M.O. 227 *f.*

METEOROLOGICAL OFFICE.

BRITISH METEOROLOGICAL AND MAGNETIC YEAR BOOK, 1916.

PART IV.

HOURLY VALUES FROM AUTOGRAPHIC RECORDS: 1916.

COMPRISING

HOURLY READINGS OF TERRESTRIAL MAGNETISM AT ESKDALEMUIR 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 Authority of the Meteorological Committee.

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PREFACE.

For the years 1911 to 1913, "Hourly Values from Autographic Records" was published in two sections. The issue of the first section, which contained hourly values of pressure, temperature, humidity, wind, rainfall, and sunshine, is now discontinued. The present volume represents the Section 2 of those three years, and is the sixth of the series. It may be regarded as a continuation in extended form of the tables and summaries giving the results of observations in terrestrial magnetism and atmospheric electricity which were included in the reports of the committee of management of the Kew Observatory from 1842 to 1910, and of tables published by the Meteorological Office in the *Quarterly Weather Report* from 1869 to 1880, and thereafter in *Hourly Readings.*

The tables of the present volume fall into three groups. In the first group the mean daily variation of the various meteorological elements is given for each month. The figures refer to the five observatories, Aberdeen, Eskdalemuir, Cahirciveen (Valencia Observatory), Richmond (Kew Observatory), and Falmouth.

In the second group fall Tables I. to XLVIII., in which the readings of the magnetographs at Eskdalemuir Observatory for each hour throughout the year are set out, together with appropriate notes; Tables XLIX. to LXIV., giving results deduced from these readings and corresponding figures for Kew Observatory; and Tables LXVII. and LXVIII., in which magnetic data for various stations are set out.

In the third group are the three tables on page 64. These tables show the mean daily variation of potential gradient at Richmond and Eskdalemuir. The values from which the means have been computed are not published.

The tables are followed by notes on the management of the magnetic and electrical instruments and on results of interest. For notes on the meteorological instruments reference may be made to the Year Book, Part IV., Section 1, 1913, but notes on the Meteorological Summaries are included in this volume.

Attention may be called to the article by Dr. Chree on the results of the observations of electrical potential at the two observatories during the years 1914–1916.

It is proper to add that in all matters concerning the scientific work of the observatories full advantage is 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.

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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 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.

In 1911, the first year of the British Meteorological and Magnetic Year Book, this principle was carried out in Part III., Section 1 (the *Geophysical Journal*), and in the two sections of Part IV. In 1912 it was adopted for Part III., Section 1 (*Daily Readings*). The expression of pressure in millibars in the *Monthly Weather Report* and in the maps of the *Weekly Weather Report*, Section 2, dates from 1914. At the time of writing it can be added that rainfall has been given in millimetres in the Monthly and Weekly Reports since the beginning of 1915, and that the use of Absolute Temperatures in the descriptive summaries and in the Tables of District-Values in those publications commenced in 1916.

Tables for conversion of meteorological data between Inch-Fahrenheit units and the units used in this publication are given in the 1913 volume and in the *Computer's Handbook*.

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 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.

In the magnetic tables X has been used to denote the North Component and —Y the West Component, in accordance with the International practice of employing 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 South–North and East-West Components.

The year 1916 was the first in which "Summer Time" was introduced. The reader need not take this into consideration, however, as all the observations at the observatories are referred to Greenwich Mean Time.

Some explanation of the insistance in this volume on the references to Richmond and Cahirciveen in connection with Kew Observatory and Valencia Observatory may be desirable.

Kew Observatory is in the Old Deer Park. This Park adjoins the Royal Gardens, Kew, but access to it is by Richmond, not by Kew, so that visitors coming by railway have to be warned not to book to either of the Kew stations. It is of interest to recall that there was once an observatory at Kew, and that some of Bradley's observations which led to the discovery of aberration were made there; the site, in front of Kew Palace, is marked by a sundial.* In the instructions prepared by the King's Observer, Dr. S. C. Demainbray, for the observation of the transit of Venus in 1769, the present observatory is referred to as Richmond Observatory.

The name of Valencia Observatory can be justified on historical grounds, though not geographically. The observatory was established on Valencia Island in 1867, and the instruments were transferred to Westwood House, Cahirciveen, in 1892. The distance between the two sites is about three miles.

The publication of meteorological and geophysical data for the year 1916 is arranged in accordance with the following scheme :—

(*a*) DAILY WEATHER REPORT.—

This includes meteorological observations for 7 h. and 18 h. 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 :—

* "The History of the Kew Observatory," R. H. Scott, London, *Royal Soc. Proc.*, vol. xxxix., p. 1, 1885.

Part I.—*Weekly Weather Report*, comprising Section I., Weekly results of observations of the meteorological elements for stations and districts in the British Isles; Section II., Daily Synoptic Charts of the North Atlantic Ocean and adjoining continents; Annual and Quarterly Appendices. Issued on Friday of each week. Price 6d. per number. Annual subscription (which includes the Monthly Weather Report) 30s., postage paid. The issue of Section II. has been suspended since August 1914.

Part II.—*Monthly Weather Report*, prepared for issue at the end of the month to which it refers, and uniform with a summary issued annually. Price 6d. per number.

Part III.—(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.—*Hourly Values* from Autographic Records. Meteorology, Terrestrial Magnetism, and Atmospheric Electricity. Issued at the end of each year. Price 5s.

