014	1003	1005	1009	1004	993	993	989	987	990	993	1005	1010	1008	1006	1010	1016	1014	1013	1013	1012	1011	1006
17	1011	1011	1012	1012	1013	1012	1010	1007	1006	993	981	976	986	1002	1004	1020	1019	1023	1015	1017	1018	1013	1014	1018	1017	1008
18	1017	1015	1017	1016	1017	1019	1019	1020	1016	1011	1001	989	985	991	998	1005	1008	1016	1016	1020	1020	1014	1013	1013	1013	1011
19	1013	1021	1015	1013	1017	1020	1020	1020	1012	1003	988	979	973	976	985	992	999	1008	1014	1018	1019	1021	1026	1012	1013	1007
20 c	1013	1013	1013	1013	1013	1013	1013	1011	1003	992	977	967	965	973	985	996	1004	1009	1015	1019	1019	1015	1015	1019	1016	1003
21	1016	1015	1014	1013	1011	1011	1010	1006	997	989	980	978	978	991	997	1005	1008	1012	1015	1017	1016	1017	1017	1018	1005	
22	1018	1017	1015	1018	1017	1019	1018	1017	1011	999	965	948	946	969	985	980	987	989	1007	1011	1014	1016	1016	1017	1019	1000
23	1019	1008	1006	1013	1015	1013	1008	1000	995	982	965	976	986	977	991	993	996	999	1006	1010	1014	1013	1011	1010	1011	1000
24	1010	1008	1006	1006	1006	1012	1017	1017	1008	999	990	984	986	992	998	998	1000	1005	1012	1017	1018	1017	1016	1015	1016	1006
25	1016	1015	1019	1023	1018	1020	1017	1018	1009	1004	997	992	988	988	992	992	999	1003	1008	1011	1012	1012	1015	1012	1012	1007
26	1012	1012	1013	1012	1011	1012	1012	1015	1013	1011	1007	1003	995	996	998	1000	1006	1011	1016	1014	1013	1013	1012	1011	1010	1009
27 c	1010	1010	1010	1010	1010	1011	1010	1010	1007	999	990	985	986	987	992	997	999	1008	1014	1016	1018	1019	1019	1019	1019	1006
28	1019	1018	1014	1014	1017	1012	1013	1013	1000	997	992	990	990	989	991	994	998	1002	1012	1016	1016	1012	1015	1014	1013	1006
29 c	1013	1013	1013	1012	1012	1011	1010	1006	1001	997	987	985	985	992	1000	999	1003	1006	1011	1015	1019	1019	1019	1018	1018	1006
30	1018	1016	1015	1015	1015	1014	1013	1008	1003	993	987	987	992	997	1003	1004	1003	1009	1009	1012	1000	1009	1013	1013	1012	1006
Mean †	1016	1015	1014	1014	1013	1012	1013	1009	1002	993	983	980	983	991	997	1002	1005	1010	1012	1016	1017	1016	1017	1017	1016	1006

XXXIV.—READINGS OF THE WEST COMPONENT OF TERRESTRIAL MAGNETIC FORCE

Eskdalemuir. (−Y.) AT EACH HOUR OF GREENWICH MEAN TIME. **September, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
	5000 γ (·05 C.G.S. unit) +																									
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	166	165	165	162	160	158	151	148	151	160	172	184	201	208	201	191	178	172	165	168	170	171	168	165	166	171
2	166	165	164	165	163	158	150	147	146	152	170	186	201	205	197	186	172	165	162	170	170	163	157	161	158	168
3	158	155	154	159	‡	‡	‡	‡	‡	‡	‡	‡	‡	‡	194	186	178	171	167	168	172	165	162	162	161	...
4 c	160	166	169	164	161	158	155	149	145	148	164	181	196	203	198	186	176	165	157	164	170	169	169	167	161	168
5	161	162	158	162	159	157	157	154	149	144	149	161	183	198	201	195	182	169	169	170	168	160	168	170	169	167
6	169	179	178	159	155	156	154	153	152	157	171	179	187	206	201	194	183	182	157	160	165	168	152	142	156	169
7	155	163	158	169	164	156	157	156	151	159	156	166	178	187	189	174	168	167	164	169	170	167	160	150	165	165
8✲	165	174	177	151	168	143	147	165	170	152	169	184	193	208	197	186	177	169	166	167	163	164	170	169	182	171
9	181	159	141	131	147	174	150	141	148	150	157	184	192	190	184	177	162	147	149	157	164	158	151	156	160	160
10	160	153	158	166	158	147	147	152	145	150	165	174	175	177	174	170	167	161	168	138	139	158	160	160	146	159
11	146	148	155	157	161	169	173	167	167	163	170	179	184	184	187	177	169	167	166	166	166	163	159	154	162	167
12	162	163	163	165	156	162	161	149	145	149	162	180	192	197	193	179	167	171	165	147	162	164	167	164	164	166
13	163	163	161	161	161	159	155	153	152	160	164	175	182	188	183	176	169	162	154	162	162	158	161	163	166	165
14 c	166	166	165	164	161	166	165	165	161	161	167	171	181	183	179	174	169	166	164	164	163	162	157	159	165	167
15	165	160	155	158	156	154	157	161	160	156	161	173	189	193	191	184	179	174	170	166	166	165	166	168	168	168
16	167	170	160	160	167	171	161	156	152	152	155	167	182	182	182	175	164	161	165	164	162	162	162	162	161	165
17	161	162	162	162	163	162	160	156	154	159	167	181	197	204	201	188	177	175	168	166	164	165	164	166	164	170
18	164	162	162	161	161	160	158	153	148	147	155	167	174	184	188	184	178	173	168	165	164	158	154	145	155	164
19	154	153	146	152	161	151	147	140	137	136	147	158	173	184	195	191	181	174	171	169	166	162	152	141	161	160
20 c	161	160	162	162	160	160	158	152	145	144	151	159	173	182	186	183	175	171	168	168	163	164	163	165	162	164
21	162	163	160	160	161	159	155	150	142	141	148	163	177	191	194	189	181	176	170	167	163	163	162	164	166	165
22	166	162	163	164	159	155	152	149	143	142	162	186	204	204	204	193	185	162	155	165	166	169	167	164	131	168
23	130	143	116	128	133	139	143	143	145	149	164	167	182	183	179	168	164	161	161	158	156	157	160	161	161	154
24	161	159	159	158	163	158	158	154	151	151	158	165	177	180	179	173	168	168	169	170	168	166	164	163	163	164
25	163	161	167	158	153	156	159	158	150	149	151	163	169	176	175	170	165	164	165	164	159	160	158	159	160	161
26	159	158	157	157	157	158	159	159	157	153	157	165	170	176	179	175	170	164	166	167	166	163	161	160	159	163
27 c	159	158	157	157	157	157	156	152	148	148	153	162	175	180	179	174	165	165	164	162	163	163	163	163	159	162
28	159	160	161	161	155	156	157	152	149	150	157	166	174	175	173	169	163	161	161	160	157	151	157	160	160	160
29 c	159	158	157	156	153	152	150	147	141	142	151	166	177	178	178	173	168	166	165	163	163	162	162	161	161	160
30	161	158	157	156	155	155	154	148	143	140	144	157	171	176	175	172	167	165	156	143	154	156	157	156	154	157
Mean †	161	161	159	158	158	157	155	153	150	150	159	171	183	189	188	180	172	167	164	163	163	162	161	160	161	164

c International quiet day. ✲ Day "proposed for reproduction" by the International Magnetic Commission (single star).
† Mean 29 days. 3rd omitted. ‡ Light failed on W instrument.

XXXV.—READINGS OF THE VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (Z.) **September, 1913.**

Hour G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
											45,000 γ (·45 C.G.S. unit) +															
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	272	272	272	272	273	272	272	273	273	271	269	265	265	265	268	272	277	282	282	277	274	274	274	275	274	273
2	273	274	274	274	274	275	277	277	275	274	269	263	262	265	275	281	283	283	282	277	277	277	278	277	274	275
3 ‡	273	273	273	272	269	271	272	272	269	269	269	268	264	263	269	276	278	281	281	281	278	277	277	276	276	273
4 c	275	274	273	274	275	275	276	278	278	278	274	271	268	269	275	278	281	283	282	278	277	277	277	277	277	276
5	276	273	274	275	275	276	277	278	277	275	271	268	268	267	272	278	280	282	281	280	279	279	277	275	276	276
6	275	271	264	267	271	272	273	274	272	271	271	268	267	266	272	276	277	279	288	287	284	281	279	275	271	274
7	270	270	272	273	272	274	275	274	275	273	270	268	263	264	270	280	287	287	286	282	280	279	279	278	274	275
8✲	275	267	259	245	239	255	266	266	265	267	269	268	272	274	282	287	285	282	281	280	280	280	278	278	267	271
9	265	245	255	262	264	257	249	260	265	265	271	269	272	277	280	285	287	289	288	285	284	282	281	277	275	272
10	274	273	274	271	268	272	276	276	276	272	268	268	270	272	273	276	278	278	277	281	280	276	276	278	271	274
11	270	267	271	271	271	270	267	271	271	271	269	269	269	270	274	279	280	283	282	283	282	282	280	279	279	274
12	279	277	276	274	274	274	274	274	274	271	270	268	267	267	270	278	280	279	279	282	279	279	278	279	277	275
13	276	274	275	275	275	274	276	278	278	278	278	276	272	274	276	279	281	282	282	281	280	280	279	278	278	277
14 c	277	277	277	277	277	276	275	274	273	272	270	270	269	269	273	273	274	274	275	274	274	275	277	276	273	274
15	272	269	273	272	274	273	272	272	274	275	273	269	265	268	272	272	276	276	276	275	275	276	275	274	271	273
16	271	270	272	272	272	269	269	269	271	272	270	268	267	269	270	274	277	277	277	276	277	277	276	276	275	273
17	274	275	275	275	274	274	274	273	271	269	267	264	259	261	263	267	271	274	275	274	274	275	275	273	273	271
18	272	273	272	272	271	272	273	270	267	265	263	263	262	263	266	270	273	272	271	272	273	274	275	274	274	270
19	274	272	272	271	270	270	270	271	270	270	266	263	264	265	266	270	271	273	272	272	274	274	274	274	274	270
20 c	273	271	272	273	272	272	273	273	271	269	269	265	264	264	267	269	273	272	271	271	271	273	272	271	270	270
21	270	269	271	272	271	272	273	273	272	270	265	261	257	256	260	264	268	269	271	271	270	272	270	269	268	268
22	267	270	270	270	270	270	270	270	270	268	268	264	263	264	268	272	275	281	288	284	280	277	276	274	270	272
23	269	253	252	250	252	258	261	264	263	263	260	260	261	264	267	270	271	270	269	270	270	270	269	268	268	263
24	268	266	267	267	266	266	266	266	267	266	265	262	259	258	260	262	264	264	264	266	266	266	267	267	267	265
25	266	266	264	258	258	258	259	262	264	263	261	257	256	256	258	263	266	267	267	267	268	269	268	267	267	263
26	267	266	266	265	265	265	265	265	265	265	265	261	259	257	255	257	261	264	265	265	265	267	267	268	268	264
27 c	267	268	268	267	267	267	267	268	269	269	267	265	258	257	260	263	266	266	266	268	268	269	269	269	268	266
28	267	267	267	264	264	264	264	265	266	265	261	260	257	260	264	266	268	268	266	268	268	269	268	268	268	265
29 c	268	267	267	267	266	267	267	267	267	264	262	258	252	254	257	260	263	263	264	263	263	265	265	266	266	263
30	265	266	267	266	265	265	264	265	265	264	259	255	257	259	263	265	265	267	267	271	270	270	268	268	268	265
Mean †	271	269	269	269	268	269	270	271	270	269	268	265	264	265	268	272	274	275	276	275	275	275	274	273	272	271

c International quiet day. ✲ Day "proposed for reproduction" by the International Magnetic Commission (single star).
† Mean 29 days. 3rd omitted. ‡ Light failed on W instrument.

XXXVI.—AUXILIARY OBSERVATIONS IN ABSOLUTE MEASURE; DAILY VALUES OF TEMPERATURE IN THE EAST ROOM OF THE MAGNET HOUSE; MAGNETIC NOTES FOR THE MONTH.

Eskdalemuir. **September, 1913.**

Date.	Time, G.M.T.	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day. (0–2).	Date.
Sept.	h m	γ	° ′ ″	° ′	° 11·6	0	1
1	11 53	16815	17 59 38		11·6	0	2
,,	15 17			69 36·2			
					11·6	1	3
					11·6	1	4
					11·6	1	5
					11·6	2	6
					11·7	2	7
5	11 47	16805	17 55 54				
,,	15 7			69 36·7	11·7	2	8
					11·7	2	9
					11·7	2	10
					11·7	1	11
					11·7	1	12
11	16 9			69 37·8			
					11·7	1	13
					11·7	0	14
					11·7	0	15
					11·7	1	16
12	15 11	16816	17 55 52		11·7	1	17
					11·7	0	18
					11·8	1	19
					11·7	0	20
19	11 38	16783	17 54 43		11·7	0	21
,,	15 42			69 37·0	11·8	2	22
					11·8	2	23
					11·7	0	24
					11·7	1	25
26	12 36			69 37·6	11·8	0	26
					11·7	0	27
					11·8	0	28
					11·8	0	29
30	12 7	16809	17 56 48		11·7	1	30

SEPTEMBER, 1913.

Two of the largest disturbances of vertical force have been selected for detailed examination. They were both smooth. They occurred during the darker half of the 24 hours on 7th to 8th and 8th to 9th, and are set out in order below. The *slower disturbances are here all measured from the quiet-day inequality*; but the rapid oscillations, which are seldom absent, are on the contrary reckoned from the mean value of the trace at the time in question.

Sept. 7th to 8th.—The vertical force increased to a maximum + (N, E, down) at $7^d\ 15^h\ 50^m$, the field being + (N, E, down). A more rapid oscillating field ± (N, W) was superposed. The downward force fell at first gradually, then in a wavy manner to a marked minimum at $8^d\ 3^h\ 55^m$. The direction of the disturbing force changed as follows:—

$2^h\ 55^m$	$3^h\ 25^m$	$3^h\ 36^m$	$3^h\ 46^m$	$3^h\ 55^m$	$4^h\ 30^m$
(N, E, up)	(up)	(E, up)	(N, E, up)	(up)	(E, up)

thus corresponding to a vector rotating right-handedly about an axis which pointed ENE and steeply upwards.

Sept. 8th to 9th.—Maximum of downward force near $8^d\ 14\frac{3}{4}^h$. Horizontal disturbance + (SW) for 3 hours, until about 20 minutes before the maximum of V, when it reverses to + (NE), and continues so for an hour. Superposed is another field oscillating in the quadrants ± (N, W) both before and after the maximum of V. The downward force decreases very rapidly soon after midnight to a minimum at $9^d\ 1^h$; a second minimum at $5^h\ 30^m$. In both cases there is a W force when V is decreasing, an E force when V is increasing, when V is reckoned positive downwards; in fact, $W - W_q = -k\frac{dV}{dt}$ at least approximately, where W_q is the value of W on a neighbouring quiet day. Measurements gave $k = 37$ minutes for the first fall of V, 48 minutes for the second. The horizontal components show short-period oscillations mainly ± N or ± (N, E). If these were smoothed out, then $N - N_q = -l\frac{dW}{dt}$ indicates in a rough way the relation for the slower changes—at least as regards sign; but l is not constant, being about 2·5 minutes at $0^h\ 6^m$ and 30 minutes at $4^h\ 50^m$. The disturbing vector was thus rotating about a line pointing N, down.

* Mean of the Corrected Readings of the Thermometers in the N, W, and V Magnetograph Boxes.

XXXVII.—READINGS OF THE NORTH COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (X.) **October, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
														15,000 γ (·15 C.G.S. unit) +												
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	1012	1013	1014	1012	1007	1010	1004	1003	1002	992	981	975	979	987	994	1002	1007	1007	1011	1013	1013	1014	1014	1014	1014	1003
2 c	1014	1012	1014	1014	1014	1015	1017	1011	1006	992	980	981	986	992	998	1003	1006	1009	1012	1012	1013	1013	1012	1012	1011	1006
3 c	1011	1014	1016	1018	1018	1019	1014	1013	1009	1001	992	990	991	997	1005	1010	1012	1015	1015	1017	1018	1014	1015	1015	1014	1010
4	1013	1014	1013	1014	1011	1011	1011	1010	1006	1001	992	986	990	991	995	1005	1007	1010	1011	1012	1015	1013	1036	1020	1023	1008
5	1023	1035	1029	1017	1018	998	1016	1003	997	988	972	972	978	975	971	984	998	992	997	998	1005	1008	1008	1008	1006	999
6	1006	1005	1009	1007	1028	1022	964	940	950	949	959	965	946	967	970	978	991	992	991	998	1003	1007	1006	1005	1006	986
7✳	1006	1014	988	1010	1006	1004	1006	991	983	978	981	962	967	969	983	972	991	991	998	1016	1008	997	997	1003	1002	992
8	1002	998	998	1004	994	994	1003	982	957	971	966	977	984	984	992	974	987	1000	1004	1006	1038	1015	999	1004	1007	993
9	1007	1000	1000	1000	1005	1010	1003	1000	998	991	984	977	972	983	992	993	1005	1016	1003	991	993	1000	1011	1004	1009	997
10	1009	991	1001	1009	1009	999	1001	1006	1001	965	957	958	953	980	986	992	982	990	995	995	1006	1004	1008	1004	999	992
11	998	996	990	1001	1003	1003	1000	1003	998	986	982	979	978	982	988	992	1000	1002	999	1002	1007	1007	1006	1004	1005	996
12	1005	1005	1005	1005	1005	1007	1005	1005	1004	991	980	970	968	983	992	995	997	996	1007	1014	1011	1023	1010	1010	1003	1000
13	1003	1009	1006	1006	1011	1016	1013	1000	999	988	982	978	980	983	993	997	997	997	1011	998	1006	1008	1005	1005	1005	1000
14	1005	1007	1007	1008	1009	1012	1010	1012	1004	995	987	984	985	994	996	999	1007	1005	1010	1010	1010	1008	1009	1015	1010	1004
15	1010	1012	1010	1012	1014	1016	1013	1008	1008	1003	990	984	985	991	1001	1004	1009	1010	1006	1006	1003	1007	1006	1012	1010	1005
16	1010	1008	1007	1010	1009	1010	1010	1010	1004	995	987	982	983	989	994	1003	1003	1005	1010	1011	1009	1010	1017	1018	1008	1004
17	1007	1007	1005	1007	1007	1007	1008	1007	1007	1003	995	987	985	987	989	996	1000	1004	1007	1009	1008	1009	1009	1008	1005	1002
18	1005	1009	1007	1006	1008	1009	1009	1009	1013	1015	1010	1002	997	1001	998	1000	1002	1010	991	967	976	981	983	981	1001	999
19	1001	1001	998	1003	1002	1012	1014	1004	1004	991	985	981	976	969	974	981	987	995	1000	999	1002	1005	1009	1010	1004	996
20	1004	1004	1006	1008	1005	1012	1015	1019	1007	973	970	976	983	980	988	993	997	997	994	1003	1002	1005	1003	1003	1003	998
21	1003	1016	1002	1002	1003	1004	1007	1005	1004	997	983	978	982	991	995	998	1001	1005	1008	1009	1010	1008	1011	1008	1009	1001
22	1009	1009	1007	1004	1008	1013	1012	1010	1005	1000	993	984	982	989	993	1001	1006	1008	1009	1009	1009	1009	1020	1011	1009	1004
23 c	1009	1007	1007	1007	1007	1008	1009	1008	1005	1000	991	988	989	995	1001	1004	1007	1008	1009	1010	1009	1010	1010	1011	1009	1005
24 c	1009	1009	1009	1010	1011	1014	1014	1013	1008	998	992	992	996	998	1002	1005	1006	1009	1011	1013	1013	1013	1013	1012	1011	1007
25	1010	1008	1009	1011	1009	1015	1015	1015	1007	993	984	985	989	993	999	1005	1008	1008	1010	1011	1010	1007	1008	1001	997	1004
26	997	1005	1007	1008	1010	1009	1010	1008	1006	1001	991	986	988	992	996	1001	1003	1006	1008	1008	1009	1013	1014	1015	1011	1004
27	1011	1011	1011	1012	1013	1013	1014	1013	1009	1001	991	988	988	995	1005	1008	1011	1012	1014	1014	1016	1015	1015	1015	1014	1008
28 c	1013	1013	1014	1013	1013	1014	1012	1010	1007	998	987	987	987	994	1000	1009	1010	1010	1013	1011	1012	1014	1014	1016	1015	1007
29	1015	1014	1012	1011	1014	1015	1018	1019	1013	1000	990	988	994	1000	1006	1011	1013	1012	1013	1014	1014	1014	1013	1014	1012	1009
30	1012	1013	1012	1012	1013	1011	1014	1017	1014	1007	994	987	987	994	998	1001	1001	1002	1007	1004	1008	1012	1011	1014	1013	1006
31	1013	1032	1012	1020	1017	1020	1020	1019	1017	1000	993	984	986	989	993	996	1001	1000	999	1003	1008	1008	1009	1018	1014	1007
Mean	1008	1009	1007	1009	1010	1010	1009	1006	1002	992	985	981	982	988	993	997	1002	1004	1006	1006	1009	1009	1009	1009	1008	1002

XXXVIII.—READINGS OF THE WEST COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (−Y.) **October, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
														5000 γ (·05 C.G.S. unit) +												
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	153	151	141	145	149	146	146	143	140	140	150	165	180	186	182	176	168	162	162	162	162	160	158	158	159	158
2 c	159	159	158	158	155	155	150	146	140	137	151	171	181	184	176	169	161	159	162	161	159	159	158	158	158	159
3 c	158	159	161	160	152	153	152	148	141	138	147	161	171	174	173	169	164	163	164	164	162	160	157	157	158	159
4	158	157	157	158	157	156	155	154	149	149	155	168	180	183	177	173	165	161	161	159	160	159	160	162	163	161
5	162	160	122	106	134	167	165	139	134	138	145	154	169	179	176	175	164	159	157	154	154	154	156	155	154	153
6	154	161	158	180	130	156	171	186	166	183	191	184	183	176	176	169	161	155	154	147	156	158	157	154	154	165
7✳	154	146	176	132	142	154	162	163	154	153	157	161	170	171	179	155	159	155	154	107	118	140	140	156	161	153
8	160	156	163	148	165	198	174	160	159	159	158	161	172	180	182	160	152	157	158	127	131	119	145	156	153	158
9	153	154	154	153	153	153	152	147	142	139	146	160	174	174	176	162	153	128	143	138	139	135	149	170	143	152
10	142	142	150	147	146	153	161	159	148	142	153	168	166	174	177	174	163	139	152	152	145	139	147	159	165	155
11	165	169	162	160	153	154	155	146	138	136	146	159	168	170	170	165	159	155	152	152	157	156	156	156	155	156
12	155	155	155	155	155	155	154	150	145	143	152	167	172	173	171	166	159	153	157	157	152	126	140	145	153	155
13	152	158	156	158	154	150	151	148	150	145	153	160	171	174	169	164	157	143	142	153	151	151	152	152	160	155
14	160	159	156	154	155	151	156	153	148	145	150	158	165	173	170	164	159	154	155	157	154	153	151	150	148	156
15	148	153	154	153	159	155	151	151	149	145	151	159	171	176	181	176	169	163	161	158	136	138	144	150	151	156
16	150	149	153	156	153	153	153	150	144	141	145	153	163	172	176	172	167	164	161	160	157	149	146	130	133	155
17	133	147	151	153	155	155	153	154	151	146	151	157	165	171	175	171	165	162	160	160	157	156	151	150	150	157
18	150	152	152	154	156	156	156	154	152	149	151	162	169	179	180	181	178	179	162	135	116	106	88	94	100	149
19	99	126	133	143	137	155	146	153	145	149	154	164	171	181	188	182	176	164	159	153	150	148	148	144	153	154
20	153	156	156	156	164	166	158	156	154	154	169	171	177	177	172	169	158	158	139	153	152	150	149	149	152	159
21	152	150	150	153	153	151	150	149	142	140	143	155	167	173	172	168	162	159	158	156	156	155	152	155	158	155
22	158	157	155	157	159	156	153	151	149	148	156	168	180	184	180	171	163	158	158	158	148	142	148	152	157	159
23 c	156	156	156	155	155	155	153	149	142	141	147	159	170	171	170	164	161	160	158	158	156	156	156	155	153	157
24 c	153	152	154	155	154	152	153	152	148	145	156	167	171	171	168	163	159	160	160	160	158	159	159	158	158	158
25	158	158	158	157	156	159	153	153	149	150	158	166	173	174	167	160	155	157	157	155	155	147	136	118	135	155
26	134	154	154	154	154	154	151	150	148	147	152	160	167	170	169	163	157	158	158	154	157	155	156	157	156	156
27	157	157	158	158	158	157	155	154	150	144	148	161	168	168	169	163	161	161	164	153	158	159	159	159	159	158
28 c	159	159	160	159	159	157	155	152	147	142	148	162	171	176	173	166	161	160	158	156	154	154	154	155	156	158
29	155	154	153	154	153	155	155	153	147	144	151	162	171	171	168	164	161	161	160	159	156	154	155	154	156	157
30	156	158	157	159	154	155	156	153	146	144	147	161	172	176	176	171	168	168	162	154	151	146	138	121	127	156
31	127	133	117	139	145	156	153	156	151	153	162	175	181	177	174	168	168	167	163	158	155	154	150	159	149	156
Mean	151	153	153	153	152	156	155	153	147	146	153	163	172	175	175	168	162	158	157	153	151	148	149	150	151	156

c International quiet day.

✳ Day "proposed for reproduction" by the International Magnetic Commission (single star).

XXXIX.—READINGS OF THE VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (Z.) **October, 1913.**

Hour, G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
	45,000 γ (·45 C.G.S. unit)+																									
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	271	267	267	267	265	263	264	264	265	263	260	258	258	260	263	266	267	268	267	267	266	267	267	267	267	265
2 c	266	266	266	266	266	266	265	265	263	262	259	257	257	259	262	265	267	266	265	265	264	265	265	265	266	264
3 c	265	264	263	262	261	261	261	262	264	264	262	259	257	260	262	265	265	265	265	265	264	265	264	264	264	263
4	264	264	265	264	264	265	264	263	263	263	260	256	253	254	260	265	265	265	265	265	265	264	261	261	261	262
5	260	252	248	248	243	240	232	247	254	256	259	257	258	260	264	267	269	274	273	273	272	269	268	267	267	259
6	266	265	261	247	239	241	242	242	247	254	259	261	266	271	271	270	271	272	274	274	272	271	268	269	268	261
7☆	268	264	252	252	257	259	259	260	261	264	263	263	266	267	268	277	279	278	276	277	272	270	267	261	260	266
8	259	261	259	257	253	241	241	249	258	259	263	265	263	263	266	275	276	275	272	273	267	263	263	258	254	262
9	254	259	262	263	264	263	264	265	266	265	263	261	260	262	266	267	274	276	275	275	275	273	266	253	243	265
10	242	251	257	259	260	261	259	259	261	262	267	266	266	266	266	270	276	284	279	278	276	270	269	269	266	266
11	265	260	259	260	261	263	262	264	264	261	260	261	261	263	264	268	267	266	268	268	267	265	266	266	266	264
12	266	265	265	265	265	265	265	265	265	265	265	263	263	264	265	267	269	269	268	265	268	268	264	264	263	266
13	263	262	263	262	261	260	261	263	264	264	264	264	264	265	267	269	273	273	272	272	270	268	268	268	268	266
14	267	264	263	263	263	262	262	262	263	263	263	260	260	262	264	267	267	268	267	267	267	267	267	265	264	264
15	264	264	264	263	263	262	262	262	263	261	262	262	260	259	260	263	264	265	264	267	268	271	269	264	263	264
16	263	263	263	263	262	262	261	262	263	263	263	263	262	261	262	263	264	267	268	267	267	267	266	264	263	264
17	263	263	263	263	263	263	263	262	262	263	261	263	264	262	262	264	267	267	267	266	266	266	266	266	266	264
18	265	264	264	263	263	262	262	261	261	258	...	...	270	270	270	272	274	275	283	310	315	301	291	283	278	...
19	278	270	264	262	263	260	260	263	266	268	270	267	266	270	277	281	285	284	282	281	281	279	275	274	274	272
20	274	274	274	275	274	269	265	267	269	270	270	270	274	279	281	283	*289*	294	294	290	287	284	282	282	281	278
21	281	274	273	274	276	277	277	278	278	279	*279*	278	277	278	280	282	282	280	279	279	278	278	278	277	276	278
22	276	274	275	274	274	274	274	276	277	277	275	274	274	278	281	282	283	282	282	281	282	279	278	276	275	277
23 c	274	274	274	275	275	274	275	276	277	276	277	274	274	275	276	278	279	278	278	279	280	279	278	277	277	276
24 c	277	277	276	275	274	274	273	274	277	275	273	273	273	274	276	277	277	276	275	274	275	275	274	273	273	275
25	273	273	273	273	273	272	272	273	276	276	272	272	272	275	276	277	276	274	273	274	275	277	278	277	275	274
26	275	273	273	273	272	272	272	273	273	273	273	273	272	273	274	276	276	273	273	273	273	273	273	273	273	273
27	273	272	272	271	271	272	271	272	273	273	269	269	*273*	277	278	280	277	277	275	276	275	273	273	273	273	274
28 c	273	273	273	272	271	269	270	272	272	272	273	*275*	277	277	278	280	281	280	278	278	279	277	277	277	276	275
29	276	277	277	276	273	273	273	273	276	277	274	273	273	276	278	280	279	278	277	277	277	277	277	277	277	276
30	277	276	274	273	273	273	272	271	273	274	274	273	273	275	276	278	281	281	281	282	283	284	282	280	270	277
31	270	244	248	250	253	256	260	261	264	264	261	262	263	266	273	278	281	282	283	282	281	280	278	272	269	267
Mean†	268	266	265	265	264	264	263	265	266	267	266	266	266	268	270	273	274	275	274	274	273	272	271	270	268	269

c International quiet days. ☆ Day "proposed for reproduction" by the International Magnetic Commission (single star). Values in italics are interpolations.
† Mean 30 days. 18th omitted owing to discontinuity between 9h and 12h.

XL.—AUXILIARY OBSERVATIONS IN ABSOLUTE MEASURE; DAILY VALUES OF TEMPERATURE IN THE EAST ROOM OF THE MAGNET HOUSE; MAGNETIC NOTES FOR THE MONTH.

Eskdalemuir. **October, 1913.**

Date.	Time, G.M.T.	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
Oct.	h m	γ	° ′ ″	° ′	°	°	
3	11 47	16806	17 56 0		11·7	0	1
,,	15 27			69 36·6	11·8	0	2
					11·8	0	3
					11·8	1	4
					11·8	2	5
					11·8	2	6
					11·8	2	7
10	11 39	16767	17 57 5		11·8	2	8
,,	15 26			69 38·2	11·8	2	9
					11·8	1	10
					11·8	0	11
					11·7	1	12
					11·7	1	13
					11·7	0	14
					11·8	0	15
17	11 47	16797	17 53 43		11·7	0	16
,,	15 16			69 37·4	11·7	0	17
					11·7	2	18
					11·7	2	19
					11·7	1	20
					11·7	0	21
					11·7	0	22
24	11 23	16806	17 54 10		11·7	0	23
,,	15 1			69 37·4	11·7	0	24
					11·7	1	25
					11·6	1	26
					11·5	0	27
					11·5	0	28
					11·5	0	29
					11·5	1	30
31	11 35	16803	17 56 30		11·5	1	31

OCTOBER, 1913.

There was considerable disturbance, as is shown by the character figures printed in the adjoining column. The 7th, being an international starred day, has been selected for detailed description, and has been compared with the mean of the nearest quiet times, Oct. 3rd to 4th and 11th to 12th. During the evening of the 6th the disturbance from the quiet day level was small and directed + (S, down). Near $7^d\ 0^h\ 40^m$ the downward force crossed its quiet day value; an hour later it began to fall much more rapidly, reaching a marked minimum at $2^h\ 17^m$. Near this time the sign of the deviation of W from its quiet day value W_q was given by $W - W_q = -k\frac{d(V - V_q)}{dt}$, where k was positive but not constant; thus, at the most rapid fall in V, which occurred at $1^h\ 55^m$, k was 45 minutes; while both before and after this in the slower changes of V, k was much greater. Again, between 1^h and 3^h the sign of $N - N_q$ was given more or less by $N - N_q = +lk\frac{d^2(V - V_q)}{dt^2}$, where lk was positive. The largest value of $N - N_q$ was $-55\ \gamma$ at $1^h\ 45^m$, and at this time lk was about 2000 (minutes)^2, so that l and k were nearly equal. Compare a similar disturbance on Sept. 9th. Between 6^h and 10^h the disturbance from the quiet day level was slight and + (S, W, up). From 10^h to 14^h still slight but + (S, down). The downward force increased to a maximum near $15^h\ 30^m$, and then to a second maximum at $19^h\ 10^m$. On both these occasions the westward and upward components increased and decreased simultaneously; the north component was not simply related to either near 15^h, but the second maximum of V is accompanied by a large disturbance +NE, in which $W - W_q$ reaches $-95\ \gamma$ at $19^h\ 26^m$, and $N - N_q$ $+50\ \gamma$ at $19^h\ 30^m$. From 20^h to 23^h the disturbance from quiet day level was + (S, E, down), from 23^h to 24^h (S, up).

So far only the slow changes have been noted. Oscillations of periods lying in the range 15^m to 2^m occurred throughout the 24 hours, but most conspicuously between 6^h and 20^h. The azimuth of the oscillating vector was in the ±NW quadrants, except near 5^h, where it was in ±NE quadrants, and at 24^h, where it was ±N. Near 10^h the oscillating vector had a distinct vertical component, and was ±(N, W, up).

* Mean of the Corrected Readings of the Thermometers in the N, W, and V Magnetograph Boxes.

XLI.—READINGS OF THE NORTH COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (X.) **November, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
	15,000 γ ('15 C.G.S. unit) +																									
Day. 1	γ 1014	γ 1011	γ 1002	γ 1007	γ 1012	γ 1014	γ 1014	γ 1014	γ 1011	γ 1000	γ 988	γ 985	γ 988	γ 990	γ 995	γ 1002	γ 1001	γ 1003	γ 1005	γ 1007	γ 1009	γ 1013	γ 1014	γ 1014	γ 1014	γ 1005
2✲	1013	1010	1020	1006	1007	1013	1006	996	986	982	980	981	982	970	967	983	978	983	986	986	990	994	1007	1013	1012	993
3	1012	1007	1013	1009	997	997	1005	1006	1004	995	974	979	970	962	974	993	995	1000	1003	1003	998	1003	1013	1011	1006	997
4 c	1006	1005	1005	1005	1009	1009	1010	1010	1006	998	987	985	987	991	994	999	1004	1010	1011	1011	1012	1012	1011	1011	1010	1004
5	1009	1008	1005	1008	1011	1012	1013	1013	1012	997	985	986	992	993	996	1001	1004	1008	1011	1011	1012	1012	1010	1012	1011	1005
6	1011	1012	1012	1009	1011	1018	1013	1011	1010	999	993	997	995	998	1001	1005	1002	999	988	985	998	1005	1009	1004	1005	1003
7	1005	1005	1018	1019	1013	1014	1018	1015	1009	1000	999	993	995	1001	1005	1002	977	980	998	1005	1005	1005	1005	1012	1018	1004
8	1018	1003	1005	1009	1008	1011	1002	1008	1009	1003	996	992	994	994	999	1001	999	1007	1004	1012	1002	1012	1007	1005	1005	1004
9	1004	1001	1003	1004	1006	1008	1004	1007	1005	998	994	991	992	991	987	1003	1008	1009	1004	1005	1009	1009	1008	1012	1010	1003
10	1010	1007	1004	1006	1009	1013	1012	1012	1009	1001	993	991	990	993	1004	1010	1012	1007	1009	1012	1011	1011	1011	1012	1011	1006
11	1011	1011	1010	1011	1011	1012	1015	1016	1012	1006	999	996	996	999	1001	1005	1011	1015	1017	1017	1012	1014	1012	1013	1013	1009
12	1012	1011	1011	1006	1007	1013	1016	1017	1011	1005	998	994	992	997	1001	1006	1009	1010	1011	1011	1010	1009	1016	1009	1010	1008
13	1010	1009	1009	1011	1011	1018	1016	1016	1015	1010	1003	997	995	994	998	1003	1008	1010	1012	1014	1014	1014	1009	1010	1008	1009
14 c	1008	1005	1007	1008	1010	1012	1012	1010	1008	1004	1000	996	998	1002	1006	1008	1009	1011	1013	1015	1015	1016	1012	1013	1014	1008
15 c	1014	1010	1009	1009	1010	1010	1012	1015	1010	1009	1006	1007	1006	1006	1008	1010	1012	1014	1015	1015	1016	1012	1013	1012	1010	1011
16 c	1009	1009	1009	1009	1013	1015	1015	1015	1013	1008	1002	997	997	1003	1011	1015	1016	1018	1018	1017	1016	1015	1015	1013	1011	1011
17	1011	1011	1011	1012	1014	1015	1015	1015	1011	1008	1002	998	999	1004	1009	1015	1016	1017	1018	1016	1017	1015	1015	1014	1015	1012
18	1015	1015	1012	1013	1013	1015	1016	1015	1013	1009	1005	1002	1003	1006	1009	1009	1009	1010	1012	1013	1015	1015	1015	1015	1013	1011
19	1012	1011	1012	1013	1015	1014	1014	1015	1012	1008	1006	1001	1001	1005	1010	1011	1012	1014	1015	1015	1014	1014	1020	1008	1010	1011
20	1010	1008	1008	1010	1014	1017	1017	1015	1011	1005	1000	999	1001	1006	1010	1013	1014	1015	1016	1017	1015	1014	1014	1010	1007	1011
21	1007	1008	1008	1010	1014	1014	1015	1014	1010	1008	1005	1002	1004	1008	1011	1012	1010	1011	1014	1015	1014	1011	1014	1016	1014	1011
22	1014	1014	1015	1014	1015	1016	1016	1017	1017	1012	1006	1000	1001	1006	1009	1013	1014	1015	1016	1016	1014	1014	1011	1011	1011	1012
23	1010	1008	1012	1011	1013	1017	1018	1018	1015	1011	1002	997	1000	1007	1013	1015	1016	1018	1018	1018	1014	1013	1010	1010	1007	1012
24	1007	1008	1009	1010	1013	1015	1014	1013	1011	1007	1003	1000	1005	1009	1013	1014	1013	1014	1015	1016	1015	1014	1014	1013	1013	1011
25 c	1013	1011	1009	1011	1013	1013	1014	1014	1013	1007	1004	1005	1004	1006	1010	1013	1013	1014	1016	1018	1017	1017	1014	1015	1013	1012
26	1012	1012	1008	1006	1007	1012	1019	1019	1019	1016	1007	998	996	999	1002	1008	1012	1015	1014	1014	1014	1012	1012	1010	1008	1010
27	1008	1012	1015	1012	1013	1015	1017	1019	1018	1015	1012	1011	1005	1005	1000	1000	992	985	984	992	999	999	1005	1006	1007	1006
28	1007	1001	1004	1004	1010	1014	1020	1015	1011	1013	1007	998	990	989	1006	1008	1012	1001	993	1001	1001	1006	1034	1006	1005	1006
29	1004	1005	1004	1004	1005	1007	1011	1013	1009	996	989	988	983	989	994	996	1002	1006	1012	1011	1012	1011	1011	1008	1008	1003
30	1008	1007	1009	1011	1010	1012	1012	1011	1011	1010	1005	1002	999	1002	998	998	1003	1004	1006	1007	1006	1007	1012	1009	1009	1007
Mean	1010	1009	1009	1009	1010	1013	1013	1013	1010	1005	998	996	995	998	1001	1006	1006	1007	1008	1010	1010	1011	1012	1011	1010	1007

XLII.—READINGS OF THE WEST COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (−Y.) **November, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
	5000 γ (0·5 C.G.S. unit) +																									
Day. 1	γ 148	γ 154	γ 152	γ 155	γ 157	γ 151	γ 152	γ 150	γ 149	γ 148	γ 155	γ 164	γ 174	γ 173	γ 172	γ 167	γ 159	γ 161	γ 163	γ 157	γ 156	γ 153	γ 153	γ 153	γ 154	γ 157
2✲	154	154	162	153	163	156	164	185	171	160	154	*163*	172	182	174	157	177	173	154	131	134	127	100	139	116	156
3	116	125	151	146	171	173	155	151	148	145	145	157	170	175	171	165	162	162	159	155	151	148	147	148	152	155
4 c	152	154	156	161	157	155	154	152	149	145	149	160	170	171	170	162	160	159	158	157	155	154	154	153	152	157
5	151	151	154	156	156	157	156	152	149	145	152	159	166	167	166	164	160	159	158	157	156	155	155	156	155	157
6	155	152	152	154	156	156	158	160	154	154	153	164	163	165	164	159	158	154	155	154	151	149	141	150	148	155
7	148	137	133	129	142	152	163	157	156	151	159	163	165	166	166	162	140	160	161	159	161	157	153	151	151	154
8	151	150	152	150	154	154	158	156	153	152	154	161	165	167	163	154	147	158	149	143	145	151	143	146	153	153
9	152	154	156	159	157	151	152	154	151	149	152	160	168	171	163	162	159	156	150	154	154	153	153	151	147	156
10	147	149	153	152	153	152	153	152	150	148	152	162	169	169	172	165	161	159	157	159	157	156	156	156	157	157
11	157	157	157	157	158	159	158	158	152	149	152	160	168	171	167	161	160	158	159	161	153	150	150	155	157	158
12	157	154	161	144	149	150	153	153	152	146	150	158	165	172	171	165	162	161	160	158	157	155	149	141	149	156
13	149	153	157	156	162	163	155	153	152	151	152	159	165	168	165	163	161	159	156	155	154	152	151	151	148	157
14 c	147	154	156	157	157	157	155	153	149	149	155	164	170	171	168	164	162	161	158	157	156	155	153	151	151	158
15 c	151	150	152	154	156	157	156	154	154	153	152	157	164	169	165	162	160	158	158	157	156	154	153	154	154	157
16 c	154	156	157	158	159	158	156	154	149	148	149	157	168	171	169	163	160	159	158	157	154	153	153	152	154	157
17	154	154	155	156	157	157	157	155	153	151	154	159	165	171	171	168	164	164	162	158	157	156	154	152	151	158
18	151	153	154	156	160	157	154	154	152	150	149	157	164	170	168	163	161	159	162	159	156	154	153	152	152	157
19	152	154	157	159	159	157	156	154	152	152	157	162	164	164	164	163	160	159	158	159	155	152	151	147	151	157
20	151	152	156	158	159	159	158	157	155	154	157	164	166	169	164	161	159	158	157	157	155	154	154	151	151	158
21	150	151	153	154	155	154	155	154	153	154	158	161	163	165	164	162	160	160	159	158	155	152	148	148	155	156
22	155	157	156	156	159	159	157	157	156	156	162	163	167	168	165	160	158	157	156	156	155	154	153	153	152	158
23	152	156	157	158	157	156	156	154	152	149	151	157	164	166	164	160	157	158	158	158	158	152	150	147	149	156
24	149	153	155	156	156	156	156	154	152	151	156	162	166	167	164	158	157	156	156	154	153	152	153	153	154	156
25 c	154	155	156	156	156	155	154	154	152	149	152	160	165	166	167	163	163	162	158	155	152	150	149	151	151	156
26	151	153	152	153	155	154	149	149	149	148	155	162	168	170	170	165	163	159	156	154	153	150	146	147	149	155
27	149	159	160	158	160	158	155	155	154	152	154	162	164	170	169	168	170	179	166	156	147	131	138	137	142	157
28	141	148	146	150	151	153	153	155	155	149	149	155	161	164	162	159	159	157	127	140	140	143	135	133	146	149
29	146	150	152	153	154	153	152	153	149	146	152	155	158	169	169	159	155	158	156	154	152	150	150	148	149	154
30	149	152	160	159	158	156	153	153	151	150	152	157	162	165	159	155	155	157	153	154	143	137	140	144	147	153
Mean	150	152	154	154	157	156	155	155	152	150	153	160	166	169	167	162	160	160	157	155	153	150	148	149	150	156

c International quiet day. ✲ Day "proposed for reproduction" by the International Magnetic Commission (single star). Values in italics are interpolations.

XLIII.—READINGS OF THE VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (Z.) **November, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
											45,000 γ (·45 C.G.S. unit) +															
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	269	267	270	269	269	269	269	271	271	271	271	270	272	274	278	280	280	280	279	278	278	276	274	273	273	273
2✲	273	272	268	269	269	269	270	269	272	273	274	272	273	280	289	298	297	294	294	298	294	285	275	248	248	278
3	248	251	245	247	250	248	260	266	271	273	275	272	275	281	283	285	284	281	280	279	280	280	275	272	272	270
4 c	272	273	273	273	273	273	273	273	274	274	275	274	273	275	278	279	278	277	276	276	275	274	273	273	273	274
5	273	272	272	271	271	271	271	270	271	272	271	269	270	271	273	273	274	273	273	272	271	271	271	271	270	271
6	270	269	269	268	268	268	269	268	269	269	269	268	269	269	271	273	273	275	280	282	281	280	277	273	262	272
7	262	260	257	252	252	257	257	259	264	267	266	268	269	268	269	273	290	293	284	278	276	275	273	272	267	268
8	267	260	260	264	266	266	268	268	269	270	270	271	273	273	273	276	277	274	275	274	275	269	268	268	268	270
9	268	269	269	269	269	269	269	269	271	273	271	270	270	271	273	273	273	272	273	272	271	272	271	269	269	271
10	269	268	267	268	267	267	267	268	268	269	269	269	270	270	271	271	270	270	269	268	268	269	269	269	268	269
11	268	268	267	266	266	265	265	265	266	268	267	266	266	268	269	269	268	267	266	266	268	268	268	266	266	267
12	266	266	264	263	264	264	263	263	264	265	266	266	266	264	265	269	269	268	268	267	266	267	266	267	265	266
13	266	266	266	265	265	262	263	264	263	263	262	262	262	263	266	267	267	267	267	266	266	266	266	267	267	265
14 c	267	267	266	265	265	264	263	263	265	265	265	263	263	265	266	266	266	266	266	265	265	265	265	265	265	265
15 c	265	265	265	265	265	264	264	264	265	265	265	263	261	260	262	265	265	265	265	264	264	265	265	265	265	264
16 c	265	265	265	265	264	264	264	263	263	264	261	261	261	262	265	265	265	265	265	264	264	263	263	263	263	264
17	263	264	264	263	263	263	262	262	262	263	261	261	262	262	265	265	264	264	263	264	263	263	263	265	264	263
18	264	263	262	262	261	261	261	261	261	261	261	258	258	259	261	262	263	263	263	263	263	263	262	262	262	262
19	262	262	262	262	261	262	262	261	261	262	261	262	262	263	265	265	265	264	263	263	263	262	262	262	261	262
20	261	261	261	261	261	260	260	260	261	261	261	261	261	261	262	263	262	262	262	261	261	261	261	261	261	261
21	261	261	261	261	261	261	261	261	261	261	261	262	261	261	261	262	262	262	262	262	262	262	262	261	260	261
22	261	260	260	260	260	261	262	261	261	262	260	262	262	262	263	262	262	262	262	262	262	262	262	262	262	261
23	262	260	259	259	259	259	259	259	259	260	262	259	259	259	261	259	258	258	258	258	258	259	259	260	259	259
24	259	258	257	257	256	255	256	257	257	258	257	257	257	257	258	258	258	258	258	258	258	258	258	257	257	257
25 c	257	257	256	255	255	255	255	255	257	258	255	255	255	257	258	258	257	257	257	257	258	257	257	257	256	256
26	256	255	255	255	255	254	254	254	254	255	254	256	257	259	259	258	257	257	257	257	257	258	258	258	258	256
27	258	257	253	254	254	253	253	252	252	252	251	250	251	253	257	258	259	263	270	271	271	271	267	263	258	258
28	258	257	255	256	257	255	254	254	253	254	255	255	257	259	259	260	259	259	263	263	262	260	250	250	251	257
29	251	254	254	254	254	254	253	252	253	255	255	256	257	258	259	262	261	259	258	258	256	257	256	256	256	256
30	256	255	254	254	254	254	254	253	253	252	251	250	252	254	256	258	258	258	257	256	257	257	254	254	253	255
Mean	263	263	262	262	262	262	262	262	263	264	263	263	263	265	267	268	268	268	268	267	267	267	265	264	263	264

c International quiet day. ✲ Day "proposed for reproduction" by the International Magnetic Commission (single star).

XLIV.—AUXILIARY OBSERVATIONS IN ABSOLUTE MEASURE; DAILY VALUES OF TEMPERATURE IN THE EAST ROOM OF THE MAGNET HOUSE; MAGNETIC NOTES FOR THE MONTH.

Eskdalemuir. **November, 1913.**

Date.	Time, G.M.T.	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
Nov.	h m	γ	° ′ ″	° ′	°		
4	12 57			69 38·2	11·5	0	1
					11·4	2	2
					11·4	1	3
					11·4	0	4
7	12 29			69 37·4	11·4	0	5
					11·3	1	6
					11·3	2	7
					11·3	1	8
8	11 37	16810	17 53 10		11·3	0	9
					11·3	0	10
					11·2	0	11
					11·2	0	12
14	11 3	16816	17 53 40		11·2	0	13
					11·1	0	14
					11·1	0	15
					11·1	0	16
15	12 14			69 37·0	11·0	0	17
					11·0	0	18
					11·0	0	19
					10·9	0	20
					10·9	0	21
21	10 38	16818	17 52 33				
					10·9	0	22
					10·8	0	23
					10·9	0	24
					10·9	0	25
22	10 52			69 37·5	10·8	0	26
					10·8	1	27
					10·7	1	28
28	11 41	16801	17 52 53		10·7	0	29
,,	14 48			69 36·7	10·6	0	30

* Mean of the Corrected Readings of the Thermometers in the N, W, and V Magnetograph Boxes.

NOVEMBER, 1913.

The only large disturbances occurred on 2nd to 3rd and 7th to 8th. Lesser ones on 6th and 28th. The 2nd being an international starred day has been described in detail. Reckoning all disturbances from the field at the same hour on the quiet days 4th and 5th, the disturbing vector changed as follows:— Small on the evening of 1st and until $2^d\ 1^h\ 25^m$. At 2^h, (N, W, up). $2^h\ 30^m$, (N, E, up). 3^h to 6^h, small. 6^h to 9^h, (S, W). 10^h to 12^h, W. 13^h, (S, W). 14^h, (S, down). 15^h, (E, down). 16^h to 18^h, (S, W, down). 18^h to 22^h, (S, E, down). 22^h, E. $22^h\ 25^m$, (N, E, up). $22^h\ 50^m$, (S, E, up). 23^h, up. $23^h\ 30^m$, (N, E, up). 24^h, (S, E, up). The vertical disturbance continued to be upward until 6^h on 3rd; the horizontal components during this period were smaller and variable. On the afternoon of 2nd, superposed on the slow changes already described, an oscillation having a period of about half an hour is recognisable, the azimuth of the disturbing vector wandered, its angular altitude was small. Superposed on both the above, small pulsations were scattered throughout the day.

On 7th there was a marked maximum of downward force at $16^h\ 25^m$. The disturbing field was (S, E, down) before the maximum of V, and (S, down) afterwards. Superposed was a smaller oscillatory field ± (NNW, slightly upwards), the most conspicuous period of vibration being about 15 minutes near midnight. 7^d to 8^d there was a disturbance in a direction which wandered as follows:—

$23^h\ 15^m$, (N, slightly down). $23^h\ 40^m$, ESE. $24^h\ 15^m$, (N, W, up). $24^h\ 25^m$, (N, up). $24^h\ 45^m$, (E, up). $1^h\ 12^m$, (S, up). $1^h\ 30^m$, (W, up).

There was a small sudden disturbance beginning on the N and W components at $19^d\ 21^h\ 49^m$. On the vertical component it began at the same time or possibly a minute earlier. The +N and +W disturbances attained maxima of 25 γ and 11 γ respectively. Seven minutes after the commencement pulsations were superposed. The accompanying upward disturbance was smooth, amounting to 3 γ only, and did not attain its maximum until seven minutes after the maxima of N and W.

XLV.—READINGS OF THE NORTH COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (X.) **December, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
											15,000 γ (·15 C.G.S. unit) +															
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	1009	1007	1005	1003	1006	1016	1017	1014	1014	1012	1005	1003	1004	1007	1010	1008	1005	1006	1011	1010	1011	1011	1013	1009	1007	1009
2	1006	1009	1010	1010	1010	1010	1011	1014	1016	1006	1010	1008	1004	1002	1005	1000	998	1001	997	996	998	1008	996	1008	1007	1006
3	1007	1007	1008	1010	1010	1011	1011	1014	1014	1010	1004	1001	998	997	1003	1005	1010	1010	1010	1010	1010	1009	1005	1005	1004	1007
4	1004	1007	1009	1010	1010	1010	1012	1012	1010	1008	1007	1010	1005	1011	1012	1010	995	984	990	979	977	1003	1010	1006	1004	1004
5	1003	1003	1003	1004	1003	1019	1016	996	996	1003	998	991	984	983	983	988	996	1003	1004	1004	1004	1003	1006	1009	1003	1000
6	1003	1003	1000	999	1002	1005	1010	1004	1005	1005	1003	994	999	1002	1005	1008	1009	1009	1009	1008	1008	1005	1007	1005	1004	1004
7	1004	1004	1005	1006	1009	1013	1017	1019	1017	1014	1017	1014	1013	1015	1013	1014	1014	1013	1014	994	1001	1019	1017	1002	1003	1011
8	1003	1005	1004	1009	1007	1011	1021	1014	1010	1010	1011	1009	1009	1005	1007	1005	1010	1013	1014	1013	1012	1009	1009	1004	1005	1009
9	1004	1004	1005	1008	1010	1014	1014	1015	1015	1012	1009	1008	1007	1007	1008	1010	1013	1013	1008	1001	1010	1012	1010	1008	1007	1009
10 c	1007	1007	1008	1008	1009	1010	1011	1011	1009	1006	1001	999	1002	1002	1004	1008	1010	1012	1012	1012	1011	1010	1009	1008	1008	1008
11 c	1007	1004	1003	1005	1007	1008	1010	1011	1009	1009	1007	1005	1002	1002	1007	1009	1011	1012	1014	1014	1014	1013	1012	1009	1010	1009
12	1010	1009	1010	1010	1011	1012	1014	1013	1013	1012	1009	1007	1006	1007	1011	1010	1011	1013	1015	1017	1009	1003	1009	1011	1011	1011
13 c	1011	1009	1008	1009	1009	1011	1012	1013	1012	1009	1007	1006	1002	1006	1006	1008	1009	1011	1013	1013	1008	1007	1010	1009	1010	1009
14	1009	1007	1007	1008	1010	1011	1012	1013	1011	1009	1007	1008	1009	1005	1003	1000	995	1005	1010	1009	1010	1009	1008	1008	1008	1008
15	1008	1008	1009	1011	1013	1015	1013	1012	1012	1012	§	§	§	§	§	§	§	§	§	§	§	§	§	§	§	...
16	§	§	§	§	§	§	§	§	§	§	1014	1011	1006	1006	1007	1009	1013	1014	1015	1016	1015	1013	1011	1010	1009	...
17 c	1008	1008	1009	1009	1007	1008	1010	1008	1008	1007	1008	1006	1005	1009	1012	1010	1010	1012	1014	1014	1013	1012	1010	1009	1009	1009
18	1009	1010	1010	1010	1011	1012	1012	1012	1012	1010	1007	1007	1010	1014	1015	1014	1016	1015	1016	1017	1017	1013	1013	1012	1011	1012
19	1011	1010	1008	1008	1011	1014	1015	1015	1015	1015	1007	1005	1008	1004	999	987	999	1009	1010	1012	1012	1010	1010	1009	1005	1008
20	1004	1003	1004	1005	1007	1005	1005	1005	1005	1005	1006	1006	1004	1005	1006	1004	1007	1011	1012	1011	1013	1013	1011	1010	1009	1007
21	1009	1009	1009	1009	1011	1010	1011	1010	1009	1007	1005	1005	1004	1006	1009	1011	1012	1013	1014	1012	1012	1010	1008	1014	1005	1009
22	1005	1006	1006	1008	1011	1014	1013	1012	1012	1014	1017	1015	1012	1010	1013	1012	1012	1012	1005	1005	1008	1011	1011	1010	1009	1011
23 c	1008	1006	1005	1005	1006	1009	1011	1010	1009	1006	1007	1007	1008	1012	1013	1013	1012	1012	1011	1011	1008	1007	1007	1007	1009	
24	1007	1006	1008	1008	1011	1013	1012	1013	1013	1014	1014	1008	1009	1010	1012	1014	1014	1013	1014	1014	1015	1013	1012	1012	1011	1012
25	1011	1012	1012	1011	1014	1023	1036	1025	1019	1014	1007	1003	999	1003	1005	1006	1011	1013	1012	1014	1009	983	991	999	1003	1010
26	1002	1008	1005	1013	1010	1015	1009	1008	1007	1003	997	990	982	996	1002	1002	999	1005	999	1005	1007	1006	1003	1002	1003	1003
27	1003	1004	1006	1007	1007	1008	1009	1011	1012	1011	1008	1000	996	996	998	1002	1004	1001	997	1000	1009	1002	1012	1006	1003	1005
28	1002	1002	1003	1005	1006	1007	1008	1009	1005	1003	1001	1001	999	998	999	1000	1003	1006	1008	1008	1010	1011	1010	1009	1008	1005
29	1008	1008	1008	1009	1010	1009	1009	1010	1009	1009	1010	1011	1008	1004	1006	1006	1008	1010	1011	1011	1009	1005	1006	1005	1004	1008
30	1004	1008	1009	1010	1011	1010	1009	1008	1008	1005	1005	1008	1009	1008	1008	1005	1007	1003	1005	1007	1008	1007	1008	1008	1008	
31	1007	1005	1007	1007	1009	1011	1012	1010	1007	1004	1003	1003	1005	1008	1010	1008	1006	1005	1007	1010	1010	1009	1008	1008	1009	1008
Mean †	1006	1007	1007	1008	1009	1011	1013	1011	1010	1009	1007	1005	1003	1005	1006	1006	1007	1009	1009	1008	1008	1008	1008	1008	1007	1008

XLVI.—READINGS OF THE WEST COMPONENT OF TERRESTRIAL MAGNETIC FORCE AT EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (−Y.) **December, 1913.**

Hour. G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
											5000 γ (0·5 C.G.S. unit) +															
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	147	149	149	156	168	151	151	152	151	151	153	156	160	162	162	160	157	156	157	153	152	149	141	138	149	153
2	149	155	153	154	156	155	153	154	154	150	152	156	161	162	162	161	161	161	159	154	147	137	140	147	150	154
3	150	150	152	153	153	153	154	153	153	153	155	157	161	159	158	156	156	155	155	154	150	148	149	150	151	154
4	151	151	151	153	154	153	153	152	153	153	154	162	162	166	162	160	158	158	166	134	128	148	149	153	152	154
5	152	150	150	151	164	162	155	157	170	162	162	166	169	172	174	162	153	152	150	147	148	146	145	140	128	156
6	127	136	145	147	150	149	148	147	148	148	150	152	156	158	160	155	153	152	151	151	149	148	149	150	151	150
7	151	152	154	154	154	154	154	156	156	153	154	156	161	165	163	158	157	155	156	148	150	154	142	135	147	154
8	147	147	150	152	148	150	149	148	149	150	155	159	162	161	159	156	154	152	151	150	150	149	148	147	148	152
9	148	148	149	153	151	150	151	151	152	152	154	155	157	160	161	157	156	155	159	145	153	151	148	148	151	153
10 c	151	151	151	152	151	151	151	150	150	148	151	154	160	161	158	156	153	152	152	151	150	148	149	150	150	152
11 c	150	150	150	149	150	149	148	150	151	151	152	153	154	155	155	154	154	152	152	151	150	150	149	149	148	151
12	148	151	153	153	154	153	151	151	150	148	149	154	158	158	160	158	159	156	153	153	150	140	146	148	150	152
13 c	149	150	150	151	152	152	151	150	149	147	153	157	159	160	160	155	154	152	153	152	147	147	146	147	147	152
14	147	149	152	152	152	152	151	150	149	150	153	157	163	160	159	163	166	156	154	150	150	147	146	145	145	153
15	145	146	145	145	148	145	148	149	147	146	§	§	§	§	§	§	§	§	§	§	§	§	§	§	§	...
16	§	§	§	§	§	§	§	§	§	§	150	150	151	153	154	154	153	153	152	152	151	148	147	147	148	...
17 c	148	150	151	150	150	151	151	150	149	151	154	157	158	159	156	153	153	153	152	151	150	148	148	148	148	152
18	148	150	151	152	153	153	152	151	150	151	153	160	161	164	160	158	156	158	153	151	151	148	138	141	147	153
19	147	148	147	148	151	152	149	151	148	152	156	160	166	165	171	176	162	154	152	149	147	146	144	146	145	154
20	145	147	151	150	148	148	148	148	148	148	151	154	155	155	155	152	151	150	151	147	150	149	149	150	150	150
21	150	149	150	151	151	151	150	150	150	151	153	156	156	156	154	153	152	152	151	150	151	146	146	141	146	151
22	146	147	147	149	150	148	148	150	151	153	156	159	160	158	159	157	155	157	158	159	152	150	150	150	150	153
23 c	150	150	149	150	151	150	149	149	148	150	149	153	154	155	155	154	153	152	150	149	149	148	147	149	149	151
24	149	148	149	148	149	149	150	150	150	152	155	155	157	160	160	158	156	155	153	151	151	151	151	152	152	153
25	152	152	154	153	149	155	145	145	153	161	165	167	163	159	155	154	152	151	152	152	153	116	128	144	146	151
26	145	145	174	137	141	146	146	154	154	144	*150*	155	154	159	160	155	132	137	150	147	147	147	148	147	146	149
27	146	150	152	152	154	155	153	147	148	148	147	150	153	157	160	157	155	142	128	143	140	143	144	147	149	149
28	149	150	152	153	152	152	150	148	145	145	147	149	150	157	159	155	151	147	145	145	147	146	146	147	149	149
29	149	150	151	152	153	153	152	148	149	150	152	154	152	154	157	154	152	151	149	148	146	140	144	145	148	150
30	148	147	149	150	150	150	149	148	148	150	152	154	155	159	157	*154*	*152*	150	145	146	147	146	146	145	146	150
31	146	149	152	151	152	151	150	149	147	148	152	156	158	159	158	155	152	151	149	148	147	147	147	147	148	151
Mean †	148	149	151	151	152	152	150	150	151	151	153	156	158	160	160	157	154	153	152	149	148	146	146	146	148	152

c International quiet day. † Mean 29 days. 15th and 16th omitted. § Clock stopped. Values in italics are interpolations.

XLVII.—READINGS OF THE VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE.

Eskdalemuir. (Z.) AT EACH HOUR OF GREENWICH MEAN TIME. **December, 1913.**

Hour G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.
	45,000 γ (·45 C.G.S. unit) +																									
Day.	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	254	254	254	254	250	250	251	251	251	252	253	253	254	253	254	256	258	258	256	256	256	256	255	255	254	254
2	254	252	252	253	253	252	252	251	251	251	250	250	250	251	253	255	256	257	258	259	260	259	259	256	255	254
3	255	254	254	254	253	252	251	251	251	251	251	253	256	256	256	257	257	256	256	254	254	254	254	254	254	254
4	254	254	254	254	254	254	254	254	253	253	253	250	251	251	253	256	260	266	266	283	290	277	264	261	260	259
5	260	259	258	258	256	249	249	251	249	251	253	253	254	256	260	264	268	268	266	265	263	262	261	259	257	258
6	257	254	254	254	254	255	255	256	256	257	255	256	•	•	•	•	•	•	•	•	•	•	•	•	•	..
7	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	...
8	250	250	250	250	250	249	247	247	248	247	247	247	248	248	251	252	254	254	254	254	254	255	256	256	256	251
9	256	255	254	254	252	252	251	252	251	252	251	251	251	251	252	255	255	254	256	261	259	257	257	257	256	254
10 c	256	255	254	254	254	254	253	254	254	254	252	252	254	255	257	257	258	257	256	257	257	257	256	257	257	255
11 c	257	256	256	256	255	255	255	254	253	251	250	252	255	255	256	256	256	256	256	255	255	255	256	256	255	255
12	255	255	254	254	253	253	252	252	252	252	250	250	252	252	254	256	255	255	255	254	257	261	258	257	257	254
13 c	257	256	256	255	255	254	254	253	253	252	250	251	253	254	254	255	256	256	256	255	257	257	258	257	257	255
14	257	256	256	256	254	254	254	253	252	250	247	248	250	253	254	256	258	259	259	259	258	258	258	258	258	255
15	258	258	257	256	254	254	253	252	252	250	§	§	§	§	§	§	§	§	§	§	§	§	§	§	§	...
16	§	§	§	§	§	§	§	§	§	§	246	247	248	248	252	255	257	257	256	256	255	256	256	256	256	...
17 c	256	256	256	257	257	256	256	256	255	253	253	251	252	253	255	256	258	258	257	256	256	255	255	255	255	255
18	255	255	255	255	255	255	255	255	254	252	251	251	252	253	255	256	256	257	257	257	256	256	257	256	255	255
19	255	254	255	255	255	254	254	254	253	250	252	254	254	256	258	261	263	263	262	259	259	258	258	257	257	256
20	257	257	257	257	258	258	258	257	256	255	253	253	255	256	256	258	259	259	259	259	258	257	257	256	256	257
21	256	256	255	255	255	256	256	256	256	254	253	254	255	255	256	257	258	257	257	257	257	258	258	257	257	256
22	257	256	255	255	254	254	254	254	254	252	250	250	251	252	253	254	255	255	257	257	258	258	257	256	255	254
23 c	255	255	254	254	254	254	254	254	253	252	251	252	253	253	252	253	255	255	255	255	254	255	256	255	255	254
24	255	254	253	253	252	252	252	252	252	251	250	250	251	250	252	253	254	254	254	254	254	254	254	254	254	253
25	254	253	252	251	250	247	242	243	243	244	247	250	252	252	253	256	256	254	254	253	254	268	270	263	259	253
26	260	257	244	239	244	246	247	248	248	251	251	252	255	257	257	260	264	262	259	257	257	257	257	257	257	254
27	257	256	255	255	254	253	253	252	252	252	252	253	253	253	256	258	258	260	264	260	257	258	256	255	256	255
28	256	256	256	255	255	255	255	253	253	252	252	251	251	252	256	258	258	257	257	256	255	254	254	254	254	255
29	254	255	254	254	253	253	253	253	252	251	251	250	249	249	251	255	258	258	257	256	255	257	256	255	255	254
30	255	255	255	255	255	255	255	254	253	251	253	253	252	252	255	258	264	264	264	262	260	260	259	258	257	257
31	257	257	257	257	257	257	256	256	255	253	254	256	260	260	260	262	265	267	266	264	262	261	260	260	259	259
Mean ‡	256	255	254	254	254	253	253	253	252	251	251	251	253	253	255	257	258	258	258	258	258	258	258	257	256	255

• Instrument recovering after readjustment. § Clock stopped. ‡ Mean 27 days. 6th, 7th, 15th, and 16th omitted. c International quiet day.

XLVIII.—AUXILIARY OBSERVATIONS IN ABSOLUTE MEASURE; DAILY VALUES OF TEMPERATURE IN THE EAST ROOM

Eskdalemuir. OF THE MAGNET HOUSE; MAGNETIC NOTES FOR THE MONTH. **December, 1913.**

Date.	Time, G.M.T.	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
Dec.	h m	γ	° ′ ″	° ′	°		′
8	11 5	16814	17 51 45		10·7	0	1
					10·6	1	2
					10·5	0	3
					10·5	2	4
9	11 59			69 36·7	10·4	1	5
					10·4	0	6
					10·4	1	7
12	12 25	16815	17 52 2		10·4	0	8
					10·3	1	9
					10·3	0	10
					10·3	0	11
15	12 30			69 37·4	10·3	0	12
					10 3	0	13
					10·2	0	14
					10·2	—	15
19	11 41	16814	17 53 15		10·1	—	16
					10·1	0	17
					10·0	0	18
					10·0	1	19
23	12 52			69 36·6	10·0	0	20
					10·0	0	21
					10·0	0	22
26	12 8		17 52 2		9·9	0	23
					9·9	0	24
					9·8	1	25
					9·8	1	26
29	11 49			69 36·9	9·9	1	27
					9·9	0	28
					9·8	0	29
					9·8	0	30
30	11 31	16819	17 51 7		9·7	0	31

DECEMBER, 1913.

The largest disturbance was on the evening of 4th. Reckoned from the field of the quiet 6th and 7th its direction and magnitude varied as follows:—16h to 18h, small and mainly SSW. 18h 30m, (SSW, down). 19h 0m, (S, down). 19h 10m, (*S, E, down). 19h 17m, (S, E, down). 19h 20m, (S, *E, down). 19h 26m, (*N, E, down). 20h 6m, (*S, E, down). The maximum elongations are denoted by *. They had the following values:—19h 10m, 59 γ S. 19h 17m, 38 γ down. 19h 20m, 83 γ E. 19h 26m, 12 γ N. 20h 6m, 56 γ S. After 20h 6m, the disturbance, while remaining in the octant (S, E, down), gradually diminished in intensity, becoming inconspicuous between 23h and 24h.

On the evening of 6th a small disturbance occurred (S, E, down) at 19h, and (N, W) during the decrease of the downward force at 21h 20m. Marked pulsations of period 2 to 2·5 minutes in quadrant ± (N, W) occurred near the latter time.

Between 19h and 20h on 10th a small bay (S, down) changing to (E, down).

The second largest disturbance in the month occurred between 25d 20h and 26d 6h. In the slower changes during this interval N and up go together, while the maximum of E occurred at the time 20h 45m of the most rapid increase of downward force, and the maximum of W at the time 2h 2m of most rapid increase of upward force; in other words, the disturbing vector was rotating about an axis pointing N and down, in the sense given by the right-hand screw-rule. This rotation was only noticeable near 25d 21h and 26d 2h. In the intermediate part 23h to 1h, there was not much change. Near 21h there were large pulsations of 3 minutes' period. The largest double-excursion occurred at 21h 12m, and measured ±(17 γ S, 20 γ E, 3 γ down), which corresponds to a field with an azimuth ±(N 50° W), and inclined 6° to the horizontal.

[For a general summary for the whole year and a glossary of terms see pp. 78–82].

* Mean of the Corrected Readings of the Thermometers in the N, W, and V Magnetograph Boxes.

XLIX.-LI.—DIURNAL INEQUALITIES OF THE GEOGRAPHICAL COMPONENTS OF MAGNETIC FORCE.

Eskdalemuir. *Mean Hourly Values, Greenwich Mean Time, for the Months, Year, and Seasons.* **1913.**

ΔX (or ΔN). XLIX.—NORTH COMPONENT (all days except April 24, 25, June 19, 20, July 18, Aug. 4, 5, Sept. 3, Dec. 15, 16).

Month and Season.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
J.	0·5	−0·2	0·5	1·9	4·9	5·9	x 6·1	3·5	0·4	− 4·0	− 7·6	n 9·6	− 6·1	− 4·4	− 1·8	− 1·2	0·3	0·4	− 0·4	1·1	4·1	2·2	1·6	1·7
F.	1·8	1·4	1·2	2·8	4·6	6·2	x 6·7	6·0	2·7	− 4·3	− 10·4	n 12·1	− 9·5	− 7·5	− 3·3	− 1·5	− 1·6	0·4	2·4	3·9	2·9	1·2	2·5	3·6
M.	3·7	1·4	2·7	4·4	5·5	6·2	6·1	4·1	− 2·6	− 10·3	− 15·9	n 17·5	− 13·5	− 8·2	− 4·1	0·6	1·0	3·3	5·0	5·2	6·2	x 6·6	5·4	4·7
A.	6·2	3·4	4·3	4·8	4·8	4·5	3·7	− 1·1	− 10·3	− 20·6	n 25·1	− 23·9	− 18·2	− 10·7	− 3·2	3·8	7·2	11·8	x 12·1	9·6	9·6	10·6	8·7	8·0
M.	5·6	2·3	2·4	2·9	4·1	2·2	− 1·6	− 7·2	− 13·8	− 19·7	n 22·0	− 19·8	− 13·1	− 6·1	− 0·3	3·3	8·9	13·1	x 14·8	12·1	8·9	7·6	7·9	7·3
J.	5·8	5·9	3·9	5·3	5·8	2·0	− 4·0	− 11·0	− 17·0	− 22·2	n 25·4	− 22·8	− 15·8	− 8·7	0·1	6·1	11·8	14·4	x 15·4	14·1	12·7	9·2	7·6	6·8
J.	5·4	4·7	3·8	3·9	4·3	3·1	0·5	− 4·7	− 10·0	− 18·4	n 23·1	n 23·1	− 18·6	− 12·7	− 4·5	1·2	6·7	12·4	x 15·6	15·4	11·3	9·5	8·5	8·7
A.	7·5	6·0	5·7	5·7	5·4	3·5	− 1·1	− 7·7	− 15·7	− 23·0	n 24·4	− 22·2	− 15·2	− 8·3	− 1·1	3·7	6·5	9·8	x 13·5	13·2	11·8	10·3	8·7	7·2
S.	8·6	7·2	7·7	7·2	5·6	6·4	2·7	− 4·2	− 13·4	− 23·1	n 25·8	− 23·2	− 15·6	− 9·0	− 3·7	− 0·6	4·2	6·4	10·2	10·5	10·5	x 11·0	10·8	9·7
O.	7·8	5·6	7·4	8·1	x 8·7	7·4	3·9	0·0	− 9·3	− 17·2	n 20·7	− 20·0	− 14·2	− 8·6	− 4·6	− 0·1	2·2	3·8	4·1	6·7	7·3	7·6	7·5	6·5
N.	1·4	2·2	2·1	3·4	5·7	x 6·3	6·0	3·2	− 2·5	− 8·8	− 11·5	n 11·8	− 9·7	− 5·8	− 1·5	− 1·1	0·3	1·3	2·6	2·7	3·4	5·2	3·7	3·1
D.	− 1·1	− 1·0	0·0	1·1	3·7	x 5·0	3·6	2·6	1·0	− 1·0	− 3·2	n 4·4	− 3·3	− 1·5	− 1·7	− 0·8	0·7	0·9	0·0	0·5	0·2	0·3	− 0·4	− 1·3
Y.	4·4	3·2	3·5	4·3	5·3	4·9	2·7	− 1·4	− 7·5	− 14·4	n 17·9	− 17·5	− 12·7	− 7·6	− 2·5	1·1	4·0	6·5	x 7·9	x 7·9	7·4	6·8	6·1	5·5
W.	0·7	0·6	1·0	2·3	4·7	x 5·9	5·6	3·8	0·4	− 4·5	− 8·2	n 9·5	− 7·1	− 4·8	− 2·1	− 1·2	− 0·1	0·7	1·2	2·1	2·6	2·2	1·9	1·8
Eq.	6·6	4·4	5·5	6·1	6·2	6·1	4·1	− 0·3	− 8·9	− 17·8	n 21·8	− 21·1	− 15·4	− 9·2	− 3·9	0·9	3·6	6·3	7·9	8·0	8·4	x 8·9	8·1	7·2
S.	6·1	4·7	3·9	4·5	4·9	2·7	− 1·6	− 7·7	− 14·1	− 20·8	n 23·7	− 22·0	− 15·7	− 9·0	− 1·5	3·6	8·5	12·4	x 14·8	13·7	11·2	9·2	8·2	7·5

−ΔY (or ΔW). L.—WEST COMPONENT (all days except April 24, 25, June 19, 20, July 18, Aug. 4, 5, Sept. 3, Dec. 15, 16).

	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
J.	− 4·0	− 2·1	− 0·6	− 0·2	− 0·4	0·1	− 0·6	− 2·5	− 3·5	− 0·2	3·9	8·3	x 12·3	11·6	6·6	4·2	2·4	1·7	− 1·6	− 5·2	n 9·5	− 7·7	− 7·0	− 6·2
F.	− 3·2	− 1·5	− 2·1	− 2·2	− 2·2	− 2·2	− 3·1	− 3·7	− 6·2	− 3·1	1·8	9·3	x 13·8	13·3	9·8	6·3	3·4	3·1	− 0·6	− 4·6	− 6·7	n 7·1	− 6·8	− 5·6
M.	− 4·8	− 2·5	− 4·2	− 5·2	− 6·0	− 6·3	− 7·6	− 10·3	n 13·1	− 6·8	3·5	15·2	22·1	x 23·4	16·7	10·4	3·2	2·0	− 2·4	− 3·0	− 5·2	− 6·1	− 8·5	− 4·5
A.	− 4·0	− 1·2	− 4·1	− 5·6	− 7·4	− 8·7	− 11·7	− 17·6	n 19·2	− 12·0	− 1·6	13·3	24·3	x 25·2	19·9	14·8	9·6	4·4	− 0·3	− 1·6	− 3·1	− 4·4	− 5·4	− 3·8
M.	− 3·6	− 2·7	− 3·6	− 7·5	− 13·1	− 17·5	n 20·3	− 20·0	− 16·2	− 6·4	5·8	17·2	x 22·3	21·7	18·1	13·0	9·0	4·7	2·4	0·7	− 0·6	− 1·1	− 1·1	− 1·1
J.	− 3·7	− 5·4	− 7·7	− 10·0	− 16·7	− 22·1	n 23·3	− 23·0	− 19·7	− 11·2	1·3	14·5	22·7	x 24·8	23·6	19·0	14·0	9·3	7·3	5·4	4·1	0·3	− 1·5	− 1·9
J.	− 3·0	− 4·2	− 6·3	− 8·7	− 13·5	− 19·3	− 21·3	n 21·7	− 18·3	− 10·6	− 0·6	11·3	19·2	x 23·0	22·0	18·1	12·8	9·0	6·4	4·7	2·7	0·0	− 0·4	− 1·4
A.	− 3·2	− 5·4	− 5·9	− 7·7	− 11·2	− 15·8	− 18·6	n 19·9	− 16·1	− 5·4	7·7	19·4	x 26·7	25·3	18·4	10·1	3·8	1·3	2·7	1·9	− 0·3	− 2·3	− 2·4	− 2·9
S.	− 3·4	− 5·4	− 6·4	− 6·3	− 7·0	− 9·1	− 11·7	n 14·6	− 14·0	− 5·2	6·9	18·7	x 24·6	23·3	15·8	7·7	2·6	− 0·7	− 1·6	− 1·2	− 1·9	− 3·3	− 4·4	− 3·5
O.	− 2·9	− 3·5	− 3·8	− 4·0	0·0	− 1·3	− 3·7	− 9·1	n 10·3	− 3·4	6·8	15·5	x 19·0	18·1	11·7	5·9	1·7	0·7	− 3·8	− 5·9	− 8·1	− 7·7	− 6·6	− 5·3
N.	− 4·2	− 1·6	− 1·9	0·8	0·2	− 0·6	− 0·9	− 3·6	− 5·9	− 2·9	4·1	10·0	x 13·1	10·9	6·0	3·6	4·0	0·5	− 1·3	− 3·3	− 5·8	n 8·1	− 7·1	− 6·2
D.	− 2·8	− 0·5	− 0·9	0·3	− 0·2	− 1·4	− 1·5	− 1·0	− 1·1	1·3	4·5	6·6	x 8·0	7·8	5·3	2·5	0·7	0·1	− 2·6	− 3·5	− 5·9	n 6·2	− 5·4	− 4·0
Y.	− 3·6	− 3·0	− 3·9	− 4·7	− 6·5	− 8·7	− 10·4	n 12·2	− 12·0	− 5·5	3·7	13·3	x 19·0	x 19·0	14·5	9·6	5·6	3·0	0·4	− 1·3	− 3·4	− 4·5	− 4·7	− 3·9
W.	− 3·6	− 1·4	− 1·4	− 0·3	− 0·6	− 1·0	− 1·5	− 2·7	− 4·2	− 1·2	3·6	8·6	x 11·8	10·9	6·9	4·1	2·6	1·4	− 1·5	− 4·2	− 7·0	n 7·3	− 6·6	− 5·5
Eq.	− 3·8	− 3·2	− 4·6	− 5·3	− 5·1	− 6·3	− 8·7	− 12·9	n 14·1	− 6·9	3·9	15·6	x 22·5	x 22·5	16·0	9·7	4·3	1·6	− 2·0	− 2·9	− 4·6	− 5·4	− 6·2	− 4·2
S.	− 3·4	− 4·4	− 5·9	− 8·5	− 13·6	− 18·7	− 20·9	n 21·1	− 17·6	− 8·4	3·6	15·6	22·7	x 23·7	20·5	15·0	9·9	6·1	4·7	3·2	1·5	− 0·8	− 1·4	− 1·8

ΔZ (or ΔV). LI.—VERTICAL COMPONENT (all days except June 23, 24, 25, 27–30, July 16, 17, Aug. 4, 5, Oct. 18).

	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
J.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
F.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
M.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
A.	− 2·9	− 2·0	− 1·3	− 1·0	− 1·2	− 1·2	− 1·0	− 1·2	− 2·3	− 3·9	− 6·2	n 9·7	− 8·8	− 3·8	1·2	5·0	8·4	x 10·4	9·8	8·0	6·0	2·2	− 1·2	− 3·2
M.	− 1·2	− 1·2	− 2·3	− 1·0	0·0	0·3	0·2	− 1·3	− 5·0	− 8·7	− 11·7	n 12·7	− 9·6	− 4·9	0·2	5·6	8·8	x 10·5	10·0	8·8	7·3	5·5	3·1	− 0·7
J.	− 0·2	− 1·5	− 0·9	0·3	1·8	2·2	1·2	− 0·9	− 3·8	− 7·1	− 9·3	n 9·4	− 7·8	− 4·9	− 1·5	3·5	6·2	x 7·4	6·7	5·6	4·6	2·8	2·8	2·0
J.	− 0·8	− 0·7	− 0·4	0·8	1·6	1·4	1·4	0·8	− 2·3	− 5·0	− 8·9	n 10·7	− 9·2	− 5·3	− 1·6	2·6	5·9	x 7·4	7·3	5·9	4·6	3·3	1·6	− 0·1
A.	0·4	0·2	0·2	0·6	0·8	1·3	1·6	1·0	− 0·8	− 4·2	− 6·8	n 9·3	− 8·0	− 3·9	0·3	3·1	4·9	x 5·0	3·8	3·0	2·7	2·2	1·6	0·6
S.	− 1·4	− 1·1	− 1·8	− 2·0	− 1·4	− 0·8	0·1	0·0	− 1·1	− 3·0	− 5·6	n 7·0	− 6·0	− 2·5	1·3	3·7	4·7	x 4·9	4·4	3·8	3·8	3·2	2·6	0·9
O.	− 2·4	− 3·1	− 3·7	− 4·2	− 4·8	n 5·2	− 3·7	− 2·0	− 1·7	− 2·1	− 2·8	− 2·6	− 0·8	1·4	4·2	5·7	x 6·1	5·9	5·2	4·6	3·7	2·8	0·9	− 0·5
N.	− 2·0	− 2·8	− 2·9	− 2·8	n 3·0	− 2·5	− 2·4	− 1·5	− 0·7	− 1·1	− 1·5	− 0·9	0·2	2·2	3·4	x 3·7	3·5	3·5	3·2	2·9	2·4	0·9	− 0·5	− 1·5
D.	0·4	− 0·5	− 0·7	− 1·2	− 1·7	− 2·1	− 2·3	− 2·8	− 3·5	n 3·8	− 3·5	− 2·3	− 1·7	− 0·2	1·7	3·2	x 3·3	3·2	3·2	3·1	3·2	2·5	1·5	1·0
Y.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
W.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eq.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S.	− 0·4	− 0·8	− 0·8	0·2	1·0	1·3	1·1	− 0·1	− 3·0	− 6·2	− 9·2	n 10·5	− 8·6	− 4·8	− 0·7	3·7	6·5	x 7·6	7·0	5·8	4·8	3·5	2·3	0·5

x and *n* mark respectively the mean maximum and minimum values in each month or season. The − over the *n* denotes that the value to which the letter is prefixed is to be taken with the minus sign.

LII.–LIV.—DIURNAL INEQUALITIES OF THE MAGNETIC COMPONENTS, DECLINATION (D.), INCLINATION (I.), AND HORIZONTAL FORCE (H.)

(Corrected for the errors in the Azimuths of the Magnetographs.)

Eskdalemuir. *Mean Hourly Values, Greenwich Mean Time, for the Months, Year, and Seasons.* **1913.**

LII.—DECLINATION (measured positive towards the West)

(all days except April 24, 25, June 19, 20, July 18, Aug. 4, 5, Sept. 3, Dec. 15, 16).

Month and Season. ΔD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.
J.	−0′81	−0′40	−0′15	−0′14	−0′36	−0′32	−0′47	−0′70	−0′71	0′20	1′21	2′19	x 2′77	2′52	1′39	0′88	0′46	0′32	−0′29	−1′09	n 2′10	−1′65	−1′46	−1′30
F.	−0′74	−0′39	−0′48	−0′60	−0′70	−0′79	−0′99	−1′07	−1′37	−0′35	0′97	2′52	x 3′24	3′05	2′12	1′32	0′76	0′59	−0′25	−1′12	n 1′49	−1′46	−1′47	−1′31
M.	−1′15	−0′58	−0′98	−1′27	−1′50	−1′59	−1′85	−2′26	n 2′41	−0′74	1′61	3′99	x 5′11	5′06	3′50	2′00	0′56	0′19	−0′75	−0′89	−1′57	−1′58	−1′98	−1′15
A.	−1′14	−0′43	−1′05	−1′38	−1′72	−1′96	−2′51	n 3′38	−3′16	−1′16	−1′14	3′99	x 5′81	5′55	4′09	2′68	1′47	0′18	−0′76	−0′88	−1′16	−1′48	−1′55	−1′20
M.	−1′04	−0′66	−0′84	−1′64	−2′81	−3′56	n 3′88	−3′50	−2′37	−0′11	2′41	4′51	x 5′12	4′60	3′56	2′36	1′24	0′16	−0′38	−0′56	−0′64	−0′66	−0′67	−0′64
J.	−1′06	−1′39	−1′73	−2′28	−3′61	n 4′44	−4′34	−3′88	−2′88	−0′91	1′73	4′22	x 5′36	x 5′36	4′61	3′36	2′05	1′00	0′54	0′24	0′07	−0′48	−0′74	−0′76
J.	−0′89	−1′10	−1′46	−1′94	−2′89	−3′97	n 4′20	−3′98	−3′01	−1′00	1′23	3′56	4′84	x 5′25	4′58	3′47	2′12	1′05	0′35	0′02	−0′12	−0′56	−0′57	−0′78
A.	−1′06	−1′42	−1′48	−1′84	−2′50	−3′29	n 3′59	−3′45	−2′25	0′27	2′92	5′09	x 6′12	5′45	3′67	1′76	0′36	−0′32	−0′26	−0′39	−0′75	−1′05	−0′98	−0′99
S.	−1′16	−1′49	−1′69	−1′65	−1′70	−2′15	−2′46	n 2′61	−1′96	0′32	2′85	5′00	x 5′73	5′08	3′31	1′54	0′27	−0′50	−0′91	−0′84	−0′98	−1′28	−1′49	−1′24
O.	−1′02	−1′01	−1′18	−1′25	−0′51	−0′68	−0′96	−1′77	−1′48	0′33	2′53	4′19	x 4′54	4′05	2′56	1′16	0′20	−0′09	−0′98	−1′54	n 2′02	−1′94	−1′73	−1′41
N.	−0′91	−0′44	−0′49	−0′04	−0′29	−0′48	−0′53	−0′88	−1′00	−0′06	1′48	2′64	x 3′12	2′47	1′25	0′77	0′76	0′03	−0′40	−0′81	−1′32	n 1′90	−1′60	−1′38
D.	−0′49	−0′04	−0′18	0′00	−0′24	−0′57	−0′51	−0′35	−0′28	0′30	1′06	1′55	x 1′76	1′62	1′13	0′53	0′10	−0′03	−0′50	−0′71	−1′16	n 1′24	−1′04	−0′72
Y.	−0′96	−0′78	−0′97	−1′17	−1′57	−1′98	−2′19	n 2′32	−1′91	−0′24	1′76	3′62	x 4′46	4′17	2′98	1′82	0′86	0′22	−0′38	−0′71	−1′09	−1′27	−1′27	−1′07
W.	−0′74	−0′32	−0′32	−0′19	−0′40	−0′54	−0′62	−0′75	−0′84	0′02	1′18	2′23	x 2′72	2′41	1′47	0′88	0′52	0′23	−0′36	−0′93	−1′52	n 1′56	−1′39	−1′18
Eq.	−1′12	−0′87	−1′23	−1′39	−1′36	−1′60	−1′94	n 2′51	−2′25	−0′31	2′03	4′29	x 5′30	4′94	3′37	1′84	0′63	−0′05	−0′85	−1′04	−1′38	−1′57	−1′69	−1′25
S.	−1′01	−0′89	−1′38	−1′92	−2′95	−3′82	n 4′00	−3′70	−2′63	−0′44	2′07	4′34	x 5′36	5′16	4′10	2′74	1′44	0′47	0′06	−0′17	−0′36	−0′69	−0′74	−0′79

LIII.—INCLINATION (all days except April 24, 25, June 19, 20, July 18, Aug. 4, 5, Sept. 3, Dec. 15, 16) Oct. 18, Dec. 6, 7 omitted from V only.

ΔI.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.
J.	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ..	′ ...	′ ...	′ ...	′ ...
F.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
M.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
A.	−0′38	−0′24	−0′22	−0′21	−0′18	−0′14	−0′02	0′40	0′99	1′46	x 1′47	1′00	0′44	0′07	−0′18	−0′43	−0′45	n 0′58	−0′52	−0′38	−0′40	−0′53	−0′47	−0′51
M.	−0′31	−0′12	−0′13	−0′06	0′01	0′23	0′52	0′84	1′09	x 1′16	0′98	0′59	0′13	−0′18	−0′35	−0′34	−0′53	−0′67	n 0′74	−0′56	−0′37	−0′33	−0′41	−0′46
J.	−0′30	−0′30	−0′11	−0′12	0′02	0′38	0′76	1′15	1′39	x 1′47	1′35	0′92	0′35	−0′08	−0′53	−0′69	−0′88	−0′92	n 0′96	−0′87	−0′78	−0′52	−0′38	−0′34
J.	−0′30	−0′23	−0′12	−0′05	0′04	0′23	0′44	0′76	0′95	x 1′26	x 1′26	0′97	0′56	0′20	−0′20	−0′38	−0′54	−0′79	n 0′94	−0′93	−0′66	−0′52	−0′50	−0′53
A.	−0′40	−0′26	−0′23	−0′19	−0′09	0′14	0′49	0′92	1′31	x 1′47	1′22	0′78	0′22	−0′09	−0′30	−0′37	−0′37	−0′53	n 0′82	−0′80	−0′68	−0′55	−0′47	−0′38
S.	−0′51	−0′37	−0′40	−0′38	−0′24	−0′24	0′07	0′56	1′11	x 1′50	1′36	0′92	0′34	0′04	−0′06	−0′02	−0′20	−0′27	−0′50	n 0′55	−0′53	n 0′55	−0′54	−0′52
O.	−0′49	−0′36	−0′49	−0′53	n 0′68	−0′57	−0′26	0′14	0′76	x 1′11	1′10	0′89	0′49	0′21	0′16	0′03	−0′02	−0′12	−0′06	−0′19	−0′21	−0′27	−0′32	−0′32
N.	−0′05	−0′17	−0′17	−0′30	−0′44	n 0′45	−0′42	−0′17	0′26	0′59	x 0′61	0′52	0′35	0′20	0′06	0′09	−0′01	−0′01	−0′06	−0′03	−0′04	−0′14	−0′10	−0′10
D.	0′14	0′06	0′00	−0′10	−0′27	n 0′34	−0′26	−0′21	−0′13	−0′06	0′02	0′09	0′00	−0′07	0′04	0′08	0′02	0′02	0′13	0′12	x 0′19	0′17	0′17	x 0′19
Y.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...
W.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eq.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S.	−0′33	−0′23	−0′15	−0′10	−0′01	0′24	0′55	0′92	1′18	x 1′34	1′20	0′81	0′31	−0′04	−0′34	−0′44	−0′58	−0′73	n 0′86	−0′79	−0′62	−0′48	−0′44	−0′43

LIV.—HORIZONTAL FORCE (all days except April 24, 25, June 19, 20, July 18, Aug. 4, 5, Sept. 3, Dec. 15, 16).

ΔH.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.
J.	γ −0·7	γ −0·9	γ 0·3	γ 1·8	γ 4·5	γ 5·6	x 5·7	γ 2·6	− 0·7	− 3·8	− 6·0	n 6·5	− 2·0	− 0·6	0·3	0·1	1·0	0·9	− 0·9	− 0·6	1·0	− 0·3	− 0·6	− 0·3
F.	0·8	0·9	0·5	2·0	3·7	5·3	x 5·4	4·6	0·6	− 5·0	n 9·4	− 8·7	− 4·8	− 3·0	− 0·1	0·5	− 0·5	1·3	2·1	2·3	0·7	− 1·1	0·3	1·7
M.	2·1	0·6	1·3	2·6	3·4	3·9	3·4	0·8	− 6·5	− 11·9	n 14·0	− 11·9	− 6·0	− 0·6	1·3	3·8	1·9	3·8	4·0	4·0	x 4·3	x 4·3	2·5	3·1
A.	4·6	2·9	2·8	2·8	2·2	1·6	− 0·1	− 6·5	− 15·7	− 23·3	n 24·3	− 18·6	− 9·8	− 2·4	3·1	8·2	9·8	x 12·5	11·5	8·7	8·2	8·7	6·6	6·4
M.	4·2	1·4	1·2	0·5	− 0·2	− 3·3	− 7·8	− 13·0	− 18·2	n 20·7	− 19·1	− 13·5	− 5·6	0·9	5·3	7·2	11·2	13·9	x 14·8	11·7	8·3	6·9	7·2	6·6
J.	4·4	3·9	1·4	2·0	0·4	− 4·9	− 11·0	− 17·6	− 22·3	n 24·6	− 23·7	− 17·3	− 8·1	− 0·7	7·3	11·6	15·5	16·6	x 16·9	15·1	13·3	8·9	6·7	5·9
J.	4·3	3·1	1·7	1·1	− 0·1	− 3·0	− 6·1	− 11·1	− 15·2	− 20·8	n 22·2	− 18·5	− 11·8	− 5·0	2·5	6·7	10·3	14·6	x 16·8	16·1	11·6	9·1	8·0	7·9
A.	6·2	4·0	3·6	3·0	1·7	− 1·6	− 6·8	− 13·5	− 19·9	n 23·6	− 20·8	− 15·2	− 6·2	− 0·1	4·6	6·7	7·4	9·7	x 13·7	13·1	11·2	9·1	7·6	6·0
S.	7·2	5·2	5·3	4·9	3·2	3·3	− 1·0	− 8·5	− 17·0	n 23·6	− 22·4	− 16·3	− 7·3	− 1·5	1·4	1·8	4·8	5·9	9·2	x 9·7	9·4	9·5	9·0	8·1
O.	6·5	4·3	5·9	6·5	x 8·3	6·6	2·6	− 2·8	− 12·1	− 17·4	n 17·6	− 14·3	− 7·7	− 2·6	− 0·8	1·7	2·6	3·8	2·8	4·6	4·5	4·9	5·1	4·6
N.	0·0	1·6	1·5	3·5	5·5	x 5·8	5·4	2·0	− 4·1	− 9·3	n 9·7	− 8·2	− 5·2	− 2·2	0·4	0·1	1·5	1·4	2·1	1·5	1·5	2·5	1·3	1·0
D.	− 1·9	− 1·1	− 0·3	1·1	3·4	x 4·4	3·0	2·2	0·6	− 0·6	− 1·6	− 2·1	− 0·7	0·9	0·1	0·0	0·9	0·9	− 0·8	− 0·6	− 1·7	− 1·6	− 2·0	n 2·5
Y.	3·1	2·2	2·1	2·6	3·0	2·0	− 0·7	− 5·1	− 10·9	− 15·4	n 15·9	− 12·6	− 6·3	− 1·4	2·1	4·0	5·5	7·1	x 7·7	7·1	6·0	5·1	4·3	4·0
W.	− 0·5	0·1	0·5	2·1	4·3	x 5·3	4·9	2·8	− 0·9	− 4·7	n 6·7	− 6·4	− 3·2	− 1·2	0·2	0·2	0·7	1·1	0·6	0·7	0·4	− 0·1	− 0·2	0·0
Eq.	5·1	3·2	3·8	4·2	4·3	3·9	1·2	− 4·2	− 12·8	− 19·1	n 19·6	− 15·3	− 7·7	− 1·8	1·2	3·9	4·8	6·5	x 6·9	6·7	6·6	x 6·9	5·8	5·6
S.	4·8	3·1	2·0	1·6	0·5	− 3·2	− 7·9	− 13·8	− 18·9	n 22·4	− 21·5	− 16·1	− 7·9	− 1·2	4·9	8·0	11·1	13·7	x 15·6	14·0	11·1	8·5	7·4	6·6

x and *n* mark respectively the mean maximum and minimum values in each month or season.

LV.-LVII.—INTERNATIONAL QUIET DAYS—DIURNAL INEQUALITIES OF THE GEOGRAPHICAL COMPONENTS OF MAGNETIC FORCE.

Eskdalemuir. *Mean Hourly Values, Greenwich Mean Time, for the Months, Year, and Seasons.* **1913.**

LV.—NORTH COMPONENT.

ΔX (or ΔN).

Month and Season.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
J.	−0·2	−0·3	0·8	1·7	3·5	5·2	x 5·9	4·0	0·2	− 4·3	− 7·8	n 8·4	− 5·1	− 1·0	1·1	0·8	1·0	0·9	− 0·2	0·1	1·1	1·2	− 0·1	− 0·1
F.	0·5	0·1	0·3	1·1	2·3	2·9	3·5	x 3·9	3·1	− 2·3	− 7·7	n 9·5	− 7·9	− 6·3	− 3·9	− 0·1	2·7	3·7	3·5	2·7	2·5	2·1	1·3	1·5
M.	4·1	3·7	3·8	4·4	4·9	5·5	6·4	x 7·0	− 1·3	− 9·4	− 17·2	n 19·5	− 15·1	− 11·8	− 5·4	0·8	3·5	5·1	6·0	5·8	4·5	5·5	4·8	4·2
A.	6·5	5·5	4·6	4·5	4·4	5·8	6·1	2·2	− 6·1	− 15·6	− 23·8	n 23·9	− 19·4	− 13·9	− 5·9	0·2	4·1	9·1	x 11·0	9·3	7·6	8·6	10·5	8·6
M.	7·3	4·4	2·5	4·8	5·8	3·9	0·0	− 7·7	− 15·4	− 23·2	n 26·7	− 21·8	− 12·9	− 3·3	2·2	4·1	8·8	11·4	x 12·1	10·6	9·7	8·5	8·0	6·9
J.	6·2	5·7	4·6	6·1	6·8	3·9	− 1·6	− 7·9	− 13·0	− 18·7	n 24·3	− 21·8	− 15·7	− 7·2	− 2·5	3·2	9·1	13·0	x 13·9	11·2	9·3	6·3	6·8	6·5
J.	3·6	2·7	2·5	2·4	3·8	2·6	0·7	− 2·3	− 6·2	− 15·4	− 19·8	n 20·5	− 19·5	− 15·6	− 9·2	0·3	8·7	13·9	15·0	x 15·4	12·3	10·1	7·5	7·2
A.*	7·9	7·3	6·9	7·3	5·9	3·0	− 2·1	− 9·8	− 16·7	− 22·1	n 22·7	− 15·6	− 11·5	− 7·1	1·5	3·9	6·3	6·6	x 10·0	9·6	9·0	8·1	6·9	7·3
S.	8·0	8·3	7·7	7·5	6·9	7·2	4·2	− 2·6	− 10·4	− 21·8	n 27·1	− 25·9	− 19·9	− 12·9	− 7·2	− 1·0	3·6	6·5	10·7	x 13·3	12·1	11·4	11·6	10·0
O.	4·5	5·4	5·8	6·0	x 7·3	6·5	4·3	0·2	− 9·0	− 18·4	n 19·3	− 17·1	− 11·7	− 5·8	− 0·8	1·2	3·1	4·9	5·5	5·8	5·6	5·6	5·9	4·7
N.	−0·5	−0·7	−0·2	2·4	3·1	3·8	4·0	1·1	− 3·8	− 9·3	n 11·1	− 10·8	− 7·5	− 3·5	− 0·4	1·4	3·9	5·0	x 5·6	5·5	4·6	3·2	4·9	1·6
D.	− 1·6	− 1·9	− 1·3	− 0·9	0·7	2·2	2·0	0·8	− 1·2	− 2·7	− 4·1	n 5·1	− 3·3	− 0·6	0·8	1·8	3·0	x 4·1	3·9	2·5	1·1	0·6	− 0·6	− 0·2
Y.	3·9	3·3	3·2	3·9	4·6	4·4	2·8	− 0·9	− 6·6	− 13·6	n 17·6	− 16·7	− 12·5	− 7·4	− 2·5	1·4	4·8	7·0	x 8·1	7·6	6·5	5·9	5·5	4·8
W.	− 0·5	− 0·7	− 0·1	1·0	2·4	3·5	x 3·8	2·4	− 0·4	− 4·6	− 7·7	n 8·4	− 6·0	− 2·9	− 0·6	0·9	2·6	3·4	3·2	2·7	2·3	1·8	0·9	0·7
Eq.	5·8	5·7	5·5	5·6	5·9	6·2	5·2	1·7	− 6·7	− 16·3	n 21·9	− 21·6	− 16·5	− 11·1	− 4·8	0·3	3·6	6·5	8·3	x 8·5	7·5	7·7	8·2	6·9
S.	6·2	5·0	4·1	5·1	5·6	3·4	− 0·8	− 6·9	− 12·8	− 19·8	n 23·4	− 19·9	− 14·9	− 8·3	− 2·0	2·9	8·2	11·2	x 12·8	11·7	10·1	8·2	7·3	7·0

LVI.—WEST COMPONENT.

−ΔY (or ΔW).

	γ	γ	γ	γ	γ	γ	γ	n γ	γ	γ	γ	γ	x γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
J.	− 1·2	1·2	− 0·1	1·6	0·4	− 0·9	− 1·6	n 6·1	− 5·2	− 1·8	1·7	5·6	x 10·6	8·7	4·2	2·3	0·7	0·8	− 0·7	− 3·4	− 3·8	− 4·3	5·2	− 3·5
F.	− 1·9	− 0·3	0·9	0·5	0·1	− 1·4	− 2·0	− 3·6	n 6·4	− 3·6	2·0	8·9	x 11·9	11·7	8·5	3·3	0·9	− 1·8	− 1·4	− 3·6	− 4·6	− 5·8	− 6·3	− 5·9
M.	− 2·5	− 1·9	− 2·9	− 4·1	− 3·7	− 5·1	− 7·1	− 11·3	n 14·5	− 10·1	0·1	12·1	x 17·7	17·5	12·5	6·1	1·9	0·1	0·9	0·3	− 0·7	− 1·9	− 1·7	− 2·3
A.	− 1·0	0·0	− 1·8	− 4·3	− 6·5	− 8·6	− 13·2	− 18·3	n 20·9	− 15·9	− 6·6	7·8	18·7	x 21·1	16·3	13·4	10·0	6·3	4·5	2·3	1·0	0·4	− 1·3	− 3·3
M.	0·8	− 1·5	− 0·3	− 5·5	− 12·8	− 18·4	− 22·2	n 23·7	− 20·9	− 10·9	3·5	17·4	x 23·6	22·8	17·7	11·1	4·5	1·4	0·4	1·4	2·1	3·3	3·7	2·6
J.	0·1	− 0·7	− 2·7	− 7·6	− 15·4	− 21·2	− 24·0	n 27·3	− 25·3	− 14·7	− 1·9	13·0	20·2	x 24·0	21·9	16·3	10·9	7·9	6·6	6·2	5·4	4·6	3·3	0·5
J.	− 1·6	− 2·6	− 4·1	− 7·7	− 12·9	− 16·6	− 19·2	n 19·5	− 19·1	− 12·6	− 3·2	8·2	15·7	20·1	x 21·0	17·6	12·4	9·3	6·7	5·8	3·8	− 1·1	− 0·1	− 0·5
A.*	− 4·8	− 6·9	− 5·4	− 5·8	− 10·6	− 16·2	− 18·6	n 18·7	− 15·8	− 5·9	7·3	19·2	x 28·4	25·3	18·7	7·8	0·5	− 0·1	2·7	1·7	1·1	0·3	− 1·6	− 2·9
S.	− 2·3	− 2·0	− 3·4	− 5·6	− 5·4	− 7·3	− 11·1	n 16·1	− 15·5	− 7·0	3·6	16·2	x 21·0	19·8	13·7	6·3	2·3	− 0·8	− 0·2	0·0	− 0·4	− 1·7	− 1·5	− 2·9
O.	− 1·3	− 0·5	− 0·9	− 3·3	− 3·9	− 5·6	− 8·8	− 14·5	n 17·6	− 8·4	5·9	14·7	x 17·1	13·9	8·1	3·1	2·4	2·4	1·8	− 0·2	− 0·4	− 1·2	− 1·4	− 1·3
N.	− 2·8	− 1·2	0·6	0·4	− 0·3	− 1·7	− 3·4	− 6·2	n 8·0	− 5·5	2·7	10·5	x 12·7	10·8	5·8	4·0	2·7	0·9	− 0·6	− 2·6	− 4·0	− 4·9	− 5·1	− 4·9
D.	− 1·8	− 1·7	− 1·5	− 1·0	− 1·2	− 1·7	− 1·9	− 2·2	− 2·2	0·3	3·3	5·6	x 6·6	5·5	3·1	2·2	1·0	0·7	− 0·3	− 1·8	− 2·8	n 3·1	− 2·3	− 2·4
Y.	− 1·7	− 1·5	− 1·8	− 3·5	− 6·0	− 8·7	− 11·1	− 13·9	n 14·3	− 8·0	1·5	11·6	x 17·0	16·8	12·6	7·8	4·2	2·3	1·7	0·5	− 0·3	− 1·3	− 1·6	− 2·2
W.	− 1·9	− 0·5	0·0	0·4	− 0·3	− 1·4	− 2·2	− 4·5	n 5·4	− 2·7	2·4	7·7	x 10·4	9·2	5·4	2·9	1·3	0·1	− 0·7	− 2·9	− 3·8	− 4·5	− 4·7	− 4·2
Eq.	− 1·8	− 1·1	− 2·2	− 4·3	− 4·9	− 6·6	− 10·0	− 15·0	n 17·1	− 10·3	0·8	12·7	x 18·6	18·1	12·7	7·2	4·1	2·0	1·8	0·6	− 0·1	− 1·1	− 1·4	− 2·5
S.	− 1·4	− 2·9	− 3·1	− 6·7	− 12·9	− 18·1	− 21·0	n 22·3	− 20·3	− 11·0	1·4	14·4	22·0	x 23·0	19·8	13·2	7·0	4·6	4·1	3·8	3·1	1·8	1·3	− 0·1

LVII.—VERTICAL COMPONENT.

ΔZ (or ΔV).

	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
J.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
F.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
M.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
A.	1·9	1·8	1·8	1·4	1·1	0·9	1·1	0·2	− 1·0	− 2·0	− 4·1	− 8·1	n 8·5	− 5·2	− 1·4	1·2	2·7	x 2·7	2·3	2·6	2·4	2·2	2·1	1·9
M.	0·8	1·2	2·0	3·2	4·8	4·8	4·5	2·5	− 3·3	− 10·7	− 14·3	n 15·9	− 12·5	− 6·2	0·2	5·4	7·6	x 7·6	6·1	3·9	2·9	2·3	1·7	1·5
J. †	1·5	1·9	2·4	3·6	3·5	3·5	2·9	0·6	− 3·2	− 6·8	− 11·1	n 12·4	− 11·7	− 7·5	− 1·5	4·2	4·9	x 5·8	5·3	4·0	3·2	2·6	2·3	1·8
J. †	1·5	1·7	1·9	3·4	x 4·1	2·5	2·0	1·9	− 1·6	− 4·4	− 7·9	n 10·0	− 9·3	− 6·1	− 3·1	0·1	2·8	3·5	4·0	3·2	3·4	3·1	2·1	1·3
A. †	2·1	2·1	2·0	1·5	2·0	2·5	2·2	1·4	0·2	− 1·9	− 5·6	n 10·4	− 9·2	− 2·7	0·3	2·3	x 4·0	2·5	0·2	− 0·1	0·7	0·6	1·6	1·8
S.	0·9	0·9	1·2	1·0	1·1	1·3	1·8	1·4	0·3	− 1·7	− 4·2	n 7·8	− 7·3	− 3·5	− 1·2	1·6	1·9	1·9	1·2	1·0	2·3	x 2·5	2·4	1·4
O.	0·3	− 0·1	− 0·6	− 1·2	− 1·8	− 1·8	− 0·8	0·0	− 0·8	− 1·8	− 3·0	n 3·0	− 1·6	0·2	2·4	x 3·2	2·3	1·5	1·5	1·7	1·5	0·9	0·5	0·5
N.	0·3	− 0·1	− 0·5	− 0·7	− 1·0	− 1·2	− 1·4	− 0·1	0·3	− 0·7	− 1·6	n 2·2	− 1·0	1·1	x 1·9	1·6	1·4	1·2	0·9	0·7	0·5	0·2	0·2	0·0
D.	0·6	0·2	0·3	0·1	− 0·3	− 0·5	− 0·7	− 1·3	− 2·4	n 3·6	− 3·2	− 1·4	− 0·8	0·0	0·7	x 1·9	1·7	1·3	0·9	1·1	1·2	1·6	1·4	1·2
Y.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
W.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eq.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S.	1·4	1·7	2·1	2·9	3·6	3·3	2·9	1·6	− 2·0	− 5·9	− 9·7	n 12·2	− 10·6	− 5·6	− 1·0	3·0	4·8	x 4·9	3·9	2·7	2·5	2·2	1·9	1·6

x and *n* mark respectively the mean maximum and minimum values in each month or season.

* Four days only used—August 5 omitted.

† Four days only used—Missing days June 27, July 17, August 5.

LVIII.-LX.—INTERNATIONAL QUIET DAYS—DIURNAL INEQUALITIES.

Corrected for Errors in Azimuths of Magnetographs.

Eskdalemuir. *Mean Hourly Values, Greenwich Mean Time, for the Months, Year, and Seasons.* **1913.**

LVIII.—DECLINATION (measured positive towards the West).

ΔD.

Month and Season.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.
J.	-0'22	0'25	-0'07	0'22	-0'14	-0'48	-0'66	$\overline{n}$ 1'42	-1'02	-0'11	0'79	1'59	x 2'37	1'76	0'76	0'41	0'07	0'10	-0'12	-0'66	-0'82	-0'92	-1'01	-0'68
F.	-0'40	-0'07	0'16	0'03	-0'12	-0'44	-0'59	-0'93	$\overline{n}$ 1'44	-0'58	0'83	2'30	x 2'79	2'66	1'89	0'65	0'01	-0'56	-0'48	-0'86	-1'05	-1'27	-1'30	-1'24
M.	-0'72	-0'58	-0'78	-1'05	-1'01	-1'31	-1'76	-2'61	$\overline{n}$ 2'76	-1'43	1'02	3'50	x 4'35	4'12	2'77	1'16	0'17	-0'27	-0'17	-0'27	-0'39	-0'68	-0'61	-0'69
A.	-0'57	-0'32	-0'63	-1'10	-1'54	-2'01	-2'94	-3'71	$\overline{n}$ 3'74	-2'22	0'09	2'91	4'80	x 4'94	3'53	2'62	1'72	0'72	0'24	-0'10	-0'25	-0'43	-0'86	-1'15
M.	-0'27	-0'54	-0'20	-1'36	-2'83	-3'83	$\overline{n}$ 4'35	-4'19	-3'20	-0'79	2'23	4'68	x 5'37	4'65	3'35	1'94	0'36	-0'38	-0'63	-0'35	-0'15	0'15	0'25	0'11
J.	-0'34	-0'46	-0'79	-1'85	-3'42	-4'38	-4'61	$\overline{n}$ 4'90	-4'21	-1'80	1'05	3'81	4'87	x 5'13	4'43	3'00	1'61	0'80	0'48	0'56	0'52	0'54	0'25	-0'28
J.	-0'52	-0'67	-0'94	-1'65	-2'76	-3'40	$\overline{n}$ 3'81	-3'68	-3'38	-1'57	0'52	2'79	4'21	x 4'85	4'66	3'44	1'92	1'02	0'44	0'25	0'03	-0'79	-0'46	-0'52
A.*	-1'39	-1'77	-1'47	-1'56	-2'42	-3'35	$\overline{n}$ 3'52	-3'09	-2'12	0'13	2'75	4'67	x 6'23	5'36	3'57	1'31	-0'27	-0'41	-0'05	-0'22	-0'30	-0'42	-0'71	-0'99
S.	-0'92	-0'86	-1'11	-1'53	-1'47	-1'84	-2'41	$\overline{n}$ 3'01	-2'44	-0'10	2'28	4'68	x 5'27	4'62	3'11	1'29	0'24	-0'52	-0'65	-0'77	-0'79	-0'98	-0'96	-1'15
O.	-0'52	-0'41	-0'51	-0'99	-1'18	-1'48	-1'97	-2'85	$\overline{n}$ 2'92	-0'57	2'27	3'87	x 4'03	3'06	1'64	0'55	0'28	0'18	0'03	-0'38	-0'40	-0'55	-0'61	-0'53
N.	-0'51	-0'19	0'12	-0'07	-0'24	-0'56	-0'89	-1'28	$\overline{n}$ 1'35	-0'53	1'18	2'68	x 2'92	2'32	1'56	0'70	0'31	-0'12	-0'43	-0'83	-1'06	-1'13	-1'17	-1'06
D.	-0'26	-0'23	-0'22	-0'15	-0'27	-0'47	-0'49	-0'49	-0'36	0'21	0'89	1'39	x 1'49	1'10	0'56	0'32	0'03	-0'11	-0'28	-0'51	-0'61	$\overline{n}$ 0'65	-0'42	-0'47
Y.	-0'55	-0'49	-0'54	-0'92	-1'45	-1'96	-2'33	$\overline{n}$ 2'68	-2'41	-0'78	1'32	3'24	x 4'06	3'71	2'62	1'45	0'54	0'04	-0'13	-0'35	-0'44	-0'59	-0'63	-0'72
W.	-0'35	-0'06	0'00	0'01	-0'19	-0'49	-0'66	-1'03	$\overline{n}$ 1'04	-0'25	0'92	1'99	x 2'39	1'96	1'09	0'52	0'10	-0'17	-0'33	-0'71	-0'88	-0'99	-0'97	-0'86
Eq.	-0'68	-0'54	-0'76	-1'17	-1'30	-1'66	-2'27	$\overline{n}$ 3'04	-2'97	-1'08	1'42	3'74	x 4'61	4'18	2'76	1'40	0'60	0'03	-0'14	-0'38	-0'46	-0'66	-0'76	-0'88
S.	-0'63	-0'86	-0'85	-1'60	-2'86	-3'74	$\overline{n}$ 4'07	-3'97	-3'23	-1'01	1'63	3'99	x 5'17	5'00	4'00	2'42	0'90	0'26	0'06	0'06	0'02	-0'13	-0'17	-0'42

LIX.—INCLINATION.

ΔI.

J.	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...	′ ...
F.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
M.	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
A.	-0'35	-0'30	-0'21	-0'16	-0'12	-0'17	-0'09	0'24	0'79	1'27	x 1'54	1'16	0'63	0'31	0'01	-0'26	-0'40	-0'64	$\overline{n}$ 0'73	-0'57	-0'44	-0'50	-0'59	-0'43
M.	-0'46	-0'22	-0'10	-0'11	0'02	0'25	0'57	1'03	1'32	x 1'43	1'27	0'63	0'02	-0'41	-0'50	-0'36	-0'46	-0'56	$\overline{n}$ 0'63	-0'61	-0'59	-0'55	-0'54	-0'46
J.†	-0'36	-0'30	-0'18	-0'14	-0'03	0'27	0'66	1'08	1'26	x 1'32	1'31	0'81	0'30	-0'22	-0'33	-0'43	-0'68	-0'85	$\overline{n}$ 0'89	-0'74	-0'63	-0'43	-0'44	-0'38
J.†	-0'16	-0'07	-0'03	0'09	0'13	0'24	0'40	0'59	0'75	x 1'13	1'12	0'89	0'68	0'43	0'08	-0'38	-0'74	-0'99	-0'99	$\overline{n}$ 1'02	-0'77	-0'54	-0'43	-0'42
A.‡	-0'36	-0'27	-0'28	-0'31	-0'11	0'20	0'57	1'04	1'39	x 1'47	1'15	0'34	-0'08	-0'14	-0'47	-0'35	-0'31	-0'36	$\overline{n}$ 0'68	-0'65	-0'58	-0'50	-0'37	-0'36
S.	-0'44	-0'46	-0'39	-0'34	-0'30	-0'27	0'01	0'53	0'98	1'48	x 1'54	1'12	0'65	0'33	0'15	-0'03	-0'23	-0'35	-0'65	$\overline{n}$ 0'82	-0'71	-0'63	-0'65	-0'54
O.	-0'25	-0'34	-0'36	-0'34	$\overline{n}$ 0'43	-0'34	-0'11	0'28	0'91	x 1'30	1'03	0'71	0'36	0'09	-0'06	-0'06	-0'17	-0'32	-0'35	-0'32	-0'31	-0'31	-0'34	-0'26
N.	0'09	0'07	-0'01	-0'17	-0'22	-0'24	-0'22	0'05	0'41	x 0'68	0'61	0'42	0'19	0'03	-0'05	-0'13	-0'27	-0'31	$\overline{n}$ 0'32	-0'28	-0'20	-0'10	-0'07	0'00
D.	0'16	0'16	0'12	0'08	-0'03	-0'12	-0'11	-0'04	0'06	0'07	0'11	x 0'18	0'06	-0'08	-0'10	-0'11	-0'17	$\overline{n}$ 0'24	-0'22	-0'09	0'02	0'06	0'12	0'09
Y.	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
W.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eq.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
S.	-0'33	-0'22	-0'15	-0'12	0'00	0'24	0'55	0'94	1'18	x 1'34	1'21	0'67	0'23	-0'08	-0'31	-0'38	-0'55	-0'69	$\overline{n}$ 0'80	-0'75	-0'64	-0'51	-0'44	-0'40

LX.—HORIZONTAL FORCE.

ΔH.

	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
J.	-0'5	0'1	0'7	2'1	3'5	4'7	x 5'1	1'9	- 1'4	- 4'7	$\overline{n}$ 6'9	- 6'2	- 1'6	1'7	2'3	1'4	1'2	1'1	-0'4	-1'0	-0'1	-0'2	-1'7	-1'1
F.	-0'1	0'0	0'6	1'2	2'2	2'3	2'7	2'6	1'0	- 3'3	$\overline{n}$ 6'7	- 6'3	- 3'8	-2'4	-1'1	0'9	2'8	x 3'0	2'9	1'5	1'0	0'2	-0'7	-0'4
M.	3'1	2'9	2'7	2'9	3'5	3'6	3'9	3'1	- 5'7	- 12'0	$\overline{n}$ 16'3	- 14'8	- 8'9	-5'8	-1'3	2'6	3'9	4'8	x 6'0	5'6	4'1	4'6	4'0	3'3
A.	5'9	5'2	3'8	3'0	2'2	2'8	1'7	- 3'6	- 12'2	- 19'7	$\overline{n}$ 24'7	- 20'3	- 12'6	-6'7	-0'6	4'3	7'0	10'6	x 11'8	9'5	7'6	8'2	9'6	7'2
M.	7'1	3'7	2'3	2'9	1'5	-2'0	-6'8	- 14'6	- 21'0	$\overline{n}$ 25'5	- 24'4	- 15'4	- 5'0	3'8	7'5	7'3	9'8	11'3	x 11'6	10'5	9'9	9'1	8'7	7'4
J.	5'9	5'2	3'6	3'5	1'7	-2'8	-8'9	- 15'9	- 20'1	- 22'3	$\overline{n}$ 23'7	- 16'8	- 8'8	0'5	4'4	8'1	12'0	14'8	x 15'3	12'6	10'6	7'4	7'4	6'3
J.	3'0	1'7	1'1	-0'1	-0'4	-2'6	-5'3	- 8'2	- 11'8	- 18'5	$\overline{n}$ 19'8	- 17'0	- 13'7	-8'7	-2'3	5'6	12'1	16'1	16'3	x 16'5	12'8	9'3	7'2	6'7
A.§	6'1	4'8	4'9	5'1	2'3	-2'2	-7'8	- 15'1	- 20'7	$\overline{n}$ 22'8	- 19'3	- 8'9	- 2'2	1'0	7'2	6'1	6'1	6'3	x 10'3	9'7	8'9	7'8	6'1	6'1
S.	6'9	7'3	6'3	5'4	4'9	4'6	0'6	- 7'4	- 14'6	- 22'8	$\overline{n}$ 24'7	- 19'7	- 12'5	-6'2	-2'7	1'0	4'2	5'9	10'1	x 12'7	11'4	10'3	10'6	8'6
O.	3'9	5'0	5'2	4'7	x 5'8	4'5	1'4	- 4'2	- 14'0	$\overline{n}$ 20'1	- 16'6	- 11'8	- 5'9	-1'2	1'7	2'1	3'7	5'4	x 5'8	5'5	5'2	4'9	5'2	4'1
N.	-1'3	-1'1	0'0	2'4	2'9	3'1	2'7	-0'9	- 6'1	$\overline{n}$ 10'5	- 9'8	- 7'0	- 3'3	0'0	1'4	2'5	4'5	x 5'1	x 5'1	4'4	3'2	1'5	1'2	0'0
D.	-2'1	-2'3	-1'7	-1'2	0'3	1'6	1'3	0'1	- 1'9	- 2'5	- 2'9	$\overline{n}$ 3'2	- 1'1	1'2	1'7	2'4	3'1	x 4'1	3'6	1'8	0'2	-0'4	-1'3	-1'0
Y.	3'2	2'7	2'5	2'7	2'5	1'5	-0'8	- 5'2	- 10'7	- 15'4	$\overline{n}$ 16'3	- 12'3	- 6'6	-1'9	1'5	3'7	5'9	7'4	x 8'2	7'4	6'2	5'2	4'7	3'9
W.	-1'0	-0'8	-0'1	1'1	2'2	2'9	3'0	0'9	- 2'1	- 5'2	$\overline{n}$ 6'6	- 5'7	- 2'5	0'1	1'1	1'8	2'9	x 3'3	2'8	1'7	1'0	0'3	-0'6	-0'6
Eq.	5'0	5'1	4'5	4'0	4'1	3'9	1'9	- 3'0	- 11'6	- 18'7	$\overline{n}$ 20'6	- 16'6	- 10'0	-5'0	-0'7	2'5	4'7	6'7	x 8'4	8'3	7'1	7'0	7'3	5'8
S.	5'5	3'9	3'0	2'8	1'3	-2'4	-7'2	- 13'4	- 18'4	$\overline{n}$ 22'3	- 21'8	- 14'5	- 7'4	-0'8	4'2	6'8	10'0	12'1	x 13'4	12'3	10'5	8'4	7'4	6'6

x and $\overline{n}$ mark respectively the mean maximum and minimum values in each month or season.

* Four days only used—August 5 omitted.

† In calculating ΔI only four days of the Vertical Force were available. Missing days—June 27, July 17.

‡ In calculating ΔI only four days of both Vertical and Horizontal Forces were available. Missing day—August 5.

§ Four days only used.

LXI.-LXII.—INTERNATIONAL QUIET DAYS—DIURNAL INEQUALITIES OF DECLINATION AND HORIZONTAL FORCE.

Kew. *Mean Hourly Values, Greenwich Mean Time, for the Months, Year, and Seasons.* **1913.**

LXI.—DECLINATION (measured positive towards the west).

ΔD

Month and Season.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.
J.	-0'12	-0'17	-0'72	-0'01	-0'14	-0'01	$\bar{n}$ 1'03	-1'02	-0'93	-0'32	0'75	1'76	x 2'71	1'72	0'83	0'40	0'03	0'01	-0'12	-0'57	-0'54	-0'85	-0'90	-0'65
F.	-0·24	-0·35	-0·11	-0·14	-0·10	-0·49	-0·87	-1·16	$\bar{n}$ 1·58	-1·03	0·71	2·14	2·67	x 2·73	1·84	0·76	0·21	-0·21	-0·40	-0·68	-0·71	-1·03	-1·08	-0·76
M.	-0·63	-0·69	-1·12	-0·86	-0·75	-1·11	-2·04	-2·78	$\bar{n}$ 3·29	-1·77	1·62	3·68	x 4·48	4·35	2·93	1·14	0·18	-0·41	0·01	-0·42	-0·36	-0·65	-0·79	-0·74
A.	-0·42	-0·60	-0·77	-0·99	-1·09	-1·87	-3·15	$\bar{n}$ 4·05	-4·00	-1·98	0·20	3·40	x 5·30	4·90	3·70	2·33	1·45	0·59	0·03	-0·15	-0·51	-0·56	-0·78	-0·86
M.	-0·16	-0·34	-0·40	-0·74	-1·92	-3·06	-4·13	$\bar{n}$ 4·21	-2·87	-0·51	2·51	4·73	x 5·23	4·63	3·09	1·37	0·01	-0·70	-0·70	-0·68	-0·40	-0·32	-0·22	-0·18
J.	-1·51	-2·20	-2·61	-2·89	-3·69	-4·31	-4·42	$\bar{n}$ 4·53	-3·75	-1·96	0·48	3·45	4·48	x 5·27	4·78	3·61	2·67	2·24	2·06	1·81	1·55	0·68	-0·17	-1·02
J.	-1·04	-1·33	-1·83	-2·08	-2·99	-3·48	$\bar{n}$ 3·88	-3·84	-2·94	-1·44	0·39	2·74	3·76	x 4·86	4·60	3·66	2·50	1·67	0·87	0·70	0·43	-0·41	-0·39	-0·56
A.	-1·08	-1·46	-1·59	-1·51	-2·09	-2·89	$\bar{n}$ 3·23	-3·17	-1·97	-0·18	2·43	4·42	x 5·65	5·31	3·69	1·45	-0·17	-0·36	-0·02	-0·15	-0·44	-0·75	-0·83	-1·05
S.	-0·87	-1·08	-1·68	-1·63	-1·47	-1·84	-2·77	$\bar{n}$ 3·19	-2·61	-0·15	2·38	4·57	x 5·35	4·54	3·14	1·41	0·54	0·16	-0·18	-0·55	-0·64	-1·15	-1·17	-1·22
O.	-0·34	-0·38	-0·77	-0·69	-0·65	-0·90	-2·26	$\bar{n}$ 3·51	-3·31	-0·67	2·11	3·76	x 4·04	3·10	1·91	0·58	0·44	0·45	0·17	-0·45	-0·40	-0·65	-0·82	-0·70
N.	-0·29	-0·09	0·00	0·05	0·01	-0·40	-1·12	$\bar{n}$ 1·66	-1·62	-0·67	1·00	2·84	x 3·06	2·23	1·15	0·74	0·41	-0·13	-0·51	-0·74	-0·87	-1·12	-1·11	-1·07
D.	0·13	-0·01	-0·20	-0·05	0·04	0·03	-0·79	$\bar{n}$ 0·83	-0·66	0·12	0·83	1·66	x 1·70	0·86	0·53	0·25	0·03	-0·45	-0·41	-0·66	-0·51	-0·59	-0·58	-0·44
Y.	-0·55	-0·73	-0·98	-0·96	-1·24	-1·69	-2·47	$\bar{n}$ 2·83	-2·46	-0·88	1·28	3·26	x 4·04	3·71	2·68	1·47	0·69	0·24	0·07	-0·21	-0·28	-0·62	-0·74	-0·77
W.	-0·13	-0·16	-0·26	-0·04	-0·05	-0·22	-0·95	$\bar{n}$ 1·17	-1·20	-0·48	0·82	2·10	x 2·53	1·88	1·09	0·54	0·17	-0·20	-0·36	-0·66	-0·66	-0·90	-0·92	-0·73
Eq.	-0·57	-0·69	-1·09	-1·04	-0·99	-1·43	-2·56	$\bar{n}$ 3·38	-3·30	-1·14	1·58	3·85	x 4·79	4·22	2·92	1·36	0·65	0·20	0·01	-0·39	-0·48	-0·75	-0·89	-0·88
S.	-0·95	-1·33	-1·61	-1·81	-2·67	-3·44	-3·92	$\bar{n}$ 3·94	-2·88	-1·02	1·45	3·84	4·78	x 5·02	4·04	2·52	1·25	0·71	0·55	0·42	0·29	-0·20	-0·40	-0·70

LXII.—HORIZONTAL FORCE.

ΔH

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.
J.	γ -3'4	γ -3'4	γ -2'5	γ -0'9	γ 1'2	γ 4'3	x γ 5'2	γ 4'4	γ 0'2	- γ 4'4	$\bar{n}$ γ 7'1	- γ 6'8	γ -0'5	γ 1'1	γ 2'4	γ 1'9	γ 2'0	γ 1'3	γ 1'6	γ 1'2	γ 1'8	γ 1'3	γ -0'5	γ -0'6
F.	-3·5	$\bar{n}$ 4·6	-3·8	-2·6	-1·1	2·2	2·9	x 4·4	3·2	- 0·6	- 4·4	- 4·3	-2·2	-1·3	-0·7	0·6	1·6	3·4	3·5	2·4	2·4	2·1	-0·1	0·0
M.	0·3	-3·2	-2·8	-0·7	0·4	3·1	5·5	5·4	- 3·7	- 10·4	$\bar{n}$ 11·9	- 8·3	-5·5	-2·0	-0·2	1·4	3·5	3·5	5·6	x 5·7	4·7	3·6	2·5	2·9
A.	5·0	1·2	-1·5	-0·7	-0·4	2·5	1·3	-3·0	- 8·6	- 17·0	$\bar{n}$ 19·2	- 13·1	-6·0	-5·2	-0·5	4·1	6·3	7·7	x 9·0	7·3	6·3	7·8	x 9·0	8·0
M.	5·0	0·9	-0·3	-1·1	-2·0	-3·3	-7·8	-14·5	- 16·7	$\bar{n}$ 17·2	- 12·9	- 6·6	0·3	4·3	5·8	3·7	6·1	6·0	8·7	9·0	x 10·0	8·5	7·4	7·1
J.	2·1	0·9	-0·4	-1·1	-1·9	-3·0	-5·4	-6·7	- 8·0	- 8·8	$\bar{n}$ 11·5	- 9·9	-6·2	-2·3	0·6	2·9	6·7	7·7	x 9·9	9·1	8·0	6·7	6·1	4·2
J.	2·1	-1·2	-1·6	-2·4	-2·1	-1·4	-1·3	-4·0	- 4·3	- 6·8	$\bar{n}$ 10·8	- 9·5	-7·9	-5·9	-2·6	2·6	5·1	8·8	7·9	x 9·6	7·7	5·3	6·0	6·3
A.	8·5	4·4	2·7	4·2	3·3	1·4	-2·0	-9·5	- 15·2	$\bar{n}$ 18·6	- 16·1	- 7·0	-5·0	-5·4	1·3	1·5	2·7	3·9	7·9	6·8	7·0	6·6	7·4	x 9·5
S.	6·8	3·2	2·8	3·9	2·5	3·7	3·0	-4·2	- 11·1	$\bar{n}$ 16·6	- 15·5	- 12·9	-9·3	-7·5	-5·3	-3·0	0·1	3·2	7·5	x 10·2	9·5	9·2	9·4	9·8
O.	3·3	2·0	0·8	2·6	4·7	5·9	4·4	-0·7	- 10·7	$\bar{n}$ 19·1	- 16·8	- 12·3	-6·0	-3·4	-0·8	0·3	2·5	5·6	x 7·7	6·8	6·8	6·0	5·0	5·0
N.	-2·0	-3·9	-3·5	-1·1	0·2	2·0	3·5	-0·2	- 3·4	- 8·1	$\bar{n}$ 9·0	- 6·8	-4·3	-0·8	1·3	1·8	4·5	5·4	x 6·4	5·5	5·0	3·3	2·9	1·2
D.	-3·5	-4·1	$\bar{n}$ 4·6	-3·8	-1·6	-0·2	2·1	2·7	3·3	0·4	- 2·1	- 2·5	-3·0	0·0	0·9	-0·6	3·2	3·9	x 4·6	4·2	2·8	0·6	-1·5	-0·5
Y.	1·7	-0·6	-1·2	-0·3	0·3	1·4	1·0	-2·2	- 6·3	- 10·6	$\bar{n}$ 11·4	- 8·3	-4·6	-2·4	0·2	1·4	3·7	5·0	x 6·7	6·5	6·0	5·1	4·5	4·4
W.	-3·1	-4·0	-3·6	-2·1	-0·3	2·1	3·4	2·8	0·8	- 3·2	$\bar{n}$ 5·6	- 5·1	-2·5	0·2	1·0	0·9	2·8	3·5	x 4·0	3·3	3·0	1·8	0·2	0·0
Eq.	3·9	0·8	-0·2	1·3	1·8	3·8	3·6	-0·6	- 8·5	$\bar{n}$ 15·8	$\bar{n}$ 15·8	- 11·6	-6·7	-4·5	-1·7	0·7	3·1	5·0	x 7·5	x 7·5	6·8	6·7	6·5	6·4
S.	4·4	1·3	0·1	-0·1	-0·7	-1·6	-4·1	-8·7	- 11·1	$\bar{n}$ 12·9	- 12·8	- 8·3	-4·7	-2·3	1·3	2·7	5·2	6·6	x 8·6	x 8·6	8·2	6·8	6·7	6·8

x and $\bar{n}$ mark respectively the mean maximum and minimum values in each month or season.

LXIII.—RANGE OF THE MEAN DIURNAL INEQUALITIES OF MAGNETIC FORCE AND NON-CYCLIC CHANGE ($24^h - 0^h$) FOR THE MONTHS, YEAR, AND SEASONS OF 1913, AT TWO OBSERVATORIES.

	ESKDALEMUIR.								KEW.			
	For omitted days see Tables specified.						International quiet Days.						International quiet Days.			
Refer to Table.	XLIX.		L.		LI.		LII.	LIII.	LIV.	LV.		LVI.		LVII.		LVIII.	LIX.	LX.	LXI.		LXII.	
	X.		—Y.		Z.		D.	I.	H.	X.		—Y.		Z.		D.	I.	H.	D.		H.	
	Range.	24 − 0.	Range.	24 − 0.	Range.	24 − 0.	Range.	Range.	Range.	Range.	24 − 0.	Range.	24 − 0.	Range.	24 − 0.	Range.	Range.	Range.	Range.	24 − 0.	Range.	24 − 0.
	γ	γ	γ	γ	γ	γ	′	′	γ	γ	γ	γ	γ	γ	γ	′	′	γ	′	′	γ	γ
J.	15·7	+0·6	21·8	−0·1	...	...	4·87	...	12·2	14·3	+3·0	16·7	+1·8	...	...	3·79	...	12·0	3·74	+0·22	12·3	+ 1·0
F.	18·8	+0·1	20·9	+1·0	...	...	4·73	...	14·8	13·4	0·0	18·3	+5·2	...	...	4·23	...	9·7	4·31	+0·36	9·0	+ 0·1
M.	24·1	+0·2	36·5	−0·1	...	...	7·52	...	18·3	26·5	+1·2	32·2	0·0	...	...	7·11	...	22·3	7·77	+0·12	17·6	+ 1·3
A.	37·2	+0·1	44·4	+0·1	20·1	+0·1	9·19	2·05	36·8	34·9	+1·8	42·0	+1·0	11·2	−0·8	8·68	2·27	36·5	9·35	+0·44	28·2	+ 3·1
M.	36·8	+0·4	42·6	+0·4	23·2	+0·8	9·00	1·90	35·5	38·8	+1·8	47·3	+0·8	23·5	−0·4	9·72	2·06	37·1	9·44	+0·02	27·2	+ 1·5
J.	40·8	−0·9	48·1	−0·2	16·8	+1·4	9·80	2·43	41·5	38·2	+2·2	51·3	−0·6	18·2	+1·3	10·03	2·21	39·0	9·80	−0·02	21·4	+ 4·3
J.	38·7	−0·2	44·7	−0·2	18·1	+1·5	9·45	2·20	39·0	35·9	−1·0	40·5	+1·0	14·1	+1·0	8·66	2·15	36·3	8·74	−0·39	20·4	0·0
A.	37·9	−0·6	46·6	−0·2	14·3	+1·6	9·71	2·29	37·3	32·7	+3·3	47·1	+2·3	14·4	+0·5	9·75	2·15	33·1	8·88	+0·30	28·1	+ 6·8
S.	36·8	−0·4	39·2	−0·2	11·9	+0·5	8·34	2·05	33·3	40·4	+4·2	37·1	+0·6	10·3	−1·2	8·28	2·36	37·4	8·54	−0·58	26·8	+ 5·8
O.	29·4	+0·2	29·3	+0·2	11·3	−0·2	6·56	1·78	25·9	26·6	+0·8	34·7	−0·4	6·2	+0·2	6·95	1·73	25·9	7·55	−0·37	26·8	+ 1·3
N.	18·1	+0·1	21·2	+0·1	6·7	−0·6	5·02	1·06	15·5	16·7	+1·6	20·7	+0·8	4·1	−0·8	4·27	1·00	15·6	4·72	+0·37	15·4	+ 1·2
D.	9·4	+0·3	14·2	0·0	7·1	+0·5	3·00	0·53	6·9	9·2	+0·6	9·7	−1·2	5·5	−0·4	2·14	0·42	7·3	2·53	−0·40	9·2	− 1·2
Y.	25·8	...	31·2	...	...	...	6·78	...	23·6	25·7	...	31·3	...	...	...	6·74	...	24·5	6·87	...	18·1	...
W.	15·4	...	19·1	...	...	...	4·28	...	12·0	12·2	...	15·8	...	...	...	3·43	...	9·9	3·70	...	9·6	...
Eq.	30·7	...	36·6	...	...	...	7·81	...	26·5	30·4	...	35·7	...	...	...	7·65	...	29·0	8·17	...	23·3	...
S.	38·5	..	44·8	...	18·1	...	9·36	2·20	38·0	36·2	...	45·3	...	17·1	...	9·24	2·14	35·7	8·96	...	21·5	...

LXIV.—HARMONIC COMPONENTS OF THE DIURNAL INEQUALITY OF THE GEOGRAPHICAL COMPONENTS OF TERRESTRIAL MAGNETIC FORCE.

The formula * used is—Inequality $= a_1 \cos 15t^\circ + b_1 \sin 15t^\circ + a_2 \cos 30t^\circ + b_2 \sin 30t^\circ + \ldots$
$= c_1 \sin (15t^\circ + \alpha_1) + c_2 \sin (30t^\circ + \alpha_2) + \ldots$
t being time of day measured in hours from midnight G.M.T.

Eskdalemuir. (Eskdalemuir Observatory is 13 minutes of time West of Greenwich.) **1913.**

Month and Year.	North Component. ΔX. (or ΔN.) All days except Apr. 24, 25, June 19, 20, July 18, Aug. 4, 5, Sept. 3, Dec. 15, 16. Corrected for Effect of West Component on North Magnetograph. (See p. 71.)								West Component. −ΔY. (or ΔW.) All days except Apr. 24, 25, June 19, 20, July 18, Aug. 4, 5, Sept. 3, Dec. 15, 16. Corrected for Effect of North Component on West Magnetograph. (See p. 71.)								Vertical Component. ΔZ. or (ΔV.) All days except June 23, 24, 25, 27–30, July 16, 17, Aug. 4, 5, Oct. 18.							
	a_1.	b_1.	a_2.	b_2.	c_1.	α_1.	c_2.	α_2.	a_1.	b_1.	a_2.	b_2.	c_1.	α_1.	c_2.	α_2.	a_1.	b_1.	a_2.	b_2.	c_1.	α_1.	c_2.	α_2.
	γ	γ	γ	γ	γ	°	γ	°	γ	γ	γ	γ	γ	°	γ	°	γ	γ	γ	γ	γ	°	γ	°
J.	3·4	1·5	−3·3	−1·0	3·7	65·5	3·5	252·4	−6·0	−0·8	0·6	4·3	6·0	262·4	4·3	7·4	Vertical force magnetograph unreliable during January, February, and March.							
F.	4·8	2·2	−4·1	−1·8	5·3	65·3	4·5	246·4	−5·7	−2·9	0·9	5·0	6·4	243·3	5·1	10·7								
M.	8·2	0·5	−5·7	−1·2	8·2	86·5	5·8	257·8	−7·6	−6·6	3·6	7·5	10·1	228·9	8·3	25·5								
A.	12·9	−3·7	−8·2	0·2	13·4	105·8	8·2	271·4	−5·8	−10·4	3·3	9·9	11·9	209·1	10·4	18·7	2·5	−4·5	−5·1	−1·1	5·1	150·9	5·2	258·3
M.	11·4	−6·0	−7·0	1·4	12·9	118·0	7·1	281·6	−5·6	−12·4	6·5	7·5	13·6	204·2	10·0	41·2	4·9	−5·0	−5·7	−0·9	7·0	135·4	5·8	260·6
J.	13·6	−7·1	−8·2	2·5	15·3	117·7	8·5	286·9	−5·2	−18·2	5·3	8·6	18·9	195·9	10·1	31·9	4·2	−2·8	−4·4	−0·5	5·0	123·5	4·4	263·1
J.	13·4	−4·5	−7·9	−0·8	14·2	108·7	7·9	264·3	−4·2	−15·6	4·4	7·9	16·2	194·9	9·1	28·9	−0·1	−2·4	−4·8	2·7	2·4	181·2	5·5	299·4
A.	13·8	−5·2	−7·1	1·9	14·7	110·8	7·4	285·2	−6·9	−11·5	6·9	7·0	13·4	211·0	9·9	44·4	3·1	−1·4	−3·5	−0·4	3·4	115·1	3·5	264·3
S.	14·6	−2·6	−6·6	1·4	14·8	100·1	6·8	282·2	−7·2	−7·9	5·9	6·4	10·7	221·9	8·7	42·5	2·2	−2·7	−2·5	−0·9	3·5	140·9	2·7	249·9
O.	11·6	0·1	−6·0	1·3	11·6	89·4	6·2	281·9	−7·2	−3·2	3·0	6·4	7·9	246·3	7·0	25·5	0·0	−4·9	−1·1	−0·4	4·9	180·0	1·1	248·7
N.	5·8	1·0	−4·2	−0·5	5·9	79·9	4·2	263·5	−5·4	−1·5	0·5	4·3	5·6	254·9	4·4	6·9	−0·7	−3·2	−0·8	−0·2	3·2	191·8	0·8	257·8
D.	0·9	1·3	−2·4	−0·6	1·5	35·0	2·5	255·3	−4·6	−0·2	1·0	2·8	4·6	267·5	3·0	19·6	1·6	−2·9	−0·8	0·3	3·3	151·2	0·9	291·7
Y.	9·5	−1·9	−5·9	0·2	9·7	101·1	5·9	272·3	−5·9	−7·6	3·5	6·5	9·7	218·0	7·4	28·4	...	...	...	...	...	...	...	...

LXV. AND LXVI.—QUICK RUNS OF THE RECORDING MAGNETOGRAPHS AT KEW AND ESKDALEMUIR. **1913.**

No quick Runs were made in 1913.

* In the volumes for 1911 and 1912, a and b were interchanged.

LXVII.—MEAN MONTHLY AND ANNUAL VALUES OF TERRESTRIAL MAGNETIC ELEMENTS AT METEOROLOGICAL OFFICE OBSERVATORIES.

1913.	KEW (quiet days D and H, absolute observations I. See p. 65).				ESKDALEMUIR (all days except those noted in monthly tables).				VALENCIA (2 absolute observations per month).			
	North.	West.	Vertical.	Total.	North.	West.	Vertical.	Total.	North.	West.	Vertical.	Total.
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
January	17821	5008	43465	47243	16009	5198	45328	48352	16771	6241	44699	48148
February	17824	5008	43469	47247	16005	5194	45246	48274	16779	6234	44689	48141
March	17823	4996	43459	47237	16003	5193	45326	48348	16786	6223	44668	48122
April	17820	4999	43461	47238	16001	5183	45292	48314	16778	6220	44644	48097
May	17830	4990	43436	47217	16007	5178	45290	48314	16779	6215	44649	48101
June	17824	4973	43468	47243	16008	5176	dip circle out of action	dip circle out of action	16770	6207	44573	48026
July	17820	4978	43468	47242	16008	5173			16785	6207	44634	48088
August	17818	4979	43445	47220	16011	5170	45277	48303	16778	6202	44580	48035
September	17818	4972	43433	47209	16006	5164	45271	48294	16739	6208	44485	47934
October	17826	4966	43451	47227	16002	5156	45269	48290	16772	6204	44583	48036
November	17823	4957	43436	47211	16007	5156	45264	48287	16786	6215	44633	48088
December	17819	4953	43401	47177	16008	5152	45255	48279	16812	6208	44695	48154
Year 1913	17822	4982	43449	47226	16006	5174	45282†	48306†	16778	6215	44628	48081
Year 1912	17801	5029	43454	47227	16015	5224	45345*	48374	16766	6265	44684	48134
Year 1910	17781	5117	43546	47313	15976	5311	45343	48368	16732	6337	44771	48215
Year 1905	17743	5272	43742	47496	...	...	...	...	16640	6447	44893	48313

1913.	Declination (West).	Inclination (North).	Horizontal Force.	Declination (West).	Inclination (North).	Horizontal Force.	Declination (West).	Inclination (North).	Horizontal Force.
	° ′	° ′	γ	° ′	° ′	γ	° ′	° ′	γ
January	15 41·8	66 55·9	18511	17 59·3	69 37·7	16831	20 24·7	68 10·9	17895
February	15 41·7	66 55·8	18514	17 58·7	69 36·0	16827	20 22·9	68 10·3	17900
March	15 39·6	66 55·8	18510	17 58·7	69 38·2	16824	20 20·4	68 9·6	17902
April	15 40·3	66 56·0	18508	17 57·0	69 37·7	16819	20 20·4	68 9·5	17894
May	15 38·2	66 54·8	18515	17 55·5	69 37·3	16823	20 19·5	68 9·7	17893
June	15 35·4	66 56·4	18505	17 55·1	dip circle out of action	16824	20 18·7	68 8·4	17882
July	15 36·4	66 56·6	18502	17 54·5		16823	20 17·7	68 9·1	17896
August	15 36·8	66 56·0	18501	17 53·7	69 36·9	16825	20 17·2	68 8·2	17888
September	15 35·4	66 55·8	18499	17 52·9	69 37·2	16819	20 20·9	68 8·0	17853
October	15 34·0	66 55·9	18505	17 51·7	69 37·6	16812	20 17·9	68 8·6	17883
November	15 32·6	66 55·8	18500	17 51·3	69 37·1	16817	20 19·0	68 8·8	17900
December	15 32·0	66 55·2	18494	17 50·4	69 36·9	16816	20 16·1	68 9·0	17922
Year 1913	15 37·0	66 55·8	18505	17 54·9	69 37·3†	16822	20 19·6	68 9·2	17892
Year 1912	15 46·5	66 56·5	18498	18 3·9	69 37·2*	16846	20 29·3	68 10·3	17898
Year 1910	16 3·2	66 58·7	18503	18 23·3	69 37·8	16836	20 44·6	68 13·0	17892
Year 1905	16 32·9	67 3·8	18510	...	...	...	21 10·4	68 19·2	17848

* From absolute observations and 1911 inequalities.

† From first 5 and last 5 months of year.

LXVIII.—MEAN VALUES, FOR THE YEARS SPECIFIED, OF THE MAGNETIC ELEMENTS AT OBSERVATORIES WHOSE PUBLICATIONS ARE RECEIVED AT KEW OBSERVATORY.

Place.	Latitude.	Longitude.	1913. Declination.	1913. Inclination.	1913. Horizontal Force.	1913. Vertical Force.	1912. Declination.	1912. Inclination.	1912. Horizontal Force.	1912. Vertical Force.	1911. Declination.	1911. Inclination.	1911. Horizontal Force.	1911. Vertical Force.
	N.			N.	γ	γ		N.	γ	γ		N.	γ	γ
Sitka (Alaska)	° ′ 57 3	° ′ 135 20 W.	° ′ ...	° ′ ...	...	...	° ′ 30 20·9 E.	° ′ 74 28·8	15615	56231	° ′ 30 19·1 E.	° ′ 74 30·4	15606	56298
Rude Skov	55 51	12 27 E.	9 3·5 W	68 46·6	17319	44597	9 12·2 W.	68 45·4	17342	44610	9 20·4 W.	68 44·8	17359	44631
Kasan	55 47	49 8 E.	...	...	...	...	8 9·1 E.	69 17·3	18017	47651	8 4·5 E.	69 15·1	18052	47652
*Eskdalemuir	55 19	3 12 W.	17 54·9 W.	69 37·3	16822	45282	18 3·9 W.	69 37·2	16846	45345	18 12·4 W.	69 37·1	16846	45344
Stonyhurst	53 51	2 28 W.	16 55·4 W.	68 41·2	17374	44532	17 3·5 W.	68 41·4	17398	44601	17 13·3 W.	68 41·4	17412	44637
Potsdam	52 23	13 4 E.	8 36·4 W.	66 21·4	18783	42904	8 45·9 W.	66 20·4	18803	42914	8 54·5 W.	66 20·0	18816	42930
Seddin	52 17	13 1 E.	8 37·7 W.	66 18·4	18821	42889	8 47·2 W.	66 17·4	18841	42899	8 55·8 W.	66 17·0	18854	42915
†De Bilt (Utrecht)	52 5	5 11 E.	...	...	...	...	12 41·7 W.	66 46·5	18537	43200	12 50·7 W.	66 45·4	18540	43169
Valencia	51 56	10 15 W.	20 19·6 W.	68 9·2	17892	44628	20 29·3 W.	68 10·3	17898	44684	20 38·1 W.	68 12·1	17889	44730
Kew	51 28	0 19 W.	15 37·0 W.	66 55·8	18505	43449	15 46·5 W.	66 56·5	18498	43454	15 55·3 W.	66 57·2	18502	43490
Greenwich	51 28	0 0	15 15·2 W.	66 50·5	18514	43283	15 24·3 W.	66 51·8	18528	43360	15 33·0 W.	66 52·1	18529	43374
Uccle (Brussels)	50 48	4 21 E.	...	...	...	...	...	...	...	...	13 13·9 W.	66 0·1	19025	42734
Falmouth	50 9	5 5 W.	...	...	...	...	17 24·2 W.	66 26·6	18799	43118	17 33·0 W.	66 28·2	18898	43172
Prague	50 5	14 25 E.	...	...	...	...	7 50·3 W.	...	...	...	7 59·3 W.	...	...	...
Cracow	50 4	19 58 E	5 3·3 W.	64 18·4	...	...	5 13·4 W.	64 10·7	...	...	5 18·1 W.	64 15·5	...	...
Val Joyeux (near Paris)	48 49	2 1 E.	13 59·2 W.	64 38·9	19744	41673	14 8·9 W.	64 40·1	19747	41714	14 17·6 W.	64 41·6	19744	41757
‡O'Gyalla (Pesth)	47 53	18 12 E.	...	...	...	...	6 17·5 W.	...	21064	...	6 25·6 W.	...	21067	...
Pola	44 52	13 51 E.	...	...	...	...	8 8·5 W.	60 3·6	22199	38544	8 17·5 W.	60 3·6	22190	38526
Agincourt (Toronto)	43 47	79 16 W.	...	...	...	...	6 13·7 W.	74 39·8	16178	58988	6 9·0 W.	74 39·1	16204	59036
Karsani (near Tiflis)	41 43	44 48 E.	3 9·1 E.	56 51·1	25217	38612	3 3·1 E.	56 46·0	25255	38545	2 57·4 E.	56 41·2	25289	38480
Capodimonte (Naples)	40 52	14 15 E.	...	...	...	...	...	...	...	...	...	56 11·7	...	...
Tortosa	40 49	0 30 E.	13 0·7 W.	57 49·3	23288	37011	13 9·3 W.	57 51·8	23271	37042	13 18·6 W.	57 54·8	23256	37092
Coimbra	40 12	8 25 W.	...	...	...	...	16 19·7 W.	58 42·0	23033	37886	16 27·4 W.	58 46·4	23008	37950
Cheltenham, U.S.	38 44	76 50 W.	...	...	...	...	5 50·0 W.	70 39·1	19702	56108	5 45·6 W.	70 37·4	19765	56197
San Fernando	36 28	6 12 W.	14 51·7 W.	54 26·6	24939	34890	14 54·3 W.	54 26·7	24923	34870	15 5·2 W.	54 31·5	24894	34932
Tokio	35 41	139 45 E.	...	...	...	...	...	...	...	...	5 0·6 W.	49 5·0	30025	34640
Tucson (Arizona)	32 15	110 50 W.	...	...	...	...	13 33·5 E.	59 20·3	27331	46101	13 29·7 E.	59 19·9	27370	46155
Dehra Dun	30 19	78 3 E.	...	...	...	...	2 25·9 E.	44 8·9	33218	32244	2 29·2 E.	44 2·0	33238	32136
Helwan	29 52	31 21 E.	2 17·0 W.	40 47·6	30031	25916	2 25·4 W.	40 43·7	30063	25884	2 33·2 W.	40 41·9	30030	25828
Barrackpore	22 46	88 22 E.	...	...	...	...	0 44·0 E.	30 50·7	37369	22316	0 49·9 E.	30 45·5	37337	22220
Hong Kong	22 18	114 10 E.	0 6·2 W.	30 53·7	37172	22242	0 4·3 W.	30 56·3	37193	22294	0 2·4 W.	30 58·5	37145	22297
Honolulu (Hawaii)	21 19	158 4 W.	...	...	...	...	9 34·8 E.	39 38·4	29124	24128	9 32·2 E.	39 42·2	29139	24195
Toungoo	18 56	96 27 E.	...	...	...	...	0 13·4 E.	23 3·1	38889	16548	0 19·3 E.	23 3·0	38853	16532
Alibag (Bombay)	18 39	72 52 E.	0 47·5 E.	24 4·1	36880	16472	0 51·2 E.	23 56·1	36874	16367	0 54·7 E.	23 47·6	36856	16250
Vieques (Porto Rico)	18 9	65 26 W.	...	...	...	...	2 39·0 W.	50 9·0	28667	34346	2 29·9 W.	50 0·4	28768	34292
Antipolo	14 39	121 10 E.	...	...	...	...	...	...	...	...	0 39·8 E.	16 17·2	38244	11174
Kodai-Kanal	10 13	77 27 E.	...	...	...	...	1 5·8 W.	3 59·1	37543	02616	1 0·2 W.	3 52·0	37515	02536
	S.			S.				S.				S.		
Batavia	6 11	106 49 E.	...	...	...	...	...	...	...	...	0 47·7 E.	31 16·4	36664	22269
Apia	13 48	171 45 W.	...	...	...	...	...	...	...	...	...	...	...	...
Mauritius	20 6	57 33 E.	9 30·0 W.	53 17·9	23282	31234	9 25·5 W.	53 23·2	23304	31364	...	...	...	...
Pilar (Argentine)	31 40	63 53 W.	...	...	...	...	8 57·1 E.	25 45·0	12388	25682	9 5·4 E.	25 49·4	12436	25699
Christchurch, N.Z.	43 32	172 37 E.	...	...	...	...	...	...	...	...	16 39·0 E.	67 56·2	22494	55497

* The Inclination and Vertical Force for 1913 are from the first and last 5 months only of the year.
† The Inclination and Vertical Force are from a dip circle in 1911, but from an inductor in 1912.
The instrumental differences are 1′·2 in Inclination and 40γ in Vertical Force.
‡ The results for 1912 are from the first and last 4 months only of the year.

ADDITIONAL VALUES FOR EARLIER YEARS.

Place.	Latitude.	Longitude.	1910. Declination.	1910. Inclination.	1910. Horizontal Force.	1910. Vertical Force.	1909. Declination.	1909. Inclination.	1909. Horizontal Force.	1909. Vertical Force.	1908. Declination.	1908. Inclination.	1908. Horizontal Force.	1908. Vertical Force.
	N.			N.	γ	γ		N.	γ	γ		N.	γ	γ
Kasan	° ′ 55 47	° ′ 49 8 E.	° ′ 8 3·3 E.	° ′ 69 9·7	18098	47547	° ′ 8 5·1 E.	° ′ 69 9·1	18118	47575	° ′ ...	° ′ ...	...	...
Munich	48 9	11 37 E.	9 31·5 W.	63 8·4	20639	40751	...	...	...	...	...	...	...	...
Karsani	41 43	44 48 E.	2 52·7 E.	56 35·5	25343	38422	2 46·8 E.	56 32·1	25377	38391	2 39·8 E.	56 28·4	25404	38343
Baldwin (Kansas)	38 47	95 10 W.	...	...	...	...	8 34·0 E.	68 50·2	21666	55964	8 33·0 E.	68 47·8	21714	55973
Athens	37 58	21 23 E.	...	...	...	...	...	...	...	...	4 52·9 W.	52 11·7	26197	33613
Tucson (Arizona)	32 15	110 50 W.	13 25·8 E.	59 19·6	27406	46206	...	...	...	...	...	...	...	...
Vieques (Porto Rico)	18 9	65 26 W.	2 20·6 W.	49 52·0	28863	34236	...	...	...	...	...	...	...	...
Lu-kia-pang	31 19	121 2 E.	...	...	...	...	2 59·6 W.	45 34·9	33226	33906	2 58·3 W.	45 35·1	33215	33881
	S.			S.				S.				S.		
Batavia	6 11	106 49 E.	0 48·7 E.	31 12·0	36660	22202	0 49·5 E.	31 9·2	36682	22175	0 50·7 E.	31 2·4	36694	22082
Apia	13 48	171 45 W.	...	...	...	...	...	...	...	...	9 41·9 E.	29 21·7	35613	20036
Rio de Janeiro	22 55	43 11 W.	9 40·0 W.	...	...	...	...	...	...	...	...	...	...	...
Santiago (Chili)	33 27	70 42 W.	...	...	...	...	13 57·9	29 57·2	...	...	...	...	...	...

LXIX.-LXXIV.—NORMALS FOR THE MONTHS OF THE HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS

LXIX.—PRESSURE IN MILLIBARS.

(The Mean Values are corrected

Hour, G.M.T.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
JANUARY.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.
Aberdeen, Normal. 1000+	7·51	7·49	7·40	7·27	7·13	7·12	7·17	7·41	7·63	7·81	7·83	7·64
Difference for 1913	− 4·76	− 4·77	− 4·70	− 4·73	− 4·76	− 4·77	− 4·78	− 4·79	− 4·87	− 4·89	− 4·87	− 4·86
Eskdalemuir, 1913. 970+	6·69	6·78	6·71	6·57	6·58	6·57	6·69	6·86	7·04	7·15	7·12	6·83
Valencia, Normal. 1000+	12·84	12·72	12·73	12·57	12·44	12·37	12·43	12·64	12·91	13·19	13·34	13·18
Difference for 1913	−13·40	−13·44	−13·41	−13·47	−13·43	−13·50	−13·50	−13·61	−13·67	−13·79	−13·90	−13·90
Kew, Normal. 1000+	16·26	16·29	16·22	16·07	15·95	15·97	16·11	16·39	16·62	16·83	16·82	16·46
Difference for 1913	− 8·33	− 8·17	− 8·14	− 8·03	− 8·00	− 7·88	− 7·85	− 7·90	− 7·88	− 7·86	− 7·89	− 7·89
Falmouth, Normal. 1000+	10·65	10·61	10·59	10·45	10·29	10·27	10·38	10·66	10·93	11·20	11·32	10·99
FEBRUARY.												
Aberdeen, Normal. 1000+	7·98	7·89	7·68	7·55	7·47	7·48	7·57	7·80	7·92	8·04	8·12	8·07
Difference for 1913	+ 5·03	+ 5·22	+ 5·32	+ 5·54	+ 5·64	+ 5·90	+ 5·99	+ 6·20	+ 6·26	+ 6·33	+ 6·32	+ 6·32
Eskdalemuir, 1913. 980+	9·40	9·49	9·41	9·39	9·41	9·58	9·75	10·04	10·20	10·31	10·40	10·35
Valencia, Normal. 1000+	12·16	12·00	11·85	11·64	11·61	11·66	11·72	11·99	12·19	12·40	12·50	12·53
Difference for 1913	+ 4·19	+ 4·11	+ 4·07	+ 3·97	+ 3·79	+ 3·52	+ 3·26	+ 2·96	+ 3·06	+ 3·16	+ 3·35	+ 3·41
Kew, Normal. 1000+	14·96	14·85	14·62	14·52	14·51	14·53	14·66	14·93	15·05	15·17	15·22	15·00
Difference for 1913	+ 5·74	+ 5·91	+ 6·00	+ 6·18	+ 6·28	+ 6·43	+ 6·44	+ 6·53	+ 6·51	+ 6·53	+ 6·48	+ 6·44
Falmouth, Normal. 1000+	9·40	9·27	9·07	8·92	8·90	8·93	9·01	9·35	9·52	9·71	9·87	9·78
MARCH.												
Aberdeen, Normal. 1000+	7·16	7·03	6·79	6·67	6·63	6·70	6·80	6·98	7·06	7·17	7·19	7·15
Difference for 1913	− 7·51	− 7·67	− 7·81	− 7·99	− 8·03	− 8·11	− 8·18	− 8·07	− 8·02	− 7·92	− 7·75	− 7·44
Eskdalemuir, 1913. 970+	6·19	6·05	5·85	5·64	5·61	5·70	5·94	6·35	6·74	6·93	7·08	7·24
Valencia, Normal. 1000+	11·93	11·80	11·56	11·35	11·32	11·39	11·51	11·73	11·86	12·03	12·07	12·07
Difference for 1913	− 5·80	− 5·74	− 5·58	− 5·56	− 5·54	− 5·52	− 5·44	− 5·51	− 5·55	− 5·68	− 5·79	− 5·90
Kew, Normal. 1000+	13·08	12·92	12·70	12·62	12·63	12·76	12·95	13·15	13·27	13·32	13·26	13·10
Difference for 1913	− 1·56	− 1·65	− 1·72	− 1·77	− 1·90	− 1·97	− 2·06	− 1·99	− 1·89	− 1·84	− 1·84	− 1·78
Falmouth, Normal. 1000+	8·06	7·90	7·61	7·47	7·45	7·55	7·70	7·95	8·11	8·27	8·34	8·30
APRIL.												
Aberdeen, Normal. 1000+	9·26	9·11	8·92	8·82	8·82	8·99	9·12	9·27	9·34	9·41	9·38	9·38
Difference for 1913	− 3·45	− 3·39	− 3·32	− 3·28	− 3·32	− 3·20	− 3·21	− 3·15	− 3·17	− 3·13	− 3·14	− 3·21
Eskdalemuir, 1913. 980+	0·47	0·41	0·29	0·26	0·31	0·48	0·70	0·89	0·98	1·00	0·89	0·78
Valencia, Normal. 1000+	11·12	10·90	10·72	10·59	10·55	10·68	10·85	11·01	11·08	11·21	11·24	11·22
Difference for 1913	− 2·91	− 2·91	− 2·90	− 2·97	− 3·07	− 3·11	− 3·10	− 3·21	− 3·26	− 3·35	− 3·36	− 3·45
Kew, Normal. 1000+	12·39	12·24	12·11	12·02	12·07	12·30	12·46	12·54	12·58	12·56	12·44	12·24
Difference for 1913	− 2·31	− 2·22	− 2·09	− 2·05	− 2·06	− 2·01	− 2·03	− 2·03	− 2·04	− 1·96	− 1·94	− 1·97
Falmouth, Normal. 1000+	6·91	6·70	6·51	6·37	6·33	6·54	6·72	6·89	7·00	7·16	7·21	7·15
MAY.												
Aberdeen, Normal. 1000+	11·76	11·62	11·46	11·40	11·44	11·57	11·66	11·77	11·79	11·82	11·83	11·81
Difference for 1913	− 3·02	− 3·01	− 2·97	− 2·99	− 3·06	− 3·11	− 3·06	− 3·09	− 3·12	− 3·11	− 3·12	− 3·09
Eskdalemuir, 1913. 980+	3·37	3·25	3·09	2·97	3·02	3·06	3·14	3·19	3·20	3·12	3·08	3·09
Valencia, Normal. 1000+	13·99	13·79	13·61	13·45	13·43	13·59	13·71	13·86	13·93	13·99	14·05	14·07
Difference for 1913	− 4·63	− 4·60	− 4·58	− 4·55	− 4·57	− 4·62	− 4·62	− 4·67	− 4·76	− 4·74	− 4·86	− 4·89
Kew, Normal. 1000+	14·84	14·71	14·58	14·53	14·64	14·82	14·93	15·01	14·97	14·90	14·81	14·63
Difference for 1913	− 2·60	− 2·56	− 2·60	− 2·61	− 2·61	− 2·60	− 2·64	− 2·72	− 2·73	− 2·73	− 2·78	− 2·80
Falmouth, Normal. 1000+	9·54	9·34	9·16	9·05	9·12	9·33	9·49	9·69	9·75	9·86	9·91	9·89
JUNE.												
Aberdeen, Normal. 1000+	12·11	11·97	11·81	11·79	11·81	11·91	12·00	12·10	12·09	12·11	12·11	12·09
Difference for 1913	− 1·09	− 1·07	− 1·00	− 1·08	− 1·03	− 0·98	− 0·93	− 0·85	− 0·76	− 0·70	− 0·68	− 0·65
Eskdalemuir, 1913. 980+	7·21	7·06	6·94	6·91	7·03	7·21	7·43	7·61	7·74	7·82	7·81	7·88
Valencia, Normal. 1000+	14·41	14·22	14·01	13·89	13·91	14·06	14·17	14·34	14·42	14·49	14·54	14·58
Difference for 1913	+ 2·33	+ 2·43	+ 2·55	+ 2·60	+ 2·58	+ 2·66	+ 2·77	+ 2·82	+ 2·97	+ 3·09	+ 3·18	+ 3·26
Kew, Normal. 1000+	15·21	15·06	14·95	14·97	15·07	15·21	15·33	15·42	15·37	15·32	15·27	15·11
Difference for 1913	+ 2·86	+ 2·87	+ 2·81	+ 2·81	+ 2·70	+ 2·74	+ 2·76	+ 2·76	+ 2·68	+ 2·74	+ 2·72	+ 2·75
Falmouth, Normal. 1000+	10·26	10·06	9·86	9·81	9·86	10·04	10·19	10·39	10·44	10·53	10·60	10·62

Notes.—The Geographical Co-ordinates of the Observatories are as follows :—

	G.M.T. of Local Mean Noon.	Lat.	Long.	Height of Barometer Cistern above M.S.L. in metres.
Aberdeen	12h 8m	57° 10′ N.	2° 6′ W.	26·8
Eskdalemuir	12h 13m	55° 19′ N.	3° 12′ W.	237·0
Valencia	12h 41m	51° 56′ N.	10° 15′ W.	13·7
Kew	12h 1m	51° 28′ N.	0° 19′ W.	10·4
Falmouth	12h 20m	50° 9′ N.	5° 4′ W.	55·9

AT THE FIVE OBSERVATORIES WITH DIFFERENCES BETWEEN THE NORMALS AND THE VALUES FOR 1913.

JANUARY TO JUNE.

for non-cyclic change.)

13.	4.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.	Hour, G.M.T.
mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	JANUARY.
7·39	7·31	7·29	7·41	7·47	7·60	7·64	7·75	7·75	7·76	7·68	7·64	7·505	Normal. Aberdeen.
− 4·79	− 4·88	− 5·03	− 5·08	− 5·16	− 5·26	− 5·33	− 5·34	− 5·38	− 5·34	− 5·33	− 5·28	− 4·981	Diff. for 1913. ,,
6·47	6·25	6·08	6·07	6·10	6·13	6·25	6·34	6·36	6·42	6·42	6·40	6·545	1913. Eskdalemuir.
12·83	12·56	12·51	12·58	12·67	12·82	12·93	13·05	13·10	13·12	13·09	13·05	12·819	Normal. Valencia.
−13·86	−13·91	−13·93	−13·93	−13·95	−14·03	−14·00	−14·03	−13·94	−13·96	−13·89	−13·81	−12·754	Diff. for 1913. ,,
16·10	15·90	15·91	16·01	16·10	16·24	16·35	16·46	16·48	16·49	16·46	16·38	16·287	Normal. Kew.
− 7·88	− 7·90	− 7·93	− 7·88	− 8·01	− 8·04	− 8·24	− 8·41	− 8·47	− 8·59	− 8·73	− 8·64	− 8·100	Diff. for 1913. ,,
10·59	10·34	10·33	10·43	10·50	10·70	10·80	10·93	10·94	10·98	10·91	10·84	10·698	Normal. Falmouth.
													FEBRUARY.
7·84	7·72	7·60	7·67	7·74	7·98	8·05	8·14	8·13	8·17	8·12	8·11	7·868	Normal. Aberdeen.
+ 6·23	+ 6·08	+ 5·95	+ 5·84	+ 5·87	+ 5·86	+ 5·92	+ 5·96	+ 6·02	+ 6·03	+ 6·12	+ 6·22	+ 5·892	Diff. for 1913. ,,
10·08	9·82	9·55	9·49	9·51	9·78	9·95	10·06	10·09	10·28	10·31	10·31	9·853	1913. Eskdalemuir.
12·27	12·01	11·78	11·74	11·77	11·98	12·17	12·23	12·22	12·26	12·20	12·19	12·046	Normal. Valencia.
+ 3·61	+ 3·66	+ 3·76	+ 3·95	+ 4·28	+ 4·43	+ 4·63	+ 4·65	+ 4·75	+ 4·73	+ 4·75	+ 4·64	+ 3·933	Diff. for 1913. ,,
14·69	14·42	14·32	14·34	14·46	14·74	14·88	14·98	15·05	15·10	15·05	15·05	14·797	Normal. Kew.
+ 6·29	+ 6·25	+ 6·05	+ 6·03	+ 5·93	+ 5·95	+ 5·87	+ 5·91	+ 5·96	+ 6·09	+ 6·11	+ 6·30	+ 6·157	Diff. for 1913. ,,
9·47	9·18	9·03	9·04	9·12	9·38	9·51	9·58	9·60	9·63	9·55	9·54	9·345	Normal. Falmouth.
													MARCH.
6·99	6·83	6·72	6·72	6·78	7·02	7·19	7·33	7·33	7·36	7·29	7·27	7·007	Normal. Aberdeen.
− 7·23	− 7·08	− 7·05	− 7·12	− 7·29	− 7·45	− 7·57	− 7·67	− 7·79	− 7·85	− 7·86	− 7·93	− 7·680	Diff. for 1913. ,,
7·05	6·83	6·70	6·49	6·41	6·44	6·35	6·40	6·28	6·15	5·95	5·81	6·353	1913. Eskdalemuir.
11·93	11·73	11·52	11·49	11·49	11·67	11·88	12·06	12·15	12·23	12·19	12·16	11·795	Normal. Valencia.
− 6·01	− 6·31	− 6·10	− 6·65	− 6·63	− 6·69	− 6·70	− 6·58	− 6·50	− 6·49	− 6·38	− 6·37	− 6·035	Diff. for 1913. ,,
12·81	12·54	12·37	12·30	12·39	12·67	12·89	13·08	13·15	13·19	13·16	13·11	12·894	Normal. Kew.
− 1·80	− 1·79	− 1·86	− 1·91	− 1·95	− 1·97	− 2·01	− 2·03	− 2·08	− 2·12	− 2·12	− 2·11	− 1·893	Diff. for 1913. ,,
8·11	7·88	7·71	7·62	7·64	7·86	8·03	8·22	8·27	8·33	8·26	8·19	7·946	Normal. Falmouth.
													APRIL.
9·31	9·25	9·11	9·09	9·09	9·25	9·42	9·68	9·71	9·71	9·63	9·56	9·274	Normal. Aberdeen.
− 3·21	− 3·26	− 3·33	− 3·35	− 3·37	− 3·41	− 3·45	− 3·49	− 3·57	− 3·58	− 3·58	− 3·52	− 3·342	Diff. for 1913. ,,
0·68	0·55	0·42	0·32	0·25	0·33	0·52	0·77	0·78	0·85	0·83	0·78	0·602	1913. Eskdalemuir.
11·15	11·09	10·90	10·80	10·76	10·84	10·93	11·15	11·32	11·36	11·29	11·25	11·000	Normal. Valencia.
− 3·38	− 3·38	− 3·25	− 3·14	− 3·05	− 2·99	− 2·91	− 2·97	− 2·88	− 2·86	− 2·85	− 2·85	− 3·089	Diff. for 1913. ,,
12·07	11·83	11·62	11·53	11·58	11·75	12·01	12·41	12·55	12·63	12·64	12·60	12·215	Normal. Kew.
− 1·97	− 1·94	− 1·92	− 1·89	− 1·97	− 1·95	− 2·05	− 2·13	− 2·17	− 2·25	− 2·22	− 2·20	− 2·059	Diff. for 1913. ,,
7·08	6·98	6·77	6·69	6·66	6·74	6·83	7·15	7·26	7·27	7·19	7·13	6·885	Normal. Falmouth.
													MAY.
11·76	11·73	11·63	11·58	11·53	11·62	11·73	11·95	12·08	12·14	12·07	11·99	11·738	Normal. Aberdeen.
− 3·10	− 3·20	− 3·24	− 3·25	− 3·26	− 3·26	− 3·29	− 3·29	− 3·20	− 3·21	− 3·18	− 3·21	− 3·146	Diff. for 1913. ,,
3·10	2·97	2·89	2·77	2·76	2·87	2·95	3·19	3·40	3·54	3·56	3·49	3·128	1913. Eskdalemuir.
14·04	14·03	13·93	13·86	13·82	13·83	13·91	14·04	14·27	14·37	14·30	14·21	13·920	Normal. Valencia.
− 4·92	− 4·91	− 4·88	− 4·81	− 4·84	− 4·74	− 4·66	− 4·68	− 4·59	− 4·63	− 4·55	− 4·53	− 4·705	Diff. for 1913. ,,
14·46	14·30	14·13	14·02	13·97	14·09	14·29	14·65	14·94	15·05	15·07	15·00	14·639	Normal. Kew.
− 2·75	− 2·73	− 2·65	− 2·60	− 2·59	− 2·54	− 2·54	− 2·45	− 2·43	− 2·44	− 2·51	− 2·53	− 2·616	Diff. for 1913. ,,
9·83	9·77	9·62	9·54	9·44	9·44	9·50	9·67	9·91	9·95	9·85	9·75	9·592	Normal. Falmouth.
													JUNE.
12·00	11·98	11·89	11·84	11·76	11·84	11·92	12·08	12·27	12·36	12·32	12·26	12·018	Normal. Aberdeen.
− 0·58	− 0·56	− 0·50	− 0·46	− 0·42	− 0·41	− 0·34	− 0·30	− 0·35	− 0·38	− 0·41	− 0·42	− 0·684	Diff. for 1913. ,,
7·89	7·87	7·76	7·70	7·67	7·74	7·78	7·86	8·06	8·10	8·06	7·95	7·617	1913. Eskdalemuir.
14·56	14·51	14·46	14·40	14·33	14·33	14·40	14·49	14·65	14·82	14·74	14·64	14·390	Normal. Valencia.
+ 3·32	+ 3·41	+ 3·41	+ 3·35	+ 3·26	+ 3·12	+ 3·04	+ 2·90	+ 2·87	+ 2·64	+ 2·65	+ 2·68	+ 2·903	Diff. for 1913. ,,
14·94	14·77	14·63	14·48	14·41	14·49	14·64	14·91	15·25	15·38	15·41	15·33	15·039	Normal. Kew.
+ 2·76	+ 2·85	+ 2·89	+ 2·97	+ 2·97	+ 3·03	+ 3·12	+ 3·13	+ 3·16	+ 3·22	+ 3·22	+ 3·26	+ 2·899	Diff. for 1913. ,,
10·58	10·55	10·46	10·38	10·26	10·27	10·31	10·42	10·67	10·75	10·66	10·54	10·354	Normal. Falmouth.

The values for 1913 are given by the excess or defect from the normal ; + indicates excess, − defect.
The pressures are for station level, corrected for temperature and gravity.
The normals are for the period 1871–1910. The observations at Eskdalemuir are in the third year of publication.

LXIX.-LXXIV.—NORMALS FOR THE MONTHS OF THE HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS

LXIX.—*continued*—PRESSURE IN MILLIBARS.

(The Mean Values are corrected

Hour, G.M.T.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
JULY.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.
Aberdeen, Normal. 1000+	9·52	9·37	9·19	9·17	9·19	9·29	9·38	9·47	9·47	9·48	9·50	9·49
Difference for 1913	+ 5·80	+ 5·82	+ 5·81	+ 5·83	+ 5·84	+ 5·81	+ 5·80	+ 5·74	+ 5·73	+ 5·74	+ 5·64	+ 5·71
Eskdalemuir, 1913. 980+	10·33	10·17	10·06	10·02	10·04	10·13	10·22	10·31	10·35	10·35	10·29	10·21
Valencia, Normal. 1000+	14·07	13·84	13·62	13·48	13·48	13·59	13·71	13·87	13·94	14·02	14·09	14·16
Difference for 1913	+ 5·94	+ 6·00	+ 6·04	+ 6·05	+ 6·05	+ 6·06	+ 6·03	+ 5·93	+ 5·87	+ 5·77	+ 5·67	+ 5·62
Kew, Normal. 1000+	14·43	14·28	14·17	14·17	14·26	14·42	14·56	14·65	14·62	14·57	14·52	14·38
Difference for 1913	+ 2·75	+ 2·72	+ 2·67	+ 2·60	+ 2·54	+ 2·50	+ 2·48	+ 2·44	+ 2·47	+ 2·53	+ 2·50	+ 2·46
Falmouth, Normal. 1000+	10·11	9·89	9·68	9·61	9·65	9·83	10·00	10·20	10·25	10·35	10·41	10·43
AUGUST.												
Aberdeen, Normal. 1000+	8·36	8·23	8·05	7·95	7·95	8·08	8·19	8·31	8·36	8·39	8·41	8·40
Difference for 1913	+ 5·93	+ 5·85	+ 5·89	+ 5·86	+ 5·82	+ 5·85	+ 5·83	+ 5·78	+ 5·70	+ 5·64	+ 5·46	+ 5·45
Eskdalemuir, 1913. 980+	9·77	9·65	9·46	9·33	9·35	9·53	9·62	9·74	9·72	9·72	9·58	9·48
Valencia, Normal. 1000+	12·79	12·58	12·38	12·18	12·13	12·26	12·41	12·58	12·67	12·79	12·84	12·85
Difference for 1913	+ 5·80	+ 5·86	+ 5·87	+ 5·87	+ 5·92	+ 5·92	+ 5·92	+ 5·88	+ 5·91	+ 5·88	+ 5·78	+ 5·68
Kew, Normal. 1000+	13·99	13·86	13·73	13·64	13·70	13·89	14·02	14·14	14·17	14·13	14·05	13·89
Difference for 1913	+ 3·06	+ 3·04	+ 2·99	+ 3·01	+ 3·01	+ 3·03	+ 3·08	+ 3·02	+ 3·09	+ 3·12	+ 2·98	+ 3·02
Falmouth, Normal. 1000+	9·35	9·15	8·95	8·80	8·79	8·98	9·15	9·38	9·47	9·59	9·63	9·61
SEPTEMBER.												
Aberdeen, Normal. 1000+	10·33	10·21	10·01	9·89	9·84	9·99	10·12	10·27	10·35	10·39	10·33	10·30
Difference for 1913	+ 3·32	+ 3·30	+ 3·28	+ 3·31	+ 3·32	+ 3·34	+ 3·32	+ 3·35	+ 3·41	+ 3·44	+ 3·44	+ 3·44
Eskdalemuir, 1913. 980+	7·72	7·54	7·36	7·23	7·21	7·38	7·53	7·70	7·77	7·70	7·57	7·50
Valencia, Normal. 1000+	14·05	13·84	13·61	13·45	13·39	13·53	13·75	13·95	14·10	14·26	14·26	14·24
Difference for 1913	− 2·18	− 2·13	− 2·22	− 2·23	− 2·20	− 2·22	− 2·23	− 2·16	− 2·06	− 2·02	− 2·03	− 1·97
Kew, Normal. 1000+	15·51	15·36	15·21	15·11	15·13	15·34	15·54	15·73	15·85	15·82	15·71	15·54
Difference for 1913	− 1·67	− 1·71	− 1·74	− 1·77	− 1·78	− 1·76	− 1·73	− 1·78	− 1·78	− 1·72	− 1·72	− 1·65
Falmouth, Normal. 1000+	10·38	10·20	9·96	9·82	9·77	9·95	10·15	10·40	10·57	10·73	10·69	10·64
OCTOBER.												
Aberdeen, Normal. 1000+	6·96	6·83	6·62	6·56	6·51	6·62	6·78	7·03	7·12	7·24	7·23	7·17
Difference for 1913	− 0·07	− 0·12	− 0·23	− 0·33	− 0·34	− 0·49	− 0·41	− 0·51	− 0·52	− 0·49	− 0·57	− 0·56
Eskdalemuir, 1913. 980+	1·93	1·81	1·56	1·42	1·32	1·48	1·68	2·05	2·17	2·30	2·33	2·21
Valencia, Normal. 1000+	10·63	10·49	10·25	10·13	10·12	10·17	10·28	10·59	10·77	10·93	10·96	10·93
Difference for 1913	− 6·30	− 6·34	− 6·30	− 6·29	− 6·27	− 6·22	− 6·20	− 6·23	− 6·23	− 6·28	− 6·34	− 6·43
Kew, Normal. 1000+	12·50	12·32	12·12	12·07	12·08	12·15	12·38	12·65	12·74	12·77	12·73	12·48
Difference for 1913	− 2·05	− 1·97	− 1·94	− 1·84	− 1·82	− 1·80	− 1·75	− 1·82	− 1·83	− 1·78	− 1·87	− 1·99
Falmouth, Normal. 1000+	7·00	6·81	6·54	6·46	6·45	6·52	6·69	7·04	7·20	7·34	7·36	7·23
NOVEMBER.												
Aberdeen, Normal. 1000+	6·99	6·94	6·79	6·71	6·67	6·73	6·84	7·09	7·19	7·33	7·31	7·15
Difference for 1913	− 7·44	− 7·38	− 7·49	− 7·45	− 7·48	− 7·49	− 7·38	− 7·35	− 7·42	− 7·34	− 7·34	− 7·41
Eskdalemuir, 1913. 970+	7·89	7·80	7·63	7·59	7·63	7·62	7·75	8·16	8·29	8·38	8·33	8·10
Valencia, Normal. 1000+	11·28	11·12	11·01	10·85	10·81	10·84	10·92	11·20	11·42	11·62	11·68	11·49
Difference for 1913	− 3·13	− 3·09	− 3·03	− 3·03	− 2·94	− 2·89	− 2·78	− 2·77	− 2·71	− 2·68	− 2·64	− 2·70
Kew, Normal. 1000+	13·10	13·04	12·89	12·80	12·80	12·86	13·01	13·31	13·44	13·59	13·51	13·20
Difference for 1913	− 1·33	− 1·29	− 1·29	− 1·40	− 1·44	− 1·44	− 1·29	− 1·41	− 1·54	− 1·33	− 1·27	− 1·26
Falmouth, Normal. 1000+	7·73	7·64	7·48	7·34	7·33	7·35	7·47	7·82	7·99	8·16	8·20	7·88
DECEMBER.												
Aberdeen, Normal. 1000+	4·88	4·86	4·74	4·61	4·49	4·50	4·57	4·76	4·97	5·20	5·17	4·99
Difference for 1913	+ 3·39	+ 3·38	+ 3·32	+ 3·37	+ 3·30	+ 3·26	+ 3·24	+ 3·29	+ 3·17	+ 3·29	+ 3·35	+ 3·47
Eskdalemuir, 1913. 980+	6·43	6·51	6·45	6·30	6·15	6·10	6·19	6·33	6·44	6·71	6·81	6·61
Valencia, Normal. 1000+	10·17	10·02	10·02	9·87	9·75	9·74	9·81	10·01	10·28	10·59	10·72	10·48
Difference for 1913	+ 9·81	+ 9·81	+ 9·83	+ 9·88	+ 9·97	+10·02	+10·07	+10·09	+10·00	+ 9·99	+10·03	+10·01
Kew, Normal. 1000+	13·06	13·08	12·99	12·83	12·72	12·78	12·90	13·16	13·40	13·66	13·53	13·20
Difference for 1913	+ 5·35	+ 5·37	+ 5·38	+ 5·34	+ 5·29	+ 5·22	+ 5·16	+ 5·10	+ 5·02	+ 5·19	+ 5·30	+ 5·43
Falmouth, Normal. 1000+	7·60	7·54	7·50	7·35	7·22	7·26	7·37	7·64	7·91	8·23	8·25	7·92
YEAR.												
Aberdeen, Normal. 1000+	8·57	8·46	8·29	8·20	8·16	8·25	8·35	8·52	8·61	8·70	8·70	8·64
Difference for 1913	− 1·40	− 1·40	− 1·40	− 1·41	− 1·42	− 1·41	− 1·39	− 1·37	− 1·38	− 1·34	− 1·35	− 1·32
Eskdalemuir, 1913. 980+	3·95	3·88	3·73	3·64	3·64	3·74	3·89	4·10	4·22	4·29	4·27	4·19
Valencia, Normal. 1000+	12·45	12·28	12·11	11·95	11·91	11·99	12·11	12·31	12·47	12·63	12·69	12·65
Difference for 1913	− 0·85	− 0·84	− 0·80	− 0·81	− 0·81	− 0·83	− 0·82	− 0·87	− 0·87	− 0·89	− 0·91	− 0·94
Kew, Normal. 1000+	14·11	14·00	13·85	13·78	13·79	13·92	14·07	14·26	14·34	14·39	14·32	14·10
Difference for 1913	− 0·01	+ 0·03	+0·04	+ 0·04	+ 0·02	+ 0·04	+ 0·05	+ 0·01	+ 0·01	+ 0·06	+ 0·06	+ 0·07
Falmouth, Normal. 1000+	8·92	8·76	8·57	8·45	8·43	8·55	8·69	8·95	9·10	9·26	9·32	9·20

AT THE FIVE OBSERVATORIES WITH DIFFERENCES BETWEEN THE NORMALS AND THE VALUES FOR 1913.

JULY TO DECEMBER AND YEAR.

for non-cyclic change.)

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.	Hour, G.M.T.
mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	JULY.
9·45	9·44	9·37	9·30	9·24	9·31	9·39	9·55	9·70	9·78	9·72	9·65	9·435	Normal. Aberdeen.
+ 5·70	+ 5·75	+ 5·72	+ 5·70	+ 5·62	+ 5·67	+ 5·74	+ 5·78	+ 5·75	+ 5·77	+ 5·70	+ 5·66	+ 5·739	Diff. for 1913. ,,
10·15	10·05	9·94	9·78	9·69	9·70	9·81	10·02	10·30	10·34	10·32	10·26	10·122	1913. Eskdalemuir.
14·17	14·17	14·13	14·06	14·01	14·02	14·10	14·21	14·38	14·49	14·45	14·34	14·015	Normal. Valencia.
+ 5·54	+ 5·56	+ 5·49	+ 5·46	+ 5·45	+ 5·46	+ 5·45	+ 5·53	+ 5·68	+ 5·68	+ 5·67	+ 5·66	+ 5·741	Diff. for 1913. ,,
14·23	14·09	13·96	13·81	13·73	13·77	13·92	14·19	14·49	14·65	14·67	14·62	14·298	Normal. Kew.
+ 2·42	+ 2·47	+ 2·54	+ 2·55	+ 2·56	+ 2·59	+ 2·60	+ 2·59	+ 2·62	+ 2·60	+ 2·53	+ 2·50	+ 2·556	Diff. for 1913. ,,
10·39	10·36	10·28	10·20	10·10	10·10	10·16	10·28	10·51	10·59	10·51	10·40	10·178	Normal. Falmouth.
8·35	8·32	8·23	8·16	8·12	8·19	8·30	8·54	8·60	8·62	8·55	8·47	8·298	AUGUST. Normal. Aberdeen.
+ 5·40	+ 5·41	+ 5·40	+ 5·48	+ 5·52	+ 5·61	+ 5·72	+ 5·79	+ 5·83	+ 5·88	+ 5·87	+ 5·86	+ 5·699	Diff. for 1913. ,,
9·42	9·32	9·23	9·14	9·10	9·10	9·26	9·56	9·70	9·77	9·76	9·70	9·504	1913. Eskdalemuir.
12·85	12·85	12·76	12·66	12·61	12·62	12·68	12·87	13·03	13·04	12·98	12·89	12·686	Normal. Valencia.
+ 5·64	+ 5·68	+ 5·60	+ 5·63	+ 5·62	+ 5·61	+ 5·67	+ 5·70	+ 5·79	+ 5·75	+ 5·77	+ 5·76	+ 5·767	Diff. for 1913. ,,
13·73	13·57	13·42	13·29	13·21	13·29	13·48	13·86	14·02	14·14	14·14	14·07	13·811	Normal. Kew.
+ 3·05	+ 3·07	+ 3·03	+ 3·00	+ 3·05	+ 3·04	+ 3·05	+ 3·00	+ 2·97	+ 2·91	+ 2·93	+ 2·90	+ 3·022	Diff. for 1913. ,,
9·58	9·54	9·41	9·33	9·25	9·23	9·30	9·56	9·70	9·73	9·62	9·52	9·360	Normal. Falmouth.
10·20	10·10	9·98	9·95	9·98	10·15	10·36	10·55	10·54	10·54	10·48	10·40	10·220	SEPTEMBER. Normal. Aberdeen.
+ 3·47	+ 3·39	+ 3·32	+ 3·38	+ 3·31	+ 3·36	+ 3·29	+ 3·37	+ 3·42	+ 3·44	+ 3·46	+ 3·48	+ 3·366	Diff. for 1913. ,,
7·35	7·23	7·12	7·13	7·16	7·39	7·63	7·88	7·94	7·99	8·02	7·92	7·539	1913. Eskdalemuir.
14·17	14·05	13·88	13·78	13·76	13·84	13·97	14·19	14·26	14·23	14·16	14·06	13·952	Normal. Valencia.
− 2·00	− 1·98	− 2·01	− 1·92	− 2·01	− 2·02	− 2·00	− 2·00	− 1·93	− 2·04	− 2·03	− 2·03	− 2·068	Diff. for 1913. ,,
15·32	15·11	14·93	14·84	14·87	15·03	15·30	15·57	15·64	15·69	15·65	15·56	15·392	Normal. Kew.
− 1·69	− 1·66	− 1·66	− 1·60	− 1·59	− 1·55	− 1·58	− 1·65	− 1·65	− 1·65	− 1·65	− 1·70	− 1·686	Diff. for 1913. ,,
10·53	10·40	10·22	10·15	10·14	10·24	10·37	10·64	10·65	10·65	10·54	10·41	10·345	Normal. Falmouth.
7·00	6·91	6·81	6·84	6·95	7·19	7·24	7·32	7·30	7·29	7·19	7·16	6·993	OCTOBER. Normal. Aberdeen.
− 0·57	− 0·58	− 0·65	− 0·67	− 0·68	− 0·65	− 0·61	− 0·63	− 0·60	− 0·64	− 0·65	− 0·72	− 0·501	Diff. for 1913. ,,
2·05	1·89	1·69	1·66	1·80	1·98	1·99	2·07	2·06	1·91	1·74	1·66	1·876	1913. Eskdalemuir.
10·73	10·58	10·46	10·46	10·52	10·72	10·89	10·96	11·00	10·83	10·91	10·81	10·629	Normal. Valencia.
− 6·48	− 6·59	− 6·71	− 6·75	− 6·82	− 6·93	− 6·94	− 6·94	− 6·80	− 6·59	− 6·67	− 6·65	− 6·505	Diff. for 1913. ,,
12·23	12·07	11·98	12·00	12·15	12·47	12·60	12·71	12·81	12·81	12·73	12·66	12·425	Normal. Kew.
− 2·10	− 2·12	− 2·21	− 2·23	− 2·30	− 2·32	− 2·27	− 2·21	− 2·17	− 2·10	− 2·16	− 2·08	− 2·031	Diff. for 1913. ,,
7·01	6·87	6·78	6·79	6·88	7·16	7·29	7·38	7·44	7·44	7·30	7·20	7·007	Normal. Falmouth.
6·95	6·85	6·77	6·86	6·93	7·09	7·11	7·14	7·12	7·11	7·05	7·05	6·993	NOVEMBER. Normal. Aberdeen.
− 7·42	− 7·48	− 7·50	− 7·50	− 7·52	− 7·65	− 7·67	− 7·73	− 7·72	− 7·65	− 7·55	− 7·43	− 7·497	Diff. for 1913. ,,
8·00	7·87	7·79	7·84	7·86	8·15	8·03	8·02	8·02	8·01	8·10	8·27	7·959	1913. Eskdalemuir.
11·21	11·00	10·83	10·91	11·01	11·23	11·36	11·45	11·48	11·55	11·47	11·47	11·217	Normal. Valencia.
− 2·81	− 2·92	− 3·02	− 2·78	− 2·79	− 2·81	− 2·73	− 2·84	− 2·71	− 2·77	− 2·74	− 2·69	− 2·844	Diff. for 1913. ,,
12·95	12·73	12·71	12·79	12·93	13·13	13·21	13·28	13·34	13·32	13·27	13·21	13·102	Normal. Kew.
− 1·12	− 1·07	− 1·05	− 0·92	− 0·86	− 0·84	− 0·90	− 0·91	− 0·92	− 0·93	− 1·04	− 0·95	− 1·167	Diff. for 1913. ,,
7·60	7·38	7·30	7·40	7·51	7·75	7·84	7·92	7·98	8·02	7·93	7·92	7·706	Normal. Falmouth.
4·77	4·73	4·71	4·88	4·92	5·06	5·10	5·19	5·16	5·17	5·12	5·07	4·900	DECEMBER. Normal. Aberdeen.
+ 3·55	+ 3·63	+ 3·76	+ 3·86	+ 3·97	+ 3·89	+ 3·87	+ 3·85	+ 3·86	+ 3·88	+ 3·96	+ 4·03	+ 3·565	Diff. for 1913. ,,
6·35	6·07	6·21	6·49	6·51	6·67	6·71	6·87	6·77	6·85	7·03	7·15	6·516	1913. Eskdalemuir.
10·15	9·93	9·84	10·00	10·11	10·25	10·32	10·40	10·40	10·42	10·37	10·33	10·167	Normal. Valencia.
+ 9·85	+ 9·69	+ 9·70	+ 9·71	+ 9·75	+ 9·92	+10·06	+10·10	+10·28	+10·17	+10·19	+10·28	+ 9·957	Diff. for 1913. ,,
12·91	12·75	12·80	12·92	13·01	13·15	13·28	13·40	13·43	13·44	13·44	13·33	13·130	Normal. Kew.
+ 5·43	+ 5·42	+ 5·41	+ 5·49	+ 5·51	+ 5·56	+ 5·59	+ 5·59	+ 5·57	+ 5·66	+ 5·71	+ 5·77	+ 5·404	Diff. for 1913. ,,
7·58	7·37	7·37	7·52	7·63	7·80	7·89	8·01	8·02	8·04	7·98	7·90	7·703	Normal. Falmouth.
8·50	8·43	8·34	8·36	8·38	8·53	8·62	8·77	8·81	8·84	8·77	8·72	8·522	YEAR. Normal. Aberdeen.
− 1·29	− 1·31	− 1·34	− 1·35	− 1·37	− 1·39	− 1·39	− 1·39	− 1·39	− 1·39	− 1·37	− 1·35	− 1·374	Diff. for 1913. ,,
4·05	3·88	3·78	3·74	3·74	3·86	3·94	4·09	4·15	4·18	4·18	4·14	3·968	1913. Eskdalemuir.
12·51	12·38	12·25	12·23	12·24	12·35	12·46	12·59	12·69	12·73	12·68	12·61	12·386	Normal. Valencia.
− 0·96	− 1·00	− 0·99	− 0·99	− 0·98	− 0·98	− 0·92	− 0·93	− 0·83	− 0·87	− 0·84	− 0·82	− 0·991	Diff. for 1913. ,,
13·88	13·68	13·56	13·53	13·57	13·73	13·91	14·13	14·26	14·32	14·30	14·25	14·002	Normal. Kew.
+ 0·04	− 0·01	+ 0·06	+ 0·08	+ 0·07	+ 0·09	+ 0·05	+ 0·03	+ 0·04	+ 0·04	+ 0·01	+ 0·04	+ 0·038	Diff. for 1913. ,,
9·03	8·89	8·77	8·76	8·76	8·89	8·99	9·14	9·25	9·28	9·19	9·11	8·928	Normal. Falmouth.

LXIX.-LXXIV.—NORMALS FOR THE MONTHS OF THE HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS

LXX.—TEMPERATURE (in degrees absolute).

(The Mean Values are corrected

Hour, G.M.T.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
	°	°	°	°	°	°	°	°	°	°	°	°
JANUARY.												
Aberdeen, Normal. 200+	76·07	76·02	76·00	75·94	75·95	75·92	75·97	75·97	76·06	76·28	76·75	77·09
Difference for 1913	+ 0·72	+ 0·50	+ 0·37	+ 0·28	+ 0·14	+ 0·23	+ 0·30	+ 0·31	+ 0·41	+ 0·36	+ 0·18	0·00
Eskdalemuir, 1913. 200+	74·88	74·78	74·58	74·52	74·40	74·40	74·25	74·25	74·25	74·68	75·15	75·55
Valencia, Normal. 200+	79·82	79·76	79·77	79·73	79·74	79·70	79·72	79·70	79·78	79·95	80·31	80·61
Difference for 1913	− 0·32	− 0·16	− 0·22	− 0·18	− 0·27	− 0·35	− 0·28	− 0·26	− 0·16	− 0·21	− 0·06	+ 0·01
Kew, Normal. 200+	76·29	76·21	76·20	76·12	76·10	76·03	76·04	76·02	76·25	76·74	77·34	77·82
Difference for 1913	+ 1·76	+ 1·59	+ 1·55	+ 1·60	+ 1·55	+ 1·40	+ 1·33	+ 1·20	+ 1·22	+ 1·11	+ 1·30	+ 1·38
Falmouth, Normal. 200+	79·18	79·10	79·13	79·06	79·07	79·03	79·05	79·04	79·24	79·58	80·03	80·25
FEBRUARY.												
Aberdeen, Normal, 200+	75·93	75·85	75·78	75·69	75·67	75·64	75·64	75·70	76·02	76·51	77·13	77·58
Difference for 1913	+ 0·75	+ 0·78	+ 0·78	+ 0·71	+ 0·69	+ 0·82	+ 0·74	+ 0·64	+ 0·75	+ 0·93	+ 1·02	+ 1·09
Eskdalemuir, 1913. 200+	75·13	75·13	75·02	75·00	75·07	75·22	75·01	75·13	75·52	76·41	76·90	77·27
Valencia, Normal. 200+	79·59	79·52	79·50	79·42	79·39	79·33	79·38	79·33	79·60	79·97	80·49	80·87
Difference for 1913	− 0·29	− 0·31	− 0·39	− 0·38	− 0·39	− 0·28	− 0·29	− 0·19	− 0·20	− 0·13	0·00	+ 0·14
Kew, Normal. 200+	76·51	76·37	76·30	76·20	76·18	76·10	76·10	76·15	76·71	77·32	78·17	78·74
Difference for 1913	+ 0·87	+ 0·81	+ 0·64	+ 0·54	+ 0·45	+ 0·41	+ 0·39	+ 0·55	+ 0·65	+ 0·64	+ 0·70	+ 0·78
Falmouth, Normal. 200+	79·06	78·97	78·95	78·87	78·86	78·78	78·79	78·80	79·20	79·74	80·21	80·49
MARCH.												
Aberdeen, Normal. 200+	76·27	76·16	76·09	75·97	75·90	75·85	75·99	76·41	77·17	77·80	78·41	78·80
Difference for 1913	+ 0·21	+ 0·20	+ 0·17	+ 0·17	+ 0·25	+ 0·25	+ 0·24	+ 0·33	+ 0·37	+ 0·54	+ 0·44	+ 0·42
Eskdalemuir, 1913. 200+	74·90	74·84	74·74	74·67	74·61	74·94	74·93	75·46	75·86	76·78	77·32	77·85
Valencia, Normal. 200+	79·56	79·44	79·37	79·26	79·22	79·13	79·15	79·39	80·04	80·63	81·19	81·56
Difference for 1913	− 0·16	− 0·01	+ 0·07	+ 0·15	+ 0·15	+ 0·05	− 0·02	− 0·18	− 0·17	− 0·18	− 0·10	− 0·20
Kew, Normal. 200+	77·06	76·82	76·66	76·47	76·38	76·26	76·43	77·06	78·11	79·05	80·06	80·70
Difference for 1913	+ 1·85	+ 1·89	+ 1·79	+ 1·73	+ 1·75	+ 1·77	+ 1·81	+ 1·72	+ 1·72	+ 1·65	+ 1·38	+ 1·22
Falmouth. Normal. 200+	79·00	78·89	78·88	78·76	78·74	78·67	78·75	79·13	79·91	80·42	80·98	81·20
APRIL.												
Aberdeen, Normal. 200+	77·63	77·45	77·34	77·22	77·16	77·37	78·11	78·81	79·60	80·11	80·54	80·78
Difference for 1913	+ 0·24	+ 0·22	+ 0·12	+ 0·04	+ 0·07	+ 0·01	+ 0·20	+ 0·14	+ 0·22	− 0·05	− 0·17	− 0·06
Eskdalemuir, 1913. 200+	76·60	76·54	76·48	76·28	76·06	76·26	77·12	78·34	79·36	79·77	80·16	80·80
Valencia, Normal. 200+	80·81	80·66	80·58	80·42	80·36	80·28	80·67	81·26	82·04	82·59	83·20	83·55
Difference for 1913	− 0·67	− 0·77	− 0·91	− 0·85	− 0·85	− 0·73	− 0·61	− 0·52	− 0·73	− 0·77	− 0·96	− 0·99
Kew, Normal. 200+	79·05	78·76	78·54	78·29	78·17	78·31	79·16	80·16	81·38	82·30	83·31	83·91
Difference for 1913	+ 0·61	+ 0·52	+ 0·44	+ 0·47	+ 0·62	+ 0·62	+ 0·60	+ 0·52	+ 0·55	+ 0·38	+ 0·11	− 0·23
Falmouth, Normal. 200+	80·48	80·31	80·25	80·11	80·07	80·07	80·70	81·40	82·17	82·60	83·16	83·33
MAY.												
Aberdeen, Normal. 200+	79·80	79·59	79·41	79·26	79·63	80·31	81·08	81·70	82·22	82·59	82·95	83·17
Difference for 1913	+ 0·86	+ 0·68	+ 0·70	+ 0·71	+ 0·61	+ 0·56	+ 0·61	+ 0·35	+ 0·27	+ 0·19	+ 0·07	− 0·06
Eskdalemuir, 1913. 200+	78·99	78·77	78·73	78·66	78·83	79·39	80·16	81·17	81·84	82·76	83·41	83·91
Valencia, Normal. 200+	82·60	82·42	82·29	82·14	82·10	82·29	83·14	83·90	84·72	85·16	85·69	85·95
Difference for 1913	− 0·09	− 0·09	+ 0·03	− 0·19	− 0·20	− 0·09	− 0·14	− 0·47	− 0·77	− 0·78	− 1·00	− 1·33
Kew, Normal. 200+	81·58	81·18	80·95	80·67	80·86	81·43	82·68	83·72	84·86	85·66	86·52	87·04
Difference for 1913	+ 1·38	+ 1·41	+ 1·36	+ 1·33	+ 1·30	+ 1·33	+ 1·27	+ 1·27	+ 1·44	+ 1·55	+ 1·77	+ 1·80
Falmouth, Normal. 200+	82·38	82·22	82·14	82·00	82·01	82·33	83·46	84·18	84·97	85·28	85·78	85·90
JUNE.												
Aberdeen, Normal. 200+	82·59	82·35	82·20	82·17	82·76	83·62	84·41	84·87	85·33	85·66	86·00	86·09
Difference for 1913	+ 0·42	+ 0·42	+ 0·47	+ 0·35	+ 0·10	+ 0·08	+ 0·07	+ 0·01	+ 0·20	+ 0·15	+ 0·43	+ 0·93
Eskdalemuir, 1913. 200+	81·69	81·53	81·48	81·44	81·79	82·49	83·40	84·28	85·20	86·02	86·58	87·12
Valencia, Normal. 200+	85·13	84·97	84·87	84·74	84·77	85·11	85·88	86·50	87·21	87·66	88·17	88·43
Difference for 1913	− 0·89	− 0·96	− 1·02	− 1·06	− 0·96	− 0·77	− 0·87	− 0·87	− 0·92	− 1·08	− 1·28	− 1·30
Kew, Normal. 200+	84·98	84·59	84·28	84·02	84·49	85·10	86·15	87·10	88·22	88·97	89·88	90·43
Difference for 1913	+ 0·28	+ 0·17	+ 0·23	+ 0·19	+ 0·14	+ 0·33	+ 0·40	+ 0·54	+ 0·65	+ 0·76	+ 0·86	+ 0·59
Falmouth, Normal. 200+	85·20	85·06	84·98	84·88	84·96	85·48	86·44	87·18	87·96	88·35	88·74	88·84

The Temperature is obtained photographically from a mercurial thermometer with a large cylindrical bulb 4 inches (0·10 metre) long, and a long stem. The column of mercury in the stem is broken at a convenient point by a small air space, which moves up or down with the rise or fall of temperature. The bulb is exposed in a louvred screen attached to the wall of the Observatory, and the stem is bent twice at right angles so that whilst one vertical portion containing the air speck is within the room where the photographic record is obtained, the other with the bulb itself is in the open air and at least 2 feet (0·61 metre) from the wall. Two such thermometers are in the screen, one being used as a dry bulb and the other as a wet bulb, with two thermometers having bulbs of the same size as standards.

AT THE FIVE OBSERVATORIES WITH DIFFERENCES BETWEEN THE NORMALS AND THE VALUES FOR 1913.

JANUARY TO JUNE.

for non-cyclic change.)

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.	Hour, G.M.T.
°	°	°	°	°	°	°	°	°	°	°	°	°	JANUARY.
77·35	77·40	77·29	77·01	76·75	76·56	76·47	76·32	76·26	76·19	76·16	76·10	76·41	Normal. Aberdeen.
0·00	− 0·05	+ 0·10	+ 0·19	+ 0·48	+ 0·71	+ 0·78	+ 0·86	+ 0·83	+ 0·84	+ 0·75	+ 0·64	+ 0·42	Diff. for 1913. ,,
75·75	75·85	75·63	75·45	75·23	75·19	74·97	74·99	74·86	74·95	74·78	74·74	74·92	1913. Eskdalemuir.
80·88	80·91	80·89	80·67	80·33	80·12	80·04	79·94	79·92	79·84	79·85	79·78	80·07	Normal. Valencia.
− 0·01	+ 0·01	− 0·06	− 0·31	− 0·27	− 0·36	− 0·54	− 0·44	− 0·47	− 0·51	− 0·26	− 0·24	− 0·24	Diff. for 1913. ,,
78·26	78·39	78·34	77·95	77·52	77·20	77·04	76·86	76·75	76·61	76·52	76·38	76·87	Normal. Kew.
+ 1·56	+ 1·63	+ 1·54	+ 1·47	+ 1·64	+ 1·62	+ 1·57	+ 1·57	+ 1·55	+ 1·65	+ 1·71	+ 1·68	+ 1·51	Diff. for 1913. ,,
80·45	80·40	80·33	80·06	79·81	79·59	79·53	79·42	79·39	79·30	79·28	79·17	79·52	Normal. Falmouth.
													FEBRUARY.
77·96	78·06	77·99	77·70	77·27	76·90	76·65	76·44	76·30	76·16	76·08	75·99	76·53	Normal. Aberdeen.
+ 1·04	+ 1·14	+ 1·24	+ 1·28	+ 1·10	+ 0·94	+ 0·98	+ 0·82	+ 0·89	+ 0·86	+ 0·86	+ 0·92	+ 0·90	Diff. for 1913. ,,
77·61	77·85	77·74	77·62	76·99	76·43	75·99	75·65	75·34	75·23	75·32	75·14	75·99	1913. Eskdalemuir.
81·13	81·17	81·18	81·00	80·72	80·25	80·02	79·87	79·82	79·73	79·69	79·59	80·02	Normal. Valencia.
+ 0·20	+ 0·11	+ 0·08	− 0·03	− 0·08	+ 0·03	− 0·01	− 0·09	− 0·07	− 0·05	− 0·19	− 0·14	− 0·12	Diff. for 1913. ,,
79·20	79·38	79·43	79·11	78·67	78·05	77·63	77·32	77·14	76·94	76·77	76·60	77·38	Normal. Kew.
+ 0·86	+ 0·73	+ 0·76	+ 0·92	+ 0·89	+ 0·88	+ 0·92	+ 0·88	+ 0·85	+ 0·86	+ 1·02	+ 1·02	+ 0·75	Diff. for 1913. ,,
80·73	80·72	80·66	80·39	80·07	79·69	79·49	79·32	79·25	79·16	79·13	79·05	79·52	Normal. Falmouth.
													MARCH.
79·03	79·07	79·04	78·83	78·49	77·93	77·45	77·14	76·94	76·72	76·57	76·42	77·27	Normal. Aberdeen.
+ 0·53	+ 0·67	+ 0·82	+ 0·75	+ 0·70	+ 0·72	+ 0·68	+ 0·69	+ 0·60	+ 0·65	+ 0·54	+ 0·40	+ 0·47	Diff. for 1913. ,,
78·08	78·45	78·31	77·95	77·63	77·08	76·38	75·95	75·65	75·53	75·26	75·02	76·17	1913. Eskdalemuir.
81·92	81·97	82·02	81·86	81·59	81·11	80·60	80·26	80·11	79·92	79·81	79·64	80·36	Normal. Valencia.
− 0·28	− 0·39	− 0·44	− 0·21	− 0·14	− 0·10	− 0·09	− 0·17	− 0·21	− 0·27	− 0·09	− 0·12	− 0·12	Diff. for 1913. ,,
81·27	81·47	81·64	81·39	80·95	80·10	79·36	78·78	78·37	77·93	77·59	77·29	78·63	Normal. Kew.
+ 1·07	+ 1·11	+ 1·11	+ 1·18	+ 1·23	+ 1·27	+ 1·30	+ 1·40	+ 1·57	+ 1·66	+ 1·76	+ 1·77	+ 1·53	Diff. for 1913. ,,
81·47	81·46	81·43	81·16	80·89	80·33	79·89	79·60	79·47	79·29	79·20	79·06	79·86	Normal. Falmouth.
													APRIL.
80·94	80·91	80·87	80·60	80·34	79·97	79·45	78·94	78·65	78·35	78·08	77·86	79·05	Normal. Aberdeen.
− 0·03	+ 0·12	+ 0·21	+ 0·43	+ 0·33	+ 0·33	+ 0·36	+ 0·38	+ 0·50	+ 0·52	+ 0·58	+ 0·49	+ 0·22	Diff. for 1913. ,,
80·87	81·06	80·85	80·84	80·46	79·63	78·75	78·15	77·53	77·09	76·92	76·84	78·45	1913. Eskdalemuir.
83·85	83·91	83·96	83·82	83·61	83·12	82·48	81·91	81·58	81·32	81·15	80·98	82·00	Normal. Valencia.
− 0·81	− 0·55	− 0·63	− 0·66	− 0·67	− 0·72	− 0·47	− 0·40	− 0·33	− 0·65	− 0·73	− 0·75	− 0·69	Diff. for 1913. ,,
84·47	84·74	84·85	84·64	84·23	83·51	82·38	81·47	80·84	80·24	79·84	79·42	81·33	Normal. Kew.
− 0·40	− 0·57	− 0·50	− 0·56	− 0·45	− 0·67	− 0·35	+ 0·06	+ 0·38	+ 0·58	+ 0·70	+ 0·72	+ 0·17	Diff. for 1913. ,,
83·60	83·56	83·55	83·26	82·97	82·42	81·89	81·31	81·10	80·88	80·78	80·62	81·69	Normal. Falmouth.
													MAY.
83·34	83·29	83·24	83·01	82·88	82·51	82·12	81·52	81·05	80·67	80·32	80·06	81·48	Normal. Aberdeen.
0·00	+ 0·36	+ 0·48	+ 0·69	+ 0·68	+ 0·77	+ 0·56	+ 0·80	+ 0·88	+ 0·93	+ 0·87	+ 0·91	+ 0·54	Diff. for 1913. ,,
84·07	84·21	84·02	84·00	83·40	82·86	82·16	81·30	80·47	80·06	79·65	79·54	81·35	1913. Eskdalemuir.
86·19	86·28	86·37	86·25	86·12	85·63	85·07	84·33	83·75	83·39	83·13	82·86	84·24	Normal. Valencia.
− 1·22	− 1·19	− 1·23	− 1·29	− 1·41	− 1·44	− 1·41	− 1·09	− 0·80	− 0·73	− 0·51	− 0·40	− 0·74	Diff. for 1913. ,,
87·61	87·83	88·10	87·98	87·74	87·15	86·19	84·92	83·99	83·25	82·60	82·10	84·44	Normal. Kew.
+ 1·79	+ 1·64	+ 1·64	+ 1·64	+ 1·81	+ 2·04	+ 1·81	+ 1·60	+ 1·32	+ 1·27	+ 1·31	+ 1·16	+ 1·51	Diff. for 1913. ,,
86·13	86·05	86·05	85·85	85·64	85·10	84·53	83·76	83·29	82·96	82·80	82·59	84·06	Normal. Falmouth.
													JUNE.
86·28	86·22	86·16	85·97	85·90	85·56	85·17	84·64	84·05	83·65	83·31	82·97	84·50	Normal. Aberdeen.
+ 1·22	+ 1·27	+ 1·20	+ 1·27	+ 1·17	+ 0·96	+ 0·93	+ 0·73	+ 0·56	+ 0·39	+ 0·29	+ 0·31	+ 0·58	Diff. for 1913. ,,
87·23	87·47	87·59	87·42	86·80	86·34	85·60	84·72	83·65	83·08	82·64	82·26	84·49	1913. Eskdalemuir.
88·71	88·77	88·84	88·77	88·66	88·09	87·60	87·00	86·25	85·87	85·63	85·37	86·79	Normal. Valencia.
− 1·28	− 1·32	− 1·30	− 1·17	− 1·07	− 1·22	− 1·13	− 1·07	− 0·82	− 0·82	− 0·71	− 0·70	− 1·03	Diff. for 1913. ,,
91·08	91·33	91·62	91·47	91·26	90·76	89·96	88·66	87·50	86·70	86·07	85·51	87·92	Normal. Kew.
+ 0·63	+ 0·87	+ 0·71	+ 0·84	+ 0·72	+ 0·67	+ 0·50	+ 0·33	+ 0·41	+ 0·38	+ 0·29	+ 0·32	+ 0·49	Diff. for 1913. ,,
89·04	88·99	89·00	88·80	88·64	88·10	87·50	86·70	86·06	85·73	85·55	85·36	86·98	Normal. Falmouth.

The heights of the thermometers above the ground are:—

At Aberdeen	12·5 metres.
,, Eskdalemuir . . .	0·9 ,,
,, Valencia	1·2 ,,
,, Kew	3·0 ,,
,, Falmouth	1·2 ,,

The normals for temperature are for the 40 years, 1871–1910.
The values for 1913 are given by the excess or defect from the normal; + indicates excess, − defect.

LXIX.-LXXIV.—NORMALS FOR THE MONTHS OF THE HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS

LXX.—*continued*—TEMPERATURE (in degrees absolute).

(The Mean Values are corrected

Hour, G.M.T.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
	°	°	°	°	°	°	°	°	°	°	°	°
JULY.												
Aberdeen, Normal. 200+	84·66	84·44	84·24	84·11	84·51	85·17	86·03	86·58	87·09	87·45	87·83	87·99
Difference for 1913	− 0·25	− 0·20	− 0·11	− 0·08	− 0·18	− 0·48	− 0·72	− 0·71	− 0·60	− 0·42	− 0·38	− 0·34
Eskdalemuir, 1913. 200+	83·14	82·65	82·53	82·30	82·53	83·65	84·39	85·38	86·25	87·14	87·80	88·50
Valencia, Normal. 200+	86·55	86·40	86·31	86·21	86·21	86·42	87·06	87·60	88·30	88·74	89·17	89·41
Difference for 1913	− 0·58	− 0·62	− 0·66	− 0·75	− 0·66	− 0·61	− 0·36	− 0·30	− 0·26	− 0·10	+ 0·02	+ 0·05
Kew, Normal. 200+	87·03	86·62	86·30	86·04	86·25	86·92	87·99	88·98	90·09	90·91	91·79	92·29
Difference for 1913	− 0·96	− 0·95	− 0·72	− 0·54	− 0·74	− 1·16	− 1·64	− 1·94	− 2·24	− 2·41	− 2·35	− 2·13
Falmouth, Normal. 200+	86·91	86·76	86·70	86·56	86·62	87·05	88·08	88·85	89·66	89·99	90·43	90·57
AUGUST.												
Aberdeen, Normal. 200+	84·62	84·40	84·22	84·05	84·04	84·51	85·40	86·13	86·85	87·27	87·72	87·95
Difference for 1913	− 0·21	− 0·27	− 0·23	− 0·24	− 0·34	− 0·30	− 0·07	+ 0·09	+ 0·15	+ 0·19	+ 0·29	+ 0·40
Eskdalemuir, 1913. 200+	83·15	82·86	82·62	82·34	82·18	82·68	83·69	85·31	86·42	87·54	88·12	88·89
Valencia, Normal. 200+	86·84	86·68	86·63	86·53	86·49	86·48	86·97	87·56	88·29	88·78	89·29	89·56
Difference for 1913	+ 0·44	+ 0·23	+ 0·19	− 0·01	− 0·08	0·00	+ 0·14	+ 0·35	+ 0·53	+ 0·63	+ 0·58	+ 0·71
Kew, Normal. 200+	86·74	86·36	86·13	85·89	85·82	86·12	87·18	88·28	89·56	90·42	91·38	91·96
Difference for 1913	− 0·13	− 0·21	− 0·27	− 0·15	− 0·15	− 0·27	− 0·46	− 0·62	− 0·61	− 0·67	− 0·62	− 0·62
Falmouth, Normal. 200+	87·16	87·05	87·00	86·88	86·84	86·95	87·81	88·69	89·46	89·92	90·36	90·53
SEPTEMBER.												
Aberdeen, Normal. 200+	82·98	82·77	82·65	82·50	82·40	82·40	82·99	83·84	84·83	85·49	86·03	86·28
Difference for 1913	+ 0·94	+ 0·94	+ 1·07	+ 1·14	+ 1·31	+ 1·23	+ 1·06	+ 0·71	+ 0·39	+ 0·10	+ 0·02	− 0·04
Eskdalemuir, 1913. 200+	82·26	82·05	81·98	81·89	81·72	81·77	82·10	83·24	84·11	85·44	85·97	86·80
Valencia, Normal. 200+	85·58	85·48	85·42	85·28	85·25	85·17	85·31	85·85	86·59	87·20	87·81	88·13
Difference for 1913	+ 0·51	+ 0·36	+ 0·40	+ 0·55	+ 0·65	+ 0·66	+ 0·60	+ 0·48	+ 0·47	+ 0·59	+ 0·68	+ 0·87
Kew, Normal. 200+	84·66	84·35	84·15	83·95	83·84	83·79	84·39	85·37	86·73	87·78	88·86	89·47
Difference for 1913	+ 0·96	+ 0·99	+ 1·01	+ 0·97	+ 1·12	+ 1·09	+ 1·04	+ 0·91	+ 0·78	+ 0·81	+ 0·96	+ 0·90
Falmouth, Normal. 200+	85·92	85·82	85·77	85·65	85·60	85·53	85·92	86·67	87·48	88·01	88·58	88·76
OCTOBER.												
Aberdeen, Normal. 200+	80·48	80·36	80·28	80·19	80·15	80·09	80·13	80·50	81·22	81·95	82·55	82·92
Difference for 1913	+ 1·90	+ 2·03	+ 2·21	+ 2·56	+ 2·05	+ 2·11	+ 1·94	+ 1·78	+ 1·90	+ 1·64	+ 1·54	+ 1·65
Eskdalemuir, 1913. 200+	80·56	80·45	80·43	80·40	80·46	80·52	80·45	80·86	81·51	82·39	82·72	83·18
Valencia, Normal. 200+	83·19	83·08	83·05	82·99	82·99	82·93	82·92	83·05	83·67	84·16	84·77	85·03
Difference for 1913	+ 0·51	+ 0·62	+ 0·68	+ 0·78	+ 0·78	+ 0·61	+ 0·57	+ 0·60	+ 0·55	+ 0·69	+ 0·66	+ 0·78
Kew, Normal. 200+	81·39	81·19	81·10	80·97	80·91	80·81	80·92	81·41	82·47	83·51	84·48	85·04
Difference for 1913	+ 2·04	+ 2·06	+ 2·08	+ 2·04	+ 2·09	+ 2·10	+ 2·06	+ 2·14	+ 2·02	+ 1·94	+ 2·00	+ 2·13
Falmouth, Normal. 200+	83·48	83·36	83·34	83·25	83·25	83·16	83·22	83·59	84·35	84·88	85·37	85·55
NOVEMBER.												
Aberdeen, Normal. 200+	78·22	78·17	78·11	78·05	78·03	77·99	78·04	78·11	78·43	78·85	79·36	79·77
Difference for 1913	+ 1·97	+ 1·81	+ 1·88	+ 1·86	+ 1·85	+ 1·84	+ 1·99	+ 1·82	+ 1·60	+ 1·72	+ 1·83	+ 1·97
Eskdalemuir, 1913. 200+	78·41	78·38	78·52	78·45	78·40	78·46	78·33	78·25	78·49	79·24	79·76	80·34
Valencia, Normal. 200+	81·30	81·21	81·20	81·13	81·13	81·08	81·08	81·04	81·29	81·69	82·20	82·47
Difference for 1913	+ 1·58	+ 1·59	+ 1·66	+ 1·50	+ 1·42	+ 1·54	+ 1·55	+ 1·45	+ 1·51	+ 1·33	+ 1·32	+ 1·28
Kew, Normal. 200+	78·79	78·67	78·64	78·55	78·52	78·40	78·40	78·50	79·03	79·74	80·52	81·05
Difference for 1913	+ 2·65	+ 2·53	+ 2·38	+ 2·28	+ 2·22	+ 2·28	+ 2·24	+ 2·23	+ 2·21	+ 2·29	+ 2·38	+ 2·66
Falmouth, Normal. 200+	81·35	81·27	81·28	81·21	81·20	81·13	81·15	81·16	81·60	82·10	82·60	82·84
DECEMBER.												
Aberdeen, Normal. 200+	76·43	76·40	76·37	76·33	76·36	76·33	76·34	76·32	76·42	76·64	77·00	77·26
Difference for 1913	+ 0·04	− 0·18	− 0·23	− 0·16	− 0·17	− 0·19	− 0·11	− 0·06	− 0·04	− 0·06	+ 0·24	+ 0·37
Eskdalemuir, 1913. 200+	75·56	75·48	75·42	75·35	75·29	75·53	75·34	75·46	75·39	75·84	76·18	76·53
Valencia, Normal. 200+	80·35	80·28	80·28	80·20	80·20	80·12	80·12	80·10	80·16	80·33	80·78	81·03
Difference for 1913	− 0·17	− 0·10	− 0·09	− 0·22	− 0·03	− 0·20	− 0·17	− 0·31	− 0·22	− 0·07	0·00	+ 0·12
Kew, Normal. 200+	76·85	76·74	76·71	76·63	76·65	76·61	76·65	76·63	76·91	77·29	77·90	78·34
Difference for 1913	+ 1·51	+ 1·52	+ 1·42	+ 1·36	+ 1·34	+ 1·31	+ 1·32	+ 1·34	+ 1·26	+ 1·27	+ 1·38	+ 1·45
Falmouth, Normal. 200+	79·99	79·93	79·95	79·88	79·91	79·87	79·88	79·86	80·03	80·34	80·86	81·06
YEAR.												
Aberdeen, Normal. 200+	79·67	79·52	79·41	79·30	79·39	79·63	80·02	80·40	80·95	81·37	81·87	82·13
Difference for 1913	+ 0·60	+ 0·55	+ 0·58	+ 0·60	+ 0·52	+ 0·48	+ 0·51	+ 0·46	+ 0·46	+ 0·45	+ 0·45	+ 0·54
Eskdalemuir, 1913. 200+	78·77	78·62	78·54	78·44	78·45	78·78	79·02	79·76	80·35	81·20	81·64	82·23
Valencia, Normal. 200+	82·57	82·45	82·40	82·31	82·30	82·31	82·59	82·94	83·50	83·92	84·44	84·74
Difference for 1913	+ 0·03	+ 0·02	+ 0·02	− 0·03	− 0·02	+ 0·01	+ 0·04	− 0·02	− 0·06	− 0·02	− 0·03	− 0·01
Kew, Normal. 200+	80·92	80·67	80·50	80·30	80·33	80·49	81·01	81·61	82·49	83·34	84·18	84·76
Difference for 1913	+ 1·06	+ 1·01	+ 0·99	+ 1·00	+ 0·99	+ 0·93	+ 0·86	+ 0·83	+ 0·84	+ 0·74	+ 0·83	+ 0·80
Falmouth, Normal. 200+	82·48	82·36	82·33	82·23	82·23	82·30	82·74	83·23	83·86	84·26	84·78	84·95

AT THE FIVE OBSERVATORIES WITH DIFFERENCES BETWEEN THE NORMALS AND THE VALUES FOR 1913.

JULY TO DECEMBER AND YEAR.

for non-cyclic change.)

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.	Hour, G.M.T.
°	°	°	°	°	°	°	°	°	°	°	°	°	JULY.
88·18	88·16	88·14	87·90	87·78	87·43	87·05	86·45	85·93	85·49	85·16	84·89	86·34	Normal. Aberdeen.
− 0·38	− 0·59	− 0·52	− 0·54	− 0·40	− 0·38	− 0·56	− 0·05	− 0·55	− 0·53	− 0·45	− 0·43	− 0·40	Diff. for 1913. ,,
88·74	89·32	89·20	88·99	88·72	88·04	87·25	86·11	85·01	84·15	83·75	83·26	85·72	1913. Eskdalemuir.
89·70	89·75	89·84	89·73	89·63	89·09	88·65	88·01	87·36	87·06	86·89	86·70	87·95	Normal. Valencia.
− 0·02	− 0·13	+ 0·08	+ 0·23	+ 0·37	+ 0·20	+ 0·14	+ 0·10	+ 0·25	− 0·02	− 0·19	− 0·32	− 0·18	Diff. for 1913. ,,
92·96	93·28	93·56	93·45	93·28	92·73	91·95	90·53	89·46	88·68	88·03	87·43	89·86	Normal. Kew.
− 2·05	− 2·06	− 2·16	− 2·22	− 2·20	− 1·99	− 1·68	− 1·38	− 1·16	− 1·07	− 0·98	− 0·87	− 1·57	Diff. for 1913. ,,
90·84	90·76	90·74	90·48	90·24	89·77	89·15	88·33	87·65	87·32	87·16	87·01	88·65	Normal. Falmouth.
													AUGUST.
88·18	88·16	88·11	87·87	87·60	87·21	86·71	86·06	85·63	85·25	85·01	84·78	86·15	Normal. Aberdeen.
+ 0·36	+ 0·56	+ 0·27	+ 0·30	+ 0·33	+ 0·18	+ 0·27	+ 0·27	+ 0·13	+ 0·06	+ 0·41	− 0·16	+ 0·11	Diff. for 1913. ,,
89·07	89·52	89·39	89·32	88·85	88·29	86·86	85·75	84·70	84·19	83·81	83·48	85·79	1913. Eskdalemuir.
89·87	89·92	89·94	89·75	89·55	89·05	88·56	87·84	87·40	87·17	87·07	86·92	88·05	Normal. Valencia.
+ 0·64	+ 0·52	+ 0·71	+ 0·71	+ 0·80	+ 0·80	+ 0·84	+ 0·70	+ 0·78	+ 0·69	+ 0·46	+ 0·38	+ 0·49	Diff. for 1913. ,,
92·57	92·80	93·04	92·85	92·57	91·87	90·76	89·54	88·74	88·08	87·53	87·06	89·30	Normal. Kew.
− 0·49	− 0·34	− 0·43	− 0·18	− 0·16	− 0·12	− 0·14	− 0·07	− 0·08	− 0·12	+ 0·01	+ 0·01	− 0·29	Diff. for 1913. ,,
90·82	90·75	90·72	90·36	90·07	89·52	88·84	88·10	87·71	87·46	87·34	87·20	88·65	Normal. Falmouth.
													SEPTEMBER.
86·51	86·53	86·41	86·14	85·78	85·19	84·63	84·15	83·85	83·59	83·37	83·14	84·33	Normal. Aberdeen.
− 0·29	− 0·31	− 0·21	− 0·17	− 0·18	+ 0·05	+ 0·52	+ 0·73	+ 0·87	+ 0·94	+ 0·87	+ 1·44	+ 0·55	Diff. for 1913. ,,
87·10	87·35	87·14	86·79	86·33	85·17	84·20	83·68	83·26	83·14	82·92	82·50	84·12	1913. Eskdalemuir.
88·45	88·46	88·47	88·20	87·89	87·31	86·70	86·27	86·10	85·91	85·81	85·64	86·60	Normal. Valencia.
+ 0·79	+ 0·75	+ 0·71	+ 0·80	+ 0·94	+ 0·97	+ 1·10	+ 0·99	+ 1·02	+ 0·93	+ 0·79	+ 0·63	+ 0·71	Diff. for 1913. ,,
90·06	90·27	90·39	90·11	89·62	88·54	87·37	86·62	86·08	85·61	85·18	84·84	86·75	Normal. Kew.
+ 0·94	+ 0·95	+ 0·88	+ 0·90	+ 0·62	+ 0·58	+ 0·77	+ 0·75	+ 0·81	+ 0·80	+ 0·84	+ 0·95	+ 0·89	Diff. for 1913. ,,
88·96	88·88	88·80	88·49	88·09	87·42	86·87	86·46	86·28	86·14	86·05	85·92	87·00	Normal. Falmouth.
													OCTOBER.
83·16	83·20	83·05	82·65	82·14	81·66	81·30	81·07	80·91	80·73	80·63	80·48	81·33	Normal. Aberdeen.
+ 1·53	+ 1·53	+ 1·56	+ 1·63	+ 1·75	+ 1·87	+ 2·02	+ 1·97	+ 2·07	+ 1·88	+ 1·92	+ 1·97	+ 1·87	Diff. for 1913. ,,
83·41	83·57	83·32	82·90	82·01	81·40	80·96	80·84	80·59	80·64	80·50	80·47	81·44	1913. Eskdalemuir.
85·24	85·26	85·21	84·97	84·59	84·04	83·80	83·62	83·51	83·32	83·24	83·01	83·82	Normal. Valencia.
+ 0·69	+ 0·80	+ 0·86	+ 0·77	+ 0·74	+ 0·66	+ 0·55	+ 0·50	+ 0·38	+ 0·39	+ 0·45	+ 0·58	+ 0·64	Diff. for 1913. ,,
85·52	85·63	85·54	85·07	84·32	83·53	82·98	82·53	82·25	81·95	81·72	81·43	82·78	Normal. Kew.
+ 2·27	+ 2·21	+ 2·17	+ 2·06	+ 1·90	+ 1·88	+ 1·91	+ 1·85	+ 1·88	+ 1·76	+ 1·81	+ 1·92	+ 2·01	Diff. for 1913. ,,
85·74	85·64	85·51	85·14	84·74	84·20	83·96	83·79	83·73	83·62	83·58	83·42	84·16	Normal. Falmouth.
													NOVEMBER.
79·98	79·97	79·78	79·38	79·03	78·83	78·70	78·57	78·51	78·40	78·31	78·19	78·70	Normal. Aberdeen.
+ 2·11	+ 2·18	+ 2·22	+ 2·14	+ 2·01	+ 2·12	+ 2·15	+ 2·25	+ 2·35	+ 2·29	+ 2·17	+ 2·06	+ 2·01	Diff. for 1913. ,,
80·54	80·64	80·32	79·81	79·24	79·14	79·03	78·94	78·82	78·73	78·51	78·39	79·05	1913. Eskdalemuir.
82·74	82·75	82·68	82·36	82·00	81·76	81·65	81·49	81·43	81·32	81·29	81·21	81·65	Normal. Valencia.
+ 1·12	+ 1·15	+ 0·94	+ 0·83	+ 1·03	+ 1·17	+ 1·15	+ 1·19	+ 1·32	+ 1·45	+ 1·49	+ 1·67	+ 1·33	Diff. for 1913. ,,
81·44	81·52	81·35	80·89	80·35	79·96	79·72	79·42	79·24	79·04	78·92	78·76	79·56	Normal. Kew.
+ 2·82	+ 2·90	+ 2·89	+ 2·76	+ 2·73	+ 2·66	+ 2·63	+ 2·62	+ 2·66	+ 2·83	+ 2·82	+ 2·91	+ 2·56	Diff. for 1913. ,,
83·05	82·92	82·76	82·35	82·00	81·76	81·67	81·54	81·52	81·40	81·36	81·27	81·77	Normal. Falmouth.
													DECEMBER.
77·48	77·45	77·27	77·03	76·89	76·77	76·71	76·63	76·63	76·55	76·52	76·44	76·69	Normal. Aberdeen.
+ 0·38	+ 0·42	+ 0·30	+ 0·36	+ 0·22	+ 0·05	+ 0·06	+ 0·04	+ 0·11	− 0·03	− 0·03	+ 0·01	+ 0·06	Diff. for 1913. ,,
76·76	76·73	76·47	76·10	75·94	75·81	75·62	75·63	75·49	75·46	75·28	75·24	75·75	1913. Eskdalemuir.
81·26	81·30	81·22	81·01	80·76	80·58	80·54	80·45	80·44	80·36	80·37	80·31	80·52	Normal. Valencia.
+ 0·17	+ 0·08	− 0·09	+ 0·08	+ 0·20	+ 0·10	+ 0·01	− 0·09	+ 0·01	− 0·09	− 0·09	− 0·28	− 0·05	Diff. for 1913. ,,
78·70	78·76	78·64	78·20	77·88	77·62	77·45	77·28	77·18	77·07	76·99	76·88	77·36	Normal. Kew.
+ 1·34	+ 1·21	+ 1·25	+ 1·23	+ 1·39	+ 1·36	+ 1·41	+ 1·37	+ 1·48	+ 1·41	+ 1·37	+ 1·26	+ 1·36	Diff. for 1913. ,,
81·22	81·14	81·00	80·66	80·38	80·21	80·14	80·07	80·07	80·02	80·01	79·96	80·27	Normal. Falmouth.
													YEAR.
82·33	82·34	82·26	82·01	81·74	81·35	81·04	80·68	80·38	80·12	79·97	79·80	80·74	Normal. Aberdeen.
+ 0·58	+ 0·64	+ 0·66	+ 0·69	+ 0·68	+ 0·72	+ 0·72	+ 0·77	+ 0·78	+ 0·76	+ 0·72	+ 0·69	+ 0·61	Diff. for 1913. ,,
82·44	82·67	82·50	82·24	81·80	81·28	80·65	80·14	79·61	79·35	79·11	78·91	80·27	1913. Eskdalemuir.
84·99	85·04	85·05	84·87	84·63	84·18	83·83	83·45	83·16	82·93	82·81	82·64	83·50	Normal. Valencia.
0·00	− 0·02	− 0·03	− 0·02	+ 0·03	+ 0·01	− 0·01	− 0·02	+ 0·07	+ 0·03	+ 0·06	+ 0·08	+ 0·01	Diff. for 1913. ,,
85·25	85·45	85·54	85·24	84·88	84·24	83·62	82·81	82·27	81·85	81·47	81·14	82·68	Normal. Kew.
+ 0·87	+ 0·86	+ 0·82	+ 0·86	+ 0·83	+ 0·86	+ 0·83	+ 0·93	+ 0·99	+ 0·95	+ 1·01	+ 1·07	+ 0·91	Diff. for 1913. ,,
85·15	85·09	85·04	84·77	84·47	84·01	83·66	83·21	82·96	82·76	82·66	82·52	83·50	Normal. Falmouth.

LXIX.–LXXIV.—NORMALS FOR THE MONTHS OF THE HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS

LXXI.—RELATIVE HUMIDITY.

(The Mean Values are corrected

Hour, G.M.T.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
JANUARY.	%	%	%	%	%	%	%	%	%	%	%	%
Aberdeen, Normal.	80·8	80·8	81·0	81·1	81·4	81·6	81·5	81·5	81·4	80·7	79·5	78·3
Difference for 1913	+ 4·6	+ 4·4	+ 4·4	+ 4·5	+ 3·8	+ 3·8	+ 4·3	+ 2·5	+ 1·8	+ 3·1	+ 4·5	+ 4·5
Eskdalemuir, 1913.	89·2*	88·7*	89·4*	88·5*	89·9*	89·4*	90·1*	89·2*	90·6*	87·1*	87·1*	88·4*
Valencia, Normal.	86·6	87·1	87·1	87·3	87·2	87·3	87·4	87·2	86·9	86·9	86·2	85·4
Difference for 1913	+ 2·3	+ 2·2	+ 1·6	+ 1·8	+ 1·5	+ 1·6	+ 0·9	+ 1·5	+ 1·4	+ 2·2	+ 1·3	+ 1·2
Kew, Normal.	86·6	86·9	86·8	86·8	86·5	87·1	87·0	87·1	86·4	85·6	82·9	81·6
Difference for 1913	+ 2·1	+ 2·9	+ 2·0	+ 2·4	+ 1·2	+ 1·4	+ 0·6	+ 1·5	+ 2·1	+ 3·0	+ 3·7	+ 3·6
Falmouth, Normal.	84·9	84·9	85·0	85·1	85·3	85·3	85·3	85·4	85·0	83·9	82·2	81·2
FEBRUARY.												
Aberdeen, Normal.	80·5	80·6	80·8	81·0	80·9	81·1	81·1	80·7	80·2	78·9	77·3	75·8
Difference for 1913	+ 2·9	+ 1·8	+ 2·8	+ 2·8	+ 3·4	+ 1·8	+ 2·3	+ 1·7	+ 2·2	+ 0·5	+ 0·9	+ 0·5
Eskdalemuir, 1913.	90·4†	90·1†	90·3†	90·1†	89·0†	88·9†	90·0†	88·6†	89·5†	85·5†	86·5†	85·8†
Valencia, Normal.	87·2	87·3	87·5	87·4	87·5	87·6	87·0	87·4	87·1	86·4	84·5	82·7
Difference for 1913	− 1·6	− 0·9	− 0·6	− 0·2	+ 0·3	+ 0·5	+ 1·1	+ 1·5	+ 1·0	+ 1·4	+ 1·6	+ 0·4
Kew, Normal.	84·7	85·2	85·2	85·7	85·4	85·9	85·4	85·6	84·0	82·1	78·5	76·4
Difference for 1913	− 2·1	− 2·7	− 3·1	− 2·5	− 1·9	− 2·2	− 1·4	− 2·1	− 1·7	+ 0·2	0·0	− 0·8
Falmouth, Normal.	83·6	83·5	83·7	83·7	83·9	84·0	83·9	83·9	83·2	81·4	79·4	77·9
MARCH.												
Aberdeen, Normal.	82·1	82·2	82·5	82·7	82·9	83·0	82·9	81·0	79·3	76·4	74·9	72·9
Difference for 1913	− 0·9	− 1·2	− 0·7	− 0·3	+ 0·5	+ 0·2	− 1·1	+ 0·8	− 1·5	− 1·4	− 1·4	− 2·1
Eskdalemuir, 1913.	87·0	85·7	85·1	84·5	85·0	84·6	83·8	84·3	85·1	83·2	81·3	79·4
Valencia, Normal.	86·6	86·9	87·2	87·3	87·3	87·4	87·5	86·9	85·2	83·0	80·7	79·1
Difference for 1913	0·0	− 1·3	− 1·9	− 2·1	− 2·8	− 2·2	− 0·9	− 0·2	− 0·1	+ 1·1	+ 1·8	+ 2·5
Kew, Normal.	85·4	86·7	86·6	87·1	86·8	87·3	86·4	85·0	81·0	77·8	73·1	70·8
Difference for 1913	− 3·3	− 3·4	− 2·0	− 1·6	− 0·7	− 0·9	− 0·9	− 0·7	+ 0·8	+ 0·2	+ 1·3	+ 2·0
Falmouth, Normal.	84·4	84·8	84·9	84·9	85·2	85·4	85·6	84·2	81·6	79·1	77·1	75·7
APRIL.												
Aberdeen, Normal.	83·6	84·0	84·3	84·5	84·7	84·0	82·4	79·5	76·3	73·7	72·3	71·2
Difference for 1913	+ 3·2	+ 2·5	+ 3·0	+ 2·9	+ 2·5	+ 3·0	+ 2·6	+ 2·6	+ 2·5	+ 4·1	+ 5·2	+ 5·3
Eskdalemuir, 1913.	85·7	84·6	85·1	83·6	83·4	81·9	81·2	80·0	79·0	77·1	75·8	74·3
Valencia, Normal.	86·2	86·6	86·5	86·8	86·8	86·9	86·4	84·9	81·9	79·5	77·0	76·1
Difference for 1913	− 1·0	− 0·6	+ 0·3	+ 0·7	0·0	+ 0·1	− 0·4	− 0·1	+ 0·8	+ 1·6	+ 3·1	+ 2·8
Kew, Normal.	84·4	85·7	86·1	87·1	86·9	86·8	83·8	80·1	75·3	70·4	66·6	63·7
Difference for 1913	+ 0·1	− 1·6	− 0·5	− 1·2	− 1·0	− 1·4	+ 0·7	+ 0·2	− 0·5	+ 1·0	+ 2·1	+ 3·7
Falmouth, Normal.	84·6	84·9	85·4	85·6	85·6	85·4	83·5	80·5	77·3	74·9	73·5	72·6
MAY.												
Aberdeen, Normal.	85·0	85·3	85·9	86·3	85·7	83·7	80·5	78·0	75·9	74·4	73·1	72·1
Difference for 1913	− 0·8	+ 0·1	− 0·7	− 1·3	− 2·3	− 0·4	+ 0·3	+ 0·2	+ 0·6	+ 0·6	+ 1·9	+ 1·7
Eskdalemuir, 1913.	87·7	87·4	86·7	87·4	86·9	86·5	84·6	83·2	82·6	80·3	79·1	77·7
Valencia, Normal.	87·0	87·0	87·4	87·7	87·8	87·4	85·3	81·9	78·7	76·9	75·1	74·2
Difference for 1913	+ 2·1	+ 1·5	+ 0·7	+ 2·0	+ 2·2	+ 1·4	+ 1·7	+ 3·6	+ 5·6	+ 4·6	+ 5·7	+ 7·4
Kew, Normal.	84·6	86·3	86·8	87·6	86·8	85·3	81·1	76·2	71·1	67·8	65·0	62·8
Difference for 1913	+ 2·6	+ 1·9	+ 1·0	+ 0·8	+ 1·0	+ 1·2	+ 0·9	+ 1·3	+ 2·8	+ 2·7	+ 1·1	+ 1·0
Falmouth, Normal.	87·2	87·5	87·6	88·0	88·1	86·5	83·0	78·8	75·6	73·9	73·1	72·4
JUNE.												
Aberdeen, Normal.	85·2	86·0	86·2	86·5	85·2	82·0	78·8	76·2	74·5	73·3	72·3	72·0
Difference for 1913	− 1·2	− 1·2	− 1·6	− 2·7	− 2·5	− 1·2	− 0·4	− 1·2	− 1·9	− 1·3	− 2·3	− 3·8
Eskdalemuir, 1913.	...	...	...	...	...	...	...	...	78·2	...	...	...
Valencia, Normal.	87·2	87·9	87·9	88·2	88·1	87·2	85·2	82·4	79·6	77·6	76·2	75·6
Difference for 1913	+ 3·8	+ 3·0	+ 3·4	+ 2·9	+ 2·6	+ 2·6	+ 2·6	+ 3·5	+ 5·5	+ 5·6	+ 6·9	+ 6·6
Kew, Normal.	84·3	85·8	87·1	87·6	85·7	83·7	79·7	75·7	71·3	67·9	64·8	62·3
Difference for 1913	− 0·3	+ 0·3	+ 0·3	+ 1·0	+ 1·3	− 0·1	− 0·4	− 1·6	− 1·4	− 2·7	− 1·2	− 1·2
Falmouth, Normal.	89·1	89·4	89·8	89·8	89·9	87·9	84·0	79·7	76·6	75·0	74·2	73·8

The Relative Humidity of the air for each hour is deduced from the readings of the dry and wet bulb thermometers (see note to Table LXX.) by means of Glaisher's factors; complete saturation being taken as 100.

The normals for humidity are obtained from the observations for 25 years, 1886-1910.

* Mean for 28 days only.

† Mean for 22 days only.

AT THE FIVE OBSERVATORIES WITH DIFFERENCES BETWEEN THE NORMALS AND THE VALUES FOR 1913.

JANUARY TO JUNE.

for non-cyclic change.)

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.	Hour, G.M.T.
%	%	%	%	%	%	%	%	%	%	%	%	%	JANUARY.
77·8	77·6	78·1	79·4	80·1	80·4	80·8	80·9	80·8	80·8	80·8	80·6	80·3	Normal. Aberdeen.
+ 4·0	+ 5·2	+ 4·9	+ 4·8	+ 4·3	+ 3·0	+ 1·6	+ 0·3	+ 2·0	+ 2·8	+ 3·2	+ 4·2	+ 3·6	Diff. for 1913. ,,
88·7*	88·1*	89·9*	89·6*	89·4*	89·9*	90·8*	89·3*	91·5*	90·8*	91·0*	89·9*	89·4*	1913. Eskdalemuir.
84·4	84·1	84·3	84·7	85·6	86·1	86·3	86·4	86·7	86·5	86·5	86·7	86·3	Normal. Valencia.
+ 0·9	+ 0·4	+ 1·7	+ 3·6	+ 3·0	+ 3·0	+ 3·7	+ 3·9	+ 3·1	+ 3·5	+ 2·5	+ 2·1	+ 2·1	Diff. for 1913. ,,
79·7	79·5	79·6	81·5	82·7	84·0	84·6	85·4	85·4	86·2	86·1	86·7	84·7	Normal. Kew.
+ 2·8	+ 3·1	+ 3·0	+ 2·6	+ 1·9	+ 2·4	+ 2·0	+ 1·8	+ 2·3	+ 2·0	+ 2·1	+ 2·3	+ 2·3	Diff. for 1913. ,,
80·7	80·3	81·1	82·1	83·2	83·9	84·3	84·1	84·2	84·6	84·6	84·8	83·8	Normal. Falmouth.
													FEBRUARY.
75·4	75·1	75·4	76·5	78·2	79·4	79·9	79·9	79·9	80·0	80·2	80·5	79·2	Normal. Aberdeen.
0·0	− 1·5	− 1·6	− 0·1	+ 1·2	+ 1·7	+ 0·3	+ 0·5	+ 0·3	+ 1·4	+ 1·0	+ 2·5	+ 1·1	Diff. for 1913. ,,
85·7†	85·4†	87·0†	87·8†	88·9†	88·0†	88·1†	88·9†	90·1†	89·0†	89·0†	88·8†	88·4†	1913. Eskdalemuir.
81·4	81·0	81·2	81·8	83·2	84·8	85·3	86·2	86·1	86·4	87·0	87·2	85·5	Normal. Valencia.
0·0	− 0·4	− 0·4	+ 0·3	+ 0·1	0·0	+ 0·1	− 0·4	− 0·1	− 0·6	− 0·4	− 0·8	0·0	Diff. for 1913. ,,
74·6	73·7	73·7	74·7	77·1	79·8	81·2	82·7	83·2	84·0	84·3	84·8	81·6	Normal. Kew.
− 2·7	− 1·4	− 0·6	− 1·2	− 1·7	− 1·5	− 1·4	− 1·2	− 1·8	− 1·5	− 1·2	− 1·8	− 1·6	Diff. for 1913. ,,
77·1	76·7	77·2	77·9	79·7	81·4	82·2	82·9	83·4	83·5	83·8	83·8	81·7	Normal. Falmouth.
													MARCH.
72·5	72·2	72·6	73·4	75·2	77·4	79·3	80·1	80·6	81·2	81·3	81·5	78·8	Normal. Aberdeen.
− 4·1	− 5·7	− 5·1	− 5·0	− 3·8	− 2·1	− 2·3	− 2·3	− 1·0	− 2·4	− 0·5	− 0·9	− 1·9	Diff. for 1913. ,,
79·2	77·6	76·9	78·5	80·9	83·5	85·7	86·6	88·3	86·9	87·5	87·3	83·6	1913. Eskdalemuir.
77·9	78·0	77·7	78·4	79·4	81·2	83·5	84·8	85·0	85·6	86·0	86·6	83·7	Normal. Valencia.
+ 2·8	+ 3·5	+ 4·1	+ 3·2	+ 2·0	+ 0·9	+ 0·6	+ 0·7	+ 0·4	+ 0·6	− 1·8	− 1·2	+ 0·4	Diff. for 1913. ,,
68·4	67·1	67·0	67·7	69·9	73·5	76·8	79·9	81·2	83·4	84·3	85·5	79·1	Normal. Kew.
+ 2·9	+ 2·9	+ 3·0	+ 3·6	+ 2·6	+ 2·0	+ 1·6	+ 0·3	− 0·8	− 1·6	− 1·8	− 2·6	+ 0·1	Diff. for 1913. ,,
74·9	74·7	74·9	75·7	77·2	79·1	81·8	82·8	83·5	83·9	84·2	84·7	81·3	Normal. Falmouth.
													APRIL.
70·9	71·1	71·4	72·0	73·4	75·0	77·3	79·6	80·5	81·5	82·5	83·1	78·3	Normal. Aberdeen.
+ 4·9	+ 2·9	+ 3·0	+ 2·0	+ 3·2	+ 2·0	+ 2·7	+ 1·6	+ 1·8	+ 2·5	+ 2·8	+ 1·7	+ 2·9	Diff. for 1913. ,,
73·3	72·7	73·8	74·8	77·2	79·7	83·7	84·7	87·5	86·9	86·1	85·6	80·7	1913. Eskdalemuir.
75·8	75·3	75·5	75·7	77·0	78·6	80·9	83·3	84·5	85·2	85·7	85·9	82·0	Normal. Valencia.
+ 1·4	+ 1·4	+ 1·3	+ 1·0	+ 0·2	+ 2·3	− 0·3	− 1·0	− 1·2	+ 0·5	0·0	+ 0·3	+ 0·6	Diff. for 1913. ,,
62·3	61·0	61·0	61·3	62·9	65·7	69·9	74·3	77·4	79·9	81·9	83·2	74·9	Normal. Kew.
+ 3·9	+ 5·0	+ 4·2	+ 4·4	+ 5·3	+ 7·8	+ 6·3	+ 3·8	+ 0·9	+ 0·3	− 1·0	+ 0·2	+ 1·8	Diff. for 1913. ,,
72·3	72·1	72·4	73·0	74·1	75·8	79·5	82·1	83·1	83·9	84·1	84·3	79·6	Normal Falmouth.
													MAY.
72·3	72·3	72·6	73·1	73·6	74·6	76·7	79·1	81·1	82·5	83·8	84·5	78·8	Normal. Aberdeen.
+ 1·1	+ 0·2	− 0·4	− 1·1	− 1·0	− 1·6	− 2·2	− 2·9	− 3·7	− 3·3	− 2·4	− 1·6	− 0·7	Diff. for 1913. ,,
78·6	77·3	76·3	76·6	79·7	82·3	84·4	85·6	88·4	87·5	87·5	87·3	83·4	1913. Eskdalemuir.
74·1	73·7	74·1	74·0	74·2	76·5	78·6	81·4	83·6	85·0	86·0	86·6	81·0	Normal. Valencia.
+ 6·4	+ 7·0	+ 6·6	+ 7·0	+ 7·9	+ 7·0	+ 6·8	+ 5·2	+ 4·3	+ 4·4	+ 3·2	+ 3·0	+ 4·5	Diff. for 1913. ,,
60·9	60·0	59·5	59·6	60·7	62·6	66·6	71·9	75·6	79·0	81·1	83·3	73·4	Normal. Kew.
+ 0·6	+ 0·8	+ 0·8	+ 1·2	+ 0·1	− 0·2	+ 0·7	+ 0·5	+ 2·2	+ 2·1	+ 3·1	+ 2·3	+ 1·4	Diff. for 1913. ,,
72·2	71·9	72·2	72·6	73·2	75·0	78·4	82·3	85·1	86·3	86·8	87·2	80·2	Normal. Falmouth.
													JUNE.
71·5	71·4	72·3	72·7	72·8	74·0	75·6	77·9	80·4	82·3	83·7	84·4	78·2	Normal. Aberdeen.
− 4·5	− 4·4	− 3·9	− 4·5	− 5·0	− 5·0	− 4·6	− 4·1	− 3·8	− 2·7	− 1·7	− 1·4	− 2·8	Diff. for 1913. ,,
...	...	69·7	...	...	...	...	...	83·2	...	...	...	...	1913. Eskdalemuir.
75·1	75·1	75·1	74·4	74·5	76·9	78·9	81·4	84·1	85·4	86·1	86·9	81·5	Normal. Valencia.
+ 4·8	+ 4·6	+ 4·1	+ 3·2	+ 3·0	+ 4·2	+ 3·9	+ 4·1	+ 4·3	+ 3·7	+ 4·0	+ 4·3	+ 4·1	Diff. for 1913. ,,
60·4	59·3	58·6	58·8	59·8	61·9	65·5	70·6	74·9	78·3	80·7	83·1	72·8	Normal. Kew.
− 2·3	− 1·9	− 0·3	− 2·0	− 1·6	− 2·5	− 2·1	− 2·6	− 1·8	− 3·2	− 2·1	− 1·5	− 1·2	Diff. for 1913. ,,
73·2	72·9	72·9	73·4	74·2	75·8	78·7	82·9	86·0	87·5	88·2	88·8	81·4	Normal. Falmouth.

The values for 1913 are given by the excess or defect from the normal; + indicates excess, − defect.

* Mean for 28 days only.

† Mean for 22 days only.

LXIX.-LXXIV.—NORMALS FOR THE MONTHS OF THE HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS

LXXI.—*continued*—RELATIVE HUMIDITY.

(The Mean Values are corrected

Hour, G.M.T.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
JULY.	%	%	%	%	%	%	%	%	%	%	%	%
Aberdeen, Normal.	84·9	85·6	85·8	86·3	85·0	82·6	79·6	76·8	74·5	72·9	71·7	71·7
Difference for 1913	+ 2·1	+ 1·2	+ 1·6	+ 1·4	+ 2·2	+ 2·4	+ 2·4	+ 2·6	+ 1·0	+ 0·3	+ 0·8	− 0·7
Eskdalemuir, 1913.	...	...	...	...	...	...	...	...	78·0	...	...	...
Valencia, Normal.	88·4	88·7	89·1	89·2	89·7	89·0	87·6	85·4	83·0	81·0	79·3	78·6
Difference for 1913	+ 2·0	+ 1·9	+ 1·7	+ 1·4	+ 1·0	+ 0·5	+ 1·4	+ 1·8	+ 1·7	+ 0·3	− 0·2	+ 0·3
Kew, Normal.	85·1	86·4	87·2	88·1	87·1	85·3	80·8	75·9	70·7	67·0	63·4	61·5
Difference for 1913	+ 2·7	+ 2·9	+ 2·2	+ 1·3	+ 2·4	+ 3·0	+ 4·2	+ 6·0	+ 7·1	+ 7·6	+ 8·3	+ 6·8
Falmouth, Normal.	89·6	90·0	90·1	90·1	90·2	89·0	85·5	81·1	77·0	75·2	73·8	72·8
AUGUST.												
Aberdeen, Normal.	85·4	86·1	86·4	87·0	87·0	85·5	82·2	79·5	75·8	74·0	72·4	71·3
Difference for 1913	+ 0·1	− 0·1	0·0	− 0·8	− 1·2	+ 0·3	− 0·2	− 1·3	− 2·6	− 1·0	− 1·4	− 2·3
Eskdalemuir, 1913.	...	...	...	...	...	...	...	...	78·1	...	...	...
Valencia, Normal.	88·7	89·3	89·1	89·3	89·3	89·3	88·7	86·8	84·4	82·2	80·4	79·2
Difference for 1913	− 0·7	− 0·5	0·0	+ 0·9	+ 1·0	+ 1·4	+ 1·4	+ 0·8	− 0·6	− 0·7	− 1·2	− 2·3
Kew, Normal.	86·8	87·7	88·5	89·0	89·0	88·2	84·9	80·2	74·3	69·9	65·4	63·0
Difference for 1913	− 0·8	+ 0·4	+ 1·0	+ 0·4	+ 0·2	+ 0·3	+ 0·6	+ 1·4	+ 1·9	+ 2·3	+ 2·3	+ 2·1
Falmouth, Normal.	89·7	89·9	90·1	90·3	90·7	90·6	87·8	83·9	79·7	77·1	75·6	74·3
SEPTEMBER.												
Aberdeen, Normal.	85·6	85·9	86·1	86·5	86·6	86·6	85·2	82·5	79·0	75·8	73·7	72·7
Difference for 1913	+ 2·2	+ 1·7	+ 0·7	− 0·1	+ 0·2	− 0·2	+ 0·5	+ 1·6	+ 3·0	+ 5·2	+ 5·3	+ 3·9
Eskdalemuir, 1913.	88·7	88·7	89·1	88·6	88·8	88·2	89·4	87·4	86·2	80·8	79·0	75·8
Valencia, Normal.	88·0	87·9	88·3	88·4	88·2	88·4	88·1	87·3	84·8	82·3	79·9	78·8
Difference for 1913	+ 1·0	+ 2·3	+ 1·5	+ 1·4	+ 0·9	+ 2·5	+ 2·3	+ 2·8	+ 1·9	+ 0·9	+ 1·9	+ 1·2
Kew, Normal.	88·4	89·5	89·6	90·1	90·0	90·4	88·5	85·0	80·0	75·1	70·7	67·6
Difference for 1913	+ 3·6	+ 3·3	+ 3·5	+ 3·2	+ 3·2	+ 3·2	+ 3·8	+ 4·8	+ 5·1	+ 4·9	+ 4·9	+ 5·3
Falmouth, Normal.	88·8	89·2	89·4	89·4	89·8	90·0	88·9	86·2	82·9	80·1	78·0	76·5
OCTOBER.												
Aberdeen, Normal.	85·5	85·6	85·7	85·6	85·7	85·9	85·8	84·8	82·9	80·1	77·8	76·3
Difference for 1913	− 1·8	− 2·6	− 3·2	− 2·5	− 2·9	− 3·1	− 1·9	− 3·4	− 3·1	− 3·1	− 2·8	− 4·3
Eskdalemuir, 1913.	89·8	90·2	90·8	89·3	88·9	87·8	88·9	87·9	86·8	82·2	80·9	80·1
Valencia, Normal.	86·6	86·9	86·9	86·8	86·9	86·7	87·0	86·7	85·7	84·0	81·5	80·2
Difference for 1913	+ 2·1	+ 1·8	+ 2·3	+ 3·0	+ 2·6	+ 3·1	+ 2·7	+ 2·6	+ 2·4	+ 2·3	+ 4·1	+ 2·7
Kew, Normal.	89·9	90·7	90·6	91·3	91·1	91·3	90·6	89·3	85·9	82·5	78·2	75·2
Difference for 1913	+ 2·3	+ 1·6	+ 2·0	+ 1·8	+ 1·8	+ 2·3	+ 3·4	+ 3·1	+ 3·0	+ 2·8	+ 3·5	+ 3·7
Falmouth, Normal.	89·9	90·5	90·6	91·2	91·2	91·3	90·6	89·3	86·1	82·8	79·1	76·5
NOVEMBER.												
Aberdeen, Normal.	83·7	83·7	83·6	83·5	83·6	83·6	83·8	83·4	82·8	81·3	80·1	78·8
Difference for 1913	− 2·7	− 2·3	− 2·2	− 1·9	− 1·4	− 1·4	− 3·0	− 2·4	− 1·7	− 0·9	− 1·9	− 3·0
Eskdalemuir, 1913.	88·4	88·2	88·2	87·7	88·2	87·9	88·7	87·4	89·4	85·8	86·1	84·2
Valencia, Normal.	86·9	87·3	87·4	87·5	87·7	87·8	87·9	87·8	87·3	86·5	85·0	83·5
Difference for 1913	+ 1·4	+ 1·0	+ 1·3	+ 1·2	+ 0·9	+ 0·7	+ 0·6	+ 1·1	+ 1·4	+ 1·5	+ 1·6	+ 1·9
Kew, Normal.	89·2	89·7	89·7	89·8	89·4	90·0	89·6	89·6	87·9	86·4	83·6	81·3
Difference for 1913	− 0·5	− 1·0	− 0·3	− 0·8	− 0·3	+ 0·2	+ 0·9	+ 1·1	+ 1·1	+ 0·7	− 0·5	− 2·5
Falmouth, Normal.	85·7	85·6	85·4	85·7	85·9	85·5	85·9	85·8	84·8	83·2	81·3	79·7
DECEMBER.												
Aberdeen, Normal.	82·9	83·0	83·3	83·3	83·2	82·8	83·0	82·9	82·5	82·2	81·5	80·5
Difference for 1913	− 2·7	− 0·4	− 0·9	− 0·9	− 1·6	− 2·4	− 3·2	− 1·1	− 2·1	− 2·2	− 4·1	− 3·9
Eskdalemuir, 1913.	83·6	84·6	83·5	83·5	85·2	83·9	85·0	85·2	86·5	84·2	84·2	82·3
Valencia, Normal.	88·1	87·6	87·8	88·0	87·5	87·9	87·9	87·8	87·7	87·6	86·4	86·1
Difference for 1913	− 0·8	− 1·2	− 1·7	− 0·8	− 1·1	− 0·6	− 1·4	− 0·3	− 0·6	− 1·6	− 1·0	− 1·7
Kew, Normal.	87·4	88·0	87·6	88·0	87·8	88·1	87·4	87·9	87·1	86·4	84·4	83·0
Difference for 1913	− 4·5	− 4·5	− 4·0	− 4·5	− 4·0	− 4·3	− 3·2	− 4·6	− 4·1	− 3·9	− 5·2	− 5·2
Falmouth, Normal.	85·0	84·8	85·0	85·0	85·1	84·7	85·2	85·1	84·9	84·2	82·8	81·5
YEAR.												
Aberdeen, Normal.	83·8	84·1	84·3	84·5	84·3	83·5	82·2	80·6	78·8	77·0	75·6	74·5
Difference for 1913	+ 0·4	+ 0·3	+ 0·3	+ 0·1	+ 0·1	+ 0·3	+ 0·3	+ 0·2	− 0·2	+ 0·3	+ 0·3	− 0·4
Eskdalemuir, 1913.*	87·9	87·6	87·6	87·0	87·3	86·6	85·8	85·9	84·2	82·9	82·2	80·9
Valencia, Normal.	87·3	87·5	87·7	87·8	87·8	87·7	87·2	86·0	84·4	82·8	81·0	80·0
Difference for 1913	+ 0·9	+ 0·8	+ 0·7	+ 1·0	+ 0·8	+ 1·0	+ 1·0	+ 1·6	+ 1·7	+ 1·6	+ 2·2	+ 1·9
Kew, Normal.	86·4	87·4	87·7	88·2	87·7	87·5	85·4	83·1	79·6	76·7	73·1	70·8
Difference for 1913	+ 0·2	0·0	+ 0·1	0·0	+ 0·3	+ 0·2	+ 0·8	+ 0·9	+ 1·3	+ 1·5	+ 1·6	+ 1·5
Falmouth, Normal.	86·9	87·1	87·3	87·4	87·6	87·1	85·8	83·7	81·2	79·2	77·5	76·2

* The wet bulb values at Eskdalemuir were missing for 101 days, as the mercurial wet bulb was broken and the records from the spiral spring thermograph were unreliable for these days. The values of humidity are therefore based upon the records for 264 days, except at the hours of eye observation—9 h., 15 h., and 21 h.—for which they are based upon records for 365 days.

AT THE FIVE OBSERVATORIES WITH DIFFERENCES BETWEEN THE NORMALS AND THE VALUES FOR 1913.

JULY TO DECEMBER AND YEAR.

for non-cyclic change.)

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.	Hour, G.M.T.
%	%	%	%	%	%	%	%	%	%	%	%	%	JULY.
71·0	71·2	71·6	72·5	73·3	74·5	76·3	78·9	81·4	82·9	83·7	84·6	78·3	Normal. Aberdeen.
+ 1·5	+ 2·3	+ 1·4	+ 0·9	− 0·3	+ 0·3	+ 0·9	+ 1·9	+ 0·1	+ 1·1	+ 1·3	+ 1·8	+ 1·3	Diff. for 1913. ,,
...	...	69·3	...	...	..	...	...	86·0	...	...	...	...	1913. Eskdalemuir.
77·8	77·4	77·0	77·1	76·9	79·0	81·2	83·8	86·0	87·1	87·8	88·3	83·7	Normal. Valencia.
+ 1·2	+ 1·3	+ 0·6	− 0·1	+ 0·3	+ 0·6	− 0·2	+ 0·1	− 0·6	+ 0·4	+ 0·3	+ 1·0	+ 0·8	Diff. for 1913. ,,
59·4	58·3	57·8	58·1	59·2	61·4	65·1	70·9	75·9	79·3	81·7	84·0	72·9	Normal. Kew.
+ 5·9	+ 7·0	+ 6·6	+ 7·3	+ 7·4	+ 6·6	+ 5·5	+ 5·8	+ 5·4	+ 4·3	+ 4·0	+ 2·2	+ 5·1	Diff. for 1913. ,,
72·4	72·2	72·4	72·8	73·6	75·3	78·6	83·0	86·6	88·0	88·9	89·3	81·6	Normal. Falmouth.
													AUGUST.
70·9	70·6	71·4	72·3	74·0	75·9	78·6	81·2	82·4	83·5	84·1	84·9	79·2	Normal. Aberdeen.
− 1·4	− 3·4	− 1·4	− 2·8	− 2·5	− 2·9	− 2·4	− 2·8	+ 0·1	− 0·5	+ 0·5	− 0·2	− 1·2	Diff. for 1913. ,,
...	...	66·7	...	...	...	...	...	85·9	...	...	...	...	1913. Eskdalemuir.
78·5	78·0	78·2	78·7	79·0	81·0	83·2	85·4	86·8	87·7	88·0	88·1	84·6	Normal. Valencia.
− 2·2	− 1·7	− 2·7	− 2·1	− 1·8	− 2·0	− 3·0	− 1·3	− 1·8	− 1·7	− 0·9	− 0·2	− 1·0	Diff. for 1913. ,,
61·0	59·9	59·7	59·9	61·7	64·9	70·4	75·9	79·5	82·4	84·1	85·9	75·5	Normal. Kew.
+ 0·3	+ 0·9	+ 1·7	+ 0·6	+ 0·7	+ 0·3	− 0·5	− 0·2	+ 0·6	− 0·1	+ 0·4	− 0·3	+ 0·7	Diff. for 1913. ,,
73·5	73·4	73·4	74·4	75·7	78·1	82·0	85·9	87·8	88·3	89·0	89·5	82·9	Normal. Falmouth.
													SEPTEMBER.
72·1	72·3	72·9	74·1	76·0	78·5	81·0	82·4	83·5	84·2	84·7	85·2	80·5	Normal. Aberdeen.
+ 5·1	+ 5·9	+ 5·3	+ 6·1	+ 5·5	+ 5·0	+ 2·8	+ 2·2	+ 2·5	+ 1·9	+ 2·9	+ 2·5	+ 3·1	Diff. for 1913. ,,
74·1	72·9	73·2	76·4	78·2	83·2	85·6	87·7	88·5	88·5	88·2	88·4	84·0	1913. Eskdalemuir.
77·9	77·7	77·7	78·7	79·7	82·4	84·4	85·7	86·4	86·8	87·4	87·6	84·3	Normal. Valencia.
+ 0·8	+ 1·2	+ 2·9	+ 2·7	+ 2·0	+ 0·9	+ 1·4	+ 2·4	+ 1·7	+ 1·8	+ 2·0	+ 1·8	+ 1·7	Diff. for 1913. ,,
65·4	64·3	64·1	65·3	68·1	73·2	78·0	81·5	83·4	85·3	86·4	87·8	79·5	Normal. Kew.
+ 4·6	+ 5·0	+ 4·9	+ 3·6	+ 4·8	+ 4·3	+ 4·7	+ 5·1	+ 5·0	+ 3·8	+ 4·0	+ 3·7	+ 4·3	Diff. for 1913. ,,
76·0	75·8	76·5	77·3	79·2	82·0	85·2	86·6	87·3	87·7	88·2	88·5	84·2	Normal. Falmouth.
													OCTOBER.
75·8	75·0	76·3	77·8	80·4	82·1	83·6	83·8	84·4	84·7	84·9	85·3	82·3	Normal. Aberdeen.
− 3·8	− 3·5	− 2·7	− 2·3	− 3·0	− 3·5	− 2·6	− 2·4	− 3·4	− 3·1	− 2·7	− 2·9	− 2·9	Diff. for 1913. ,,
77·9	76·3	78·1	79·7	83·3	83·6	85·7	87·0	89·3	88·2	89·4	88·3	85·4	1913. Eskdalemuir.
79·4	79·0	79·1	80·2	81·6	83·7	84·3	84·9	85·3	86·0	86·1	86·6	84·3	Normal. Valencia.
+ 3·8	+ 3·9	+ 2·8	+ 3·0	+ 3·0	+ 3·4	+ 3·5	+ 3·1	+ 2·9	+ 2·9	+ 2·5	+ 1·8	+ 2·8	Diff for 1913 ,,
73·3	72·2	72·8	75·0	79·1	83·1	85·2	87·3	87·6	88·6	89·1	90·0	84·6	Normal. Kew.
+ 3·6	+ 3·3	+ 2·9	+ 3·8	+ 3·6	+ 3·5	+ 3·3	+ 3·1	+ 3·2	+ 3·3	+ 3·3	+ 2·3	+ 2·9	Diff. for 1913. ,,
74·8	73·9	74·4	76·6	80·3	83·9	85·9	87·7	87·9	88·7	89·2	89·9	85·2	Normal. Falmouth.
													NOVEMBER.
78·5	78·6	79·7	80·5	81·6	82·0	82·5	82·5	82·9	82·9	83·2	83·3	82·1	Normal. Aberdeen.
− 3·9	− 3·6	− 2·7	− 2·9	− 2·5	− 2·1	− 2·1	− 1·5	− 1·6	− 1·7	− 2·2	− 2·9	− 2·3	Diff. for 1913. ,,
84·1	82·7	83·3	85·3	87·7	87·6	87·8	88·9	88·8	87·7	88·9	88·4	87·1	1913. Eskdalemuir.
82·5	82·1	82·5	83·7	84·9	85·5	85·7	86·4	86·4	86·7	86·8	87·0	86·0	Normal. Valencia.
+ 2·7	+ 2·1	+ 2·8	+ 2·3	+ 1·7	+ 0·7	+ 1·0	+ 0·5	+ 1·1	+ 0·6	+ 1·3	+ 1·1	+ 1·3	Diff. for 1913. ,,
79·4	78·9	79·2	81·9	84·0	85·6	86·3	87·4	87·7	88·5	88·7	89·2	86·4	Normal. Kew.
− 3·2	− 3·0	− 1·2	− 1·3	− 1·0	− 0·4	+ 0·4	− 0·1	0·0	− 0·4	+ 0·1	− 0·4	− 0·5	Diff. for 1913. ,,
79·2	79·2	80·0	81·3	83·4	84·2	84·4	84·4	84·5	84·9	85·4	85·2	83·8	Normal. Falmouth.
													DECEMBER.
79·9	79·7	80·8	81·2	81·7	82·0	82·4	82·2	82·3	82·4	82·5	82·4	82·1	Normal. Aberdeen.
− 3·2	− 1·3	− 1·9	− 1·2	− 0·9	− 0·4	− 1·2	− 0·8	+ 0·5	− 0·2	− 0·3	− 1·2	− 1·5	Diff. for 1913. ,,
82·9	83·9	84·2	83·1	85·0	85·4	85·5	85·9	86·1	85·3	86·0	85·8	84·6	1913. Eskdalemuir.
85·5	85·3	85·5	86·5	86·9	87·1	87·2	87·6	88·0	87·9	88·0	87·8	87·2	Normal. Valencia.
− 1·9	− 1·6	− 0·4	− 3·6	− 3·7	− 3·1	− 3·4	− 3·5	− 4·4	− 3·7	− 4·0	− 2·5	− 2·0	Diff. for 1913. ,,
81·8	81·1	81·9	84·0	85·0	86·1	86·2	86·8	86·8	87·4	87·3	87·9	86·1	Normal. Kew.
− 4·8	− 3·7	− 4·0	− 4·4	− 3·9	− 4·1	− 4·2	− 4·9	− 5·1	− 5·6	− 6·1	− 6·4	− 4·6	Diff. for 1913. ,,
81·2	81·1	82·0	83·1	84·0	84·2	84·6	84·4	84·7	84·8	84·8	85·0	84·1	Normal. Falmouth.
													YEAR.
74·1	73·9	74·6	75·5	76·7	78·0	79·5	80·7	81·7	82·4	83·0	83·4	79·8	Normal. Aberdeen.
− 0·4	− 0·5	− 0·4	− 0·5	− 0·4	− 0·5	− 0·8	− 0·8	− 0·5	− 0·3	+ 0·1	+ 0·1	− 0·1	Diff. for 1913. ,,
80·5	79·7	77·6	82·1	84·1	84·8	86·4	87·2	87·8	87·9	88·2	87·8	85·0	1913. Eskdalemuir.*
79·2	78·9	79·0	79·5	80·2	81·9	83·3	84·8	85·7	86·4	86·8	87·1	84·2	Normal. Valencia.
+ 1·7	+ 1·8	+ 1·9	+ 1·7	+ 1·5	+ 1·5	+ 1·2	+ 1·1	+ 0·9	+ 1·0	+ 0·7	+ 0·9	+ 1·3	Diff. for 1913. ,,
68·9	67·9	67·9	69·0	70·9	73·5	76·3	79·6	81·6	83·5	84·6	86·0	79·3	Normal. Kew.
+ 0·9	+ 1·6	+ 1·7	+ 1·5	+ 1·5	+ 1·5	+ 1·4	+ 0·9	+ 0·8	+ 0·3	+ 0·5	0·0	+ 0·9	Diff. for 1913. ,,
75·6	75·4	75·8	76·7	78·2	79·9	82·1	84·1	85·3	86·0	86·4	86·8	82·5	Normal. Falmouth.

* The wet bulb values at Eskdalemuir were missing for 101 days, as the mercurial wet bulb was broken and the records from the spiral spring thermograph were unreliable for these days. The values of humidity are therefore based upon the records for 264 days, except at the hours of eye observation—9 h., 15 h., and 21 h.—for which they are based upon records for 365 days.

LXIX.-LXXIV.—NORMALS FOR THE MONTHS OF THE HOURLY VALUES WITH DIFFERENCES BETWEEN THE NORMALS

LXXII.—WIND VELOCITY (in Metres per second).

Hour, G.M.T.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
JANUARY.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.
Aberdeen, Normal.	4·43	4·43	4·43	4·38	4·43	4·52	4·47	4·60	4·65	4·60	4·65	4·87
Difference for 1913	+ 1·15	+ 0·37	+ 0·87	+ 0·87	+ 0·96	+ 1·56	+ 1·00	+ 0·72	+ 0·86	+ 1·11	+ 1·23	+ 0·82
Eskdalemuir, 1913.	5·61	5·49	5·35	5·65	5·59	5·60	5·39	5·10	4·88	5·14	5·42	5·51
Valencia, Normal.	6·48	6·44	6·35	6·30	6·35	6·30	6·35	6·35	6·48	6·39	6·30	6·92
Difference for 1913	− 0·36	+ 0·23	+ 0·10	+ 0·08	+ 0·09	+ 0·10	+ 0·15	− 0·38	− 0·43	− 0·74	− 0·23	− 0·15
Kew, Normal.	3·26	3·31	3·31	3·26	3·35	3·35	3·31	3·40	3·49	3·76	4·20	4·34
Difference for 1913	− 0·17	− 0·26	− 0·18	− 0·11	− 0·27	− 0·19	+ 0·04	− 0·01	− 0·02	+ 0·12	− 0·57	− 0·15
Falmouth, Normal.	5·01	5·01	5·01	5·01	4·96	4·92	4·92	4·92	5·01	5·05	5·59	5·77
FEBRUARY.												
Aberdeen, Normal.	4·34	4·29	4·34	4·29	4·25	4·34	4·34	4·43	4·47	4·60	4·87	5·19
Difference for 1913	− 1·23	− 1·47	− 1·23	− 1·16	− 1·29	− 1·25	− 1·21	− 1·61	− 1·63	− 1·64	− 2·00	− 2·52
Eskdalemuir, 1913.	4·66	4·93	4·83	4·86	4·98	4·93	4·90	4·80	5·16	5·44	5·96	6·50
Valencia, Normal.	6·08	6·04	6·08	5·95	5·99	5·95	5·91	5·86	5·95	5·91	5·91	6·62
Difference for 1913	− 0·41	− 0·55	− 0·75	− 0·69	− 0·65	− 0·64	− 0·37	− 0·37	− 0·74	− 0·99	− 0·70	− 0·74
Kew, Normal.	3·31	3·31	3·26	3·26	3·26	3·31	3·31	3·40	3·76	4·07	4·69	4·87
Difference for 1913	+ 0·16	+ 0·07	+ 0·13	+ 0·02	− 0·12	+ 0·11	+ 0·07	+ 0·11	+ 0·04	+ 0·38	+ 0·09	+ 0·28
Falmouth, Normal.	4·92	4·92	4·83	4·83	4·74	4·74	4·74	4·87	4·96	5·28	5·72	5·81
MARCH.												
Aberdeen, Normal.	4·11	4·07	4·16	4·11	4·20	4·20	4·34	4·52	4·78	5·01	5·28	5·54
Difference for 1913	+ 0·27	+ 0·41	+ 0·41	+ 0·44	+ 0·28	− 0·18	− 0·03	− 0·13	− 0·10	+ 0·30	− 1·06	+ 0·84
Eskdalemuir, 1913.	6·32	6·21	5·83	5·78	5·91	6·25	6·62	6·93	7·33	7·84	8·47	8·91
Valencia, Normal.	5·45	5·36	5·28	5·19	5·14	5·28	5·19	5·36	5·63	5·86	5·95	6·62
Difference for 1913	+ 1·85	+ 1·89	+ 1·69	+ 1·55	+ 1·32	+ 0·90	+ 0·68	+ 0·35	+ 0·64	+ 0·45	+ 0·37	+ 0·18
Kew, Normal.	3·13	3·13	3·04	3·09	3·09	3·13	3·26	3·62	4·25	4·65	5·10	5·19
Difference for 1913	+ 1·43	+ 1·69	+ 1·63	+ 1·36	+ 1·26	+ 1·31	+ 1·22	+ 1·10	+ 0·92	+ 1·71	+ 0·90	+ 0·93
Falmouth, Normal.	4·52	4·56	4·52	4·43	4·43	4·43	4·47	4·65	5·05	5·45	5·91	5·99
APRIL.												
Aberdeen, Normal.	3·26	3·40	3·35	3·31	3·35	3·40	3·67	4·20	4·60	4·92	5·14	5·36
Difference for 1913	+ 0·43	− 0·49	− 0·53	− 0·45	− 0·55	− 0·62	− 0·48	− 0·41	− 0·38	− 0·29	− 0·45	− 0·91
Eskdalemuir, 1913.	5·16	4·91	4·12	3·66	3·76	3·79	4·06	4·61	5·73	6·44	6·88	7·10
Valencia, Normal.	4·69	4·65	4·60	4·60	4·60	4·69	4·78	5·10	5·45	5·77	5·86	6·44
Difference for 1913	+ 0·17	− 0·06	+ 0·18	+ 0·24	+ 0·12	− 0·08	− 0·18	+ 0·01	+ 0·25	+ 0·27	+ 0·35	+ 0·37
Kew, Normal.	2·68	2·68	2·60	2·60	2·55	2·77	3·26	3·80	4·25	4·65	5·01	5·19
Difference for 1913	+ 1·02	+ 1·24	+ 1·16	+ 1·11	+ 1·17	+ 0·89	+ 0·79	+ 1·02	+ 1·29	+ 1·44	+ 0·74	+ 0·81
Falmouth, Normal.	3·93	3·98	4·02	3·98	3·89	3·89	4·07	4·56	5·01	5·32	5·72	5·63
MAY.												
Aberdeen, Normal.	2·73	2·68	2·68	2·77	2·86	3·04	3·44	3·98	4·34	4·56	4·74	4·87
Difference for 1913	+ 0·51	+ 0·58	+ 0·59	+ 0·52	+ 0·49	+ 0·37	+ 0·41	+ 0·13	+ 0·15	+ 0·25	+ 0·26	+ 0·18
Eskdalemuir, 1913.	3·56	3·56	3·69	3·78	3·95	4·35	4·77	5·69	6·16	6·59	6·87	6·74
Valencia, Normal.	4·16	4·16	4·16	4·16	4·16	4·16	4·38	4·69	5·14	5·45	5·54	6·04
Difference for 1913	+ 0·82	+ 0·89	+ 0·60	+ 0·20	− 0·09	− 0·32	− 0·53	− 0·22	− 0·10	− 0·54	− 0·37	− 0·07
Kew, Normal.	2·33	2·28	2·24	2·24	2·24	2·60	3·17	3·62	4·02	4·29	4·65	4·69
Difference for 1913	− 0·18	− 0·06	− 0·20	− 0·15	− 0·13	− 0·35	− 0·26	− 0·18	− 0·16	+ 0·09	− 0·50	+ 0·23
Falmouth, Normal.	3·40	3·49	3·40	3·44	3·31	3·35	3·84	4·29	4·56	4·87	5·14	5·10
JUNE.												
Aberdeen, Normal.	2·37	2·37	2·41	2·46	2·55	2·77	3·13	3·49	3·80	4·02	4·34	4·47
Difference for 1913	+ 0·33	+ 0·16	+ 0·30	+ 0·30	+ 0·28	+ 0·01	+ 0·08	+ 0·14	+ 0·91	+ 0·30	+ 0·37	− 0·05
Eskdalemuir, 1913.	3·84	4·02	4·04	3·77	3·57	3·90	4·47	4·93	5·20	5·65	6·17	6·31
Valencia, Normal.	3·71	3·62	3·62	3·62	3·62	3·76	3·98	4·34	4·74	5·01	5·23	5·63
Difference for 1913	− 0·08	+ 0·25	+ 0·06	+ 0·05	− 0·13	− 0·03	0·00	− 0·16	− 0·29	− 0·35	− 0·41	− 0·43
Kew, Normal.	2·06	2·01	1·97	1·92	2·06	2·50	2·95	3·26	3·58	3·80	4·16	4·16
Difference for 1913	+ 0·34	+ 0·14	+ 0·12	+ 0·04	+ 0·15	+ 0·27	+ 0·30	+ 0·17	+ 0·25	+ 0·41	+ 0·07	+ 0·08
Falmouth, Normal.	3·13	3·09	3·09	3·00	2·95	3·17	3·58	3·89	4·25	4·47	4·78	4·74

At Aberdeen, Valencia, Kew, and Falmouth, the velocity of the wind is obtained from the records of a Robinson cup-anemometer having cups 9 inches (0·23 metre) in diameter carried on arms measuring 2 feet (0·61 metre) from the centre of the cup to the spindle. The hourly velocity is the travel of the cups in the sixty minutes from half an hour before to half an hour after the hour, reduced to miles per hour by multiplying by the factor 2·2, and converted to metres per second.

At Eskdalemuir the values are obtained from the records of a pressure-tube anemometer.

OF THE METEOROLOGICAL ELEMENTS AT THE FIVE OBSERVATORIES AND THE VALUES FOR 1913.

JANUARY TO JUNE.

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.	Hour, G.M.T.
m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	JANUARY.
4·92	4·92	4·78	4·74	4·69	4·65	4·65	4·65	4·52	4·47	4·47	4·47	4·60	Normal. Aberdeen.
+ 0·97	+ 0·34	+ 1·09	+ 1·19	+ 1·42	+ 1·28	+ 1·40	+ 0·27	+ 1·05	+ 1·30	+ 1·90	+ 1·38	+ 1·05	Diff. for 1913. ,,
5·30	5·31	5·50	5·71	5·57	5·67	5·62	5·32	5·46	5·46	5·41	5·46	5·44	1913. Eskdalemuir.
7·15	7·20	7·15	6·88	6·70	6·53	6·48	6·35	6·44	6·57	6·62	6·57	6·57	Normal. Valencia.
− 0·25	− 0·15	− 0·33	− 0·32	− 0·44	− 0·69	− 0·54	− 0·42	− 0·49	− 0·59	− 0·57	− 0·08	− 0·27	Diff. for 1913. ,,
4·34	4·34	4·11	3·80	3·76	3·67	3·71	3·67	3·58	3·53	3·40	3·40	3·65	Normal. Kew.
+ 0·12	+ 0·24	+ 0·47	+ 0·49	+ 0·35	+ 0·53	+ 0·42	+ 0·45	+ 0·29	+ 0·17	+ 0·05	− 0·24	+ 0·07	Diff. for 1913. ,,
5·95	5·86	5·77	5·45	5·32	5·14	5·10	5·10	5·14	5·01	5·01	5·10	5·21	Normal. Falmouth.
													FEBRUARY.
5·19	5·23	5·01	4·74	4·47	4·43	4·38	4·34	4·38	4·38	4·29	4·34	4·54	Normal. Aberdeen.
− 2·14	− 1·38	− 0·53	− 0·75	− 1·62	− 2·01	− 1·76	− 1·26	− 0·95	− 1·43	− 1·33	− 0·95	− 1·43	Diff. for 1913. ,,
6·65	6·76	6·66	6·02	5·59	5·00	5·00	5·00	4·49	3·83	4·13	4·06	5·21	1913. Eskdalemuir.
6·92	6·97	7·02	6·79	6·57	6·17	6·08	5·99	6·08	6·17	6·12	6·12	6·22	Normal. Valencia.
− 0·97	− 0·98	− 1·03	− 0·38	− 0·46	− 0·43	− 0·48	− 0·17	− 0·18	− 0·02	− 0·46	− 0·13	− 0·55	Diff. for 1913. ,,
4·96	4·87	4·74	4·43	4·02	3·80	3·76	3·62	3·62	3·44	3·40	3·31	3·82	Normal. Kew.
+ 0·28	+ 0·28	+ 0·16	+ 0·31	+ 0·27	+ 0·37	+ 0·21	+ 0·53	+ 0·27	+ 0·42	+ 0·31	+ 0·20	+ 0·21	Diff. for 1913. ,,
5·91	5·95	5·81	5·63	5·32	4·96	4·96	5·01	4·96	4·92	4·87	4·87	5·15	Normal. Falmouth.
													MARCH.
5·50	5·41	5·36	5·14	4·69	4·43	4·25	4·11	4·11	4·11	4·16	4·16	4·57	Normal. Aberdeen.
− 0·56	+ 0·96	+ 0·38	+ 1·11	+ 0·51	+ 1·36	+ 0·18	+ 0·15	+ 0·75	− 0·17	+ 0·38	+ 0·24	+ 0·28	Diff. for 1913. ,,
9·36	9·46	9·20	8·82	8·29	7·83	7·10	6·31	6·43	6·50	6·17	6·07	7·25	1913. Eskdalemuir.
6·84	6·92	6·84	6·75	6·53	6·17	5·86	5·63	5·63	5·54	5·45	5·45	5·83	Normal. Valencia.
+ 0·36	+ 0·83	+ 0·95	+ 0·87	+ 1·20	+ 1·40	+ 1·11	+ 1·19	+ 0·89	+ 1·14	+ 1·51	+ 1·78	+ 1·05	Diff. for 1913. ,,
5·23	5·23	5·05	4·92	4·47	3·93	3·67	3·53	3·53	3·26	3·17	3·13	3·91	Normal. Kew.
+ 1·07	+ 0·89	+ 0·88	+ 0·98	+ 1·33	+ 1·26	+ 1·08	+ 1·22	+ 1·27	+ 1·28	+ 1·37	+ 1·44	+ 1·23	Diff. for 1913. ,,
6·08	6·12	5·99	5·86	5·54	5·05	4·74	4·56	4·52	4·56	4·52	4·47	5·02	Normal. Falmouth.
													APRIL.
5·41	5·36	5·28	5·10	4·74	4·38	3·84	3·49	3·49	3·35	3·31	3·31	4·13	Normal. Aberdeen.
− 0·66	− 0·39	− 0·34	− 0·91	− 0·37	− 0·15	+ 0·14	+ 0·09	− 0·04	+ 0·12	− 0·13	− 0·24	− 0·34	Diff. for 1913. ,,
7·18	6·98	6·84	6·62	6·39	5·39	5·01	4·92	5·09	4·73	4·94	5·16	5·39	1913. Eskdalemuir.
6·66	6·66	6·66	6·66	6·44	6·08	5·59	5·14	4·96	4·78	4·74	4·74	5·43	Normal. Valencia.
+ 0·55	+ 1·06	+ 1·21	+ 0·77	+ 0·51	+ 0·43	+ 0·54	+ 0·36	+ 0·52	− 0·11	− 0·49	− 0·20	+ 0·28	Diff. for 1913. ,,
5·23	5·23	5·23	5·14	4·83	4·29	3·84	3·44	3·26	3·00	2·86	2·68	3·79	Normal. Kew.
+ 0·65	+ 0·62	+ 0·95	+ 0·80	+ 0·92	+ 1·22	+ 0·78	+ 1·22	+ 0·93	+ 1·44	+ 1·37	+ 1·35	+ 1·04	Diff. for 1913. ,,
5·72	5·72	5·68	5·54	5·32	4·92	4·38	4·16	4·07	4·02	3·93	3·98	4·64	Normal. Falmouth.
													MAY.
4·96	4·96	4·83	4·69	4·43	4·16	3·62	3·17	2·95	2·82	2·77	2·73	3·70	Normal. Aberdeen.
− 0·09	+ 0·11	+ 0·04	− 0·04	+ 0·18	+ 0·22	+ 0·71	+ 0·49	+ 0·64	+ 0·57	+ 0·43	+ 0·50	+ 0·34	Diff. for 1913. ,,
6·54	6·80	6·95	6·99	6·43	5·75	4·92	4·11	3·90	3·62	3·62	3·57	5·12	1913. Eskdalemuir.
6·25	6·30	6·30	6·25	6·08	5·72	5·23	4·74	4·38	4·20	4·20	4·20	5·00	Normal. Valencia.
− 0·06	+ 0·17	+ 0·03	+ 0·18	+ 0·18	+ 0·57	+ 0·42	+ 0·64	+ 0·85	+ 0·56	+ 0·78	+ 0·87	+ 0·23	Diff. for 1913. ,,
4·83	4·69	4·74	4·69	4·52	4·11	3·62	3·13	2·86	2·64	2·50	2·37	3·46	Normal. Kew.
+ 0·17	+ 0·44	+ 0·38	+ 0·23	+ 0·01	+ 0·14	+ 0·03	+ 0·12	+ 0·13	− 0·03	− 0·20	− 0·25	− 0·03	Diff. for 1913. ,,
5·23	5·19	5·14	5·05	4·83	4·52	4·16	3·67	3·53	3·40	3·35	3·40	4·15	Normal. Falmouth.
													JUNE.
4·52	4·47	4·43	4·20	3·98	3·67	3·31	2·86	2·55	2·46	2·37	2·37	3·31	Normal. Aberdeen.
− 0·04	+ 0·07	+ 0·24	+ 0·28	+ 0·37	+ 0·17	+ 0·06	+ 0·53	+ 0·53	+ 0·99	+ 0·26	+ 0·10	+ 0·28	Diff. for 1913. ,,
6·56	6·42	6·48	6·39	6·21	5·72	5·06	4·61	3·98	3·69	3·44	3·63	4·92	1913. Eskdalemuir.
5·86	5·95	5·95	5·81	5·68	5·36	4·92	4·43	4·11	3·84	3·76	3·76	4·60	Normal. Valencia.
− 0·50	− 0·60	− 0·35	− 0·39	− 0·43	− 0·26	− 0·09	− 0·11	− 0·03	+ 0·03	− 0·24	− 0·19	− 0·20	Diff. for 1913. ,,
4·20	4·29	4·34	4·25	4·16	3·89	3·40	2·86	2·68	2·46	2·28	2·15	3·14	Normal. Kew.
+ 0·03	− 0·02	− 0·04	+ 0·50	+ 0·46	+ 0·56	+ 0·54	+ 0·37	+ 0·25	+ 0·26	+ 0·12	+ 0·35	+ 0·24	Diff. for 1913. ,,
4·87	4·87	4·87	4·74	4·60	4·34	3·93	3·40	3·17	3·09	3·09	3·13	3·84	Normal. Falmouth.

The heights of the anemometers above the general surface of the ground are:—Aberdeen, 22·9 metres; Eskdalemuir, 15·0 metres; Valencia, 13·9 metres; Kew, 19·8 metres, and Falmouth, 12·5 metres.

The heights of the cups of the Robinson anemometers above the roofs of the buildings on which the instruments are erected are:—Aberdeen, 3·7 metres; Valencia, 2·1 metres; Kew, 2·1 metres; Falmouth, 4·0 metres.

The normals for wind velocity are for the 30 years, 1881–1910.

The values for 1913 are given by the excess or defect from the normal; + indicates excess, − defect.

LXIX.-LXXIV.—NORMALS FOR THE MONTHS OF THE HOURLY VALUES WITH DIFFERENCES BETWEEN THE NORMALS

LXXII.—*continued*—WIND VELOCITY (in Metres per Second).

Hour, G.M.T.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
JULY.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.
Aberdeen, Normal.	2·37	2·37	2·37	2·37	2·37	2·55	2·95	3·35	3·71	3·89	4·16	4·20
Difference for 1913	+ 0·04	+ 0·09	0·00	+ 0·12	+ 0·22	+ 0·35	− 0·04	+ 0·09	− 0·04	− 0·26	− 0·15	− 0·26
Eskdalemuir, 1913.	1·88	1·52	1·61	1·62	1·91	2·13	2·70	3·43	3·92	4·03	3·98	3·99
Valencia, Normal.	3·67	3·71	3·67	3·67	3·62	3·67	3·89	4·25	4·69	4·92	5·05	5·54
Difference for 1913	− 1·41	− 1·32	− 1·19	− 1·02	− 0·95	− 0·84	− 1·22	− 1·06	− 0·96	− 0·76	− 0·72	− 0·87
Kew, Normal.	1·88	1·83	1·79	1·79	1·79	2·19	2·64	3·04	3·40	3·67	3·93	3·98
Difference for 1913	+ 0·12	+ 0·21	+ 0·11	+ 0·26	+ 0·26	− 0·09	− 0·14	− 0·24	− 0·18	− 0·57	− 0·78	− 0·55
Falmouth, Normal.	3·04	3·09	3·04	2·91	2·91	3·00	3·44	3·89	4·25	4·52	4·92	4·92
AUGUST.												
Aberdeen, Normal.	2·50	2·46	2·46	2·46	2·41	2·55	2·82	3·31	3·67	3·93	4·16	4·34
Difference for 1913	− 0·46	− 0·53	− 0·71	− 0·40	− 0·46	− 0·62	− 0·58	− 0·79	− 0·75	− 0·97	− 0·56	− 0·73
Eskdalemuir, 1913.	2·06	2·06	2·04	2·24	2·38	2·08	2·57	3·08	3·42	3·65	3·96	4·53
Valencia, Normal.	4·16	4·07	4·02	4·02	4·02	3·93	4·07	4·43	4·87	5·10	5·23	5·72
Difference for 1913	− 1·74	− 1·66	− 1·77	− 1·58	− 1·76	− 1·62	− 1·40	− 1·72	− 1·97	− 1·69	− 1·29	− 1·32
Kew, Normal.	2·01	1·92	1·88	1·88	1·88	2·06	2·50	3·09	3·53	3·80	4·11	4·16
Difference for 1913	− 0·34	− 0·31	− 0·26	+ 0·02	− 0·03	− 0·16	− 0·33	− 0·61	− 0·63	− 0·55	− 0·74	− 0·69
Falmouth, Normal.	3·17	3·22	3·13	3·13	3·04	3·09	3·40	3·93	4·43	4·74	5·10	5·14
SEPTEMBER.												
Aberdeen, Normal.	2·77	2·77	2·82	2·82	2·82	2·86	2·95	3·31	3·62	3·89	4·20	4·34
Difference for 1913	− 0·14	− 0·28	− 0·14	− 0·22	− 0·21	− 0·38	− 0·07	− 0·33	− 0·52	− 0·40	− 0·27	− 0·32
Eskdalemuir, 1913.	3·19	3·03	3·19	3·03	3·28	3·34	3·40	3·98	4·51	4·66	4·48	4·94
Valencia, Normal.	4·20	4·29	4·29	4·38	4·34	4·34	4·34	4·43	4·83	5·05	5·14	5·72
Difference for 1913	− 0·57	− 1·20	− 1·24	− 1·19	− 1·41	− 1·69	− 1·38	− 1·54	− 1·81	− 1·57	− 1·73	− 1·94
Kew, Normal.	1·83	1·79	1·88	1·88	1·83	1·92	2·10	2·60	3·09	3·53	3·93	3·93
Difference for 1913	+ 0·23	+ 0·15	+ 0·17	+ 0·28	+ 0·41	+ 0·25	+ 0·30	− 0·03	+ 0·01	+ 0·09	− 0·35	− 0·16
Falmouth, Normal.	3·09	3·09	3·04	3·04	2·95	3·00	3·09	3·53	4·02	4·29	4·74	4·78
OCTOBER.												
Aberdeen, Normal.	3·89	3·89	3·84	3·84	3·80	3·80	3·89	4·02	4·25	4·47	4·65	4·83
Difference for 1913	− 0·47	− 0·31	− 0·12	− 0·14	− 0·21	− 0·09	− 0·51	− 0·27	+ 0·09	+ 0·01	+ 0·24	+ 0·47
Eskdalemuir, 1913.	4·52	4·46	4·70	4·91	5·36	5·16	4·57	4·97	6·00	6·80	7·13	7·37
Valencia, Normal.	5·05	5·10	5·05	5·14	5·14	5·14	5·10	5·19	5·32	5·50	5·63	6·17
Difference for 1913	− 0·08	− 0·30	− 0·38	− 0·54	− 0·70	− 0·60	− 0·55	− 0·68	− 0·64	− 0·72	− 0·58	− 0·65
Kew, Normal.	2·37	2·41	2·37	2·37	2·41	2·46	2·55	2·73	3·22	3·58	4·16	4·29
Difference for 1913	− 0·17	− 0·20	− 0·27	− 0·37	− 0·41	− 0·68	− 0·77	− 0·65	− 0·82	− 0·56	− 1·10	− 0·82
Falmouth, Normal.	3·93	3·93	3·89	3·89	3·89	3·84	3·80	3·93	4·34	4·78	5·23	5·19
NOVEMBER.												
Aberdeen, Normal.	4·16	4·11	4·07	4·07	4·07	4·11	4·16	4·29	4·34	4·34	4·52	4·69
Difference for 1913	− 0·32	− 0·81	− 0·55	− 0·56	− 0·58	− 0·37	− 0·35	− 0·61	− 0·51	− 0·44	− 0·59	− 0·29
Eskdalemuir, 1913.	5·98	5·83	5·98	6·15	5·87	6·17	5·92	5·49	5·43	6·21	6·88	7·54
Valencia, Normal.	5·81	5·63	5·72	5·63	5·68	5·59	5·68	5·63	5·72	5·68	5·63	6·25
Difference for 1913	+ 0·84	+ 0·76	+ 0·67	+ 0·69	+ 0·45	+ 0·70	+ 0·56	+ 0·64	+ 0·63	+ 0·50	+ 0·69	+ 0·66
Kew, Normal.	2·95	2·95	2·95	3·00	2·95	2·86	2·91	2·95	3·26	3·44	4·02	4·20
Difference for 1913	+ 0·13	+ 0·02	+ 0·12	+ 0·12	+ 0·21	+ 0·21	+ 0·29	+ 0·42	+ 0·32	+ 0·51	− 0·05	+ 0·38
Falmouth, Normal.	4·47	4·56	4·47	4·52	4·43	4·38	4·43	4·43	4·56	4·78	5·19	5·32
DECEMBER.												
Aberdeen, Normal.	4·34	4·38	4·38	4·38	4·38	4·34	4·38	4·47	4·47	4·47	4·52	4·65
Difference for 1913	− 0·03	− 0·37	− 0·18	− 0·40	− 0·60	− 0·74	− 0·69	− 0·81	− 0·67	− 0·75	− 0·14	− 0·13
Eskdalemuir, 1913.	6·01	5·59	5·70	5·38	5·79	6·01	5·70	5·73	5·99	6·49	7·29	7·51
Valencia, Normal.	6·48	6·48	6·53	6·44	6·44	6·39	6·30	6·25	6·30	6·17	6·12	6·66
Difference for 1913	− 1·52	− 0·97	− 0·61	− 0·73	− 0·48	− 0·67	− 0·65	− 1·02	− 0·86	− 0·68	− 0·62	− 0·94
Kew, Normal.	3·35	3·40	3·31	3·40	3·35	3·40	3·44	3·49	3·62	3·71	4·11	4·29
Difference for 1913	+ 0·28	− 0·10	− 0·05	− 0·13	+ 0·01	− 0·01	0·00	+ 0·07	− 0·07	+ 0·17	− 0·31	+ 0·17
Falmouth, Normal.	5·14	5·19	5·14	5·14	5·10	5·14	5·05	5·10	5·01	5·19	5·59	5·72
YEAR.												
Aberdeen, Normal.	3·44	3·44	3·44	3·44	3·44	3·53	3·71	3·98	4·25	4·38	4·60	4·78
Difference for 1913	+ 0·01	− 0·22	− 0·10	− 0·09	− 0·11	− 0·15	− 0·20	− 0·30	− 0·23	− 0·21	− 0·25	− 0·23
Eskdalemuir, 1913.	4·42	4·31	4·27	4·25	4·38	4·50	4·61	4·91	5·31	5·75	6·13	6·41
Valencia, Normal.	5·01	4·96	4·96	4·92	4·92	4·92	5·01	5·14	5·41	5·54	5·63	6·21
Difference for 1913	− 0·23	− 0·17	− 0·23	− 0·24	− 0·35	− 0·39	− 0·42	− 0·50	− 0·51	− 0·54	− 0·43	− 0·51
Kew, Normal.	2·60	2·60	2·55	2·55	2·55	2·73	2·95	3·26	3·62	3·89	4·34	4·43
Difference for 1913	+ 0·23	+ 0·20	+ 0·20	+ 0·21	+ 0·22	+ 0·11	+ 0·12	+ 0·08	+ 0·08	+ 0·29	− 0·23	+ 0·04
Falmouth, Normal.	3·98	3·98	3·98	3·93	3·89	3·89	4·07	4·34	4·60	4·87	5·28	5·32

OF THE METEOROLOGICAL ELEMENTS AT THE FIVE OBSERVATORIES AND THE VALUES FOR 1912.

JULY TO DECEMBER AND YEAR.

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.	Hour, G.M.T.
m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	m/s.	JULY.
4·29	4·29	4·25	4·07	3·80	3·53	3·09	2·73	2·46	2·33	2·37	2·37	3·18	Normal. Aberdeen.
− 0·66	− 0·29	− 0·13	− 0·24	+ 0·05	− 0·14	− 0·43	− 0·26	+ 0·18	− 0·01	− 0·13	0·00	− 0·08	Diff. for 1913. ,,
3·89	4·09	4·01	4·14	4·03	3·94	3·70	3·30	2·99	2·61	2·26	2·18	3·08	1913. Eskdalemuir.
5·72	5·81	5·81	5·63	5·54	5·28	4·87	4·34	3·98	3·80	3·71	3·76	4·53	Normal. Valencia.
− 0·64	− 0·38	− 0·32	− 0·33	− 0·41	− 0·50	− 0·66	− 0·79	− 1·04	− 1·20	− 1·16	− 1·42	− 0·89	Diff. for 1913. ,,
4·07	4·16	4·11	4·07	3·93	3·58	3·17	2·68	2·41	2·24	2·06	1·97	2·93	Normal. Kew.
− 0·36	− 0·35	− 0·39	− 0·55	− 0·63	− 0·36	− 0·37	− 0·12	− 0·08	+ 0·11	+ 0·19	+ 0·26	− 0·17	Diff. for 1913. ,,
4·96	5·01	4·96	4·87	4·74	4·43	3·93	3·40	3·22	3·13	3·09	3·09	3·86	Normal. Falmouth.
													AUGUST.
4·34	4·29	4·16	3·98	3·71	3·35	2·95	2·73	2·68	2·64	2·55	2·50	3·21	Normal. Aberdeen.
− 0·60	− 0·69	− 0·53	− 0·30	− 0·68	− 0·56	− 0·30	− 0·58	− 0·61	− 0·62	− 0·54	− 0·36	− 0·58	Diff. for 1913. ,,
4·43	4·38	4·23	4·42	4·25	3·90	3·21	2·91	2·73	2·48	2·51	2·47	3·17	1913. Eskdalemuir.
5·95	5·95	5·99	5·86	5·63	5·28	4·74	4·38	4·20	4·11	4·11	4·11	4·75	Normal. Valencia.
− 1·10	− 0·78	− 0·80	− 0·71	− 0·69	− 0·68	− 1·24	− 1·28	− 1·55	− 1·35	− 1·72	− 1·47	− 1·37	Diff. for 1913. ,,
4·25	4·29	4·29	4·16	3·98	3·58	3·00	2·64	2·50	2·28	2·15	2·10	3·00	Normal. Kew.
− 0·63	− 0·80	− 0·85	− 0·68	− 0·74	− 0·42	− 0·35	− 0·02	− 0·41	− 0·38	− 0·38	− 0·20	− 0·44	Diff. for 1913. ,,
5·19	5·23	5·23	5·01	4·78	4·43	3·76	3·31	3·26	3·22	3·13	3·17	3·97	Normal. Falmouth.
													SEPTEMBER.
4·34	4·38	4·25	3·98	3·53	3·13	2·91	2·91	2·82	2·91	2·82	2·82	3·33	Normal. Aberdeen.
− 0·47	− 0·39	− 0·32	− 0·42	− 0·21	+ 0·03	− 0·06	− 0·06	− 0·27	− 0·29	− 0·31	− 0·18	− 0·26	Diff. for 1913. ,,
5·25	5·28	4·87	4·72	4·16	3·91	3·73	3·78	3·38	3·43	3·05	2·87	3·89	1913. Eskdalemuir.
5·95	5·81	5·86	5·68	5·41	4·92	4·56	4·34	4·34	4·29	4·29	4·29	4·80	Normal. Valencia.
− 1·95	− 1·91	− 1·88	− 1·98	− 1·88	− 1·67	− 1·59	− 1·60	− 1·21	− 1·06	− 1·06	− 0·82	− 1·50	Diff. for 1913. ,,
4·02	4·07	3·93	3·71	3·35	2·82	2·46	2·41	2·28	2·15	2·01	1·88	2·73	Normal. Kew.
+ 0·13	+ 0·08	− 0·06	+ 0·18	+ 0·05	+ 0·02	0·00	+ 0·09	+ 0·24	+ 0·12	+ 0·16	+ 0·35	+ 0·11	Diff. for 1913. ,,
4·83	4·83	4·69	4·52	4·11	3·67	3·31	3·26	3·22	3·22	3·17	3·17	3·69	Normal. Falmouth.
													OCTOBER.
4·78	4·74	4·52	4·11	3·89	3·76	3·71	3·76	3·80	3·80	3·84	3·89	4·07	Normal. Aberdeen.
− 0·02	+ 0·02	+ 0·18	+ 0·35	+ 0·26	+ 0·15	+ 0·14	+ 0·01	− 0·01	+ 0·13	+ 0·14	− 0·19	− 0·01	Diff. for 1913. ,,
7·15	6·94	6·26	5·68	4·73	4·44	4·36	4·64	4·38	4·80	4·45	4·27	5·34	1913. Eskdalemuir.
6·30	6·35	6·35	6·08	5·77	5·50	5·28	5·23	5·14	5·14	5·14	5·10	5·45	Normal. Valencia.
− 0·80	− 0·76	− 1·01	− 0·98	− 0·99	− 0·77	− 0·26	− 0·17	+ 0·08	+ 0·02	+ 0·05	+ 0·04	− 0·49	Diff. for 1913. ,,
4·29	4·16	3·89	3·53	3·09	2·86	2·73	2·64	2·60	2·55	2·50	2·41	3·01	Normal. Kew.
− 0·76	− 0·53	− 0·45	− 0·36	− 0·46	− 0·41	− 0·21	− 0·33	− 0·35	− 0·09	− 0·03	+ 0·04	− 0·45	Diff. for 1913. ,,
5·23	5·14	4·96	4·69	4·29	4·11	3·98	3·98	3·93	3·89	3·93	3·93	4·28	Normal. Falmouth.
													NOVEMBER.
4·69	4·52	4·38	4·20	4·20	4·25	4·20	4·25	4·16	4·16	4·11	4·20	4·26	Normal. Aberdeen.
− 0·25	− 0·11	− 0·20	− 0·10	− 0·30	− 0·27	− 0·24	− 0·14	+ 0·13	+ 0·10	− 0·38	− 0·41	− 0·34	Diff. for 1913. ,,
7·71	7·81	7·53	7·05	6·87	6·58	6·89	6·81	6·62	6·41	6·54	6·18	6·52	1913. Eskdalemuir.
6·39	6·44	6·35	6·12	5·95	5·91	5·91	5·91	5·81	5·86	5·86	5·86	5·88	Normal. Valencia.
+ 0·61	+ 1·17	+ 1·36	+ 1·57	+ 1·09	+ 0·94	+ 0·55	+ 0·54	+ 0·50	+ 0·66	+ 0·80	+ 0·77	+ 0·76	Diff. for 1913. ,,
4·25	4·20	3·93	3·53	3·35	3·31	3·26	3·22	3·17	3·09	3·04	2·95	3·32	Normal. Kew.
+ 0·53	+ 0·22	+ 0·25	+ 0·19	− 0·06	− 0·20	+ 0·15	+ 0·05	+ 0·23	+ 0·42	+ 0·31	+ 0·52	+ 0·22	Diff. for 1913. ,,
5·41	5·36	5·10	4·74	4·60	4·47	4·47	4·52	4·47	4·43	4·38	4·47	4·67	Normal. Falmouth.
													DECEMBER.
4·60	4·47	4·43	4·34	4·34	4·25	4·34	4·34	4·34	4·38	4·34	4·38	4·40	Normal. Aberdeen.
− 0·09	− 0·39	− 0·33	− 0·17	− 0·26	− 0·04	− 0·44	− 0·09	− 0·26	− 0·12	+ 0·15	− 0·25	− 0·32	Diff. for 1913. ,,
7·51	7·87	7·61	6·85	6·58	6·32	6·13	5·99	6·03	5·92	5·75	5·59	6·31	1913. Eskdalemuir.
6·84	6·84	6·70	6·62	6·53	6·44	6·48	6·39	6·48	6·53	6·48	6·57	6·48	Normal. Valencia.
− 0·69	− 0·72	− 0·73	− 0·65	− 0·82	− 1·03	− 1·19	− 1·25	− 1·16	− 0·96	− 1·07	− 1·59	− 0·90	Diff. for 1913. ,,
4·34	4·20	3·93	3·67	3·62	3·62	3·58	3·53	3·58	3·49	3·44	3·49	3·64	Normal. Kew.
+ 0·37	+ 0·23	+ 0·25	+ 0·28	+ 0·31	+ 0·12	+ 0·04	+ 0·23	+ 0·27	+ 0·07	+ 0·04	− 0·16	+ 0·09	Diff. for 1913. ,,
5·77	5·72	5·45	5·23	5·05	5·05	4·96	5·01	5·10	5·10	5·10	5·10	5·26	Normal. Falmouth.
													YEAR.
4·78	4·74	4·65	4·43	4·20	3·98	3·76	3·62	3·53	3·49	3·44	3·44	3·94	Normal. Aberdeen.
− 0·36	− 0·16	− 0·05	+ 0·02	− 0·03	+ 0·05	− 0·04	− 0·07	+ 0·09	+ 0·04	+ 0·05	0·00	− 0·11	Diff. for 1913. ,,
6·46	6·50	6·34	6·12	5·76	5·37	5·06	4·81	4·63	4·47	4·37	4·31	5·14	1913. Eskdalemuir.
6·39	6·44	6·44	6·25	6·08	5·77	5·50	5·23	5·14	5·05	5·05	5·05	5·46	Normal. Valencia.
− 0·44	− 0·26	− 0·27	− 0·19	− 0·27	− 0·21	− 0·29	− 0·24	− 0·25	− 0·23	− 0·32	− 0·21	− 0·33	Diff. for 1913. ,,
4·52	4·47	4·34	4·16	3·93	3·62	3·35	3·13	3·00	2·86	2·73	2·64	3·37	Normal. Kew.
+ 0·11	+ 0·11	+ 0·14	+ 0·19	+ 0·14	+ 0·23	+ 0·19	+ 0·30	+ 0·25	+ 0·30	+ 0·27	+ 0·31	+ 0·17	Diff. for 1913. ,,
5·41	5·41	5·32	5·10	4·87	4·60	4·29	4·11	4·02	3·98	3·93	3·98	4·46	Normal. Falmouth.

LXIX.–LXXIV.—NORMALS FOR THE MONTHS OF THE HOURLY VALUES WITH DIFFERENCES BETWEEN THE NORMALS

LXXIII.—RAINFALL IN MILLIMETRES.

Hour, G.M.T.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
JANUARY.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Aberdeen, Normal.	0·06	0·08	0·07	0·08	0·08	0·08	0·09	0·09	0·09	0·07	0·06	0·07
Difference for 1913	+ 0·13	+ 0·02	+ 0·07	+ 0·06	+ 0·03	− 0·04	− 0·04	− 0·02	+ 0·01	+ 0·01	− 0·01	+ 0·03
Eskdalemuir, 1913.	0·11*	0·18*	0·08*	0·15*	0·10*	0·17*	0·13*	0·12*	0·16*	0·16*	0·07*	0·11*
Valencia, Normal.	0·21	0·19	0·20	0·21	0·21	0·18	0·20	0·20	0·22	0·19	0·16	0·18
Difference for 1913	+ 0·03	+ 0·09	+ 0·43	+ 0·25	+ 0·18	0·00	+ 0·17	+ 0·12	+ 0·38	+ 0·16	+ 0·13	+ 0·19
Kew, Normal.	0·05	0·06	0·07	0·07	0·06	0·06	0·06	0·07	0·07	0·07	0·05	0·05
Difference for 1913	+ 0·03	+ 0·03	+ 0·03	0·00	+ 0·01	0·00	− 0·02	− 0·05	− 0·02	− 0·04	− 0·01	− 0·04
Falmouth, Normal.	0·16	0·17	0·16	0·17	0·16	0·15	0·17	0·16	0·15	0·15	0·13	0·16
Difference for 1913	+ 0·14	+ 0·08	+ 0·10	+ 0·08	+ 0·15	+ 0·19	+ 0·26	+ 0·13	+ 0·17	+ 0·19	+ 0·15	+ 0·20
FEBRUARY.												
Aberdeen, Normal.	0·10	0·09	0·08	0·08	0·09	0·08	0·08	0·08	0·10	0·11	0·07	0·08
Difference for 1913	− 0·09	− 0·06	− 0·03	− 0·03	− 0·04	− 0·03	− 0·02	− 0·07	− 0·09	− 0·11	− 0·07	− 0·07
Eskdalemuir, 1913.	0·09	0·19	0·31	0·26	0·18	0·20	0·11	0·14	0·15	0·12	0·15	0·18
Valencia, Normal.	0·20	0·20	0·20	0·20	0·19	0·17	0·17	0·17	0·16	0·17	0·18	0·18
Difference for 1913	− 0·13	− 0·13	− 0·06	− 0·04	+ 0·07	+ 0·27	+ 0·19	+ 0·16	+ 0·02	− 0·01	− 0·12	− 0·11
Kew, Normal.	0·06	0·07	0·06	0·06	0·07	0·06	0·06	0·06	0·06	0·07	0·05	0·05
Difference for 1913	− 0·05	− 0·06	− 0·06	− 0·05	− 0·06	− 0·05	− 0·05	− 0·06	− 0·06	− 0·07	− 0·05	− 0·05
Falmouth, Normal.	0·15	0·14	0·16	0·13	0·14	0·14	0·12	0·15	0·15	0·14	0·10	0·11
Difference for 1913	− 0·09	− 0·07	− 0·15	0·00	− 0·01	− 0·03	− 0·10	− 0·09	− 0·02	+ 0·02	− 0·01	+ 0·07
MARCH.												
Aberdeen, Normal.	0·07	0·08	0·08	0·08	0·09	0·09	0·09	0·09	0·12	0·12	0·07	0·07
Difference for 1913	+ 0·18	+ 0·16	+ 0·12	+ 0·09	+ 0·05	+ 0·05	+ 0·16	+ 0·20	− 0·05	− 0·01	− 0·03	− 0·07
Eskdalemuir, 1913.	0·28†	0·22†	0·27†	0·25†	0·28†	0·29†	0·12†	0·10†	0·12†	0·25†	0·14†	0·16†
Valencia, Normal.	0·17	0·16	0·18	0·16	0·18	0·18	0·18	0·18	0·15	0·15	0·12	0·13
Difference for 1913	+ 0·16	− 0·03	0·00	+ 0·09	− 0·11	− 0·08	+ 0·03	+ 0·06	+ 0·05	+ 0·05	+ 0·06	+ 0·13
Kew, Normal.	0·04	0·05	0·05	0·05	0·05	0·07	0·06	0·05	0·05	0·05	0·04	0·05
Difference for 1913	+ 0·01	+ 0·02	+ 0·11	+ 0·03	+ 0·06	+ 0·04	− 0·04	− 0·03	0·00	− 0·02	+ 0·03	− 0·03
Falmouth, Normal.	0·13	0·13	0·13	0·12	0·10	0·11	0·12	0·12	0·12	0·12	0·10	0·09
Difference for 1913	+ 0·04	+ 0·06	+ 0·08	+ 0·10	+ 0·06	+ 0·02	− 0·09	− 0·05	+ 0·11	+ 0·07	+ 0·09	+ 0·01
APRIL.												
Aberdeen, Normal.	0·07	0·07	0·07	0·07	0·09	0·09	0·09	0·10	0·08	0·07	0·06	0·06
Difference for 1913	+ 0·09	+ 0·10	+ 0·07	+ 0·11	− 0·01	− 0·09	− 0·08	− 0·09	− 0·07	− 0·06	+ 0·01	+ 0·01
Eskdalemuir, 1913.	0·45‡	0·20‡	0·16‡	0·13‡	0·15‡	0·11‡	0·03‡	0·03‡	0·02‡	0·03‡	0·05‡	0·06‡
Valencia, Normal.	0·16	0·14	0·15	0·16	0·16	0·16	0·15	0·15	0·15	0·13	0·12	0·14
Difference for 1913	− 0·04	+ 0·03	+ 0·04	+ 0·08	+ 0·11	+ 0·04	+ 0·06	+ 0·07	+ 0·15	− 0·05	− 0·01	− 0·02
Kew, Normal.	0·05	0·05	0·05	0·06	0·06	0·06	0·06	0·06	0·06	0·06	0·05	0·05
Difference for 1913	0·00	− 0·01	0·00	+ 0·02	− 0·01	0·00	+ 0·02	− 0·01	− 0·01	− 0·03	− 0·02	0·00
Falmouth, Normal.	0·12	0·11	0·12	0·12	0·12	0·13	0·13	0·14	0·11	0·09	0·07	0·10
Difference for 1913	+ 0·07	+ 0·42	+ 0·12	+ 0·09	+ 0·12	+ 0·15	− 0·01	− 0·05	− 0·03	+ 0·01	+ 0·05	+ 0·26
MAY.												
Aberdeen, Normal.	0·08	0·06	0·07	0·07	0·08	0·09	0·07	0·06	0·06	0·05	0·05	0·07
Difference for 1913	+ 0·03	0·00	− 0·03	− 0·02	+ 0·03	+ 0·01	+ 0·07	+ 0·08	+ 0·03	+ 0·05	+ 0·07	+ 0·06
Eskdalemuir, 1913.	0·08	0·13	0·11	0·13	0·10	0·12	0·22	0·16	0·07	0·05	0·07	0·07
Valencia, Normal.	0·11	0·12	0·14	0·14	0·13	0·13	0·14	0·12	0·12	0·11	0·07	0·10
Difference for 1913	0·00	+ 0·02	+ 0·10	+ 0·17	+ 0·03	+ 0·08	− 0·02	+ 0·11	+ 0·13	+ 0·05	+ 0·28	+ 0·19
Kew, Normal.	0·04	0·04	0·06	0·05	0·08	0·07	0·06	0·06	0·06	0·06	0·05	0·06
Difference for 1913	+ 0·45	+ 0·18	− 0·03	− 0·04	− 0·05	+ 0·02	− 0·03	− 0·04	− 0·05	− 0·05	− 0·03	− 0·04
Falmouth, Normal.	0·08	0·09	0·10	0·09	0·09	0·08	0·09	0·10	0·09	0·08	0·06	0·07
Difference for 1913	+ 0·08	+ 0·18	+ 0·18	+ 0·29	+ 0·22	+ 0·25	0·00	− 0·09	− 0·06	− 0·01	+ 0·12	− 0·04
JUNE.												
Aberdeen, Normal.	0·05	0·06	0·06	0·06	0·07	0·07	0·07	0·06	0·06	0·08	0·07	0·07
Difference for 1913	+ 0·11	+ 0·16	0·00	− 0·04	− 0·06	− 0·06	− 0·07	+ 0·02	− 0·03	− 0·05	− 0·07	− 0·05
Eskdalemuir, 1913.	0·07	0·10	0·19	0·21	0·05	0·03	0·01	0·06	0·03	0·03	0·06	0·08
Valencia, Normal.	0·14	0·14	0·13	0·15	0·15	0·14	0·16	0·15	0·15	0·11	0·09	0·10
Difference for 1913	+ 0·07	− 0·02	− 0·04	− 0·09	− 0·06	− 0·08	− 0·09	− 0·04	+ 0·03	− 0·04	− 0·05	− 0·07
Kew, Normal.	0·07	0·07	0·06	0·07	0·08	0·08	0·08	0·07	0·06	0·07	0·08	0·09
Difference for 1913	− 0·05	− 0·07	− 0·03	− 0·04	− 0·08	− 0·06	− 0·05	− 0·06	− 0·05	− 0·07	− 0·07	− 0·07
Falmouth, Normal.	0·07	0·09	0·12	0·10	0·10	0·11	0·09	0·09	0·08	0·07	0·07	0·07
Difference for 1913	+ 0·02	− 0·01	− 0·03	− 0·01	− 0·03	+ 0·03	+ 0·05	− 0·09	− 0·05	− 0·05	− 0·05	− 0·06

The hourly amounts of rainfall are obtained at each observatory from the autographic records of a Beckley rain-gauge.

The heights of the gauges above the ground and also above M.S.L., are as follows :—

	Height above Ground.	Height above M.S.L.
Aberdeen	0·6 metre	14·6 metres
Eskdalemuir	0·4 ,,	242·3 ,,
Valencia	0·6 ,,	13·2 ,,
Kew	0·5 ,,	6·0 ,,
Falmouth	0·6 ,,	51·4 ,,

* Mean of 29 days only. † Mean of 26 days only. ‡ Mean of 26 days only.

OF THE METEOROLOGICAL ELEMENTS AT THE FIVE OBSERVATORIES AND THE VALUES FOR 1913.

JANUARY TO JUNE.

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.	Hour, G.M.T.
mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	JANUARY.
0·07	0·06	0·06	0·06	0·06	0·06	0·06	0·07	0·08	0·07	0·08	0·07	1·72	Normal. Aberdeen.
− 0·02	+ 0·04	+ 0·01	+ 0·08	+ 0·10	+ 0·09	+ 0·14	+ 0·04	− 0·07	0·00	− 0·04	+ 0·02	+ 0·64	Diff. for 1913. ,,
0·11*	0·13*	0·15*	0·14*	0·17*	0·28*	0·22*	0·25*	0·08*	0·09*	0·13*	0·10*	3·54	1913. Eskdalemuir.
0·18	0·20	0·20	0·16	0·17	0·21	0·18	0·20	0·22	0·23	0·21	0·22	4·73	Normal. Valencia.
+ 0·12	+ 0·08	+ 0·28	+ 0·31	+ 0·13	+ 0·22	+ 0·14	+ 0·13	+ 0·14	+ 0·05	− 0·04	+ 0·18	+ 3·87	Diff. for 1913. ,,
0·05	0·06	0·07	0·06	0·06	0·06	0·07	0·06	0·06	0·05	0·06	0·06	1·46	Normal. Kew.
− 0·03	− 0·04	+ 0·05	+ 0·05	+ 0·09	+ 0·08	+ 0·04	+ 0·11	+ 0·19	+ 0·11	− 0·02	+ 0·09	+ 0·64	Diff. for 1913. ,,
0·16	0·19	0·17	0·17	0·18	0·15	0·15	0·14	0·16	0·17	0·16	0·19	3·88	Normal. Falmouth.
+ 0·05	− 0·01	+ 0·09	+ 0·03	+ 0·05	+ 0·10	− 0·02	+ 0·14	+ 0·04	− 0·05	− 0·05	− 0·09	+ 2·12	Diff. for 1913. ,,
													FEBRUARY.
0·08	0·08	0·09	0·09	0·08	0·07	0·08	0·07	0·06	0·06	0·07	0·09	1·96	Normal. Aberdeen.
− 0·08	− 0·08	− 0·08	− 0·03	+ 0·14	− 0·03	− 0·07	− 0·07	− 0·05	− 0·05	− 0·07	− 0·07	− 1·25	Diff. for 1913. ,,
0·20	0·23	0·27	0·28	0·14	0·13	0·04	0·05	0·15	0·10	0·14	0·16	3·97	1913. Eskdalemuir.
0·15	0·16	0·17	0·19	0·21	0·18	0·18	0·21	0·20	0·20	0·20	0·21	4·45	Normal. Valencia.
− 0·10	− 0·10	− 0·12	− 0·08	− 0·09	− 0·13	− 0·13	− 0·06	− 0·14	− 0·15	− 0·01	− 0·12	− 1·12	Diff. for 1913. ,,
0·06	0·07	0·05	0·05	0·06	0·05	0·05	0·04	0·05	0·05	0·04	0·06	1·36	Normal. Kew.
− 0·02	+ 0·08	0·00	− 0·01	0·00	− 0·01	0·00	+ 0·01	0·00	+ 0·01	+ 0·01	− 0·04	− 0·64	Diff. for 1913. ,,
0·13	0·13	0·13	0·13	0·12	0·14	0·15	0·14	0·16	0·17	0·16	0·16	3·35	Normal. Falmouth.
0·00	− 0·01	− 0·08	− 0·12	− 0·03	− 0·09	− 0·12	− 0·12	− 0·15	− 0·13	− 0·15	− 0·15	− 1·63	Diff. for 1913. ,,
													MARCH.
0·08	0·07	0·08	0·08	0·08	0·09	0·08	0·08	0·07	0·06	0·07	0·07	1·96	Normal. Aberdeen.
− 0·07	0·00	− 0·04	− 0·06	− 0·06	− 0·07	+ 0·03	− 0·05	− 0·02	− 0·06	− 0·04	+ 0·15	+ 0·56	Diff. for 1913 ,,
0·09†	0·04†	0·00	0·07†	0·12†	0·25†	0·43†	0·44†	0·45†	0·32†	0·31†	0·27†	5·85	1913. Eskdalemuir.
0·15	0·14	0·12	0·11	0·11	0·12	0·12	0·14	0·13	0·12	0·12	0·15	3·47	Normal. Valencia.
+ 0·17	+ 0·27	+ 0·25	+ 0·25	+ 0·21	+ 0·10	− 0·03	+ 0·05	0·00	+ 0·06	+ 0·18	+ 0·14	+ 2·06	Diff. for 1913. ,,
0·05	0·05	0·06	0·05	0·05	0·06	0·05	0·06	0·06	0·06	0·06	0·05	1·27	Normal. Kew.
+ 0·07	− 0·02	0·00	+ 0·01	+ 0·06	+ 0·10	+ 0·03	+ 0·01	− 0·01	− 0·02	+ 0·03	− 0·01	+ 0·43	Diff. for 1913. ,,
0·10	0·11	0·10	0·10	0·12	0·12	0·11	0·10	0·12	0·10	0·11	0·10	2·68	Normal. Falmouth.
+ 0·17	+ 0·15	+ 0·06	+ 0·10	+ 0·10	+ 0·02	+ 0·11	+ 0·06	+ 0·02	+ 0·06	+ 0·01	− 0·04	+ 1·32	Diff. for 1913. ,,
													APRIL.
0·07	0·08	0·08	0·08	0·08	0·08	0·06	0·06	0·06	0·07	0·07	0·08	1·79	Normal. Aberdeen.
+ 0·02	− 0·01	+ 0·06	+ 0·11	+ 0·04	+ 0·08	+ 0·10	+ 0·10	+ 0·05	+ 0·02	− 0·01	+ 0·03	+ 0·58	Diff. for 1913. ,,
0·10‡	0·05‡	0·07‡	0·05‡	0·04‡	0·32‡	0·39‡	0·42‡	0·45‡	0·40‡	0·37‡	0·45‡	5·49	1913. Eskdalemuir.
0·13	0·13	0·12	0·13	0·13	0·14	0·13	0·15	0·13	0·12	0·14	0·12	3·34	Normal. Valencia.
+ 0·04	− 0·05	− 0·02	− 0·05	+ 0·06	+ 0·04	+ 0·02	+ 0·08	+ 0·30	+ 0·21	+ 0·05	+ 0·03	+ 1·17	Diff. for 1913. ,,
0·06	0·07	0·06	0·07	0·07	0·06	0·05	0·05	0·05	0·05	0·05	0·05	1·36	Normal. Kew.
+ 0·02	+ 0·09	+ 0·02	0·00	+ 0·04	+ 0·10	+ 0·05	+ 0·14	+ 0·41	+ 0·01	0·00	− 0·01	+ 0·82	Diff. for 1913. ,,
0·09	0·08	0·07	0·08	0·08	0·10	0·09	0·10	0·09	0·09	0·08	0·10	2·41	Normal. Falmouth.
+ 0·11	+ 0·09	+ 0·24	+ 0·04	+ 0·07	− 0·02	+ 0·27	+ 0·01	+ 0·03	+ 0·10	+ 0·02	+ 0·04	+ 2·20	Diff. for 1913. ,,
													MAY.
0·07	0·08	0·10	0·09	0·11	0·11	0·08	0·07	0·08	0·09	0·08	0·08	1·85	Normal. Aberdeen.
+ 0·13	+ 0·03	− 0·01	0·00	− 0·01	− 0·01	+ 0·02	0·00	+ 0·02	+ 0·02	+ 0·03	+ 0·10	+ 0·70	Diff. for 1913. ,,
0·11	0·21	0·11	0·14	0·38	0·23	0·17	0·11	0·11	0·10	0·16	0·23	3·37	1913. Eskdalemuir.
0·09	0·08	0·10	0·09	0·10	0·09	0·10	0·10	0·09	0·10	0·09	0·11	2·57	Normal. Valencia.
+ 0·17	+ 0·23	+ 0·29	+ 0·19	+ 0·04	+ 0·16	+ 0·12	+ 0·20	+ 0·22	+ 0·17	+ 0·04	− 0·01	+ 2·96	Diff. for 1913. ,,
0·05	0·06	0·08	0·09	0·08	0·06	0·06	0·04	0·04	0·03	0·04	0·05	1·37	Normal. Kew.
− 0·04	− 0·01	− 0·06	− 0·02	− 0·08	− 0·04	− 0·04	− 0·03	0·00	+ 0·04	+ 0·03	+ 0·05	+ 0·09	Diff. for 1913. ,,
0·05	0·06	0·06	0·06	0·06	0·06	0·08	0·08	0·09	0·08	0·08	0·09	1·87	Normal. Falmouth.
− 0·03	+ 0·02	− 0·04	− 0·04	− 0·04	+ 0·11	− 0·06	+ 0·01	+ 0·07	+ 0·01	+ 0·02	+ 0·03	+ 1·18	Diff. for 1913. ,,
													JUNE.
0·08	0·07	0·08	0·08	0·09	0·08	0·06	0·06	0·07	0·06	0·05	0·05	1·61	Normal. Aberdeen.
− 0·06	− 0·04	0·00	− 0·04	− 0·08	− 0·01	+ 0·04	0·00	− 0·04	− 0·03	0·00	− 0·02	− 0·42	Diff. for 1913. ,,
0·08	0·20	0·05	0·09	0·11	0·08	0·08	0·23	0·28	0·29	0·08	0·08	2·57	1913. Eskdalemuir.
0·09	0·09	0·11	0·11	0·12	0·13	0·11	0·12	0·11	0·11	0·14	0·15	3·00	Normal. Valencia.
− 0·01	− 0·03	0·00	− 0·03	+ 0·01	+ 0·13	+ 0·19	+ 0·12	+ 0·16	+ 0·09	− 0·04	+ 0·07	+ 0·18	Diff. for 1913. ,,
0·08	0·08	0·09	0·09	0·11	0·09	0·10	0·09	0·09	0·10	0·07	0·06	1·93	Normal. Kew.
− 0·07	− 0·08	− 0·02	− 0·09	+ 0·03	− 0·09	− 0·10	− 0·09	− 0·09	− 0·10	− 0·07	− 0·06	− 1·53	Diff. for 1913. ,,
0·09	0·09	0·09	0·08	0·08	0·07	0·06	0·08	0·08	0·08	0·09	0·10	2·05	Normal. Falmouth.
− 0·09	− 0·06	− 0·08	− 0·07	− 0·02	− 0·03	+ 0·01	− 0·08	− 0·06	− 0·02	− 0·02	− 0·04	− 0·84	Diff. for 1913. ,,

The normals for rainfall are based upon the hourly tabulations of rainfall during the period of 40 years, 1871–1910.

The values for 1913 are given by the excess or defect from the normal; + indicates excess, − defect.

Amounts of snow or rain which cannot be distributed among the actual hours of fall are omitted from the hourly means. In preparing the normals, however, an approximate allocation of such falls to their proper hours has been made.

* Mean of 29 days only. † Mean of 26 days only. ‡ Mean of 26 days only.

LXIX.–LXXIV.—NORMALS FOR THE MONTHS OF THE HOURLY VALUES WITH DIFFERENCES BETWEEN THE NORMALS

LXXIII.—*continued*—RAINFALL IN MILLIMETRES.

Hour, G.M.T.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
JULY.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Aberdeen, Normal.	0·08	0·08	0·08	0·10	0·09	0·08	0·07	0·08	0·07	0·08	0·07	0·10
Difference for 1913	− 0·06	− 0·06	− 0·08	− 0·08	− 0·08	− 0·02	− 0·05	− 0·07	− 0·05	− 0·07	− 0·06	− 0·01
Eskdalemuir, 1913.	0·01	0·02	0·01	0·01	0·00	0·01	0·00	0·06	0·01	0·02	0·02	0·02
Valencia, Normal.	0·14	0·15	0·16	0·16	0·15	0·16	0·16	0·17	0·16	0·13	0·11	0·12
Difference for 1913	− 0·11	− 0·13	− 0·12	− 0·11	− 0·13	− 0·14	− 0·13	− 0·15	− 0·02	− 0·05	− 0·07	− 0·05
Kew, Normal.	0·07	0·07	0·07	0·06	0·06	0·06	0·08	0·06	0·05	0·06	0·08	0·09
Difference for 1913	− 0·01	− 0·05	− 0·06	− 0·01	+ 0·14	+ 0·11	+ 0·03	+ 0·02	+ 0·11	+ 0·02	− 0·01	− 0·06
Falmouth, Normal.	0·11	0·12	0·15	0·13	0·12	0·14	0·11	0·10	0·11	0·10	0·06	0·09
Difference for 1913	− 0·11	− 0·11	− 0·11	− 0·09	− 0·09	− 0·13	− 0·08	− 0·07	− 0·11	− 0·10	− 0·06	− 0·09
AUGUST.												
Aberdeen, Normal.	0·11	0·10	0·11	0·12	0·11	0·11	0·11	0·11	0·09	0·10	0·07	0·08
Difference for 1913	− 0·09	− 0·06	− 0·09	− 0·11	− 0·11	− 0·11	− 0·11	− 0·06	− 0·04	+ 0·01	0·00	− 0·05
Eskdalemuir, 1913.	0·07	0·14	0·06	0·06	0·03	0·02	0·06	0·43	0·08	0·01	0·02	0·04
Valencia, Normal.	0·18	0·16	0·16	0·20	0·23	0·21	0·21	0·18	0·20	0·17	0·14	0·15
Difference for 1913	− 0·15	− 0·10	− 0·13	− 0·15	− 0·15	− 0·10	− 0·14	− 0·10	− 0·18	− 0·12	− 0·12	− 0·15
Kew, Normal.	0·06	0·08	0·07	0·05	0·06	0·04	0·06	0·06	0·07	0·07	0·06	0·10
Difference for 1913	− 0·06	− 0·08	− 0·05	− 0·03	− 0·04	+ 0·01	− 0·04	− 0·05	0·00	0·00	− 0·02	− 0·06
Falmouth, Normal.	0·12	0·12	0·14	0·12	0·13	0·16	0·11	0·11	0·12	0·12	0·12	0·11
Difference for 1913	− 0·12	− 0·11	− 0·13	− 0·10	− 0·07	− 0·09	− 0·11	− 0·09	− 0·10	− 0·11	− 0·12	− 0·09
SEPTEMBER.												
Aberdeen, Normal.	0·08	0·07	0·06	0·08	0·08	0·10	0·12	0·11	0·11	0·11	0·09	0·08
Difference for 1913	− 0·06	− 0·06	− 0·05	− 0·07	− 0·05	− 0·02	+ 0·02	+ 0·21	+ 0·15	+ 0·01	− 0·02	− 0·03
Eskdalemuir, 1913.	0·05	0·01	0·04	0·02	0·03	0·02	0·07	0·20	0·30	0·10	0·17	0·07
Valencia, Normal.	0·16	0·16	0·18	0·17	0·17	0·15	0·16	0·16	0·17	0·12	0·14	0·14
Difference for 1913	+ 0·03	+ 0·20	+ 0·07	+ 0·07	+ 0·05	+ 0·13	+ 0·08	0·00	+ 0·14	+ 0·08	+ 0·11	+ 0·08
Kew, Normal.	0·09	0·07	0·08	0·09	0·10	0·06	0·06	0·06	0·07	0·06	0·06	0·06
Difference for 1913	− 0·01	+ 0·08	− 0·05	− 0·06	− 0·07	− 0·06	− 0·02	+ 0·02	− 0·02	− 0·04	− 0·06	− 0·06
Falmouth, Normal.	0·16	0·16	0·15	0·14	0·13	0·13	0·14	0·13	0·14	0·13	0·09	0·11
Difference for 1913	+ 0·09	− 0·05	− 0·13	− 0·05	+ 0·01	− 0·10	− 0·04	− 0·12	− 0·09	− 0·09	− 0·06	− 0·01
OCTOBER.												
Aberdeen, Normal.	0·08	0·10	0·11	0·12	0·11	0·13	0·12	0·12	0·12	0·12	0·09	0·09
Difference for 1913	− 0·05	− 0·02	+ 0·09	− 0·05	− 0·11	− 0·05	+ 0·08	+ 0·06	0·00	− 0·04	− 0·06	− 0·09
Eskdalemuir, 1913.	0·14	0·09	0·19	0·14	0·08	0·23	0·29	0·26	0·38	0·22	0·21	0·12
Valencia, Normal.	0·18	0·20	0·21	0·20	0·20	0·21	0·19	0·18	0·18	0·19	0·17	0·19
Difference for 1913	+ 0·06	0·00	+ 0·10	− 0·04	+ 0·08	− 0·10	+ 0·15	+ 0·08	+ 0·02	+ 0·01	− 0·02	+ 0·06
Kew, Normal.	0·10	0·10	0·10	0·09	0·09	0·11	0·09	0·10	0·10	0·09	0·08	0·11
Difference for 1913	− 0·07	0·00	+ 0·10	− 0·07	+ 0·01	− 0·07	− 0·02	+ 0·01	+ 0·03	− 0·02	+ 0·17	+ 0·15
Falmouth, Normal.	0·22	0·20	0·21	0·22	0·22	0·21	0·19	0·22	0·18	0·19	0·14	0·17
Difference for 1913	+ 0·14	− 0·19	− 0·16	− 0·12	− 0·06	+ 0·03	+ 0·34	− 0·15	− 0·02	− 0·08	− 0·07	− 0·13
NOVEMBER.												
Aberdeen, Normal.	0·12	0·12	0·11	0·14	0·13	0·12	0·11	0·11	0·11	0·10	0·10	0·10
Difference for 1913	− 0·08	− 0·06	− 0·05	− 0·11	0·00	− 0·07	− 0·03	− 0·06	− 0·01	− 0·02	+ 0·02	− 0·05
Eskdalemuir, 1913.	0·41	0·40	0·29	0·18	0·18	0·10	0·13	0·07	0·14	0·18	0·34	0·25
Valencia, Normal.	0·23	0·20	0·22	0·21	0·22	0·19	0·23	0·22	0·18	0·18	0·18	0·18
Difference for 1913	− 0·04	+ 0·05	− 0·05	− 0·08	− 0·14	− 0·14	− 0·02	− 0·03	+ 0·19	+ 0·27	+ 0·06	+ 0·16
Kew, Normal.	0·08	0·09	0·08	0·08	0·08	0·08	0·07	0·07	0·06	0·07	0·06	0·07
Difference for 1913	− 0·05	− 0·08	− 0·01	− 0·05	− 0·05	− 0·05	+ 0·07	+ 0·08	+ 0·08	− 0·04	− 0·05	− 0·04
Falmouth, Normal.	0·18	0·17	0·20	0·22	0·17	0·19	0·18	0·21	0·18	0·18	0·16	0·18
Difference for 1913	+ 0·04	− 0·04	− 0·10	+ 0·19	+ 0·04	+ 0·29	− 0·02	− 0·03	+ 0·03	− 0·04	− 0·12	− 0·04
DECEMBER.												
Aberdeen, Normal.	0·10	0·11	0·13	0·13	0·13	0·12	0·12	0·11	0·10	0·12	0·10	0·10
Difference for 1913	0·00	− 0·08	− 0·12	− 0·12	− 0·08	− 0·11	− 0·10	− 0·06	− 0·03	− 0·06	+ 0·05	− 0·03
Eskdalemuir, 1913.	0·17	0·08	0·06	0·07	0·11	0·19	0·11	0·21	0·11	0·12	0·08	0·06
Valencia, Normal.	0·21	0·21	0·23	0·25	0·22	0·23	0·23	0·22	0·21	0·19	0·18	0·20
Difference for 1913	− 0·12	− 0·10	− 0·12	− 0·19	− 0·18	− 0·20	− 0·15	− 0·11	− 0·06	− 0·09	− 0·02	− 0·06
Kew, Normal.	0·07	0·08	0·08	0·08	0·08	0·07	0·06	0·07	0·07	0·06	0·06	0·06
Difference for 1913	− 0·05	0·00	− 0·05	− 0·08	− 0·07	− 0·06	− 0·05	− 0·06	− 0·06	0·00	− 0·04	− 0·06
Falmouth, Normal.	0·20	0·23	0·21	0·23	0·21	0·20	0·20	0·20	0·19	0·22	0·18	0·18
Difference for 1913	+ 0·09	+ 0·03	+ 0·06	− 0·04	− 0·08	+ 0·04	+ 0·04	0·00	+ 0·14	− 0·08	+ 0·05	+ 0·07
YEAR.												
Aberdeen, Normal.	0·08	0·08	0·08	0·10	0·10	0·10	0·10	0·09	0·09	0·09	0·07	0·08
Difference for 1913	+ 0·01	+ 0·01	0·00	− 0·04	− 0·04	− 0·05	− 0·02	+ 0·02	− 0·01	− 0·02	− 0·01	− 0·03
Eskdalemuir, 1913.	0·16	0·14	0·14	0·13	0·10	0·12	0·11	0·12	0·13	0·11	0·11	0·10
Valencia, Normal.	0·17	0·17	0·18	0·18	0·18	0·18	0·18	0·18	0·17	0·15	0·14	0·15
Difference for 1913	− 0·02	− 0·01	+ 0·02	0·00	− 0·02	− 0·03	+ 0·01	+ 0·01	+ 0·07	+ 0·02	+ 0·02	+ 0·03
Kew, Normal.	0·07	0·07	0·07	0·07	0·07	0·07	0·07	0·06	0·06	0·07	0·06	0·07
Difference for 1913	+ 0·01	0·00	− 0·01	− 0·03	− 0·02	− 0·02	− 0·02	− 0·01	0·00	− 0·03	− 0·01	− 0·03
Falmouth, Normal.	0·14	0·14	0·15	0·15	0·14	0·14	0·14	0·14	0·13	0·13	0·11	0·12
Difference for 1913	+ 0·04	+ 0·02	− 0·02	+ 0·03	+ 0·02	+ 0·06	+ 0·02	− 0·05	0·00	− 0·02	0·00	+ 0·01

OF THE METEOROLOGICAL ELEMENTS AT THE FIVE OBSERVATORIES AND THE VALUES FOR 1913.

JULY TO DECEMBER AND YEAR.

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.	Hour, G.M.T.
mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	JULY.
0·13	0·14	0·16	0·16	0·12	0·13	0·11	0·09	0·09	0·11	0·08	0·09	2·39	Normal. Aberdeen.
+ 0·16	+ 0·11	− 0·12	− 0·12	− 0·12	− 0·13	− 0·11	− 0·08	− 0·09	− 0·10	− 0·07	− 0·09	− 1·45	Diff. for 1913. ,,
0·02	0·05	0·05	0·07	0·07	0·25	0·07	0·02	0·01	0·00	0·02	0·01	0·83	1913. Eskdalemuir.
0·10	0·12	0·10	0·12	0·12	0·12	0·12	0·13	0·12	0·12	0·13	0·14	3·21	Normal. Valencia.
− 0·04	− 0·08	− 0·03	− 0·10	− 0·12	− 0·10	− 0·11	− 0·11	− 0·10	− 0·11	− 0·11	− 0·13	− 2·35	Diff. for 1913. ,,
0·14	0·11	0·13	0·12	0·08	0·09	0·09	0·10	0·07	0·08	0·07	0·07	1·96	Normal. Kew.
− 0·13	− 0·09	− 0·06	− 0·10	− 0·04	− 0·08	− 0·06	− 0·08	+ 0·02	+ 0·06	− 0·05	− 0·04	− 0·42	Diff. for 1913. ,,
0·10	0·11	0·11	0·09	0·08	0·08	0·10	0·11	0·08	0·09	0·10	0·09	2·48	Normal. Falmouth.
− 0·09	− 0·08	− 0·11	− 0·09	− 0·08	− 0·08	− 0·10	− 0·10	− 0·07	− 0·09	− 0·10	− 0·09	− 2·23	Diff. for 1913. ,,
													AUGUST.
0·10	0·10	0·10	0·12	0·14	0·11	0·12	0·11	0·12	0·09	0·10	0·08	2·51	Normal. Aberdeen.
− 0·04	− 0·08	− 0·08	+ 0·04	− 0·01	− 0·10	− 0·04	− 0·08	− 0·07	− 0·02	− 0·07	+ 0·01	− 1·36	Diff. for 1913. ,,
0·07	0·16	0·16	0·02	0·07	0·02	0·07	0·12	0·13	0·09	0·02	0·02	1·97	1913. Eskdalemuir.
0·13	0·13	0·15	0·15	0·16	0·18	0·18	0·16	0·16	0·17	0·16	0·18	4·10	Normal. Valencia.
− 0·12	− 0·12	− 0·08	− 0·04	− 0·13	− 0·15	− 0·06	− 0·14	− 0·16	− 0·01	− 0·11	− 0·16	− 2·87	Diff. for 1913. ,,
0·08	0·10	0·11	0·09	0·12	0·09	0·09	0·07	0·09	0·07	0·05	0·05	1·79	Normal. Kew.
− 0·06	− 0·08	− 0·03	− 0·03	− 0·12	− 0·07	+ 0·04	− 0·01	+ 0·07	0·00	− 0·04	− 0·04	− 0·79	Diff. for 1913. ,,
0·11	0·08	0·10	0·09	0·10	0·11	0·12	0·11	0·11	0·12	0·12	0·12	2·77	Normal. Falmouth.
− 0·05	− 0·01	0·00	− 0·04	+ 0·05	0·00	− 0·06	− 0·09	− 0·09	− 0·10	− 0·10	− 0·12	− 1·85	Diff. for 1913. ,,
													SEPTEMBER.
0·10	0·08	0·09	0·08	0·11	0·09	0·08	0·09	0·09	0·10	0·09	0·08	2·17	Normal. Aberdeen.
− 0·06	− 0·02	− 0·06	− 0·04	+ 0·05	+ 0·01	− 0·05	− 0·04	− 0·02	− 0·07	− 0·06	− 0·07	− 0·40	Diff. for 1913. ,,
0·15	0·08	0·10	0·06	0·08	0·11	0·08	0·09	0·08	0·07	0·08	0·08	2·14	1913. Eskdalemuir.
0·11	0·13	0·13	0·15	0·18	0·16	0·17	0·16	0·14	0·16	0·19	0·17	3·73	Normal. Valencia.
+ 0·08	+ 0·04	− 0·03	− 0·07	− 0·04	− 0·03	− 0·01	− 0·10	+ 0·02	− 0·01	− 0·05	+ 0·08	+ 0·92	Diff. for 1913. ,,
0·08	0·06	0·05	0·08	0·09	0·07	0·07	0·09	0·09	0·06	0·07	0·08	1·75	Normal. Kew.
− 0·05	− 0·03	+ 0·08	+ 0·01	+ 0·21	+ 0·01	+ 0·06	− 0·06	− 0·06	− 0·04	+ 0·07	0·00	− 0·15	Diff. for 1913. ,,
0·10	0·09	0·10	0·09	0·11	0·11	0·13	0·13	0·10	0·11	0·12	0·14	2·94	Normal. Falmouth.
+ 0·04	0·00	+ 0·09	− 0·06	+ 0·03	− 0·03	− 0·08	− 0·05	+ 0·01	− 0·10	− 0·05	0·00	− 0·84	Diff. for 1913. ,,
													OCTOBER.
0·10	0·10	0·08	0·08	0·10	0·11	0·11	0·11	0·11	0·10	0·10	0·09	2·50	Normal. Aberdeen.
− 0·10	− 0·10	− 0·06	− 0·07	− 0·09	− 0·09	− 0·11	− 0·09	− 0·10	− 0·08	− 0·06	− 0·05	− 1·24	Diff. for 1913. ,,
0·09	0·02	0·02	0·02	0·06	0·04	0·05	0·08	0·09	0·14	0·30	0·21	3·57	1913. Eskdalemuir.
0·18	0·17	0·17	0·18	0·18	0·18	0·23	0·18	0·17	0·18	0·21	0·19	4·52	Normal. Valencia.
+ 0·07	+ 0·18	+ 0·09	+ 0·22	+ 0·12	+ 0·16	+ 0·19	+ 0·19	+ 0·26	+ 0·22	+ 0·13	− 0·01	+ 2·22	Diff. for 1913. ,,
0·12	0·09	0·09	0·10	0·10	0·10	0·10	0·10	0·09	0·07	0·07	0·07	2·26	Normal. Kew.
+ 0·12	+ 0·20	+ 0·08	− 0·01	+ 0·18	+ 0·04	− 0·07	− 0·09	− 0·07	− 0·05	− 0·01	− 0·03	+ 0·51	Diff. for 1913 ,,
0·15	0·15	0·14	0·16	0·17	0·17	0·15	0·16	0·17	0·18	0·15	0·21	4·33	Normal. Falmouth.
− 0·04	− 0·04	+ 0·35	+ 0·07	− 0·05	− 0·04	+ 0·24	− 0·04	− 0·06	− 0·04	− 0·08	+ 0·31	+ 0·11	Diff. for 1913. ,,
													NOVEMBER.
0·10	0·11	0·10	0·09	0·10	0·11	0·10	0·10	0·12	0·13	0·13	0·12	2·68	Normal. Aberdeen.
− 0·07	− 0·09	− 0·08	− 0·01	− 0·02	− 0·08	− 0·07	− 0·07	− 0·08	− 0·03	− 0·08	+ 0·02	− 1·18	Diff. for 1913. ,,
0·21	0·18	0·12	0·21	0·29	0·38	0·27	0·23	0·29	0·30	0·19	0·46	5·80	1913. Eskdalemuir.
0·18	0·17	0·18	0·16	0·18	0·19	0·17	0·17	0·18	0·19	0·20	0·19	4·60	Normal. Valencia.
− 0·04	− 0·01	+ 0·14	+ 0·11	+ 0·07	+ 0·07	+ 0·07	+ 0·15	+ 0·02	+ 0·21	+ 0·06	+ 0·08	+ 1·16	Diff. for 1913. ,,
0·07	0·07	0·09	0·08	0·09	0·08	0·08	0·08	0·07	0·08	0·09	0·09	1·86	Normal. Kew.
− 0·07	− 0·03	+ 0·03	+ 0·25	− 0·03	+ 0·01	+ 0·02	+ 0·09	− 0·03	− 0·05	− 0·07	+ 0·12	+ 0·05	Diff. for 1913. ,,
0·17	0·21	0·17	0·19	0·22	0·21	0·19	0·17	0·18	0·17	0·16	0·17	4·43	Normal. Falmouth.
− 0·06	− 0·04	− 0·07	− 0·16	− 0·14	+ 0·04	+ 0·12	+ 0·03	− 0·04	+ 0·18	+ 0·22	+ 0·19	+ 0·47	Diff. for 1913. ,,
													DECEMBER.
0·10	0·09	0·09	0·11	0·11	0·10	0·09	0·10	0·11	0·10	0·09	0·09	2·55	Normal. Aberdeen.
− 0·07	− 0·01	− 0·02	− 0·04	− 0·08	− 0·01	+ 0·07	0·00	0·00	− 0·03	− 0·02	+ 0·01	− 0·94	Diff. for 1913. ,,
0·15	0·12	0·29	0·42	0·36	0·28	0·26	0·24	0·26	0·33	0·31	0·13	4·52	1913. Eskdalemuir.
0·20	0·21	0·21	0·20	0·20	0·20	0·22	0·25	0·25	0·23	0·20	0·20	5·15	Normal. Valencia.
+ 0·04	− 0·01	− 0·08	− 0·06	− 0·01	− 0·12	− 0·15	− 0·21	− 0·14	− 0·12	− 0·11	− 0·13	− 2·50	Diff. for 1913. ,,
0·06	0·06	0·08	0·08	0·06	0·07	0·07	0·06	0·07	0·06	0·07	0·07	1·65	Normal. Kew.
− 0·04	− 0·01	0·00	− 0·02	0·00	+ 0·05	− 0·01	− 0·01	− 0·05	− 0·04	− 0·07	− 0·06	− 0·84	Diff. for 1913. ,,
0·17	0·20	0·21	0·18	0·19	0·19	0·17	0·18	0·19	0·20	0·21	0·20	4·74	Normal. Falmouth.
+ 0·09	+ 0·01	− 0·02	− 0·02	− 0·08	0·00	− 0·10	− 0·16	− 0·16	− 0·04	− 0·07	+ 0·01	− 0·22	Diff. for 1913. ,,
													YEAR.
0·09	0·09	0·09	0·09	0·10	0·10	0·09	0·08	0·09	0·09	0·08	0·08	2·13	Normal. Aberdeen.
− 0·02	− 0·02	− 0·04	− 0·01	− 0·02	− 0·03	− 0·01	− 0·02	− 0·04	− 0·04	− 0·04	+ 0·01	− 0·46	Diff. for 1913. ,,
0·12	0·12	0·12	0·13	0·16	0·20	0·17	0·18	0·20	0·18	0·17	0·18	3·40	1913. Eskdalemuir.
0·14	0·14	0·15	0·15	0·16	0·16	0·16	0·16	0·16	0·16	0·17	0·17	3·91	Normal. Valencia.
+ 0·03	+ 0·04	+ 0·06	+ 0·05	+ 0·02	+ 0·03	+ 0·02	+ 0·03	+ 0·05	+ 0·05	− 0·01	0·00	+ 0·48	Diff. for 1913. ,,
0·08	0·07	0·08	0·08	0·08	0·07	0·07	0·07	0·07	0·06	0·06	0·06	1·66	Normal. Kew.
− 0·03	0·00	+ 0·01	0·00	+ 0·03	+ 0·01	0·00	0·00	+ 0·03	0·00	− 0·02	0·00	− 0·14	Diff. for 1913. ,,
0·12	0·12	0·12	0·12	0·12	0·13	0·12	0·13	0·13	0·13	0·13	0·14	3·14	Normal. Falmouth.
+ 0·01	+ 0·01	+ 0·04	− 0·03	− 0·01	0·00	+ 0·02	− 0·04	− 0·04	− 0·02	− 0·03	0·00	+ 0·02	Diff. for 1913. ,,

LXIX.–LXXIV.—NORMALS FOR THE MONTHS OF THE HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS AT THE FIVE OBSERVATORIES WITH DIFFERENCES BETWEEN THE NORMALS AND THE VALUES FOR 1913.

LXXIV.—DURATION OF BRIGHT SUNSHINE (in hours arranged according to Local Apparent Time).

JANUARY TO JUNE.

Hour, L.A.T.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	Day.
JANUARY.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.
Aberdeen, Normal.	...	...	...	...	...	0·06	0·22	0·31	0·32	0·31	0·25	0·09	...	...	...	...	...	1·56
Difference for 1913	...	...	...	...	...	−0·04	−0·16	−0·17	−0·14	−0·16	−0·17	−0·08	...	...	...	...	...	−0·92
Eskdalemuir, 1913.	...	...	...	...	...	0·03	0·04	0·04	0·05	0·08	0·09	0·04	...	...	...	...	...	0·37
Valencia, Normal.	...	...	...	...	0·01	0·12	0·23	0·28	0·28	0·27	0·22	0·14	0·03	...	...	...	...	1·58
Difference for 1913	...	...	...	...	−0·01	−0·08	−0·07	−0·08	−0·02	−0·01	+0·01	−0·06	−0·03	...	...	...	...	−0·35
Kew, Normal.	...	...	...	...	...	0·08	0·19	0·23	0·26	0·26	0·24	0·13	0·01	...	...	...	...	1·40
Difference for 1913	...	...	...	...	...	−0·01	0·00	+0·04	+0·01	−0·02	−0·03	−0·06	0·00	...	...	...	...	−0·07
Falmouth, Normal.	...	...	...	...	0·02	0·19	0·29	0·31	0·29	0·28	0·25	0·17	0·02	...	...	...	...	1·82
Difference for 1913	...	...	...	...	−0·02	−0·05	−0·05	−0·01	+0·05	+0·08	+0·04	−0·05	−0·02	...	...	...	...	−0·03
FEBRUARY.																		
Aberdeen, Normal.	...	...	...	...	0·06	0·25	0·35	0·39	0·39	0·38	0·36	0·28	0·11	...	...	...	...	2·57
Difference for 1913	...	...	...	...	−0·02	−0·12	−0·17	−0·16	−0·18	−0·10	−0·06	−0·14	−0·06	...	...	...	...	−1·01
Eskdalemuir, 1913.	...	...	...	0·01	0·06	0·10	0·19	0·25	0·17	0·23	0·17	0·09	0·03	...	...	...	...	1·30
Valencia, Normal.	...	...	...	...	0·10	0·25	0·32	0·35	0·35	0·34	0·33	0·27	0·16	0·02	...	...	...	2·49
Difference for 1913	...	...	...	...	+0·02	−0·02	−0·07	−0·03	+0·04	−0·06	−0·04	−0·03	−0·03	0·00	...	...	...	−0·22
Kew, Normal.	...	...	...	...	0·06	0·19	0·26	0·30	0·31	0·33	0·30	0·24	0·10	...	...	...	...	2·09
Difference for 1913	...	...	...	...	−0·03	−0·14	−0·13	−0·11	−0·05	−0·08	−0·07	−0·10	−0·06	...	...	...	...	−0·77
Falmouth, Normal.	...	...	...	0·01	0·17	0·31	0·36	0·40	0·41	0·41	0·38	0·33	0·18	0·01	...	...	...	2·97
Difference for 1913	...	...	...	−0·01	−0·10	−0·10	+0·05	+0·07	+0·04	+0·03	+0·02	+0·01	−0·05	−0·01	...	...	...	−0·05
MARCH.																		
Aberdeen, Normal.	...	...	0·01	0·11	0·29	0·37	0·42	0·43	0·42	0·40	0·39	0·35	0·29	0·14	0·01	...	...	3·63
Difference for 1913	...	...	−0·01	−0·02	+0·06	+0·12	+0·05	+0·02	+0·06	+0·14	+0·14	+0·08	+0·01	−0·04	−0·01	...	...	+0·60
Eskdalemuir, 1913.	...	...	...	0·03	0·10	0·29	0·35	0·39	0·34	0·38	0·37	0·27	0·18	0·06	...	...	...	2·76
Valencia, Normal.	...	...	...	0·14	0·33	0·40	0·43	0·45	0·45	0·44	0·43	0·39	0·35	0·18	0·02	...	...	4·01
Difference for 1913	...	...	...	−0·06	−0·05	−0·06	−0·09	−0·11	−0·10	−0·05	−0·03	−0·03	−0·01	+0·01	−0·01	...	...	−0·59
Kew, Normal.	...	...	...	0·09	0·24	0·34	0·38	0·42	0·41	0·41	0·38	0·36	0·29	0·14	0·01	...	...	3·47
Difference for 1913	...	...	...	−0·02	+0·01	−0·08	−0·10	−0·12	−0·04	−0·11	−0·05	−0·02	−0·03	−0·05	0·00	...	...	−0·62
Falmouth, Normal.	...	...	0·01	0·16	0·38	0·43	0·46	0·50	0·49	0·49	0·48	0·45	0·41	0·22	0·01	...	...	4·49
Difference for 1913	...	...	−0·01	0·00	+0·02	+0·02	−0·06	−0·07	+0·02	−0·11	−0·03	−0·13	−0·15	−0·13	−0·01	...	...	−0·64
APRIL.																		
Aberdeen, Normal.	...	0·02	0·15	0·30	0·39	0·44	0·46	0·47	0·48	0·48	0·46	0·45	0·41	0·34	0·17	0·03	...	5·05
Difference for 1913	...	−0·01	−0·01	+0·06	+0·01	−0·02	−0·08	−0·11	−0·03	−0·05	−0·02	−0·10	−0·06	−0·05	−0·06	−0·03	...	−0·56
Eskdalemuir, 1913.	...	...	0·05	0·23	0·25	0·30	0·34	0·30	0·23	0·30	0·25	0·25	0·25	0·20	0·05	...	...	3·00
Valencia, Normal.	...	0·01	0·15	0·34	0·42	0·46	0·48	0·48	0·48	0·49	0·48	0·46	0·42	0·38	0·22	0·02	...	5·29
Difference for 1913	...	−0·01	−0·11	0·00	−0·05	−0·03	−0·03	−0·05	−0·01	+0·02	+0·03	+0·07	−0·02	−0·08	−0·05	−0·02	...	−0·34
Kew, Normal.	...	0·01	0·13	0·30	0·38	0·43	0·47	0·49	0·49	0·48	0·48	0·45	0·42	0·34	0·17	0·01	...	5·05
Difference for 1913	...	−0·01	−0·04	−0·08	−0·01	−0·06	−0·15	−0·07	−0·13	−0·08	−0·02	−0·01	−0·16	−0·13	−0·10	−0·01	...	−1·06
Falmouth, Normal.	...	0·01	0·17	0·39	0·46	0·51	0·54	0·55	0·55	0·56	0·55	0·55	0·52	0·45	0·22	0·01	...	6·04
Difference for 1913	...	−0·01	−0·09	−0·14	−0·14	−0·12	−0·14	−0·12	−0·12	−0·16	−0·19	−0·20	−0·14	−0·14	−0·11	−0·01	...	−1·83
MAY.																		
Aberdeen, Normal.	0·01	0·17	0·31	0·36	0·40	0·43	0·45	0·45	0·47	0·46	0·47	0·46	0·44	0·39	0·34	0·20	0·02	5·83
Difference for 1913	0·00	−0·02	−0·05	−0·05	−0·05	−0·02	−0·13	−0·12	−0·13	−0·06	−0·03	0·00	+0·02	−0·05	−0·06	−0·10	−0·01	−0·86
Eskdalemuir, 1913.	...	0·03	0·10	0·10	0·17	0·30	0·38	0·44	0·45	0·40	0·38	0·38	0·38	0·28	0·22	0·06	...	4·07
Valencia, Normal.	...	0·15	0·37	0·44	0·46	0·49	0·51	0·51	0·53	0·53	0·53	0·53	0·51	0·48	0·40	0·22	0·01	6·67
Difference for 1913	...	−0·09	−0·16	−0·16	−0·10	−0·12	−0·13	−0·09	−0·17	−0·10	−0·14	−0·12	−0·18	−0·16	−0·12	−0·09	−0·01	−1·94
Kew, Normal.	...	0·10	0·34	0·44	0·49	0·51	0·52	0·53	0·52	0·52	0·51	0·50	0·47	0·44	0·38	0·19	...	6·46
Difference for 1913	...	−0·02	−0·07	0·00	+0·03	+0·02	+0·01	+0·04	0·00	+0·01	−0·03	+0·02	+0·03	+0·07	+0·17	+0·07	...	+0·35
Falmouth, Normal.	...	0·13	0·40	0·48	0·51	0·55	0·57	0·58	0·58	0·59	0·60	0·61	0·59	0·55	0·48	0·16	...	7·38
Difference for 1913	...	−0·10	−0·10	−0·05	−0·09	−0·04	+0·05	+0·08	+0·06	+0·11	+0·02	−0·03	−0·07	−0·17	−0·11	−0·10	...	−0·54
JUNE.																		
Aberdeen, Normal.	0·07	0·23	0·31	0·35	0·38	0·41	0·42	0·44	0·45	0·45	0·46	0·44	0·42	0·40	0·36	0·27	0·08	5·94
Difference for 1913	−0·02	+0·04	+0·05	+0·09	+0·08	+0·08	+0·08	+0·08	+0·06	+0·04	0·00	+0·04	0·00	−0·04	−0·01	−0·04	−0·02	+0·51
Eskdalemuir, 1913.	...	0·01	0·09	0·16	0·28	0·37	0·41	0·46	0·43	0·41	0·41	0·34	0·29	0·24	0·21	0·06	...	4·17
Valencia, Normal.	0·02	0·20	0·32	0·39	0·42	0·45	0·47	0·47	0·48	0·51	0·50	0·50	0·47	0·44	0·38	0·28	0·04	6·34
Difference for 1913	0·00	−0·01	−0·05	−0·04	−0·12	−0·18	−0·17	−0·08	−0·02	−0·03	+0·01	−0·04	−0·03	−0·13	−0·13	−0·05	0·00	−1·07
Kew, Normal.	...	0·16	0·34	0·40	0·43	0·47	0·49	0·49	0·52	0·51	0·51	0·50	0·47	0·44	0·41	0·27	0·03	6·44
Difference for 1913	...	−0·01	+0·02	+0·03	+0·10	+0·03	+0·03	−0·03	−0·01	−0·03	−0·03	−0·05	+0·05	−0·03	+0·09	+0·07	−0·02	+0·21
Falmouth, Normal.	0·01	0·24	0·39	0·45	0·48	0·51	0·53	0·54	0·55	0·58	0·58	0·58	0·58	0·55	0·50	0·30	0·01	7·38
Difference for 1913	−0·01	−0·09	−0·01	−0·09	−0·05	−0·06	−0·07	−0·01	+0·03	−0·01	+0·02	−0·11	−0·15	−0·11	−0·07	−0·05	0·00	−0·84

The hourly duration of sunshine is obtained from the records of the Campbell-Stokes recorder, in which instrument the sun's rays are focussed through a 4-inch (0·10 m.) spherical lens of crown glass upon a strip of blue card exposed in a metal bowl, the duration of sunshine being shown by the length of the scorch on the card. The hourly amounts are measured from 30 minutes before to 30 minutes after each hour of Local Apparent Time. The height of the recorder above the ground at the several stations is as follows:—

Aberdeen	20·7 metres.
Eskdalemuir.	1·5 ,,
Valencia	12·8 ,,
Kew	13·3 ,,
Falmouth	10·4 ,,

The values for 1913 are given by the excess or defect from the normal; + indicates excess, — defect.
The normals for sunshine are based upon the hourly tabulations of sunshine in the period of 30 years, from 1881–1910.

LXIX.–LXXIV.—NORMALS FOR THE MONTHS OF THE HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS AT THE FIVE OBSERVATORIES WITH DIFFERENCES BETWEEN THE NORMALS AND THE VALUES FOR 1913.

LXXIV.—*continued*—DURATION OF BRIGHT SUNSHINE (in hours arranged according to Local Apparent Time). JULY TO DECEMBER AND YEAR.

Hour, L.A.T.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	Day.
JULY.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.	hr.
Aberdeen, Normal.	0·04	0·19	0·27	0·32	0·36	0·37	0·37	0·38	0·39	0·38	0·38	0·37	0·35	0·31	0·28	0·20	0·05	5·01
Difference for 1913	−0·04	−0·11	−0·15	−0·14	−0·10	−0·02	−0·09	−0·08	−0·08	−0·04	−0·01	+0·03	+0·04	+0·11	+0·07	−0·02	−0·04	−0·67
Eskdalemuir, 1913.	...	0·11	0·24	0·29	0·26	0·36	0·42	0·40	0·44	0·42	0·50	0·46	0·40	0·37	0·24	0·13	...	5·04
Valencia, Normal.	...	0·10	0·22	0·27	0·31	0·35	0·39	0·40	0·42	0·42	0·43	0·43	0·41	0·39	0·31	0·19	0·02	5·06
Difference for 1913	...	+0·08	+0·13	+0·16	+0·17	+0·10	+0·06	+0·05	+0·07	+0·05	+0·11	+0·05	+0·08	+0·03	+0·12	+0·06	0·00	+1·32
Kew, Normal.	...	0·13	0·34	0·42	0·47	0·51	0·53	0·53	0·52	0·52	0·52	0·49	0·47	0·45	0·40	0·25	0·01	6·56
Difference for 1913	...	−0·11	−0·27	−0·29	−0·31	−0·30	−0·29	−0·22	−0·21	−0·16	−0·22	−0·13	−0·21	−0·23	−0·14	−0·08	−0·01	−3·18
Falmouth, Normal.	...	0·19	0·38	0·44	0·48	0·51	0·54	0·55	0·54	0·55	0·56	0·57	0·56	0·54	0·48	0·27	...	7·16
Difference for 1913	...	−0·08	−0·03	−0·04	−0·02	+0·02	−0·07	0·00	+0·13	+0·15	+0·16	+0·12	+0·10	+0·11	+0·02	−0·05	...	+0·52
AUGUST.																		
Aberdeen, Normal.	...	0·06	0·22	0·30	0·37	0·39	0·41	0·42	0·43	0·43	0·42	0·39	0·36	0·29	0·20	0·06	...	4·75
Difference for 1913	...	0·00	+0·01	−0·01	0·00	−0·01	−0·03	+0·01	+0·09	+0·07	−0·02	+0·02	+0·03	+0·01	0·00	−0·02	...	+0·15
Eskdalemuir, 1913.	...	0·02	0·13	0·31	0·39	0·43	0·46	0·42	0·48	0·44	0·47	0·40	0·34	0·29	0·16	0·01	...	4·75
Valencia, Normal.	...	0·03	0·19	0·28	0·34	0·38	0·41	0·42	0·43	0·45	0·44	0·43	0·41	0·36	0·27	0·07	...	4·91
Difference for 1913	...	+0·01	+0·07	+0·09	+0·06	+0·08	+0·09	+0·09	+0·16	+0·13	+0·12	+0·18	+0·18	+0·24	+0·11	0·00	...	+1·61
Kew, Normal.	...	0·03	0·23	0·39	0·48	0·52	0·54	0·55	0·54	0·53	0·53	0·51	0·48	0·44	0·32	0·07	...	6·16
Difference for 1913	...	−0·03	−0·17	−0·22	−0·14	−0·17	−0·13	−0·14	−0·10	−0·07	−0·08	−0·15	−0·08	−0·08	−0·06	−0·03	...	−1·65
Falmouth, Normal.	...	0·04	0·30	0·45	0·50	0·55	0·56	0·58	0·59	0·59	0·60	0·57	0·55	0·51	0·36	0·05	...	6·80
Difference for 1913	...	−0·02	−0·11	−0·13	−0·14	−0·08	−0·07	−0·06	−0·05	−0·02	−0·05	−0·07	−0·08	−0·06	−0·12	−0·04	...	−1·10
SEPTEMBER.																		
Aberdeen, Normal.	...	...	0·04	0·20	0·33	0·39	0·42	0·41	0·42	0·42	0·40	0·38	0·34	0·23	0·03	...	...	4·01
Difference for 1913	...	...	−0·03	−0·14	−0·20	−0·24	−0·23	−0·16	−0·15	−0·14	−0·08	−0·04	−0·08	−0·10	−0·02	...	...	−1·61
Eskdalemuir, 1913.	...	...	...	0·04	0·16	0·23	0·32	0·35	0·40	0·37	0·36	0·33	0·30	0·19	0·04	...	...	3·09
Valencia, Normal.	...	...	0·02	0·19	0·34	0·41	0·45	0·46	0·46	0·47	0·47	0·44	0·39	0·26	0·06	...	...	4·42
Difference for 1913	...	...	−0·02	−0·12	−0·08	−0·12	−0·06	−0·05	−0·05	−0·09	−0·03	−0·05	−0·09	−0·08	−0·01	...	...	−0·85
Kew, Normal.	...	...	0·02	0·17	0·32	0·42	0·48	0·51	0·50	0·51	0·50	0·48	0·44	0·30	0·05	...	...	4·70
Difference for 1913	...	...	−0·02	−0·06	−0·07	−0·04	−0·03	−0·06	−0·07	−0·06	−0·08	−0·01	+0·02	−0·02	−0·02	...	...	−0·52
Falmouth, Normal.	...	...	0·04	0·27	0·43	0·50	0·52	0·54	0·54	0·56	0·54	0·53	0·49	0·35	0·06	...	...	5·37
Difference for 1913	...	...	−0·03	−0·12	−0·09	−0·11	−0·07	−0·08	−0·11	−0·14	−0·16	−0·17	−0·14	−0·13	−0·02	...	...	−1·37
OCTOBER.																		
Aberdeen, Normal.	...	...	...	0·02	0·16	0·33	0·39	0·39	0·40	0·40	0·38	0·32	0·19	0·03	...	...	...	3·01
Difference for 1913	...	...	...	−0·02	−0·06	−0·02	+0·02	+0·09	+0·04	+0·02	+0·07	+0·02	−0·02	−0·02	...	...	...	+0·12
Eskdalemuir, 1913.	...	...	...	0·02	0·18	0·28	0·31	0·28	0·33	0·25	0·25	0·22	0·14	0·02	...	...	...	2·28
Valencia, Normal.	...	...	...	0·02	0·20	0·33	0·38	0·41	0·41	0·42	0·41	0·36	0·25	0·06	...	...	...	3·25
Difference for 1913	...	...	...	−0·02	−0·05	+0·07	+0·06	+0·04	+0·08	+0·03	−0·01	−0·03	−0·04	+0·03	...	...	...	+0·16
Kew, Normal.	...	...	...	0·03	0·18	0·29	0·35	0·39	0·38	0·38	0·38	0·32	0·22	0·04	...	...	...	2·96
Difference for 1913	...	...	...	−0·03	−0·08	−0·08	−0·03	+0·07	+0·04	+0·13	+0·10	+0·05	+0·02	−0·03	...	...	...	+0·16
Falmouth, Normal.	...	...	...	0·05	0·29	0·40	0·43	0·45	0·45	0·44	0·42	0·38	0·28	0·07	...	...	...	3·66
Difference for 1913	...	...	...	−0·01	−0·05	0·00	−0·06	−0·03	−0·02	+0·01	+0·04	+0·01	−0·03	0·00	...	...	...	−0·14
NOVEMBER.																		
Aberdeen, Normal.	...	...	...	...	0·01	0·11	0·26	0·29	0·32	0·33	0·28	0·14	0·01	...	...	...	...	1·75
Difference for 1913	...	...	...	...	−0·01	−0·01	+0·08	+0·04	+0·03	+0·06	+0·08	+0·02	0·00	...	...	...	...	+0·29
Eskdalemuir, 1913.	...	...	...	...	...	0·05	0·15	0·22	0·24	0·21	0·24	0·12	0·01	...	...	...	...	1·24
Valencia, Normal.	...	...	...	...	0·02	0·21	0·32	0·35	0·36	0·35	0·32	0·22	0·06	...	...	...	...	2·21
Difference for 1913	...	...	...	...	−0·02	−0·18	−0·21	−0·13	−0·17	−0·10	−0·10	−0·08	−0·01	...	...	...	...	−1·00
Kew, Normal.	...	...	...	...	0·01	0·10	0·21	0·27	0·30	0·30	0·28	0·20	0·03	...	...	...	...	1·70
Difference for 1913	...	...	...	...	+0·01	−0·01	+0·01	+0·11	+0·20	+0·16	+0·14	+0·05	+0·03	...	...	...	...	+0·70
Falmouth, Normal.	...	...	...	...	0·07	0·28	0·35	0·38	0·37	0·37	0·33	0·25	0·06	...	...	...	...	2·46
Difference for 1913	...	...	...	...	−0·03	−0·06	+0·03	0·00	+0·07	−0·02	+0·02	−0·04	+0·02	...	...	...	...	−0·01
DECEMBER.																		
Aberdeen, Normal.	...	...	...	...	...	0·01	0·14	0·24	0·26	0·25	0·17	0·03	...	...	...	...	...	1·10
Difference for 1913	...	...	...	...	...	0·00	+0·02	+0·07	+0·11	+0·12	+0·08	+0·05	...	...	...	...	...	+0·45
Eskdalemuir, 1913.	...	...	...	...	...	0·04	0·13	0·18	0·31	0·28	0·20	0·06	...	..	...	...	...	1·20
Valencia, Normal.	...	...	...	...	...	0·07	0·21	0·26	0·25	0·24	0·19	0·10	0·00	...	...	...	...	1·32
Difference for 1913	...	...	...	...	..	−0·07	−0·06	−0·08	−0·02	−0·02	+0·01	+0·02	+0·03	...	...	...	...	−0·19
Kew, Normal.	...	...	...	...	...	0·05	0·17	0·21	0·22	0·23	0·21	0·09	...	...	...	...	...	1·18
Difference for 1913	...	...	...	...	...	−0·02	+0·04	+0·03	+0·06	+0·02	−0·03	+0·01	...	...	...	...	...	+0·11
Falmouth, Normal.	...	...	...	...	0·01	0·15	0·27	0·31	0·32	0·30	0·24	0·13	0·00	...	...	...	...	1·73
Difference for 1913	...	...	...	...	−0·01	−0·01	−0·06	−0·04	−0·06	−0·04	+0·02	+0·04	+0·01	...	...	...	...	−0·15
YEAR.																		
Aberdeen, Normal.	0·01	0·06	0·11	0·16	0·23	0·30	0·36	0·38	0·40	0·39	0·37	0·31	0·24	0·18	0·12	0·06	0·01	3·69
Difference for 1913	−0·01	−0·01	−0·02	−0·02	−0·02	−0·03	−0·05	−0·03	−0·03	−0·01	0·00	−0·01	−0·01	−0·02	−0·01	−0·01	0·00	−0·29
Eskdalemuir, 1913.	...	0·01	0 05	0·10	0·16	0·23	0·29	0·31	0·32	0·32	0·31	0·25	0·19	0·14	0·08	0·02	...	2·78
Valencia, Normal.	...	0·04	0·11	0·17	0·25	0·33	0·38	0·40	0·41	0·41	0·40	0·36	0·29	0·21	0·14	0·06	0·01	3·97
Difference for 1913	...	0·00	−0·01	−0·01	−0·02	−0·05	−0·05	−0·04	−0·02	−0·02	−0·01	−0·01	−0·02	−0·01	−0·01	−0·01	0·00	−0·29
Kew, Normal.	...	0·04	0·12	0·19	0·26	0·33	0·38	0·41	0·42	0·42	0·40	0·36	0·28	0·22	0·15	0·07	...	4·05
Difference for 1913	...	−0·02	−0·05	−0·06	−0·05	−0·07	−0·06	−0·04	−0·03	−0·03	−0·03	−0·04	−0·03	−0·04	−0·01	0·00	...	−0·56
Falmouth, Normal.	...	0·05	0·14	0·23	0·32	0·41	0·45	0·47	0·47	0·48	0·46	0·43	0·35	0·27	0·18	0·07	...	4·78
Difference for 1913	...	−0·02	−0·03	−0·05	−0·06	−0·05	−0·04	−0·02	+0·01	−0·01	−0·01	−0·06	−0·05	−0·05	−0·04	−0·03	...	−0·51

LXXV.—DIURNAL INEQUALITIES OF POTENTIAL GRADIENT IN THE OPEN, IN VOLTS PER METRE.

Kew. MEAN HOURLY VALUES, GREENWICH MEAN TIME, FOR THE MONTHS, YEAR, AND SEASONS. **1913.**

Month and Season.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	24 – 0	No. of Days Used.	Mean Values.
	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.		v/m.
J.	– 137	– 167	– 167	$\overline{n}$ 197	– 191	– 147	– 54	– 14	54	52	65	57	46	37	60	98	134	137	x 152	141	112	29	– 10	– 87	+ 53	...	477
F.	– 56	– 104	– 132	$\overline{n}$ 133	– 103	– 96	– 31	45	102	57	10	– 32	– 44	– 60	– 56	– 17	67	128	x 155	128	93	74	35	– 33	+ 12	...	453
M.	– 66	– 62	– 79	– 78	– 72	– 44	49	96	72	34	– 40	– 59	$\overline{n}$ 90	– 62	– 43	– 30	8	95	x 113	90	86	84	33	– 33	+ 33	...	308
A.	– 35	– 54	$\overline{n}$ 87	– 74	– 49	– 44	– 1	57	x 86	61	20	– 28	– 49	– 36	– 2	14	12	33	52	46	49	48	11	– 30	+ 12	...	338
M.	16	– 37	– 56	– 57	– 59	– 19	6	41	52	25	– 16	– 38	– 28	– 49	$\overline{n}$ 60	– 38	– 35	3	58	75	56	x 79	52	31	+ 5	...	304
J.	– 30	– 32	– 39	– 38	– 36	$\overline{n}$ 41	– 14	44	35	6	– 26	– 25	– 33	– 38	– 32	2	2	30	51	43	57	x 62	35	15	– 64	..	194
J.	12	– 34	– 45	$\overline{n}$ 46	– 42	– 22	17	33	47	17	– 22	– 14	– 27	– 33	– 16	– 36	– 24	14	35	22	x 71	63	42	– 14	– 32	...	209
A.	– 32	– 24	– 56	$\overline{n}$ 60	– 54	– 31	20	7	– 2	– 4	– 10	– 12	– 21	– 16	0	– 2	2	26	72	x 86	65	27	33	– 14	– 31	...	215
S.	– 39	– 54	$\overline{n}$ 103	– 94	– 86	– 92	– 74	– 26	– 6	22	6	7	16	2	6	17	48	x 121	119	112	76	37	6	– 21	– 9	...	269
O.	$\overline{n}$ 100	– 64	– 39	– 8	– 1	65	60	67	19	– 9	– 54	– 58	– 64	– 62	– 32	– 4	79	x 112	107	90	61	– 15	– 55	– 93	– 4	...	373
N.	– 55	– 65	– 61	$\overline{n}$ 68	– 15	– 14	6	44	64	x 74	20	35	14	– 4	– 7	5	31	30	27	10	23	7	– 35	– 63	– 62	...	339
D.	– 75	– 72	– 99	$\overline{n}$ 104	– 95	– 61	28	105	x 160	146	138	41	– 19	– 27	– 35	– 29	– 5	17	13	32	8	– 6	– 25	– 34	– 23	...	545
Y.	– 50	– 64	$\overline{n}$ 80	$\overline{n}$ 80	– 67	– 46	1	42	57	40	8	– 11	– 25	– 29	– 18	– 2	27	62	x 80	73	63	41	10	– 31	...	...	335
W.	– 81	– 102	– 115	$\overline{n}$ 125	– 101	– 80	– 13	45	x 95	82	58	25	– 1	– 14	– 10	14	57	78	87	78	59	26	– 9	– 54	...	...	453
Eq.	– 60	– 58	$\overline{n}$ 77	– 63	– 52	– 29	8	49	43	27	– 17	– 35	– 47	– 40	– 18	– 1	37	90	x 98	85	68	39	– 1	– 44	...	...	322
S.	– 8	– 32	– 49	$\overline{n}$ 50	– 48	– 28	7	31	33	11	– 19	– 22	– 27	– 34	– 27	– 18	– 14	19	54	57	x 62	58	40	4	...	...	230

LXXVI.—DIURNAL INEQUALITIES OF POTENTIAL GRADIENT IN THE OPEN, IN VOLTS PER METRE.

MEAN HOURLY VALUES, GREENWICH MEAN TIME, FOR THE MONTHS, YEAR, AND SEASONS (0,a DAYS ONLY).

Eskdalemuir. **1913.**

Month and Season.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	24 – 0	No. of Days Used.	Mean Values.
	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.		v/m.
J.	– 27	– 54	– 80	$\overline{n}$ 96	– 91	– 84	– 37	– 23	7	44	51	12	18	– 8	48	83	19	– 48	– 36	48	x 101	89	45	22	+ 102	7	399
F.	3	4	– 8	– 9	– 48	$\overline{n}$ 63	– 42	– 12	5	– 13	– 56	– 45	– 31	– 45	– 40	– 43	5	67	57	92	x 100	96	25	– 1	+ 91	11	382
M.	5	20	– 18	4	38	11	– 22	– 58	– 26	– 45	27	7	– 23	– 68	$\overline{n}$ 105	– 54	– 17	– 10	57	58	15	27	x 130	44	+ 139	4	259
A.	– 5	– 17	– 28	18	16	12	12	– 9	– 47	– 47	– 40	$\overline{n}$ 51	– 18	– 20	– 13	2	16	13	13	34	x 64	38	49	8	– 8	7	170
M.	42	27	12	36	34	48	63	– 1	– 32	– 59	– 69	– 80	$\overline{n}$ 93	– 85	– 65	– 59	– 46	– 40	8	78	x 88	85	85	26	+ 70	9	201
J.	41	48	36	3	26	– 5	– 47	– 31	– 37	– 45	– 40	– 43	$\overline{n}$ 57	– 50	– 45	– 41	– 27	6	50	59	x 64	48	50	43	– 64	10	180
J.	35	56	60	x 93	65	45	45	33	– 7	– 27	– 34	– 44	– 44	– 48	– 42	– 46	$\overline{n}$ 53	– 40	– 36	– 28	– 15	– 15	9	35	+ 35	15	208
A.	– 13	– 25	– 17	0	15	17	33	5	– 17	– 21	– 20	$\overline{n}$ 30	– 29	– 21	– 19	– 24	– 19	3	33	42	39	x 43	26	3	– 18	18	173
S.	3	– 11	6	14	– 9	21	37	33	2	– 36	$\overline{n}$ 42	– 41	– 32	– 32	– 28	– 32	– 29	– 9	20	51	x 61	38	19	– 1	– 12	16	191
O.	13	19	26	41	32	5	26	4	– 10	9	– 36	– 71	– 81	$\overline{n}$ 93	– 64	– 22	6	27	71	x 77	36	7	– 24	– 3	– 48	8	206
N.	$\overline{n}$ 124	– 101	– 90	– 106	– 118	– 74	– 12	20	105	57	59	81	5	20	99	x 129	92	58	15	19	72	– 28	– 76	– 98	– 104	3	303
D.	– 51	– 32	– 59	– 80	– 79	– 25	0	37	10	27	6	23	24	1	– 9	23	87	94	x 105	93	5	– 35	– 65	$\overline{n}$ 100	+ 84	11	356
Y.	– 7	– 6	– 13	– 7	– 10	– 8	5	0	– 4	– 13	– 16	– 24	– 30	$\overline{n}$ 37	– 24	– 7	3	10	30	52	x 53	33	23	– 2	...	...	252
W.	– 50	– 46	– 59	– 73	$\overline{n}$ 84	– 62	– 23	6	32	29	15	18	4	– 8	25	48	51	43	35	63	x 70	31	– 18	– 44	...	...	360
Eq.	4	3	– 4	19	19	12	13	– 8	– 20	– 30	– 23	– 39	– 39	$\overline{n}$ 53	$\overline{n}$ 53	– 27	– 6	5	40	x 55	44	28	44	12	...	...	207
S.	26	27	23	33	35	26	24	2	– 23	– 38	– 41	– 49	$\overline{n}$ 56	– 51	– 43	– 43	– 36	– 18	14	38	x 44	40	43	27	...	...	191

LXXVII.—DIURNAL INEQUALITIES OF POTENTIAL GRADIENT IN THE OPEN, IN VOLTS PER METRE.

MEAN HOURLY VALUES, GREENWICH MEAN TIME, FOR THE MONTHS, YEAR AND SEASONS (1,a and 2,a DAYS ONLY).

Eskdalemuir. **1913.**

Month and Season.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	24 – 0	No. of Days Used.	Mean Values.
	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.	v/m.		v/m.
J.	Only one available day in January, and instrument then not in order.																										
F.	– 3	– 53	$\overline{n}$ 66	– 48	– 46	21	11	16	– 25	33	14	– 23	– 47	– 13	– 9	3	– 8	26	41	x 55	54	33	21	15	– 138	6	241
M.	– 4	– 11	– 57	$\overline{n}$ 102	– 89	– 74	– 11	– 66	– 79	– 78	– 71	– 82	– 81	– 12	4	25	– 71	44	69	126	x 217	175	170	63	– 167	2	193
A.	– 15	– 52	$\overline{n}$ 82	– 37	– 3	45	12	– 18	– 25	– 63	– 46	– 38	– 27	– 18	– 29	– 31	5	50	109	x 129	108	36	– 1	– 14	+ 20	5	159
M.	– 12	$\overline{n}$ 48	– 25	– 5	– 21	– 37	– 42	– 3	14	19	5	– 18	– 18	– 35	– 32	– 25	– 3	29	26	24	52	x 78	57	16	+ 5	3	166
J.	41	– 38	$\overline{n}$ 45	32	10	– 22	– 24	– 20	16	18	0	– 35	– 27	– 24	– 31	– 43	– 29	– 5	18	23	13	x 62	x 62	53	– 43	6	155
J.	6	5	3	– 2	– 23	$\overline{n}$ 56	– 22	24	6	– 37	– 47	– 16	– 33	– 24	– 3	– 24	– 10	3	35	53	45	x 57	47	19	– 31	10	156
A.	35	81	x 89	81	38	– 2	– 29	– 28	– 31	– 35	$\overline{n}$ 55	– 36	– 31	– 11	– 29	– 19	– 34	– 12	6	– 3	– 8	31	– 3	4	+ 102	4	136
S.	62	50	48	36	23	33	x 74	54	59	– 3	– 44	– 55	– 47	– 55	– 41	– 12	– 6	– 90	$\overline{n}$ 95	– 37	17	– 1	– 12	38	+ 138	6	198
O.	– 4	– 36	– 5	– 8	16	25	62	x 63	18	– 10	– 53	– 10	– 80	– 69	$\overline{n}$ 96	– 21	16	21	3	60	47	11	18	27	+ 56	5	158
N.	– 3	– 8	– 11	– 3	27	15	18	38	24	– 30	– 52	– 49	– 58	$\overline{n}$ 112	– 104	24	x 94	74	57	54	3	14	– 2	– 15	+ 13	7	180
D.	2	3	– 8	– 33	– 33	– 25	– 30	31	1	– 19	– 25	1	8	– 19	$\overline{n}$ 37	57	x 66	33	– 26	– 19	26	39	– 3	4	+ 44	3	124
Y.	Omitted owing to lack of inequality for January.																										
W.																											
Eq.	10	– 12	– 24	– 28	– 13	7	34	8	– 7	– 39	– 54	– 46	$\overline{n}$ 59	– 39	– 41	– 10	– 14	6	22	70	x 97	55	44	29	...	...	177
S.	18	0	6	27	1	$\overline{n}$ 29	$\overline{n}$ 29	– 7	1	– 9	– 24	– 26	– 27	– 24	– 24	– 28	– 19	4	21	24	26	x 57	41	23	...	...	153

NOTES ON THE MANAGEMENT AND MANIPULATION OF THE INSTRUMENTS AT KEW OBSERVATORY AND THE CORRESPONDING TABLES. By Dr. C. CHREE, Sc.D., LL.D., F.R.S., Superintendent.

Terrestrial Magnetism.—The building operations carried out in the course of the year involved considerable changes in the basement, including the magnetograph room. It was thus necessary to take down the magnetograph and erect it elsewhere. The movement was effected in the end of May. The magnetograph was re-erected in the wooden "experimental house" in the garden, and remained in operation there until the end of December, when it was restored to its original position in the magnetograph room.

The scale value of the declination magnetograph in the magnetograph room was

$$1 \text{ cm.} = 8'{\cdot}7 ;$$

but outside, owing to the reduced distance between the magnet's mirror and the photographic paper, it was

$$1 \text{ cm.} = 11'{\cdot}5.$$

The scale value of the horizontal force magnetograph was

$$1 \text{ cm.} = 5{\cdot}35\gamma \text{ from January to May inclusive,}$$
$$1 \text{ cm.} = 5{\cdot}85\gamma \text{ for the rest of the year.}$$

The base line values of the curves were determined by observations taken usually once a week with the Jones unifilar magnetometer, using collimator magnet K.C.I. and declinometer magnet K.O. 90, and the Barrow inclinometer No. 33, with $3\frac{1}{2}$-inch needles.

In the absolute observations of horizontal force use was made, as of late years, of three deflection distances—22·5, 30, and 40 cms.,—and values were calculated for the two constants P and Q of the deflection formula from all the observations of the year combined. The values thus obtained have been

Year.	P.	Q.
1910	+0·882	−1354
1911	+0·832	−1377
1912	+0·749	−1286
1913	+1·504	−1528

The horizontal force data published in the course of the year 1913 in the *Geophysical Journal*—including the daily maxima and minima—were based on calculations which employed the values of P and Q applying to the year 1912. They require the correction $+5\gamma$ (5×10^{-5} C.G.S.) to bring them to what they would have been if calculated from the values of P and Q found for 1913. The *Geophysical Journal* also contained the daily extremes of declination, but these require no correction.

Particulars of the magnetic "character" of individual days on the international scale "0," "1," and "2" ("0" representing quiet, "1" moderately, and "2" more

highly disturbed days) were contributed quarterly, as in recent years, to Prof. van Everdingen at De Bilt, for inclusion in the international lists. The accompanying table gives an abstract showing the number of days in each month to which the "characters" "0," "1," and "2" were assigned at Kew. It also gives for each month the mean of the "character" numbers, treated as if they were ordinary arithmetical quantities. As there is a wide range of disturbance included under any one "character" figure, these monthly means should be regarded as giving only a general indication of the disturbance prevailing.

Owing to the movement of the magnetographs, records were wholly lacking or seriously incomplete for the six days May 28 to June 2, and these days are not taken account of in the table. The mean values for May and June are based on 27 and 28 days respectively. In view of the results from other stations, there is reason to fear that disturbance in June was under-estimated, owing presumably to circumstances connected with the movements of the magnetographs.

1913.	Number of Days having Magnetic "Character."			Mean of "Character" Numbers.
	"0."	"1."	"2."	
January	20	9	2	0·42
February	17	10	1	0·43
March	17	11	3	0·55
April	13	15	2	0·63
May	15	8	4	0·59
June	27	3	0	0·11
July	21	9	1	0·35
August	21	10	0	0·32
September	16	13	1	0·50
October	16	11	4	0·61
November	23	6	1	0·27
December	25	6	0	0·19
Year	231	111	19	0·41

The declination and horizontal force curves were tabulated on the five quiet days a month selected under international auspices at De Bilt, particulars of which are given in the accompanying table.

List of Magnetic Quiet Days for 1913, *as issued by the International Commission of Terrestrial Magnetism.*

January	1,	7,	12,	16,	24	July	4,	9,	17,	19,	28
February	3,	4,	23,	24,	28	August	1,	5,	20,	29,	30
March	1,	2,	10,	26,	27	September	4,	14,	20,	27,	29
April	6,	20,	21,	22,	26	October	2,	3,	23,	24,	28
May	14,	20,	21,	22,	23	November	4,	14,	15,	16,	25
June	7,	8,	11,	12,	27	December	10,	11,	13,	17,	23

On two of the selected days, July 9 and 19, the horizontal force records were unsatisfactory or incomplete and had to be omitted, so that the diurnal inequality of horizontal force obtained for that month is based on three days only.

A temperature correction has been applied as usual to the horizontal force curves, the value applied being 3·1γ per 1° C. The curves were smoothed in the way

customary at the Observatory, and allowance was made, so far as possible, for all irregularities which were clearly due to artificial electric currents. The non-cyclic changes in the 24 hours were eliminated in the usual way, *i.e.* they were assumed to come in at a uniform rate throughout the day. Tables LXI. and LXII. give the diurnal inequalities of declination and horizontal force, after elimination of the non-cyclic change, for each month of the year, for the year as a whole, and for three seasons—Winter (January, February, November, December), Equinox (March, April, September, October), and Summer (May to August). Table LXIII. gives under the heading "range" the algebraic difference of the extreme hourly values, and under the heading "24–0" the mean algebraic excess of the value of the element at hour 24 over that at hour 0. The units employed in the tables are 1′ in the case of declination and 1γ (or 1×10^{-5} C.G.S.) in the case of horizontal force. In the case of declination the + sign denotes that the magnet is to the west of its mean position for the day.

The results in the tables—especially those for horizontal force—for the last six months of the year are less reliable than usual. For some time after the movement of the magnetographs to the "experimental house" there were a number of small discontinuities in the curves, whose appearance suggested that the magnets were not moving freely. In the case of the declination magnet the suspension was broken when the magnetograph was moved, and the new suspension seemed to have stretched. This was soon rectified. In the case of the horizontal force no actual sticking could be detected. The discontinuities disappeared, however, on the removal of some copper dampers which may just have touched the magnet or afforded lodgment for some obstructing fibre. Subsequent to July the behaviour of both magnetographs appeared satisfactory, but the large diurnal variation of temperature (sometimes as much as 10° C.) to which the horizontal force magnet was exposed necessitated so large a temperature correction that any slight error in the temperature coefficient applied, or any lag of temperature as between the magnet and the thermograph, would be important.

The disturbance in the vertical force curves, due to artificial electric currents, is such that the curves have not been tabulated on quiet days since 1902. Since then they have been used mainly in connection with the verification of dip circles. Even for that purpose the enormous temperature corrections that would have been required precluded their use during the latter part of the year. When testing dip circles recourse had to be had to simultaneous observations with the Kew dip circle. The dip observations have, however, been reduced to the mean value for the day by reference to data available from earlier years, and values have been obtained for the vertical force by combining the values of dip thus corrected with the corresponding horizontal force data derived from the curves. Table LXVII. gives mean monthly values of declination and horizontal force derived from the curves of the selected quiet days, and mean values of inclination and vertical force derived in the way just described. The values given in the table for the total force and the north and west components are calculated from the values given for the other elements. The mean annual values from the earlier years are intended to show the nature of the secular change.

Table LXVIII. gives a list of values of the magnetic elements, including the latest year available, at the Observatories whose publications are received at Kew. The information contained in publications has been supplemented in several cases by information due to the personal courtesy of directors.

Atmospheric Electricity.—The instruments in regular use throughout the year have been the Kelvin water-dropping electrograph—giving a continuous record of the potential at the spot where the jet breaks up into drops—the Kelvin portable electrometer No. 53, an Ebert aspiration apparatus, and a Wilson universal electrometer.

The Kelvin portable electrometer is used to deduce from the readings of the electrograph curves the true potential gradient in the open. The apparatus for the absolute observations consists essentially of a long horizontal insulated rod carrying a lighted fuse at the end, the rod being connected to the terminal of the portable electrometer. Readings are taken with the fuse at 1 metre and at 2 metres above the ground, the grass on which is kept short. The site is in the Observatory garden.

Theoretically, if no change occurs in the discharging tube of the water-dropper, or in its environment, one would expect a constant ratio to persist between the potential shown by the electrograph and the corresponding reading obtained with the portable electrometer. In this event it would suffice to determine the ratio once for all, and apply the factor thus deduced to convert readings of the electrograms into volts per metre in the open. As a matter of fact, the assumption of a constant ratio cannot be safely made, at least under the conditions existing at Kew Observatory. The discharge tube is long, and a slight shift in the position of the discharging nozzle, whether through sagging of the tube or other slight mechanical change, is a possibility not to be neglected. Again, the tube occasionally freezes, and may be split, and a new tube may have to be fitted. Finally, the level of the discharge tube is some 14 feet above that of the ground at the site in the garden where the absolute observations are made. In view of these several sources of uncertainty, the practice has been to take the absolute observations in the garden on all fine days, shortly after 10h., when time permits. A factor is determined from the observations of each month treated independently, and is given in the *Geophysical Journal.* In June the portable electrometer unfortunately suffered an accident which entailed its being sent to the makers for repairs. The repairs proved troublesome, and the instrument was not received back from the makers until September. In the absence of another suitable instrument, absolute observations had to be suspended, and a value had to be interpolated for the factor referred to above. This was all the more unfortunate, because structural alterations were going on in the immediate neighbourhood of the electrograph, and the external painting of the building requiring the presence of scaffolding was in progress. For these reasons the results deduced from the electrograph are less reliable than they have been for a good many years past.

Table LXXV. gives the diurnal inequalities of the potential gradient for individual months, three seasons, and the year. The seasons include the same months as in the magnetic tables. The inequalities and mean monthly and annual values in the table are based on the curves of ten "quiet" days from each month, selected as being wholly free from negative potential. Other objects in the selection of the "quiet" days are freedom from large irregular movements, absence of indications of inferior insulation in the electrograph, and the avoidance so far as possible of large non-cyclic changes. The non-cyclic changes given in the table represent, of course, means from the ten days of each month. As in the other tables, the maximum and the minimum values are distinguished by the letters x and n. The range thence deduced is much less than the mean of the individual daily ranges. It should be remembered that the mean value and the inequality derived from any single month are largely dependent on the weather

that happens to prevail, and cannot be assumed to be fairly representative of the season of the year. Adequately representative data can only be obtained by combining the results of a number of years.

The Ebert apparatus has been used to determine the total charges per c.c. carried by the positive and negative ions of which the apparatus takes cognisance. The Wilson apparatus has been used for measuring the vertical air-earth current. Its sensitiveness seems more adequate than that of the Ebert apparatus, and the results have appeared more consistent. In both cases there is some uncertainty as to the exact significance of the numerical results obtained. These results, so far as not obviously inconsistent, have been published in the *Geophysical Journal*.

Seismology.—Records continued to be taken during the earlier part of the year with the old-pattern Milne seismograph, having its boom oriented north and south and measuring tilting in the east-west direction. The building operations would, however, have rendered its records in its original site untrustworthy, and as no other site was available it was dismounted on August 7th, and was not replaced until the end of December. The movements recorded during the time when the instrument was working numbered 117. A large proportion were mere broadenings of the trace, whose seismic nature could only be established by comparison with corresponding records from other stations. This comparison depended on data kindly supplied from Shide. Particulars of the times of occurrence of all the movements and of the duration and amplitude of the larger movements were communicated to Shide for inclusion in the lists published by the British Association Committee.

Much the largest movement recorded was that on August 6th, when the amplitude exceeded 17 mm. The next largest movements took place on March 14th, June 12th and 15th, and July 28th, when the amplitudes were respectively 5·9, 4·9, 4·8, and 3·8 mm.

Meteorology.—The building operations caused some interruption of some of the records. The most serious interruption was that experienced by the Ångström pyrheliometer, which was out of action during the last six months of the year. The thermograph was run throughout the year in its usual place, but the barograph had to be moved in the end of May from its usual site in the magnetograph room to the "Experimental House," where it remained until the end of the year. The working standard barometer which serves to standardise the barograph curves had to be moved to an outbuilding in the end of May, and the large ultimate standard barometers with which the working standard is compared at intervals had to be boarded up to protect them from the builders until the end of the year. The comparisons made since, however, warrant the belief that if any error existed in the zero correction accepted for the working standard during the latter part of the year it was very trifling; and that while the barograph was outside, the only source of uncertainty in the curves which was appreciably greater than usual arose from the large size of the diurnal variation of temperature to which the instrument was exposed. There was necessarily a short interruption of the barograph trace on its transfer to the Experimental House and on its restoration to its old site, but during these times records were available from the Dines float barograph.

The old wooden building on the roof of the Observatory, which contained the recording parts of the Robinson cup and the Dines' pressure tube anemographs, was taken down and replaced by a small structure affording accommodation for the cup

anemograph only. The pressure tube anemograph had to be removed and erected temporarily in a hut near the Park entrance, but the cup anemograph had its record interrupted for only a few hours.

Hourly readings of barometric pressure, temperature, relative humidity, wind (direction and velocity), rainfall, and duration of bright sunshine, will be found as usual in the "Hourly Readings." This also contains particulars of the daily maxima and minima of barometric pressure.

The *Geophysical Journal* gives the barometric pressure, air temperature, pressure of aqueous vapour and relative humidity, as well as the direction and velocity of the wind, at hours 9 and 21 (9 p.m.). It also gives the amount of cloud at hours 10 and 22 (10 p.m.), the total daily duration of bright sunshine, the reading of the grass minimum thermometer, and the reading at hour 10 of earth thermometers at depths of 0·3 and 1·2 metres (1 and 4 feet). The readings of solar radiation taken with the Ångström pyrheliometer are likewise included.

Reference will be made here only to a few of the outstanding phenomena of the year.

Barometric Pressure.—The barometric pressure throughout the year varied from 1039·4 millibars (30·693 inches) on February 12th to 978·1 millibars (28·884 inches) on March 19th.

Temperature.—The temperature in the shade varied from 301°·3 A. (83°·0 F.) on June 16th to 269°·1 A. (25°·1 F.) on January 13th.

The highest reading given by the solar radiation thermometer was 331°·7 A. (137°·6 F.) on June 18th.

The greatest solar radiation shown by the Ångström pyrheliometer was 0·082 Watts (1·17 calories) on May 18th.

The total duration of bright sunshine for the year, 1275·3 hours, was unusually low. In July there were only 105 hours. The largest daily total was 14·5 hours on May 25th and June 15th.

The lowest temperature on the grass during the year was 262°·4 A. (12°·9 F.) on January 13th.

The readings of the earth thermometer at 0·3 metres (1 foot) varied from 275°·4 A. (36°·4 F.) on February 24th to 290°·3 A. (63°·1 F.) on June 19th. At 1·2 metres (4 feet) the readings varied from 279°·2 A. (43°·2 F.) on February 27th to 287°·5 A. (58°·1 F.) on eight days between August 25th and September 5th.

Wind.—The highest mean hourly velocity of the year was 17·7 metres per second (40 miles per hour) on March 22nd.

Cloud.—The mean amount of cloud for the year—scale 0 to 10—was 7·2, the monthly means varying from 5·5 in September to 7·9 in April.

Rainfall.—The total rainfall for the year was 555·5 mm. (21·87 inches). October with 88·4 mm. (3·48 inches) and June with 10·9 mm. (0·43 inches) were respectively the wettest and dryest months. The greatest daily total was 27·9 mm. (0·92 inches) on July 14th.

NOTES ON THE MANAGEMENT AND MANIPULATION OF THE INSTRUMENTS AT ESKDALEMUIR. By L. F. RICHARDSON, B.A., Superintendent.

The magnetic force is expressed in terms of three components, X, Y, Z, in three directions mutually at right angles. Of these, X is positive for a force towards the North, Y is positive for a force towards the East, and Z is positive for a force downwards. In England for the normal terrestrial magnetic state X is positive, Y is negative, and Z is positive. In the southern magnetic hemisphere Z is negative, the direction of the magnetic force being upwards. A magnetic force is taken to be along the line in which a magnetic needle subject to it sets itself, and in the direction from the S seeking to the N seeking pole of the magnet.

The Magnetographs recording the North and West Components were, as in the previous year, the Adie bifilar set.

	North.	West.
Time scale	1 hour to 15·6 mm.	
Time marks	every two hours, *end* of interruption is exact hour.	
Error of time marks	seldom as much as ± 1 minute.	
Scale values	8·70γ per mm.	8·80γ per mm.
Complete periods of vibration	8·7 secs.	10·5 secs.
Damping; amplitude sinks to a half in	about 24 secs.	about 15 secs.
Apparent $\frac{N}{W}$ force due to unit $\frac{W}{N}$ force	+·016	−·026
Change in azimuth of magnet for 1 mm. on the paper	$\cdot 00032_0$ radian.	$\cdot 00032_6$ radian.
Twist of bifilar suspension	35°	7°
Length of bifilar ÷ mean breadth	51	66
Temperature coefficient	−8γ per 1° C.	−2γ per 1° C.
Marked pole points	West	North.

The Scale Values were determined in October 1913 by means of a test magnet placed in four positions, two on either side of the magnetograph, so as to eliminate any error of centering. The moment of the test magnet was determined by deflections at two distances on a Kew-pattern magnetometer, assuming a value for the earth's horizontal field.

In deflecting the magnetograph, account was taken of the lengths of the two magnets concerned by calculating from them the distribution coefficient P, assuming that the magnets consisted of point-poles separated by 4/5 of the length of the steel.* If $2l_T$ and $2l_S$ are the distances between these point-poles for the test and suspended magnets respectively, then the scale value was taken to be $\frac{4m}{sr^3}\left\{1+\frac{P}{r^2}\right\}$ in "end on," or half that in the "broadside on" position, where s is the double deflection due to reversing a test magnet of moment m, and P has the following values:—

(a) Test magnet end on, both magnets in one plane $P = 2l_T^2 - 3l_S^2$.

(b) Magnets in one plane. Test magnet broadside on $P = (3/2)\,(4l_S^2 - l_T^2)$.

(c) Broadside on, but magnets at right angles to each other and also to the line joining them $P = -(3/2)\,(l_S^2 + l_T^2)$.

* *Vide* Chree, *Phil. Mag.*, Aug. 1904.

Nine observations were made on each instrument in position (*a*), nine more in (*b*). The agreement of the means of the two groups was satisfactory.

North instrument	(*a*)	8·69γ per mm.
	(*b*)	8·70γ per mm.
West instrument	(*a*)	8·81γ per mm.
	(*b*)	8·80γ per mm.

The temperature coefficient of the test magnet was measured and found to be $-0{\cdot}00040$ per 1° C.

On account of the considerable twist in the bifilar suspension of the north instrument, its sensitivity varies across the sheet; an increase or decrease of 300γ increases or decreases the sensitivity by about 0·8 per cent. of itself. The scale test gives the mean sensitivity over a range of about 200γ on either side of the undisturbed trace, and this is practically identical with the sensitivity for small changes such as the mean diurnal inequality.

Azimuths of Fixed Lines in the Underground Chamber.—In the spring of 1913 Dr Chree set off North and South marks on the plaster walls of the west room by means of an observation of declination in that room simultaneous with one taken in the east hut.

Later this line was compared with the astronomical meridian by means of a survey carried through the door and up the stairs to the window of the porch, from whence five transits of the sun and two of stars were obtained. Two theodolites were used, only one being moved at a time, and the work appeared to have an accuracy of about 1′. The line obtained magnetically was found to agree with the astronomical meridian to within 1′, thus indicating that there is no magnetic disturbance greater than this between the hut and the underground room. At the same time various other fixed azimuths were determined, as follows, reckoning N = 0°, E = 90°, and so on.

Outside—Cross on floor near window at head of stairs to Cairn on Stell Know, 177° 53′. To spire of Eskdalemuir Church, 159° 5′.

Central passage—Line cut on floor by Mr Walker, 359° 51′.

West room—Line joining N – S screw eyes (practically the same as Dr Chree's line), error less than 1′. Line joining E – W screw eyes, 90° 1′.

East room—Lines joining screw eyes in the positions to which they were removed on April 3rd 1914:—N – S 359° 59′·5; E – W 269° 59′.

Each azimuth was measured by two or more of the observers, who were Messrs L. F. Richardson, L. H. G. Dines, C. D. Stewart, and H. G. Harris.

The Effect of a West Magnetic Force on the North Magnetograph (and *vice versa*) is due to two causes, which, if the instrument were in perfect adjustment, would compensate each other. (i.) A temporary increase or decrease in the magnetic moment due to the permeability of the magnet. (ii.) A small component of the applied magnetic force perpendicular to the magnetic axis of the magnet due to the azimuth of this axis differing slightly from the west line.

The observations on this point made early in 1911 by Mr Walker were repeated in December 1913 and again in March and April 1914. A magnetic field in the west direction was applied to the North magnetograph by means of an auxiliary magnet.

Appropriate reversals were used to eliminate errors of centering and lack of parallelism between the magnetic and geometric axes of the auxiliary magnet. The results have been expressed as "the apparent north force due to unit west force." This quantity is equal to $k\mathrm{N}+\alpha$ where k is the fractional increase in the magnetic moment due to unit west force, where N is the north component of the earth's field, and where α is the very small angle (in the radian as unit) by which the west end of the magnetic axis deviates to the south of the true west. The experiment gives the sum of $k\mathrm{N}$ and α. The term $k\mathrm{N}$ is small, and may be taken as constant from year to year. The variations in α may be measured by the drift of the trace if we assume that the magnetic axis is fixed relatively to the surface of the magnet and if the mirrors have not been touched.

The results, when all reduced to the common standard of azimuth given above, are as follows :—

North Instrument.

Date.	Apparent North Force due to Unit West Force.	Differences.	Independent Measures of Rotation of Mirror.
			Radians.
1911 January . . .	+·018		−·003 from drift of trace.
1913 December 30–31 .	+·019	+·001	−·022 made on 1914 January 1.
1914 March 31 . .	−·012 } mean −·010	−·029	From that date to April, 1914,
1914 April 5 . . .	−·008 }		change was less than ±·002.

West Instrument.

Date.	Apparent West Force due to Unit North Force.	Differences.	Independent Measures of Rotation of Mirror.
			Radians.
1911 January . . .	−·017		−·008 from drift of trace.
1913 December . .	−·031	−·014	+·036 made on 1914 January 1.
1914 April 7 . . .	+·004 } mean +·006	+·037	Drift from that date to April, 1914,
1914 April 8 . . .	+·009 }		less than ±·002.

The values adopted for 1913 have been obtained by smoothing the above data, and are :—

Apparent north force due to unit west force . . .	+·016
Apparent west force due to unit north force . . .	−·026

Consequently, if n' and w' are the north and west inequalities printed herewith, then the corrected values, n and w, along the geographical directions are, for 1913 :—

$$n = n' - 0{\cdot}016\ w'$$
$$w = w' + 0{\cdot}026\ n'.$$

The effect of the interaction of the N and W magnets, when both are subjected to the same changing field, is similar in form to the effect of errors in the azimuths, but it has been found to be negligible in comparison with the errors given above.

The inequalities of declination, horizontal force and dip, were computed from those of the geographical components by the following formulæ :—

$$\delta D = \frac{3438^*}{N} \cos D \left\{ -\sin D\delta N + \cos D\delta W \right\}$$

$$\delta H = \cos D\delta N + \sin D\delta W$$

$$\delta I = \frac{3438}{H} \cos I \left\{ -\sin I\delta H + \cos I\delta V \right\}$$

here N, W, D and I are taken as fixed quantities equal to the means for the year.†

In finding δH and δI, δN and δW have been put equal to the uncorrected n' and w', but the inequality of declination and the Fourier coefficients of the N and W inequalities have been computed from the corrected n and w.

The Diurnal Inequality of Temperature in the Magnetograph Cases has been described in the concluding note to the 1911 volume. As attempts to measure the range with a Richard thermograph were open to criticism on account of the sticking of the pen, a photographic Bourdon thermograph was obtained by Dr Harker from the Cambridge Scientific Instrument Co., and was set up on May 1st inside the case of the Adie V. F. balance. The Bourdon tube carried a mirror and recorded on the same sheet of paper as the magnetograph. The temperature may be determined from the height of the trace above the base line of the magnetograph; but as the thermograph mirror was placed nearer to the paper than the base-line mirror, any movement of the slit moved the thermograph trace relative to the base line of the magnetograph. The slit was moved daily between 9h. and 10h.; so in measuring diurnal inequalities of temperature we must take the 24 hours 9h. 30 to 9h. 30 instead of midnight to midnight. The scale value was 0°·123 C. per mm. on the paper. The diurnal inequality for 10 thermally quiet days between May 3rd and 15th came out as follows, the unit being one-thousandth of 1° C., and the uncertainty perhaps 3 units.

10h.	12h.	14h.	16h.	18h.	20h.	22h.	24h.	2h.	4h.	6h.	8h.
+2	+1	+2	+1	0	−1	−2	+1	+1	−1	−4	−4

the range was thus remarkably small.

The temperature is lower by 0°·006 at 8h. than at the previous 10h.; whereas, eye readings show that it was actually rising 0°·03 C. per day during this period. The rise therefore occurred in a series of steps, each step due to the presence of the observer between 9h. and 10h.

The ventilation at this time was small; in view of subsequent measurements we may put it at not more than 10 cubic metres of air per hour entering the magnetograph room.

The presence of the observer is shown on days on which scale tests were made. An observer must have been in the E room for about half an hour between 14h. and 16h. on the four days May 9th, 15th, June 12th, 26th. The mean inequality of temperature for 24 hours beginning at 8h. on these days comes out as follows, the unit being 10^{-3} °C., but the uncertainty twice as great, as before :—

10h.	12h.	14h.	16h.	18h.	20h.	22h.	24h.	2h.	4h.	6h.	8h.
−36	−33	−27	0	+13	+19	+16	+10	+7	+10	+7	+7

On June 21st a garden party was held, and the effect of visits is shown by a rise of about 0°·04 C. during the afternoon.

* $3438 = 180 \times 60/\pi$; δD and δI being measured in minutes of arc.

† Or in some cases for a shorter period.

Absolute Magnetic Observations were made, as a rule, weekly in the East hut. The **declination** and **horizontal force** were determined by the magnetometer Elliot 60 placed on the central pier (No. 5). The azimuth of the fixed mark, as seen from this pier, was taken to be 8° 12′ 30″ W. of S., as in previous years.

The thermometer, originally placed on the end of the deflection bar opposite to that on which the collimator magnet rested, is now placed directly over the magnet; an improvement introduced by Dr Harker in the spring of 1913. A new counterpoise was made to balance the thermometer, and the consequent change in the correction for the bending of the bar was investigated by Dr Chree and found to be negligible. In May the collimator was accidently brought too near to another magnet, with the result that its magnetic moment m_0, and the distribution coefficients P and Q, were found to have changed. It was therefore necessary to depart from the practice, followed in previous years, of using for m_0, P and Q averages of all the individual values of these constants obtained up to the time of computation, from some distant date. Any assumption of the constancy of the magnetic moment at 0° C., over an interval longer than a day, was avoided by computing each value of the horizontal force from the vibration and deflexion observations made on a single day. A similar procedure could not be followed in regard to the distribution coefficients P and Q, because a considerable number of observations must be averaged, in order to obtain P and Q with sufficient accuracy; but it was decided to compute P and Q for any month from observations from seven months symmetrically distributed in time about the month in question, as far as discontinuities and other circumstances permitted. This plan involves a delay of three or four months before any H observation can be finally computed. The course actually adopted is set out in the following table:—

P and Q used for Months.	was derived from Months.	No. of Three-Distance Observations.	$\log_{10}(1+P/r^2+Q/r^4)$ for $r=25$ cms.
January	January to May	9	·00581
February			
March			
April			
May			
June	June	15	·00558
July	June to August	27	·00574
August	June to October	37	·00581
September	Seven months centering at the month in Column 1.	42	·00577
October		31	·00568
November		31	·00572
December		28	·00555

Short methods of calculating $\log(1+P/r^2+Q/r^4)$ to the required accuracy were devised by Mr L. H. G. Dines and Mr F. W. J. Whipple, and have been in regular use.

The constants for the lengths on the deflection bar, for the induction coefficient and for the moment of inertia of the collimator, were the same as those printed at the end of the 1911 issue of these notes (p. 74). Some spots of rust were to be seen on the collimator in the autumn of 1913, and it has therefore been kept since then, when not in use, in a dessicator over solid sodium hydrate. In other respects the methods for determining the horizontal force remained the same as in the previous year.

The **inclination** was determined by dip-circle Dover No. 74 placed on the East pier of the East hut (No. 6). Each observation involved thirty-two readings on each of two needles. During the latter part of the year the needles were observed while swinging. The instrument was away for repair in June and July, and so for those two months no absolute values of vertical force are printed.

The precise methods used by Mr Walker for deducing the **base values** of the magnetographs from absolute observations have been slightly simplified by Dr Chree and reduced by Mr Whipple to the tabular form at the end of this volume.

The process actually employed in the earlier part of the year for computing horizontal force and base values of N. and W. was much more circuitous than that described in the preceding paragraphs, as the base values were first computed according to a different system, and afterwards several corrections were put in. The final hourly values and the base values exhibited on the graph at the end of this volume are, however, identical with those which would have been obtained by the process described. They have the same general features as in previous years.

In computing diurnal inequalities the same base value has been assigned to each of the hours 0 h. to 24 h. of one day, the change in base value being made between 24 h. of one day and 0 h. of the next, hours separated only on computing forms. The drift of base value during the day has been removed, together with any other non-cyclic change by a correction applied to the mean inequality and proportional to the interval to or from noon.

The **times of the absolute observations** are published in the monthly tables in an abbreviated form, in order to save space. The published time of the dip is the mean time of an observation lasting from 30 to 90 minutes. The published time of the declination is, up to August, an instant to which the observations were corrected by reference to the magnetograms. From September onwards the mean time is published of two or four declination observations spread over an interval of about 10 minutes. Up to August the vibration observation was corrected to the mean curve reading during the deflexions at 25 cms., and the published time of the horizontal force is the mean time of these deflexions. From September onwards the published value of the horizontal force is a value corrected to the mean curve reading at the time of declination. In computing base values at the Observatory it is not considered permissible to substitute a central instant for an extended range of time.

The Vertical Force Determinations require special mention. In the first three months any scale test or other manipulation of the Adie magnetograph was followed by a large drifting of the trace lasting for some hours. This is thought to have been due to a distillation of moisture from one end of the balance beam to the other, owing to slight temperature gradients set up by the observer. The whole room was very moist, the shellac varnish with which the magnet was coated was thought to have absorbed water, and a little rust and oxide of zinc and moisture were to be seen on the moving system. By scraping these off and by renewing the drying agent, Dr Harker effected a great improvement in the behaviour of the instrument at the end of March. About the same time he set up in the west underground room a vertical force balance designed and lent by Professor Watson. This balance had a sensitivity about ten times as great as the Adie instrument, and has given some interesting data on pulsations. After numerous experiments on both instruments, involving many

changes of base value, the Watson instrument was put in the East room on June 27th, in place of the Adie instrument, then removed. On July 16th the sensitivity of the Watson instrument was finally adjusted.

Hourly values cannot be given for January, February, and March, on account of the uncertain behaviour of the only magnetograph then running, nor for June and July, because there were no observations of dip between June 12th and July 31st, as the dip-circle was away for repairs. Between April 1st and June 11th, twenty observations of dip were available. As the standard error of a base value of V deduced from a single dip with two needles is of the order of 50γ, twenty observations give the mean with a standard error of about 10γ. Some further assumption had to be made in order to determine the drift of the instrument, so it has been assumed that during April and May the vertical force at 6 h. was always nearly the same, if the trace was undisturbed. The base values so obtained were plotted and smoothed, and from the smoothed curve the hourly values of vertical force for April and May have been assigned.

Scale values have been assigned as follows in γ per mm., but until October they are not reliable.

Adie Vertical Force Instrument.

March 5th, 8·8, decreasing to 8·3 on April 30th.
During May, 9·25.
During June, 9·4.

Watson Vertical Force Balance.

April 1st–15th inclusive	0·82
April 16th–June 16th	$0{\cdot}91_4$
June 16th–27th	experimental only
June 27th–July 1st	unknown
July 2nd–15th	8·56
July 16th–31st	4·07
August 1st–October 17 d. 10 h.	4·15
October 17 d. 10 h.–December 3 d. 11 h.	4·09
December 3 d. 11 h.–December 6 d. 22 h.	3·97
December 6 d. 22 h.–end of year	3·91.

A comparison between the records of the Watson and Adie balances was made for four days, April 20th and 22nd, May 14th and 23rd. By a suitable estimate of drift, occurring at a constant rate throughout the day, and by a suitably chosen ratio for the two scale values, it is possible to bring the tabulated values into satisfactory agreement, so that the difference between them has a standard deviation of the order of (1/3)γ, which may well be entirely due to errors of reading the Adie curves. Unfortunately, however, the ratio of the scale values necessary to produce this agreement is not quite the same as the ratio of the scale values determined separately for each instrument, the discrepancy being nearly 10 per cent. It has, however, proved impossible to ascertain which scale value was the more correct one during these two months; those given above are from direct observations on the instruments separately.

Between October 20th and 31st eighteen scale tests were made on the Watson

instrument, with the refinements described on p. 69. The results were as follows :—

Mean of nine tests in position *b* . .	4·11 γ per mm.
Mean of nine tests in position *c* . .	4·09 γ per mm.

a more satisfactory agreement. Further tests were carried out on the same plan on December 5th and 8th.

The **time marks** on the Adie V.F. records up to June 27th, and on the Watson records after that date, are strictly simultaneous with those on the N and W traces. The time marks on the Watson V.F. records prior to June 16th were produced by an electric contact worked by the clock operating the N and W drums, and are not likely to be as much as two minutes in error.

The **hourly values or inequalities** of vertical force for April and May have been obtained from the open-scale Watson records, numerous gaps having been bridged over from the Adie. For June they have been obtained mainly from the Adie. From July onwards the Watson alone was recording.

Some idea of the **temperature coefficient** of the Adie V.F. balance can be obtained by studying the cooling of the instrument after artificial warming on May 1st, 3rd, and 30th. The temperature changes were measured by the Bourdon reflecting thermograph.

An increase in temperature produced an increase in magnetic force. The amounts per 1° C. differed, but the highest and lowest observed were 1200γ and 220γ respectively. The balance was thus very greatly overcompensated.* The V.F. inequalities for June were obtained from this instrument, and must be regarded with suspicion.

The Watson balance gives an apparent increase in the downward force of the order of 20γ for 1° C. rise in temperature.

The apparent downward force due to unit north force was determined in much the same way as were the corresponding quantities for the north and west instruments (see above). The first measurements were made in December 1914 on the Watson balance. By reference to the height of the trace above the base line it has been possible to calculate the quantity required back as far as 1913, July 16th, but not beyond this date, owing to the adjustments of the instrument which then took place. Thus we find that unit north force produced an apparent downward force of ·007 in the latter half of July, ·005 in August, ·004 in September, October, and November, and ·002 in December. These quantities are not large, and it has been thought not worth while to correct for them. As the azimuth of the magnetic axis of the balance is about N. 14° W., the effect on it of a west force is about $\frac{1}{4}$ of that of a north force.

The Figures for the Magnetic Character of the Days of 1913 at Eskdalemuir were assigned with the primary object of aiding in the selection made at De Bilt of international quiet days for measurement and of storms for reproduction.

That one of the three components which was most disturbed was principally considered. A day was called "0" if the regular diurnal inequality was conspicuous, "1" if it was recognisable throughout the day, "2" if it was not recognisable throughout a part or the whole of the day.

* Observations in 1915 showed that this balance had a large thermal hysteresis which must have interfered with any attempt to measure or adjust its temperature coefficient.

Thus the measure of disturbance is not absolute but relative to the range of the diurnal inequality, and this changes greatly with the seasons.

In deciding the character of the day as much weight was given to disturbances near midnight as to those at other times.

As the published values are hourly means, small oscillations, which would be smoothed out in taking the mean over an hour, were ignored in deciding whether to place a day in the "0" or the "1" class.

Character figures having been assigned on these principles, the numbers of 0's, 1's, and 2's were counted up in the quarters of the year January–March, April–June, July–September, and October–December. It has been suggested from De Bilt that in any such quarter of the year at least six days should have a character of "2," and that not more than two-thirds of all the days should be placed in any one of the three classes. When the numbers did not fit with this suggestion, sufficient borderland cases were moved from one class to another to redress the balance.

Monthly means of the character figures assigned will be found on p. 81. The character figures for individual days are given, month by month, in the *Geophysical Journal.*

Copies of disturbed curves.—The chart at the end of this volume contains a reproduction of the curves from the Adie magnetograph at Eskdalemuir for April 8 to 10, and the corresponding curves from April 6 to 8 for comparison. A discussion of the disturbance of April 8–10 will be found on p. 15.

REVIEW OF MAGNETIC DISTURBANCE AT ESKDALEMUIR IN THE YEAR 1913.

NOTE ON THE TERMINOLOGY USED HEREIN.

Pulsation.—A succession of waves, more or less sinusoidal in character. The term is only applied to oscillations having a period of fifteen minutes or less, although slower oscillations of a similar character are also noted. Oscillations of the type described are called pulsations without regard to the presence or absence of other kinds of disturbance at the time.

Amplitude.—Half the range of a pulsation. Usually half the range of the largest wave near the time in question.

Sudden commencement and *Bay.*—These words are used in the sense explained in Dr Chree's *Studies in Terrestrial Magnetism.*

Tooth is used to denote a disturbing force which increases to a maximum and then dies away without any conspicuous change of sign, the whole change occurring in an interval of a few minutes.

The direction of the disturbing force is specified with different degrees of vagueness or precision according to the constancy of the direction, or, more usually, according to the time spent in measuring it. For the least precise specification, space may be divided into eight octants by the three planes which intersect at right angles in the three lines which point north, east, and vertically. And we may state the octant in which the direction lies. When the disturbing force oscillates to and fro along a fixed direction, we may for brevity give only one of the two opposite octants in which the direction alternately lies, and insert a ± sign ; thus ± (N, W, up) indicates a force oscillating in magnitude and in a direction alternately in the octants (N, W, up) and (S, E, down). In case a force is very nearly horizontal, we may speak of it as lying in one of the four quadrants (N, W), (N, E), (S, E), (S, W). When the direction of an oscillating force has been more carefully measured, it has sometimes been expressed in such form as

± (N 25° W, elevation 3° up),

which means that the force was directed alternately to the points having azimuth and elevation (N 25° W, 3° up), and (S 25° E, 3° down).

Centre of an Octant.—That direction which is equally inclined to the portions of the three rectangular planes (N–S, E–W, up–down) which form the boundaries of the octant.

The halves and quarters in the table on p. 80 arose from directions which lay either in the plane separating two octants, or in the line where four octants met. Cases of this kind were divided equally between the adjacent octants.

1. It has been found that if the disturbances are classified into :—

K. Those in which the direction of the disturbing magnetic field remains constant while the magnitude and sign of the field change.

L. The remaining disturbances, namely those in which the direction of the field changes at a rate at least comparable with the rate of change of the magnitude —then K and L form natural divisions with widely separated properties in this and in other respects.*

2. *Disturbances of Class* K.—Serrated or oscillatory. The range (= twice the amplitude) seldom more than 60γ. Period often very variable ; sometimes sufficiently constant to be measured. The observed values, in minutes, of complete periods were : 180, 155, 148, then a gap until 109, 100, 95, 85, 80, 80, 78, 74, 66, 60, then a second and more conspicuous gap until 38, then a cluster 30, 30, 28, 28, 27, 26, then 23, then a cluster 19, 19, 18·5, then 15, 13·5, 12, 11, 10, 9, 8, 7, 5, 4, 3, 2·5, 2·2, 2, beyond which the close time scale did not permit oscillations to be analysed. Waves of 30 minutes' period or more have almost always been confused by more rapid oscillations, also slow waves have not persisted for more than one or two reversals ; this has made

* *Cf.* Birkeland : *Norwegian Aurora Polaris Expedition*, 1902 to 1903, Vol. I. Class K may be a local mode of recognising Birkeland's "equatorial" perturbation, and Class L may be similarly related to his "polar" and "cyclomedian" disturbances jointly.

measurement of the long periods difficult and uncertain to, say, 10 or 15 per cent. So the measured values should perhaps be taken only to point to periods near 19, 28, 79, and to a period somewhere between 150 and 180 minutes. The crowding together of periods as they get shorter gives a distinct suggestion of a harmonic series.

A remarkable property of Class K is that the direction of the disturbing field was not only constant during a few oscillations, but that from hour to hour and month to month it continued to lie in the octants ± (N, W, up).* A few examples have been noted in the octants ± (N, E, up), and these have all occurred between 0 h. and 6 h. (see April 12th, July 12th, July 23rd, August 15th, October 7th). But a tilt downwards to the north has never once been observed in the examination of a hundred or more of these disturbances, which at Eskdalemuir in 1913 oscillated to and fro along a fixed direction. The extremes of azimuth were ± WNW and ± ENE. The mean azimuth for 16 observations between 12 h. and 18 h. comes to N 25° W, and to N 30° W for 13 observations between 18 h. and 24 h. In the other half of the day disturbances of Class K were less pronounced; enough have not been measured to give a good mean, but between 0 h. and 6 h. the occasional cases of N.E. drew the mean near to north. The angular elevation of the vector has never been found to lie outside the remarkably close limits 0° and 6°,* the northerly end pointing upwards. Thus the directions form a broad flat sheaf which is nearly bisected by the magnetic meridian. The angular elevation is not noticeably correlated with the period of vibration.

Class K disturbances were more in evidence in the summer than in the winter, at any rate those which, having periods between 2 m. and 30 m., catch the eye most on magnetograms of the given scales for time and force.

The sudden commencements of storms noted during 1913 appear to belong to Class K, for the force attains its maximum in the characteristic direction. Examples are March 14 d. 4 h. 27 m.; March 21 d. 13 h. 36 m.; April 8 d. 19 h. 57 m. On the other hand, a scrutiny of the sudden disturbances on January 2 d. 11 h. 16 m. and November 19 d. 21 h. 49 m. revealed some changes in the direction of the force. It should be possible to determine the position of the electric currents, which produce the "K" disturbances, by a comparison of the direction of the disturbance at different Observatories. A further problem will be to account for the enormous periods of vibration, if these are confirmed.

3. *Disturbances of Class* L.—These include most of the disturbances having a range of 50γ or more; but smaller changes in a wandering direction also occurred.

Class L changes were usually slow, in the sense that the disturbance of any one of the three components usually remained of the same sign for 20 minutes or more. There was seldom any clear indication of a fixed period of oscillation.

Class L changes were more conspicuous during the night than during the day.

The direction of the disturbing field wandered about, and, in contrast with Class K, was often steeply inclined to the horizontal. But the direction did not wander freely, disturbances in the octants (N, W, down) and (S, E, up) being rare. In order to illustrate this point more clearly, those directions of Class L disturbances,

* *Cf.* Balfour Stewart: *Ency. Brit.*, IX. Ed., Vol. 16, p. 174. Chree: *National Antarctic Expedition*, 1901 to 1904. *Magnetic Observations*, pp. 180–181. Van Bemmelen: *Batavia Observations*, 1906, "On Pulsations," pp. 3, 4.

which are explicitly stated in the monthly notes, have been sorted by octants, with the following result:—

Octant.	Number of Disturbances of Class L.		Angle between Centre of Octant and a Plane normal to Earth's Main Field at Eskdalemuir.
N, W, up . .	$26\frac{3}{4}$	$49\frac{1}{2}$	27°
S, E, down . .	$22\frac{3}{4}$		
S, W, down . .	$18\frac{1}{2}$	40	33°
N, E, up . .	$21\frac{1}{2}$		
N, E, down . .	$11\frac{1}{2}$	$24\frac{1}{2}$	50°
S, W, up . .	13		
N, W, down . .	$2\frac{3}{4}$	10	62°
S, E, up . .	$7\frac{1}{4}$		
Total cases .	124	124	...

There was thus a remarkable correlation between the frequency of disturbances of Class L and the angle which they made with the main magnetic field of the earth at the place of observation. *The directions clustered near a plane normal to the main field.* This would be the case if the electric currents producing the disturbances were nearly parallel to the main field of the earth; or, alternatively, if the line joining the Observatory to the place where the current was circulating were nearly parallel to the main magnetic field, unless in both alternatives the permeability of the earth modified the conclusion. A disturbance that deviated much from the average plane occurred on November 1 d. near 23 h.

Disturbances of Class L have frequently been noted, in which the disturbing vector behaved somewhat as if it were rigidly attached to a fixed axis, about which it rotated* with a varying velocity. The following are examples, the connection between the axis of rotation and the direction of rotation being defined by the right-hand screw rule:—

Date and G.M.T.	Axis about which Field Rotated.
April 3 d. 0 h. to 2 h. . . .	N, down.
May 5 d. 23 h. to 6 d. 1 h. . .	N, W, down.
May 7 d. 2 h.	down
July 13 d. 0 h.	N, down.
September 8 d. 3h. to 4 h. 30 m. .	E, N, E, steeply up.
September 9 d. 1 h. to 5 h. . .	N, down.
October 7 d. 2 h. . . .	N, down.
November 8 d. 1 h. . . .	down.
December 25 d. 20 h. . . .	N, down.
December 26 d. 2 h. . . .	N, down.

The axis of rotation, when fixed, was thus frequently nearly parallel to the main part of the magnetic field at the Observatory; but there were many disturbances in which the instantaneous axis of rotation itself wandered.

4. It is noticeable that disturbances of the two classes tend to accompany one another. The largest storm of the year (April 8th to 9th) began with a Class K

* *Cf.* Sangster: *Proc. Roy. Soc.*, A, 1910, II. p. 85.

disturbance, which was followed several hours later by Class L, and this relation has been noted on other occasions.

5. The *larger vertical force disturbances* during the year * have nearly all taken the form of a downward force in the afternoon or evening, followed by an upward force in the small hours of the morning. These changes have been in a wandering azimuth, and so belong to Class L.

6. *To examine any disturbance*, the traces of the components were laid over one another, and pressed against a window pane.

7. *The smoothness of the vertical force traces* was in marked contrast to the rippled or serrated appearance of those of the north and west components. This smoothness was natural, not instrumental, for the V.F. balances in use responded sharply to the presence of the magnet used in the scale test. Again, in the latter part of the year, the Watson balance, when disturbed, executed free, damped oscillations with a period as short as six seconds. The smoothness of records from the instrument of ordinary sensitivity was confirmed during April and May by a V.F. balance, which gave a scale ten times as open (0·9 γ per mm.).

The fact that the vertical component is perpendicular to two electrically conducting shells, the earth's surface and the upper ionized air, may have an influence in reducing the amplitude of its oscillations. For an oscillating current forcibly maintained in either shell would induce a reverse current in the other shell; and, at an Observatory which was not more than a small arc of the earth's surface away from the currents, the reverse current, while partly neutralising the vertical force, would increase the horizontal components. For slower oscillations the induced current would be diminished by the electric resistance. The system is like a transformer with a short-circuited secondary coil. The vertical force is the main flux of the transformer, the horizontal components represent the magnetic leakage.†

8. *Comparison of the Months.*—Some indication of the degree of disturbance in any month is given by the amount by which the mean of the absolute daily ranges for "all" the days of that month surpasses the range of the mean diurnal inequality for the quiet days. The excess is set out in the following table:—

	North.	West.	Vertical.	Mean Character Figures.
	γ	γ	γ	
January	26	25	...	0·61
February	32	26	...	0·54
March	24	27	...	0·48
April	27	22	15	0·76
May	18	10	9	0·65
June	23	11	5	0·63
July	22	15	9	0·52
August	23	11	5	0·48
September	18	19	10	0·83
October	30	29	16	0·74
November	19	15	9	0·30
December	19	23	7	0·34

A column giving the mean character figures has been added. These character figures are assigned for Eskdalemuir on the international scale. They are relative to the quarter of the year in which they occur; for instance, they do not enable one to compare September with October.

* As in other years; *vide* Chree: *Studies in Terrestrial Magnetism*, Ch. VI.

† On the other hand, H. Ebert found oscillations in V having a period as short as 0·025 second: *Terrestrial Magnetism*, March 1907.

NOTES ON THE MAGNETIC OBSERVATIONS MADE AT THE VALENCIA OBSERVATORY, CAHIRCIVEEN, 1913. By J. E. CULLUM, Superintendent.

Absolute observations of declination, horizontal force, and inclination were taken at least twice a month with the Dover Unifilar No. 139 and the Dover Dip Circle No. 118.

The mean hours (G.M.T.) of observations, as in previous years, were 10^h for declination, 12^h (noon) for horizontal force, and 13^h (1 p.m.) for inclination.

Particulars of the individual observations will be found in the monthly numbers of the *Geophysical Journal*. The results of the horizontal force observations given therein were based on the value obtained for the distribution constant "P" from the combined observations of the year 1912. The value obtained for P from the observations of 1913 is somewhat different, necessitating the application of the correction $+2\gamma$ ($+\cdot00002$ C.G.S.) to the values published in the *Geophysical Journal*.

Table LXVII. gives the observed mean monthly and annual values of declination, horizontal force, and inclination, and corresponding calculated values for the total force, and the north, west, and vertical components.

Mean annual values are also given for the years 1912, 1910, and 1905.

APPENDIX.

REPORT BY THE SUPERINTENDENT OF THE OBSERVATORY, ESKDALEMUIR, upon a visit in 1913 to various Observatories for the purpose of comparing Magnetic Standards.

Upon his appointment in 1913 to take up the duties of superintendent of the Observatory at Eskdalemuir, Mr Richardson was instructed to visit a number of Magnetic Observatories and to make comparisons of their magnetic standards by means of observations with the instruments of the respective observatories and a set of instruments of the type of the standards used at Kew. An account of the visits, received at the Meteorological Office on September 11, 1915, is here presented for publication.

NAPIER SHAW, *Director.*

METEOROLOGICAL OFFICE,
11*th September* 1915.

To the Director of the Meteorological Office, London.

SIR,—In accordance with your instructions I visited the Magnetic Observatories at De Bilt, Eskdalemuir, Falmouth, Greenwich, Kew, Potsdam, Valencia, and Val Joyeux, for the purpose of comparing magnetic standards, during the summer of 1913.

The itinerary of my journey was as follows :—

Kew	May 30th to June 4th.
Greenwich	June 6th and 7th.
Valencia (Cahirciveen)	June 11th, 12th, and 13th.
Eskdalemuir	June 19th to 24th.
Falmouth	June 28th to July 3rd.
Val Joyeux	July 8th to 9th.
De Bilt	July 12th to 15th.
Potsdam	July 17th to 21st.
Eskdalemuir	August 1st, *et seq.*

I have set out the results of the comparison in the following report.

Thanks are due to those in charge of the several Observatories for the unvarying courtesy with which they gave me the fullest opportunities for the comparisons.—I am, sir, your obedient servant,

L. F. RICHARDSON.

REPORT.

The results are summarised in the following Table A.

Each number in this table has been obtained by subtracting the standard of the Observatory named at the head of its column from the standard of that named at the left of its row. Or, in other words, we may say that any number in Table A when added to the standard of the Observatory named at the head of its column gives the standard of the Observatory named at the left of its row.

TABLE A.—SUMMARY.

Quantity Compared.	Observatory.	Greenwich.	Kew.	Falmouth.	Valencia (Cahirciveen).	Eskdalemuir.	De Bilt.	Potsdam.	Val Joyeux.
Declination.	Greenwich.	...	...	...	...	...	...	...	...
Horizontal Force.	,,	...	−27 γ	−17 γ	−17 γ	−32 γ	−20 γ	−23 γ	−32 γ
Inclination.	,,	...	+0′·1	+1′·0	+1′·4	−0′·4	+1′·7	+1′·6	+5′·3
D	Kew.	...	...	+0′·6	−0′·8	+1′·3	+1′·9	+2′·1	+1′·6
H.F.	,,	+27 γ	...	+10 γ	+10 γ	−5 γ	+7 γ	+4 γ	−5 γ
I.	,,	−0′·1	...	+0′·9	+1′·3	−0′·5	+1′·6	+1′·5	+5′·2
D.	Falmouth.	...	−0′·6	...	−1′·4	+0′·7	+1′·3	+1′·5	+1′·0
H.F.	,,	+17 γ	−10 γ	...	0 γ	−15 γ	−3 γ	−6 γ	−15 γ
I.	,,	−1′·0	−0′·9	...	+0′·4	−1′·4	+0′·8	+0′·6	+4′·3
D.	Valencia (Cahirciveen).	...	+0′·8	+1′·4	...	+2′·1	+2′·8	+2′·9	+2′·4
H.F.	,,	+17 γ	−10 γ	0 γ	...	−15 γ	−3 γ	−6 γ	−15 γ
I.	,,	−1′·4	−1′·3	−0′·4	...	−1′·8	+0′·3	+0′·2	+3′·9
D.	Eskdalemuir.	...	−1′·3	−0′·7	−2′·1	...	+0′·6	+0′·8	+0′·3
H.F.	,,	+32 γ	+5 γ	+15 γ	+15 γ	...	+12 γ	+9 γ	+0 γ
I.	,,	+0′·4	+0′·5	+1′·4	+1′·8	...	+2′·1	+2′·0	+5′·7
D.	De Bilt.	...	−1′·9	−1′·3	−2′·8	−0′·6	...	+0′·1	−0′·3
H.F.	,,	+20 γ	−7 γ	+3 γ	+3 γ	−12 γ	...	−3 γ	−12 γ
I.	,,	−1′·7	−1′·6	−0′·8	−0′·3	−2′·1	...	−0′·1	+3′·6
D.	Potsdam.	...	−2′·1	−1′·5	−2′·9	−0′·8	−0′·1	...	−0′·5
H.F.	,,	+23 γ	−4 γ	+6 γ	+6 γ	−9 γ	+3 γ	...	−9 γ
I.	,,	−1′·6	−1′·5	−0′·6	−0′·2	−2′·0	+0′·1	...	+3′·7
D.	Val Joyeux.	...	−1′·6	−1′·0	−2′·4	−0′·3	+0′·3	+0′·5	...
H.F.	,,	+32 γ	+5 γ	+15 γ	+15 γ	−0 γ	+12 γ	+9 γ	...
I.	,,	−5′·3	−5′·2	−4′·3	−3′·9	−5′·7	−3′·6	−3′·7	...

The method by which these figures have been obtained will now be described.

OBSERVATIONS ON THE TRAVELLING INSTRUMENTS.

These instruments were Unifilar Dover No. 140 and Dip Circle Dover 120. In all cases the observations were made by myself. Particulars are set out in Tables B, C and D.

Declination was the mean of four observations, two erect and two inverted, corrected for the mean torsion.

In all cases the azimuth of the fixed mark was taken as the value in use at the Observatory.

Inclination was the mean of observations on two needles. The mean time was the same for both, so that some check on the accuracy is given by the difference between them.

In all cases except one (Potsdam, July 19), 32 readings were made on each needle.

Horizontal Force was obtained by the ordinary method by eliminating the magnetic moment from the results of observations of deflexion and vibration, made within a few hours of each other. Corrections were applied according to the Kew certificate for the temperature coefficients of the deflexion bar, of the magnetic moment of the collimator, and of the moment of inertia of the collimator magnet. The induction coefficient, the chronometer rate, and the arc of swing were also allowed for in the usual way. Deflexions were made at two distances, and the mean value of $\log \frac{m^1}{H^1}$ for the two was treated with a correction for the distribution of magnetism, in order to obtain $\log \frac{m}{H}$. The distribution correction was the mean derived from all the observations made during the journey.

As indications of the reliability of the observations we have

(i.) The differences between successive observations at the same Observatory.

(ii.) The value of $\log \frac{m^1}{H^1}$ at 30 cms. minus $\log \frac{m^1}{H^1}$ at 40 cms. This is set out opposite each H observation. It has been assumed that the differences between individual figures in this column are due to errors of observation and not to a change in the distribution of magnetism, and the mean value has been used in correcting $\log \frac{m^1}{H^1}$.

(iii.) The logarithm of the square of the magnetic moment of the collimator magnet at 0°C. The variations here are small, showing that the magnet did not experience any great shock during its journey of 5000 kilometers. The moment is, of course, eliminated in finding H. The values for $\log m^2$ have not been corrected for the change of H occurring between the times of the vibration and deflexion observations.

(iv.) Twice the angle between the magnetic and optical axes of the collimator magnet. These figures are a further indication that the magnet did not suffer any considerable disturbance. Unfortunately the mean time of observation was not the same for the erect and inverted positions.

(v.) The difference between the inclinations given by the two needles when the mean time of observation was the same for both.

Observatory Values.

Central Observatory, Kew.—The figures printed were supplied by the superintendent of the Observatory. Unfortunately the Kew magnetographs were at the time seriously disturbed by building operations.

Greenwich.—The figures were supplied by the Astronomer Royal. They apply to the mean time of the observations on the travelling instruments.

Valencia (*Cahirciveen*).—There are no magnetographs here. The Observatory values were obtained by absolute observations made and reduced by the superintendent.

Falmouth.—Most unfortunately I lost the magnetograms relating to the days of the observations. The Observatory value for horizontal force was obtained from four sets of observations made by the superintendent on July 2, June 14, May 30, and May 23. These days were selected because they were magnetically quiet at the time of the observations, judging by the Eskdalemuir magnetograms and the international character figures. The times of my observations were also quiet. The superintendent's observations were reduced in the way which had been customary at Falmouth; but a value of the distribution coefficient P had to be computed specially, as it had not been customary to work it out until the end of the year. This was obtained from the mean of ten observations made by the superintendent between March 27 and July 3 (April 28 omitted). These gave $P = +2{\cdot}50$. Finally, the superintendent's observations were corrected to mine by using the quiet day inequalities for Falmouth for 1912. Any seasonal or secular change during the period May 23 to July 3 was neglected.

In a similar way the Observatory value for Falmouth for declination was obtained from the superintendent's absolute observations on June 30 and July 2, and for inclination from his observations on June 14 and July 2, by using the Falmouth quiet day inequalities for 1912.

The observations were made on the brick pier in the small hut used by the Falmouth Observatory. A chip from one of the bricks of the pier was tested at Eskdalemuir, and found to have a magnetic susceptibility (per unit volume) of about $1{\cdot}2 \times 10^{-3}$ C.G.S. units.

As the travelling instruments were almost identical in size and form with those used by the Observatory, the magnetism of the pier would affect both equally and would be without influence on the difference between them. The pier is noticed here because it has been used for comparisons between English instruments and those of the Carnegie Institution of Washington.

Val Joyeux.—The figures were supplied by the Observatory, and relate to the periods of time during which the observations were made.

De Bilt.—The figures were supplied by the Observatory. They are mean values for the duration of the several observations. In order to allow for the presence of some magnets near the pillar on which the observations were made, the results from the travelling instruments have been corrected by the addition of $-1{\cdot}5\gamma$ to H, $+6''$ to I, and $+27''$ to D. These corrections were also supplied by the Observatory.

Potsdam.—The figures were supplied by the Observatory, and apply to the duration of the several observations.

Eskdalemuir.—The figures were deduced from the magnetograms, using base and scale values identical with those used in the preparation of the published hourly values and annual means.

The Observatory instruments have since been tested for magnetism by means of a sensitive astatic magnetometer designed for the purpose. The Dip Circle (Dover No. 74) contains nothing that could affect by 1γ the components of the force acting on the needle. [For the Schulze Inductor No. 103, which came into use for the first time in 1914, the limit might safely be put at 2γ and is probably less.] The magnetometer (Elliot 60), used for observing horizontal force and declination, shows more considerable magnetism, and the error from this cause may not improbably be more than 1γ but less than 10γ in H. Such alteration in the fittings of any of the instruments as has

been made between June 1913 and the date of writing (July 1915) could not have affected any of the standards by 1γ.

The arithmetic in connection with my observations has been worked twice; once by myself, and, secondly, mainly by Mrs Richardson, partly also by Mr A. E. Gendle and Mr H. G. Harris, both at different times of Eskdalemuir Observatory. The superintendent of Kew Observatory has supplied valuable criticism and advice.

TABLE B.—DECLINATION.

Date, 1913.	G.M.T.	Observatory.	Twice Angle between Axes.	Azimuth of Fixed Mark.	Value from No. 140.	Observatory Value.	Observatory *minus* No. 140.	Observatory.
June 4	12 h. 15 m. to 12 h. 28 m.	Kew.	4'6	2° 6' 19" E. of N.	15° 42'4	15° 44'5	+2'1	Kew.
June 11	Mean 10 h. 59 m.	Valencia (Cahirciveen).	...	...	...	20 18·7		
,, 11	12 h. 0 m. to 12 h. 35 m.	,,	6·5	19 46 0 W. of N.	20 16·5	...	+2·9	Valencia (Cahirciveen).
,, 12	10 h. 0 m. to 11 h. 20 m.	,,	5·3	...	20 18·6	...		
,, 12	Mean 11 h. 52 m.	,,	...	...	...	20 22·2		
June 23	19 h. 30 m. to 19 h. 44 m.	Eskdalemuir.	7·1	8 12 30 W. of S.	17 55·0	17 56·1	+1·1	Eskdalemuir.
,, 24	11 h. 37 m. to 11 h. 49 m.	,,	4·6	...	17 59·7	18 0·1	+0·4	
June 30	10 h. 45 m. to 10 h. 54 m.	Falmouth.	5·2	4 40 40 W. of S.	17 15·6	17 16·6*	+1·5	Falmouth.
July 3	19 h. 16 m. to 19 h. 30 m.	,,	5·2	...	17 14·6			
July 9	10 h. 19 m. to 10 h. 42 m.	Val Joyeux.	4·4	88 23 47 W. of N.	13 58·8	13 59·3	+0·5	Val Joyeux.
July 12	13 h. 59 m. to 14 h. 11 m.	De Bilt.	4·9	13 53 52 W. of N.	12 37·5	12 37·9	+0·4	De Bilt.
,, 14	13 h. 36 m. to 13 h. 46 m.	,,	5·6	...	12 36·1	12 36·0	−0·1	
July 17	14 h. 12 m. to 14 h. 25 m.	Potsdam.	5·0	9 35 6 W. of N. (Collimator).	8 41·2	8 41·1	−0·1	Potsdam.
,, 18	12 h. 0 m. to 12 h. 15 m.	,,	4·9	...	8 41·0	8 41·2	+0·2	

* See under Falmouth in the letterpress.

[TABLE C.

TABLE C.—HORIZONTAL FORCE.

Date.	Vibration or Deflection.	G.M.T.	Observatory.	log. m^2.	log. $\frac{m^1}{H^1}$ at 30 cm. *minus* log. $\frac{m^1}{H^1}$ at 40 cm.	Value from No. 140.	Observatory Value.	Observatory *minus* No. 140.	Observatory.
						γ	γ	γ	
May 30	V.	Mean 15 h. 45 m.	Kew.	5·59002	·00187	18516	...	...	...
,,	D.	16 h. 30 m. to 17 h. 35 m.	,,						
June 1	V.	14 h. 48 m. to 15 h. 1 m.	,,	5·58942	·00140	18524	...	...	...
,,	D.	15 h. 50 m. to 17 h. 0 m.	,,						
,, 3	V.	11 h. 10 m. to 11 h. 24 m.	,,		...				
,,	D.	11 h. 50 m. to 12 h. 35 m.	,,	5·58963	·00176	18524	18505	−19	Kew.
,,	D.	12 h. 47 m. to 13 h. 35 m.	,,		·00178				
June 7	V.	11 h. 34 m. to 11 h. 47 m.	Greenwich.	5·58938	·00149	18543	18497	−46	Greenwich.
,,	D.	12 h. 10 m. to 12 h. 55 m.	,,						
June 11	V.	13 h. 20 m. to 13 h. 34 m.	Valencia (Cahirciveen).	5·58903	·00174	17944	...		
,,	D.	14 h. 0 m. to 14 h. 55 m.	,,						
,,	V.,D.	Mean 16 h. 55 m.	,,	...	...	...	17932	−29	Valencia (Cahirciveen).
,, 12	V.,D.	Mean 13 h. 17 m.	,,	...	...	...	17913		
,,	V.	16 h. 37 m. to 16 h. 50 m.	,,	5·58947	·00133	17960	...		
,,	D.	17 h. 42 m. to 18 h. 35 m.	,,						
June 19	V.	11 h. 46 m. to 11 h. 56 m.	Eskdalemuir.	5·58933	·00168	16835	16815	−20	
,,	D.	12 h. 55 m. to 13 h. 25 m.	,,						
,,	D.	16 h. 55 m. to 17 h. 32 m.	,,	5·58964	·00155	16863	16850	−13	Eskdalemuir.
,,	V.	18 h. 4 m. to 18 h. 20 m.	,,						
,, 20	V.	10 h. 15 m. to 10 h. 30 m.	,,	5·58888	·00137	16815	16804	−11	
,,	D.	11 h. 37 m. to 12 h. 19 m.	,,						
June 28	V.	11 h. 35 m. to 11 h. 55 m.	Falmouth.	5·58944	·00175	18825*			
,,	D.	12 h. 30 m. to 13 h. 19 m.	,,						
,, 30	V.	11 h. 20 m. to 11 h. 40 m.	,,	5·58904	·00177	18824			
,,	D.	12 h. 43 m. to 13 h. 30 m.	,,						
July 2	D.	15 h. 7 m. to 15 h. 55 m.	,,				18799†	−29	Falmouth.
,,	V.	16 h. 13 m. to 16 h. 33 m.	,,	5·58963	·00166	18837			
,,	V.	16 h. 47 m. to 17 h. 7 m.	,,						
,, 3	V.	15 h. 16 m. to 15 h. 32 m.	,,	5·58921	·00142	18824			
,,	D.	15 h. 58 m. to 16 h. 50 m.?	,,						
July 8	D.	16 h. 25 m. to 17 h. 17 m.	Val Joyeux.	5·58934	·00132	19767	19753	−12	
,,	V.	17 h. 52 m. to 18 h. 6 m.	,,				19756		Val Joyeux.
,, 9	V.	11 h. 17 m. to 11 h. 30 m.	,,	5·58904	·00200	19752	19734	−15	
,,	D.	11 h. 56 m. to 12 h. 50 m.	,,				19739		
July 12	V.	14 h. 42 m. to 14 h. 58 m.	De Bilt.	5·58885	·00217	18579	18546·5	−30	
,,	D.	15 h. 51 m. to 16 h. 40 m.	,,				18552		De Bilt.
,, 14	D.	10 h. 12 m. to 11 h. 6 m.	,,	5·58898	·00169	18535	18510	−22	
,,	V.	11 h. 35 m. to 11 h. 51 m.	,,				18515		
July 17	V.	15 h. 10 m. to 15 h. 22 m.	Potsdam.	5·58902	·00115	18808	18783	−22	
,,	D.	16 h. 15 m. to 17 h. 5 m.	,,				18789		
,, 18	D.	9 h. 55 m. to 10 h. 46 m.	,,	5·58907	·00144	18790	18762	−23	Potsdam.
,,	V.	11 h. 14 m. to 11 h. 27 m.	,,				18772		
,,	V.	14 h. 27 m. to 14 h. 40 m.	,,	5·58908	obs. at 40 cm. only	18819	18796	−23	
,,	D.	16 h. 35 m. to 17 h. 30 m.	,,				18796		
Aug. 25	V.	10 h. 40 m. to 10 h. 53 m.	Eskdalemuir.	5·58807	·00172	16838	16824	−14	
,,	V.	11 h. 28 m. to 11 h. 42 m.	,,						Eskdalemuir.
,,	D.	15 h. 30 m. to 16 h. 20 m.	,,						
Sept. 29	V.	14 h. 27 m. to 14 h. 42 m.	,,	5·58893	·00122	16825	16816	− 9	
,,	D.	15 h. 39 m. to 16 h. 28 m.	,,						

* A correction of 1γ has been applied to this figure to allow for the presence of keys in the hut.

† See under Falmouth in the letterpress.

TABLE D.—INCLINATION.

Date.	G.M.T.	Observatory.	Needle I. *minus* Needle II.	Value from No. 120.	Observatory Value.	Observatory *minus* No. 120.	Observatory.
May 29	11 h. 10 m. to 13 h. 36 m.	Kew.	−0·3	66° 54′3	° ′ ...	′ ...	Kew.
,, 30	10 h. 37 m. to 12 h. 42 m.	,,	−0·3	66 55·2	...	...	
June 3	15 h. 10 m. to 17 h. 13 m.	,,	+0·8	66 54·5	66 56·3	+1·8	
June 6	12 h. 30 m. to 13 h. 15 m.	Greenwich.	Needle I. only.	66 48·7	66 50·4	+1·9	Greenwich.
,,	14 h. 45 m. to 15 h. 44 m.	,,	Needle II. only.	66 48·8	66 50·9		
June 13	11 h. 2 m. to 13 h. 58 m.	Valencia (Cahirciveen).	−0·4	68 6·2	...		
,,	15 h. 55 m. to 17 h. 31 m.	,,	+0·9	68 5·2	...	+0·5	Valencia (Cahirciveen).
,,	Mean 16 h. 9 m.	,,	...	...	68 5·7		
,,	Mean 19 h. 26 m.	,,	...	...	68 6·8		
June 24	14 h. 40 m. to 16 h. 4 m.	Eskdalemuir.	−0·5	69 34·7	69 36·7 *	+2·0	Eskdalemuir.
July 1	14 h. 40 m. to 16 h. 16 m.	Falmouth.	−1·1	66 22·3	66 23·8 †	+0·9	Falmouth.
,, 3	11 h. 4 m. to 12 h. 51 m.	,,	−1·6	66 23·4			
July 9	17 h. 25 m. to 19 h. 19 m.	Val Joyeux.	−0·5	64 41·2	64 37·8	−3·4	Val Joyeux.
July 15	10 h. 13 m. to 12 h. 15 m.	De Bilt.	−0·4	66 45·4	66 45·8 ‡	+0·4	De Bilt.
					66 45·3 §	−0·1	
July 19	10 h. 40 m. to 11 h. 20 m.	Potsdam.	Needle I. only.	66 20·9	66 21·7	+0·7	Potsdam.
,, 21	16 h. 11 m. to 17 h. 1 m.	,,	Needle II. only.	66 20·6	66 21·2		
,, 21	12 h. 25 m. to 13 h. 58 m.	,,	−0·8	66 22·0	66 21·9	−0·1	
Aug. 27	11 h. 8 m. to 12 h. 55 m.	Eskdalemuir.	−1·2	69 34·4	69 37·0	+2·6	Eskdalemuir.

* From absolute observations on June 3, 6, 10, and 11, and mean inequality for the month. No V.F. magnetogram on June 24.

† See under Falmouth in the letterpress.

‡ From Weber inductor.

§ From Schulze inductor No. 88.

NOTES ON THE METEOROLOGICAL SUMMARIES.

For Kew, Valencia, Falmouth, and Aberdeen, the tables give the average for the 40 years 1871–1910 of—

a. Barometric Pressure;
b. Temperature of the Air;
e. Rainfall;

the averages for the 30 years 1881–1910 of—

d. Velocity of the Wind;
f. Sunshine;

and the averages for the 25 years 1886–1910 of—

c. Relative Humidity.

In the case of Eskdalemuir the values for the current year only are given.

At Falmouth the photographic records ceased after June 1913, the station being no longer considered an Observatory of the First Class. Hourly Means of Wind Velocity also not being available, the differences between the normals and the values for 1913 are given for Rainfall and Sunshine only.

The averages referred to above have been adopted as normal values for the elements mentioned at the four observatories.

Particulars of the methods of tabulation and of the instruments, additional to those given in the footnotes to the tables, are published in the Introduction to Part IV. Section (1) of the *British Meteorological and Magnetic Year Book for 1913*, and in the *Annual Reports of the Meteorological Office for the years 1867 and 1869.*

Tables for the reduction of the values of pressure to Mean Sea Level are also included in the Introduction referred to.

The values in the tables have been expressed throughout in units based upon the C.G.S. system, and the following table shows the actual units employed for the different elements:

Element.	Unit.	Corresponding units used previously or in other Countries.
a. Barometric Pressure.	Millibars.	Inches or Millimetres of Mercury.
b. Temperature of the Air.	Degrees Absolute.	Degrees Fahrenheit or Centigrade.
c. Relative Humidity.	Percentages (100 = Saturation).	Percentages (100 = Saturation).
d. Velocity of the Wind.	Metres per second.	Miles or Kilometres per hour.
e. Rainfall.	Millimetres.	Inches or Millimetres.
f. Sunshine.	Hours.	Hours.

Tables for the conversion from one set of units to the other are given below.

a. Barometric Pressure.—Millibars. A "bar," one thousand millibars, is equal to a pressure of one million dynes per square centimetre (one megadyne per cm.^{2}). This is nearly equal to the normal mean pressure of the atmosphere at the surface of the earth.

One millibar is approximately equal to the pressure due to $\frac{3}{100}$ of an inch or $\frac{3}{4}$ of

a millimetre of mercury under normal conditions. The exact relations are given at the head of Table I., p. 95, which serves to convert inches of mercury into millibars.

The barometer readings are obtained from the hourly tabulations of photographic records from similar apparatus at all the observatories.

The barographs at Kew * and Aberdeen have remained unchanged throughout the whole period. The site of the observatory at Valencia was changed on March 23rd, 1892, the change in the height of the cistern of the barometer being from 7·0 m. to 13·7 m. The site of the observatory at Falmouth was changed in May 1885, the change in the height of the cistern of the barometer being from 64·3 m. to 55·8 m. Account has been taken of these changes of position in calculating the averages for the period 1871–1910, and the values given correspond with the present positions.

In forming the monthly means of the hourly values of pressure, temperature, and humidity (given in the last column in Tables LXIX., LXX., LXXI.), a correction has been applied to the tabulated values to eliminate the effect of a difference between the conditions at the beginning and end of the month.

The corrections to the individual mean hourly values are dependent upon the values for the first and second midnights. If the mean difference between these values is d, then $d(12-n)/24$ represents the value of the correction to be applied to the actual value obtained for the hour n. The values of d for Kew, Valencia, and Eskdalemuir may be obtained from the values published in Part IV. Section (1) of the *Year Book for 1913*. The values for pressure and temperature are given below in the tables on p. 94.

The normal daily variation of pressure is mainly made up of a more or less regular semi-diurnal wave, which, if local time be used, is independent of the position of the station, except as regards latitude, superposed upon a diurnal wave which exhibits great irregularities from place to place. If we examine the daily variation in the departures from the normal values of the means for 1913, we find that the mean pressure for the year was below the normal at Aberdeen and Valencia, and only slightly above at Kew. The months in which pressure was above the normal at all stations were February, July, August, and December; it was everywhere below the normal in January, March, April, May, October, and November.

A comparison of the diurnal variation in barometric pressure is shown below by means of the harmonic coefficients at the three stations, Eskdalemuir, Kew, and Aberdeen.

Observatory.	Amplitudes in Millibars.			Phase Angles measured from Greenwich, Midnight.		
	P_1.	P_2.	P_3.	A_1.	A_2.	A_3.
Eskdalemuir, 1912 . .	·107	·249	·033	67° 37′	141° 43′	356° 35′
„ 1913 . .	·047	·284	·031	240 4	140 40	9 15
Kew, 1912	·159	·320	·035	10 17	146 58	340 7
„ 1913	·122	·346	·042	28 0	150 10	355 9
„ 1871–1910 . . .	·133	·351	·030	29 36	149 22	7 33
Aberdeen, 1912 . . .	·032	·218	·041	35 12	139 9	342 49
„ 1913 . . .	·128	·262	·022	174 1	138 21	1 51
„ 1871–1910 . .	·119	·249	·030	157 27	143 13	352 27

* Except for the interlude mentioned on p. 67.

It may be noted that the magnitude of the whole-day term in 1913 at Eskdalemuir is only about 40 per cent. of that at Kew and Aberdeen. The 12-hour term at Eskdalemuir is between those at Aberdeen and Kew in magnitude.

b. Temperature of the Air.—Degrees absolute (°A). The value of each degree is the same as that of the centigrade scale, but the zero is taken to be the absolute zero of temperature, 273° C. below the normal freezing-point of water. The conversion from degrees A to C, or *vice versa*, is therefore a simple addition or subtraction. Table II. enables degrees F to be converted directly into degrees A or *vice versa*.

The values of temperature at all four observatories were obtained from the tabulation of photographic records from similar and similarly exposed mercurial thermometers. At Eskdalemuir the thermometer screen is away from the observatory building, while at the other observatories the screen is on the north wall of the building.

An inspection of the figures for 1913 shows that the mean temperature for the year was slightly above the normal value, but the excess is more marked during the night than the day. At Valencia the excess was very small, the mean temperature being below the normal for the first seven months of the year, and also in December.

c. Relative Humidity.—This is obtained from the tabulation of the photographic records of temperature combined with those of the wet bulb thermometer. The thermometers are similar at all the observatories; they have cylindrical bulbs about 4 inches long. The values of the humidity are calculated by the use of the Meteorological Office Tables, which are based upon Glaisher's factors. At Eskdalemuir the wet-bulb values from 1st January to 25th August were obtained from the records of a bimetallic thermograph, standardised by comparison with the readings of an ordinary wet-bulb thermometer taken three times a day.

The means for Kew, Eskdalemuir, and Valencia are obtained from the hourly values of humidity for each day; the means for Aberdeen are calculated from the mean hourly values for the month of the dry- and wet-bulb temperatures.

The year generally, except at Aberdeen, was rather more humid than usual. December was the only month in which the humidity was below the normal at all observatories. In June, although the values at Aberdeen and Kew were below, at Valencia they were considerably above the normal.

The values of the humidity depend chiefly on the difference between the readings of the wet- and dry-bulb thermometers, and a small error in the tabulated values of these records may produce a considerable error in the value of the humidity. The tabulated values are taken directly from the curves, and are not corrected for the difference between the tabulated values at fixed hours and the results of eye-observations at those hours. The tabulating scale is so adjusted that these differences are always small. The actual mean differences are shown in the table on p. 93, except in the case of Eskdalemuir, where the figures have been corrected before publication.

d. Wind.—The velocity and direction of the wind are obtained from the records of similar Robinson Anemographs at Kew, Valencia, Falmouth, and Aberdeen, but at Eskdalemuir the records are made by a Dines Pressure Tube instrument.

The records from the two instruments, when exposed at the same place, give approximately the same values for the mean velocity.

The normal daily variation of wind velocity at ground level shows a maximum in the middle of the day and a minimum near midnight or in the early morning. It is

of some interest to compare the ratio of the daily range ΔV to the mean value of the velocity V for 1913 with the corresponding normal ratio and the ratio for 1912.

The following table shows the values of the ratio $\Delta V/V$:—

	Valencia.	Kew.	Eskdalemuir.	Aberdeen.
Normal ratio . .	·269	·585	...	·340
Ratio for 1912 . .	·258	·560	·432	·369
Ratio for 1913 . .	·322	·531	·438	·360

The ratio is much larger at Kew than at the other observatories. It is smallest at Valencia. In 1913 it was considerably below normal at Kew, but above it at Valencia and Aberdeen.

Mean Monthly Values of the Differences between the Tabulated and the Standard Readings of the Thermometers.

	Valencia.			Kew.			Aberdeen.		
	Standard *minus* Curve.		Approx. Correction to Relative Humidity.	Standard *minus* Curve.		Approx. Correction to Relative Humidity.	Standard *minus* Curve.		Approx. Correction to Relative Humidity.
	Dry Bulb.	Wet Bulb.		Dry Bulb.	Wet Bulb.		Dry Bulb.	Wet Bulb.	
	°A.	°A.	%	°A.	°A.	%	°A.	°A.	%
January . .	−·02	−·01	+0·1	−·05	+·07	+1·3	−·07	−·03	+0·5
February .	−·01	−·04	−0·3	−·03	+·07	+1·1	−·07	−·07	0·0
March . .	−·02	−·03	−0·1	−·04	+·03	+0·8	−·05	−·07	−0·3
April . .	−·01	−·06	−0·5	−·01	+·04	+0·5	−·03	−·07	−0·4
May . .	−·01	−·04	−0·3	−·04	+·03	+0·8	−·03	−·03	0·0
June . .	−·02	−·04	−0·2	−·05	−·15	−1·1	+·01	+·01	0·0
July . .	−·01	−·01	0·0	−·09	−·12	−0·3	−·01	−·04	−0·4
August . .	−·02	−·02	0·0	−·05	−·13	−0·9	−·02	−·06	−0·5
September .	−·01	−·01	0·0	−·09	−·13	−0·5	−·02	+·04	+0·6
October . .	−·01	−·01	0·0	−·07	−·08	−0·1	+·03	+·04	+0·2
November .	−·01	−·06	−0·6	−·01	−·07	−0·7	−·03	−·11	−0·9
December .	−·01	−·04	−0·3	−·11	−·02	+1·0	−·06	−·11	−0·6
Year . .	−·01	−·03	−0·2	−·05	−·04	+0·2	−·03	−·04	−0·1

e. Rainfall.—The tables give the mean values of the hourly measurements for each month, *i.e.*, the value entered to noon is the mean of the amounts which fell between the hours of 11·30 a.m. and 12·30 p.m. during the month. The amount entered in the column headed "Day" is similarly the total amount recorded during the month, divided by the number of days in the month.

The total rainfall for 1913 approached the normal fall very closely at Falmouth; it was a little above the normal at Valencia, but below it at Aberdeen and Kew.

The rainfall was below the normal at all the observatories for which normals exist in February, July, August, and December, and above it in January, March, April, and May.

f. Sunshine.—The method of expressing the results is similar to that adopted for rainfall. The values are given in hours and are obtained by dividing the totals for each month by the number of days in the month. The values in the column headed "Day" are therefore the mean number of hours of sunshine per day, and the individual day is directly comparable with the average day.

The sunshine for the year 1913 was below the normal. Speaking generally, the second half of the year was brighter than the first. At Falmouth the normal duration was exceeded only in July and then generally during the hours after noon. At Kew, the sunshine in July was nearly 50 per cent. below the normal, but in November it was 40 per cent. above.

Normals.—In the case of *a*, *b*, *e*, each normal hourly value is the mean of about 1200 readings, the exact number depending of course upon the month. Within what limits such a series is sufficient to determine a normal value is a question which deserves investigation. It is not unusual for the mean value of the pressure for an individual month to differ by 15 or 20 millibars from the normal value, so that the inclusion of an extra year may affect the normal value by as much as 0·5 millibar, and the selection of a different 40-years period may lead to differences equally great or indeed greater. Thus, if we take the period 1854–1893, the mean value of the pressure in London for the month of January is less by 1·7 millibars than its value for the period 1871–1910. Clearly, therefore, a period of 40 years is not sufficient to determine within 1 millibar the normal monthly value of atmospheric pressure.

Again, with reference to temperature, a month may have a mean temperature as much as 5° A below the normal. Thus the 40-years mean is uncertain to at least 0°·1 A, and probably to a considerably greater extent.

For rainfall a single instance will suffice to illustrate the degree of uncertainty. The total fall for the month of June at Kew for the 30 years 1871–1900 was less than double the amount for the 10 years 1901–1910, the amounts being 1501 mm. and 807 mm. respectively; while it was three times the amount for the 10 years 1861–1870, 492 mm. Thus the 40 years' average for 1861–1900 would be 50 mm., while that for the 40 years 1871–1910 would be 58 mm. It follows that the 40 years' normal for rainfall for an individual month may vary by between 10 per cent. and 20 per cent. of its value.

Non-Cyclic Change (24 h.–0 h.) of Pressure and Temperature.

Differences between the Normal Monthly Mean Values of Pressure and Temperature for the 2nd and 1st Midnights, and the corresponding Differences for 1913.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Year.
	Pressure—Millibars.												
Aberdeen, Normal	−0·01	+0·01	−0·02	+0·12	+0·06	0·00	−0·03	−0·06	−0·04	+0·06	−0·10	+0·03	0·00
„ 1913.	−0·51	+1·26	−0·52	+0·12	−0·06	+0·73	−0·17	−0·11	+0·13	−0·62	+0·07	+0·76	+0·09
Eskdalemuir, 1913.	−0·42	+1·02	−0·57	+0·15	+0·04	+0·58	−0·16	−0·16	+0·10	−0·47	+0·22	+0·62	+0·08
Valencia, Normal	+0·05	−0·07	+0·09	0·00	+0·02	+0·04	+0·09	−0·08	−0·14	+0·04	+0·03	−0·03	0·00
„ 1913.	−0·28	+0·51	−0·27	+0·05	+0·15	+0·46	−0·20	−0·13	−0·11	−0·27	+0·54	+0·48	+0·08
Kew, Normal	−0·02	−0·04	−0·04	+0·05	+0·03	+0·01	+0·05	−0·07	−0·07	+0·05	−0·06	+0·11	0·00
„ 1913.	−0·32	+0·69	−0·60	+0·15	+0·12	+0·37	−0·23	−0·19	−0·08	+0·03	+0·32	+0·48	+0·06
Falmouth, Normal.	0·00	−0·04	0·00	+0·02	0·00	+0·05	+0·07	−0·05	−0·15	+0·06	−0·01	+0·05	0·00
	Temperature—Degrees Absolute.												
Aberdeen, Normal	+0·01	−0·01	+0·04	+0·06	+0·07	+0·10	+0·02	−0·04	−0·03	−0·11	−0·09	−0·03	0·00
„ 1913.	−0·15	+0·09	+0·05	+0·09	+0·06	+0·07	−0·01	−0·01	+0·02	−0·20	−0·02	−0·17	−0·02
Eskdalemuir, 1913.	−0·19	+0·05	+0·11	+0·06	+0·07	+0·11	−0·02	−0·05	+0·02	−0·25	+0·07	−0·31	−0·03
Valencia, Normal	−0·03	+0·01	+0·02	+0·05	+0·08	+0·08	+0·02	−0·02	−0·03	−0·10	−0·06	0·00	0·00
„ 1913.	−0·06	+0·14	−0·07	0·00	+0·01	+0·23	+0·08	−0·09	−0·07	−0·16	+0·17	−0·23	0·00
Kew, Normal	+0·03	−0·02	+0·06	+0·07	+0·11	+0·11	+0·01	−0·04	−0·07	−0·10	−0·11	−0·02	0·00
„ 1913.	−0·14	+0·07	+0·04	+0·13	−0·05	+0·23	−0·02	+0·02	−0·02	−0·14	+0·05	−0·38	−0·02
Falmouth, Normal	−0·03	−0·01	+0·04	+0·06	+0·11	+0·08	+0·02	−0·02	−0·05	−0·10	−0·08	−0·01	0·00

TABLES FOR CONVERTING FROM BRITISH TO METRIC UNITS, AND *VICE VERSA*.

TABLE I.—PRESSURE.

Inches of Mercury at 32° F. and 45° Latitude to Millibars.

The fundamental data are:—

acceleration of gravity in latitude 45° = 980·617 cm./sec^2.
density of mercury at normal freezing-point of water = 13·5955.
1 mercury-inch = 33·8632 millibars.
1000 millibars = 1 bar = 29·5306 mercury-inches = 750·076 mercury millimetres.
using 1 inch = 2·54000 cm.

Hundredths.	00	·01	·02	·03	·04	·05	·06	·07	·08	·09
Inches and Tenths.	Millibars.									
27·0	914·31	914·65	914·98	915·32	915·66	916·00	916·34	916·68	917·02	917·35
27·1	917·69	918·03	918·37	918·71	919·05	919·39	919·72	920·06	920·40	920·74
27·2	921·08	921·42	921·76	922·09	922·43	922·77	923·11	923·45	923·79	924·13
27·3	924·47	924·80	925·14	925·48	925·82	926·16	926·50	926·84	927·17	927·51
27·4	927·85	928·19	928·53	928·87	929·21	929·54	929·88	930·22	930·56	930·90
27·5	931·24	931·58	931·92	932·25	932·59	932·93	933·27	933·61	933·95	934·29
27·6	934·62	934·96	935·30	935·64	935·98	936·32	936·66	936·99	937·33	937·67
27·7	938·01	938·35	938·69	939·03	939·37	939·70	940·04	940·38	940·72	941·06
27·8	941·40	941·74	942·07	942·41	942·75	943·09	943·43	943·77	944·11	944·44
27·9	944·78	945·12	945·46	945·80	946·14	946·48	946·82	947·15	947·49	947·83
28·0	948·17	948·51	948·85	949·19	949·52	949·86	950·20	950·54	950·88	951·22
28·1	951·56	951·89	952·23	952·57	952·91	953·25	953·59	953·93	954·26	954·60
28·2	954·94	955·28	955·62	955·96	956·30	956·64	956·97	957·31	957·65	957·99
28·3	958·33	958·67	959·01	959·34	959·68	960·02	960·36	960·70	961·04	961·38
28·4	961·71	962·05	962·39	962·73	963·07	963·41	963·75	964·09	964·42	964·76
28·5	965·10	965·44	965·78	966·12	966·46	966·79	967·13	967·47	967·81	968·15
28·6	968·49	968·83	969·16	969·50	969·84	970·18	970·52	970·86	971·20	971·54
28·7	971·87	972·21	972·55	972·89	973·23	973·57	973·91	974·24	974·58	974·92
28·8	975·26	975·60	975·94	976·28	976·61	976·95	977·29	977·63	977·97	978·31
28·9	978·65	978·99	979·32	979·66	980·00	980·34	980·68	981·02	981·36	981·69
29·0	982·03	982·37	982·71	983·05	983·39	983·73	984·06	984·40	984·74	985·08
29·1	985·42	985·76	986·10	986·44	986·77	987·11	987·45	987·79	988·13	988·47
29·2	988·81	989·14	989·48	989·82	990·16	990·50	990·84	991·18	991·51	991·85
29·3	992·19	992·53	992·87	993·21	993·55	993·88	994·22	994·56	994·90	995·24
29·4	995·58	995·92	996·26	996·59	996·93	997·27	997·61	997·95	998·29	998·63
29·5	998·96	999·30	999·64	999·98	1000·32	1000·66	1001·00	1001·33	1001·67	1002·01
29·6	1002·35	1002·69	1003·03	1003·37	1003·71	1004·04	1004·38	1004·72	1005·06	1005·40
29·7	1005·74	1006·08	1006·41	1006·75	1007·09	1007·43	1007·77	1008·11	1008·45	1008·78
29·8	1009·12	1009·46	1009·80	1010·14	1010·48	1010·82	1011·16	1011·49	1011·83	1012·17
29·9	1012·51	1012·85	1013·19	1013·53	1013·86	1014·20	1014·54	1014·88	1015·22	1015·56
30·0	1015·90	1016·23	1016·57	1016·91	1017·25	1017·59	1017·93	1018·27	1018·61	1018·94
30·1	1019·28	1019·62	1019·96	1020·30	1020·64	1020·98	1021·31	1021·65	1021·99	1022·33
30·2	1022·67	1023·01	1023·35	1023·68	1024·02	1024·36	1024·70	1025·04	1025·38	1025·72
30·3	1026·05	1026·39	1026·73	1027·07	1027·41	1027·75	1028·09	1028·43	1028·76	1029·10
30·4	1029·44	1029·78	1030·12	1030·46	1030·80	1031·13	1031·47	1031·81	1032·15	1032·49
30·5	1032·83	1033·17	1033·50	1033·84	1034·18	1034·52	1034·86	1035·20	1035·54	1035·88
30·6	1036·21	1036·55	1036·89	1037·23	1037·57	1037·91	1038·25	1038·58	1038·92	1039·26
30·7	1039·60	1039·94	1040·28	1040·62	1040·95	1041·29	1041·63	1041·97	1042·31	1042·65
30·8	1042·99	1043·33	1043·66	1044·00	1044·34	1044·68	1045·02	1045·36	1045·70	1046·03
30·9	1046·37	1046·71	1047·05	1047·39	1047·73	1048·07	1048·40	1048·74	1049·08	1049·42

	Thousandths of an Inch.								
Inch.	0	·001	·002	·003	·004	·005	·006	·007	·008	·009
Millibars.	0	·03	·07	·10	·14	·17	·20	·24	·27	·30

TABLE II.—TEMPERATURE.

Degrees Absolute to Degrees Fahrenheit.

The relations are $A = 273 + \frac{5}{9}(F-32)$, $F = 32 + \frac{9}{5}(A-273)$.

Degrees Absolute.	0	1	2	3	4	5	6	7	8	9
	Degrees Fahrenheit.									
250	− 9·4	− 9·2	− 9·0	− 8·9	− 8·7	− 8·5	− 8·3	− 8·1	− 8·0	− 7·8
251	− 7·6	− 7·4	− 7·2	− 7·1	− 6·9	− 6·7	− 6·5	− 6·3	− 6·2	− 6·0
252	− 5·8	− 5·6	− 5·4	− 5·3	− 5·1	− 4·9	− 4·7	− 4·5	− 4·4	− 4·2
253	− 4·0	− 3·8	− 3·6	− 3·5	− 3·3	− 3·1	− 2·9	− 2·7	− 2·6	− 2·4
254	− 2·2	− 2·0	− 1·8	− 1·7	− 1·5	− 1·3	− 1·1	− 0·9	− 0·8	− 0·6
255	− 0·4	− 0·2	0·0	+ 0·1	+ 0·3	+ 0·5	+ 0·7	+ 0·9	+ 1·0	+ 1·2
256	+ 1·4	+ 1·6	+ 1·8	+ 1·9	+ 2·1	+ 2·3	+ 2·5	+ 2·7	+ 2·8	+ 3·0
257	+ 3·2	+ 3·4	+ 3·6	+ 3·7	+ 3·9	+ 4·1	+ 4·3	+ 4·5	+ 4·6	+ 4·8
258	+ 5·0	+ 5·2	+ 5·4	+ 5·5	+ 5·7	+ 5·9	+ 6·1	+ 6·3	+ 6·4	+ 6·6
259	+ 6·8	+ 7·0	+ 7·2	+ 7·3	+ 7·5	+ 7·7	+ 7·9	+ 8·1	+ 8·2	+ 8·4
260	+ 8·6	+ 8·8	+ 9·0	+ 9·1	+ 9·3	+ 9·5	+ 9·7	+ 9·9	+ 10·0	+ 10·2
261	+10·4	+10·6	+10·8	+10·9	+11·1	+11·3	+11·5	+11·7	+ 11·8	+ 12·0
262	+12·2	+12·4	+12·6	+12·7	+12·9	+13·1	+13·3	+13·5	+ 13·6	+ 13·8
263	+14·0	+14·2	+14·4	+14·5	+14·7	+14·9	+15·1	+15·3	+ 15·4	+ 15·6
264	+15·8	+16·0	+16·2	+16·3	+16·5	+16·7	+16·9	+17·1	+ 17·2	+ 17·4
265	+17·6	+17·8	+18·0	+18·1	+18·3	+18·5	+18·7	+18·9	+ 19·0	+ 19·2
266	+19·4	+19·6	+19·8	+19·9	+20·1	+20·3	+20·5	+20·7	+ 20·8	+ 21·0
267	+21·2	+21·4	+21·6	+21·7	+21·9	+22·1	+22·3	+22·5	+ 22·6	+ 22·8
268	+23·0	+23·2	+23·4	+23·5	+23·7	+23·9	+24·1	+24·3	+ 24·4	+ 24·6
269	+24·8	+25·0	+25·2	+25·3	+25·5	+25·7	+25·9	+26·1	+ 26·2	+ 26·4
270	+26·6	+26·8	+27·0	+27·1	+27·3	+27·5	+27·7	+27·9	+ 28·0	+ 28·2
271	+28·4	+28·6	+28·8	+28·9	+29·1	+29·3	+29·5	+29·7	+ 29·8	+ 30·0
272	+30·2	+30·4	+30·6	+30·7	+30·9	+31·1	+31·3	+31·5	+ 31·6	+ 31·8
273	+32·0	+32·2	+32·4	+32·5	+32·7	+32·9	+33·1	+33·3	+ 33·4	+ 33·6
274	+33·8	+34·0	+34·2	+34·3	+34·5	+34·7	+34·9	+35·1	+ 35·2	+ 35·4
275	+35·6	+35·8	+36·0	+36·1	+36·3	+36·5	+36·7	+36·9	+ 37·0	+ 37·2
276	+37·4	+37·6	+37·8	+37·9	+38·1	+38·3	+38·5	+38·7	+ 38·8	+ 39·0
277	+39·2	+39·4	+39·6	+39·7	+39·9	+40·1	+40·3	+40·5	+ 40·6	+ 40·8
278	+41·0	+41·2	+41·4	+41·5	+41·7	+41·9	+42·1	+42·3	+ 42·4	+ 42·6
279	+42·8	+43·0	+43·2	+43·3	+43·5	+43·7	+43·9	+44·1	+ 44·2	+ 44·4
280	+44·6	+44·8	+45·0	+45·1	+45·3	+45·5	+45·7	+45·9	+ 46·0	+ 46·2
281	+46·4	+46·6	+46·8	+46·9	+47·1	+47·3	+47·5	+47·7	+ 47·8	+ 48·0
282	+48·2	+48·4	+48·6	+48·7	+48·9	+49·1	+49·3	+49·5	+ 49·6	+ 49·8
283	+50·0	+50·2	+50·4	+50·5	+50·7	+50·9	+51·1	+51·3	+ 51·4	+ 51·6
284	+51·8	+52·0	+52·2	+52·3	+52·5	+52·7	+52·9	+53·1	+ 53·2	+ 53·4
285	+53·6	+53·8	+54·0	+54·1	+54·3	+54·5	+54·7	+54·9	+ 55·0	+ 55·2
286	+55·4	+55·6	+55·8	+55·9	+56·1	+56·3	+56·5	+56·7	+ 56·8	+ 57·0
287	+57·2	+57·4	+57·6	+57·7	+57·9	+58·1	+58·3	+58·5	+ 58·6	+ 58·8
288	+59·0	+59·2	+59·4	+59·5	+59·7	+59·9	+60·1	+60·3	+ 60·4	+ 60·6
289	+60·8	+61·0	+61·2	+61·3	+61·5	+61·7	+61·9	+62·1	+ 62·2	+ 62·4
290	+62·6	+62·8	+63·0	+63·1	+63·3	+63·5	+63·7	+63·9	+ 64·0	+ 64·2
291	+64·4	+64·6	+64·8	+64·9	+65·1	+65·3	+65·5	+65·7	+ 65·8	+ 66·0
292	+66·2	+66·4	+66·6	+66·7	+66·9	+67·1	+67·3	+67·5	+ 67·6	+ 67·8
293	+68·0	+68·2	+68·4	+68·5	+68·7	+68·9	+69·1	+69·3	+ 69·4	+ 69·6
294	+69·8	+70·0	+70·2	+70·3	+70·5	+70·7	+70·9	+71·1	+ 71·2	+ 71·4
295	+71·6	+71·8	+72·0	+72·1	+72·3	+72·5	+72·7	+72·9	+ 73·0	+ 73·2
296	+73·4	+73·6	+73·8	+73·9	+74·1	+74·3	+74·5	+74·7	+ 74·8	+ 75·0
297	+75·2	+75·4	+75·6	+75·7	+75·9	+76·1	+76·3	+76·5	+ 76·6	+ 76·8
298	+77·0	+77·2	+77·4	+77·5	+77·7	+77·9	+78·1	+78·3	+ 78·4	+ 78·6
299	+78·8	+79·0	+79·2	+79·3	+79·5	+79·7	+79·9	+80·1	+ 80·2	+ 80·4
300	+80·6	+80·8	+81·0	+81·1	+81·3	+81·5	+81·7	+81·9	+ 82·0	+ 82·2
301	+82·4	+82·6	+82·8	+82·9	+83·1	+83·3	+83·5	+83·7	+ 83·8	+ 84·0
302	+84·2	+84·4	+84·6	+84·7	+84·9	+85·1	+85·3	+85·5	+ 85·6	+ 85·8
303	+86·0	+86·2	+86·4	+86·5	+86·7	+86·9	+87·1	+87·3	+ 87·4	+ 87·6
304	+87·8	+88·0	+88·2	+88·3	+88·5	+88·7	+88·9	+89·1	+ 89·2	+ 89·4
305	+89·6	+89·8	+90·0	+90·1	+90·3	+90·5	+90·7	+90·9	+ 91·0	+ 91·2
306	+91·4	+91·6	+91·8	+91·9	+92·1	+92·3	+92·5	+92·7	+ 92·8	+ 93·0
307	+93·2	+93·4	+93·6	+93·7	+93·9	+94·1	+94·3	+94·5	+ 94·6	+ 94·8
308	+95·0	+95·2	+95·4	+95·5	+95·7	+95·9	+96·1	+96·3	+ 96·4	+ 96·6
309	+96·8	+97·0	+97·2	+97·3	+97·5	+97·7	+97·9	+98·1	+ 98·2	+ 98·4
310	+98·6	+98·8	+99·0	+99·1	+99·3	+99·5	+99·7	+99·9	+100·0	+100·2

TABLE III.—VAPOUR PRESSURE.

Mercury-Inches to Millibars.

Inches.	0	1	2	3	4	5	6	7	8	9
	Millibars.									
0·0	0·0	0·3	0·7	1·0	1·4	1·7	2·0	2·4	2·7	3·0
0·1	3·4	3·7	4·1	4·4	4·7	5·1	5·4	5·8	6·1	6·4
0·2	6·8	7·1	7·4	7·8	8·1	8·5	8·8	9·1	9·5	9·8
0·3	10·2	10·5	10·8	11·2	11·5	11·9	12·2	12·5	12·9	13·2
0·4	13·5	13·9	14·2	14·6	14·9	15·2	15·6	15·9	16·3	16·6
0·5	16·9	17·3	17·6	17·9	18·3	18·6	19·0	19·3	19·6	20·0
0·6	20·3	20·7	21·0	21·3	21·7	22·0	22·3	22·7	23·0	23·4
0·7	23·7	24·0	24·4	24·7	25·1	25·4	25·7	26·1	26·4	26·8
0·8	27·1	27·4	27·8	28·1	28·4	28·8	29·1	29·5	29·8	30·1
0·9	30·5	30·8	31·2	31·5	31·8	32·2	32·5	32·8	33·2	33·5
1·0	33·9	34·2	34·5	34·9	35·2	35·6	35·9	36·2	36·6	36·9

TABLE IV.—WIND VELOCITY.

Miles per Hour into Metres per Second.

1 mile per hour = 0·44704 metres per second.

Miles per Hour.	0	1	2	3	4	5	6	7	8	9
	Metres per Second.									
0	0·0	0·4	0·9	1·3	1·8	2·2	2·7	3·1	3·6	4·0
10	4·5	4·9	5·4	5·8	6·3	6·7	7·2	7·6	8·0	8·5
20	8·9	9·4	9·8	10·3	10·7	11·2	11·6	12·1	12·5	13·0
30	13·4	13·9	14·3	14·8	15·2	15·6	16·1	16·5	17·0	17·4
40	17·9	18·3	18·8	19·2	19·7	20·1	20·6	21·0	21·5	21·9
50	22·4	22·8	23·2	23·7	24·1	24·6	25·0	25·5	25·9	26·4
60	26·8	27·3	27·7	28·2	28·6	29·1	29·5	30·0	30·4	30·8
70	31·3	31·7	32·2	32·6	33·1	33·5	34·0	34·4	34·9	35·3
80	35·8	36·2	36·7	37·1	37·6	38·0	38·4	38·9	39·3	39·8
90	40·2	40·7	41·1	41·6	42·0	42·5	42·9	43·4	43·8	44·3
100	44·7	45·2	45·6	46·0	46·5	46·9	47·4	47·8	48·3	48·7
110	49·2	49·6	50·1	50·5	51·0	51·4	51·9	52·3	52·8	53·2
120	53·6	54·1	54·5	55·0	55·4	55·9	56·3	56·8	57·2	57·7
130	58·1	58·6	59·0	59·5	59·9	60·4	60·8	61·2	61·7	62·1
140	62·6	63·0	63·5	63·9	64·4	64·8	65·3	65·7	66·2	66·6

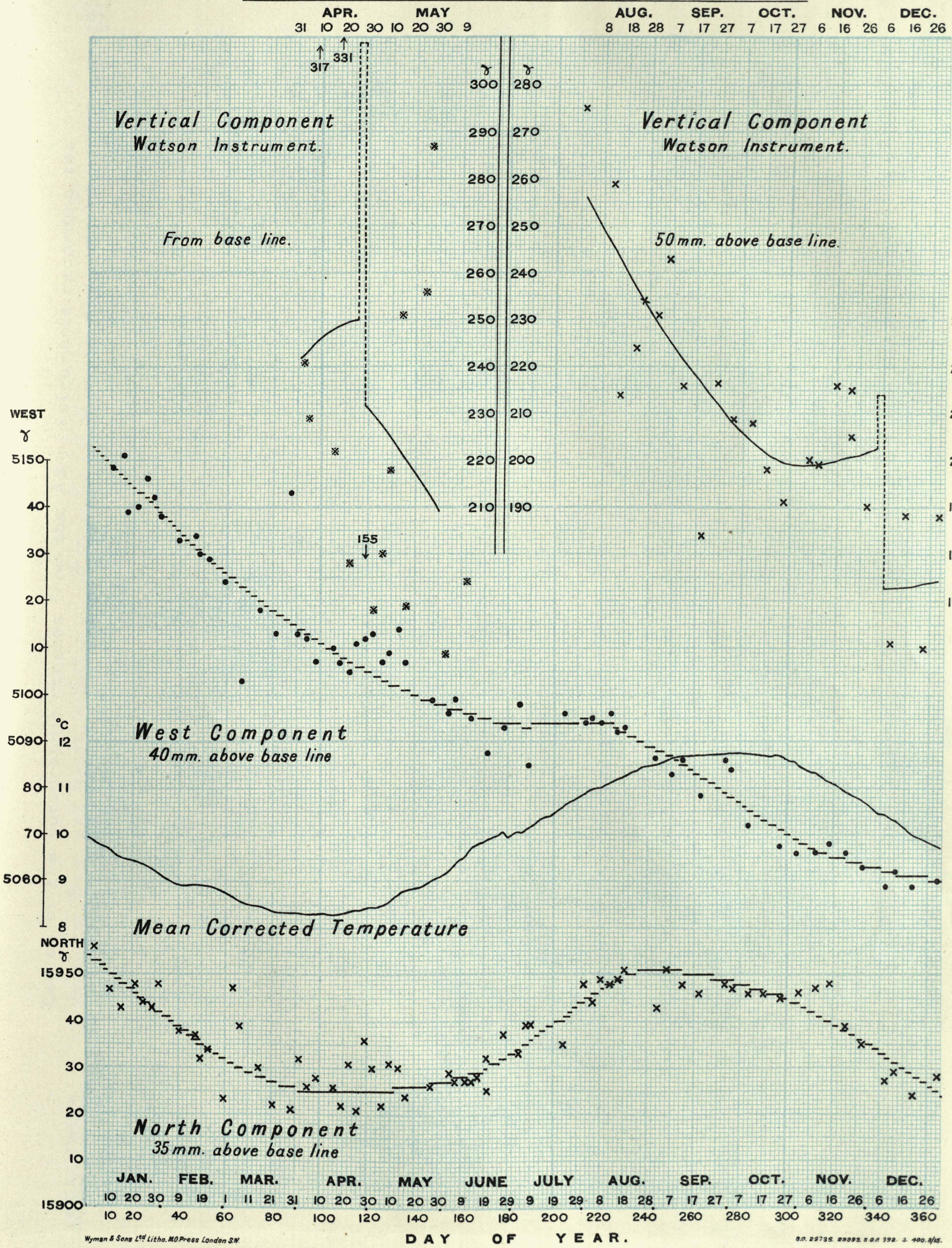
TABLE V.—RAINFALL.

Inches to Millimetres.

Inches.	0	1	2	3	4	5	6	7	8	9
	Millimetres.									
0·0	0·0	0·3	0·5	0·8	1·0	1·3	1·5	1·8	2·0	2·3
0·1	2·5	2·8	3·0	3·3	3·6	3·8	4·1	4·3	4·6	4·8
0·2	5·1	5·3	5·6	5·8	6·1	6·4	6·6	6·9	7·1	7·4
0·3	7·6	7·9	8·1	8·4	8·6	8·9	9·1	9·4	9·7	9·9
0·4	10·2	10·4	10·7	10·9	11·2	11·4	11·7	11·9	12·2	12·4
0·5	12·7	13·0	13·2	13·5	13·7	14·0	14·2	14·5	14·7	15·0
0·6	15·2	15·5	15·7	16·0	16·3	16·5	16·8	17·0	17·3	17·5
0·7	17·8	18·0	18·3	18·5	18·8	19·1	19·3	19·6	19·8	20·1
0·8	20·3	20·6	20·8	21·1	21·3	21·6	21·8	22·1	22·4	22·6
0·9	22·9	23·1	23·4	23·6	23·9	24·1	24·4	24·6	24·9	25·1
1·0	25·4	25·7	25·9	26·2	26·4	26·7	26·9	27·2	27·4	27·7
1·1	27·9	28·2	28·4	28·7	29·0	29·2	29·5	29·7	30·0	30·2
1·2	30·5	30·7	31·0	31·2	31·5	31·8	32·0	32·3	32·5	32·8
1·3	33·0	33·3	33·5	33·8	34·0	34·3	34·5	34·8	35·1	35·3
1·4	35·6	35·8	36·1	36·3	36·6	36·8	37·1	37·3	37·6	37·8
1·5	38·1	38·4	38·6	38·9	39·1	39·4	39·6	39·9	40·1	40·4
1·6	40·6	40·9	41·1	41·4	41·7	41·9	42·2	42·4	42·7	42·9
1·7	43·2	43·4	43·7	43·9	44·2	44·5	44·7	45·0	45·2	45·5
1·8	45·7	46·0	46·2	46·5	46·7	47·0	47·2	47·5	47·8	48·0
1·9	48·3	48·5	48·8	49·0	49·3	49·5	49·8	50·0	50·3	50·5
2·0	50·8	51·1	51·3	51·6	51·8	52·1	52·3	52·6	52·8	53·1

Plate I. to be inserted at end of volume.

Eskdalemuir Magnetographs, Base Values 1913.

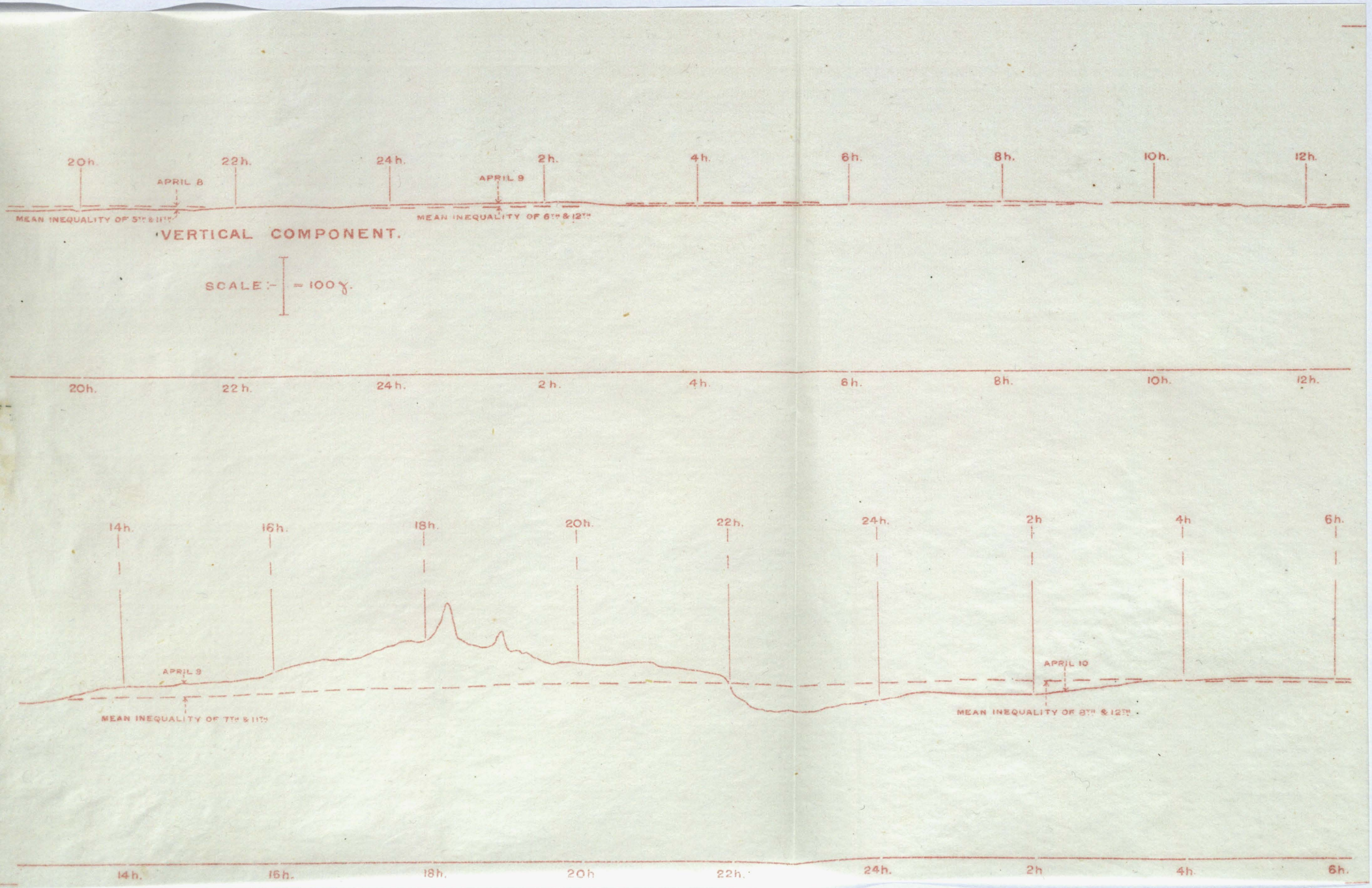


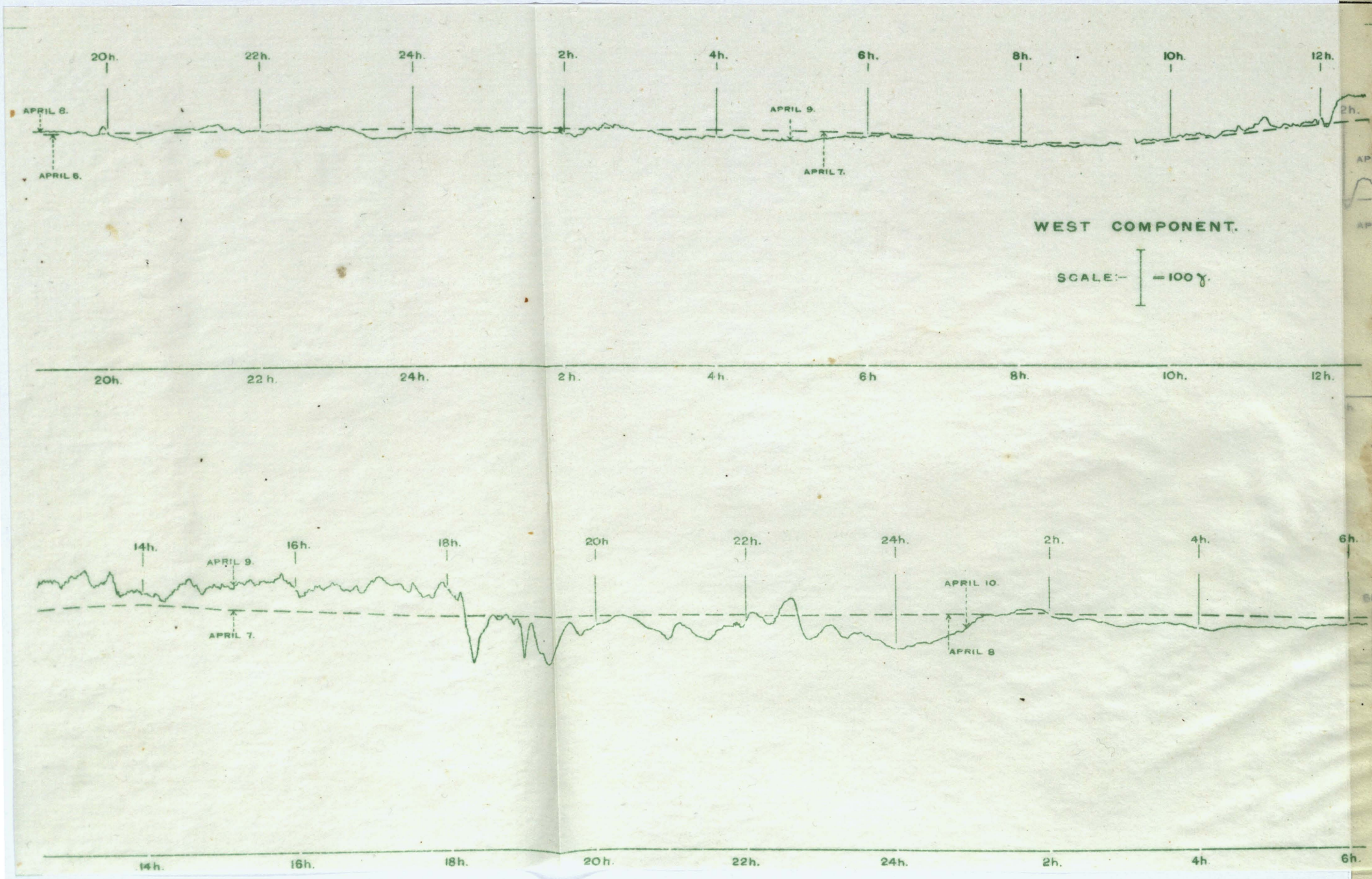
Wyman & Sons Ltd Litho. M.O. Press London S.W.

For explanation, see p. 74.

S.O. 29735. 29993. S.O.P. 392. 3. 400. 8/15.

Copies of the autographic records from the Adie instruments recording the

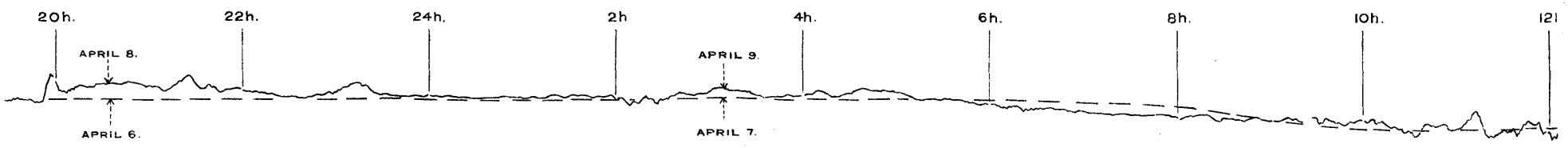



20h.
22h.
24h.
2h.
4h.
6h.
8h.
10h.
12h.
APRIL 8.
APRIL 6.
APRIL 9.
APRIL 7.
WEST COMPONENT.
SCALE:- = 100γ.
20h.
22 h.
24h.
2 h.
4 h.
6 h
8h.
10h.
12h.
14h.
16h.
18h.
20h
22h.
24h.
2h.
4h.
6h.
APRIL 9.
APRIL 7.
APRIL 10.
APRIL 8
14h.
16h.
18h.
20h.
22h.
24h.
2h.
4h
6h.

ESKDALEMUIR

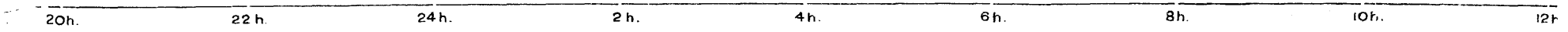
Copies of the autographic records from the Adie instruments recording the Vertical, West and North components of Terrestrial Magnetic Force for April 8–10, 1913, with the corresponding records for April 6–8, for comparison.

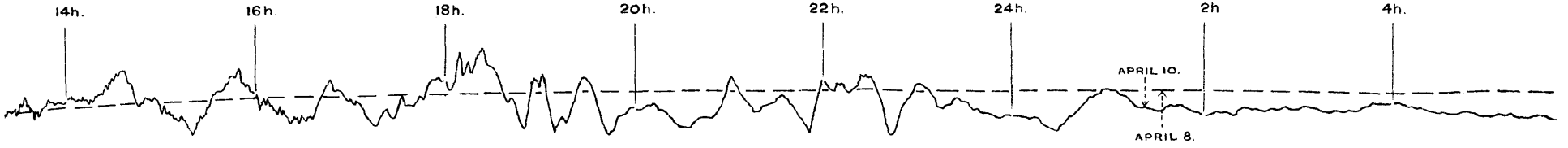
1913.

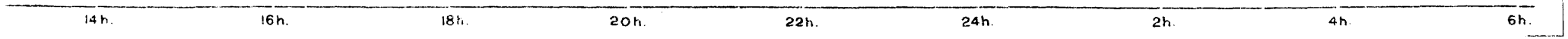


NORTH COMPONENT.

SCALE:– | = 100γ.







Wyman & Sons Ltd Litho MO Press London SW.

See p. 77.

S.O. 29736 29983. 382. 400 3 6/15

FORM 431.

METEOROLOGICAL OFFICE OBSERVATORIES.

DETERMINATION OF BASE VALUES OF MAGNETOGRAPHS.

STATION *Date*

Deductions from Obervations.	G.M.T.	NORTH COMPT.	WEST COMPT.	VERTL. COMPT.
		Heights of Secondary base lines. mm.	mm.	mm.
		Scale Values. 1 mm. = γ	1 mm. = γ	1 mm. = γ
INCLINATION.	h. m.	Curve Readings.		
I_1 = ° ′	. to .	mm.	mm.	mm.
	. to .	mm.	mm.	mm.
	Mean ...	mm.	mm.	mm.
		n_I = γ	w_I = γ	v_I = γ
DECLINATION.	. . . .	mm.	mm.	Character of Curves.
D_D = ° ″	Mean	mm.	mm.	
		n_D = γ	w_D = γ	
VIBRATION.	. to .	mm.	mm.	
log mH_V = ·		n_V = γ	w_V = γ	
DEFLECTION (shortest distance).	. to .	mm.	mm.	
log $\frac{m}{H_{R_1}}$ = ·		n_{R_1} = γ	w_{R_1} = γ	
(Diff.) 2 log H_H = $\bar{2}$·				
log H_H = $\bar{1}$·	Mean (V and R_1)	n_H = γ	w_H = γ	
H_H = · γ				
E ($n_{R_1} - n_V$) = ·	$n_D - n_H$ =	γ	$w_D - w_H$ =	γ
F ($w_{R_1} - w_V$) = ·	$n_I - n_H$ =	γ	$w_I - w_H$ =	γ
Sum = ·				
log m^2H_V/H_{R_1} = ·	$n_{R_1} - n_V$ =	γ	$w_{R_1} - w_V$ =	γ
Sum = log m^2 = ·	(E and F have the values given on the opposite page.)			
log m = ·				
m =				