Part V.—*Réseau Mondial* (Monthly and Annual Summaries of Pressure, Temperature, and Precipitation at Land Stations, generally two for each Ten-degree Square of Latitude and Longitude) has been issued for 1911, 1912, and 1913. The data for 1910 are in the printer's hands, and the 1914 volume is now being prepared.

The publications include the results of the work of the observatories in the departments of Meteorology, Terrestrial Magnetism, Atmospheric Electricity, and Seismology.

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.

NAPIER SHAW,
Director.

METEOROLOGICAL OFFICE,
SOUTH KENSINGTON, S.W. 7, *November 2nd*, 1919.

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HOURLY VALUES FROM AUTOGRAPHIC RECORDS. 1916.

LIST OF OBSERVATORIES.

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

Notes.—(1) The height given is that of the site of the rain-gauge. The heights of other meteorological instruments are shown under the appropriate Tables.

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

HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS:

PRESSURE IN MILLIBARS

Hour, G.M.T.	0.	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.	mb.
ABERDEEN: Normal 1000+	7·68	7·55	7·54	7·46	7·33	7·19	7·17	7·23	7·46	7·67	7·85	7·86	7·67
1916 Departure.	− 2·96	− 2·83	− 2·73	− 2·66	− 2·52	− 2·73	− 2·90	− 3·06	− 3·16	− 3·17	− 3·16	− 3·20	− 3·07
ESKDALEMUIR: [Normal] 900+	83·41	83·30	83·37	83·34	83·26	83·16	83·17	83·29	83·44	83·64	83·73	83·69	83·45
1916 Departure.	+ 1·02	+ 1·07	+ 1·08	+ 1·20	+ 1·13	+ 1·06	+ 1·01	+ 0·99	+ 1·02	+ 1·14	+ 1·02	+ 1·01	+ 1·02
CAHIRCIVEEN: Normal 1000+	12·74	12·57	12·45	12·45	12·30	12·16	12·09	12·15	12·36	12·63	12·91	13·05	12·89
1916 Departure.	+ 4·55	+ 4·68	+ 4·68	+ 4·63	+ 4·65	+ 4·66	+ 4·56	+ 4·50	+ 4·42	+ 4·58	+ 4·55	+ 4·80	+ 5·02
RICHMOND: Normal 1000+	16·16	16·01	16·04	15·97	15·83	15·70	15·73	15·88	16·15	16·38	16·59	16·58	16·22
1916 Departure.	+ 5·39	+ 5·41	+ 5·53	+ 5·48	+ 5·46	+ 5·44	+ 5·33	+ 5·32	+ 5·33	+ 5·36	+ 5·31	+ 5·24	+ 5·33
FEBRUARY.													
ABERDEEN: Normal 1000+	7·49	7·34	7·26	7·05	6·92	6·85	6·86	6·96	7·20	7·32	7·46	7·53	7·47
1916 Departure.	− 5·63	− 5·62	− 5·74	− 5·90	− 5·99	− 6·27	− 6·41	− 6·42	− 6·43	− 6·39	− 6·37	− 6·32	− 6·18
ESKDALEMUIR: [Normal] 900+	78·62	78·50	78·41	78·20	78·13	78·10	78·20	78·29	78·56	78·72	78·78	78·90	78·91
1916 Departure.	− 0·80	− 0·95	− 1·00	− 1·07	− 1·29	− 1·42	− 1·64	− 1·77	− 1·98	− 2·05	− 2·04	− 2·00	− 1·85
CAHIRCIVEEN: Normal 1000+	11·47	11·39	11·23	11·07	10·86	10·81	10·86	10·91	11·16	11·38	11·58	11·68	11·72
1916 Departure.	− 2·71	− 2·77	− 2·74	− 2·76	− 2·77	− 2·70	− 2·58	− 2·59	− 2·60	− 2·51	− 2·62	− 2·67	− 2·63
RICHMOND: Normal 1000+	14·68	14·55	14·45	14·22	14·12	14·11	14·14	14·27	14·54	14·67	14·79	14·84	14·62
1916 Departure.	− 6·20	− 6·48	− 6·75	− 7·09	− 7·40	− 7·63	− 7·59	− 7·58	− 7·49	− 7·50	− 7·56	− 7·58	− 7·38
MARCH.													
ABERDEEN: Normal 1000+	6·77	6·64	6·51	6·27	6·15	6·10	6·17	6·28	6·47	6·56	6·67	6·70	6·67
1916 Departure.	− 1·68	− 1·61	− 1·62	− 1·54	− 1·50	− 1·47	− 1·40	− 1·30	− 1·15	− 1·07	− 1·13	− 1·17	− 1·14
ESKDALEMUIR: [Normal] 900+	78·32	78·20	78·08	77·83	77·69	77·66	77·79	77·99	78·24	78·42	78·54	78·61	78·66
1916 Departure.	− 0·04	− 0·04	− 0·06	− 0·07	0·00	+ 0·08	+ 0·17	+ 0·25	+ 0·26	+ 0·26	+ 0·21	+ 0·30	+ 0·29
CAHIRCIVEEN: Normal 1000+	11·60	11·47	11·34	11·10	10·90	10·86	10·93	11·04	11·24	11·38	11·53	11·57	11·57
1916 Departure.	− 6·39	− 6·31	− 6·29	− 6·19	− 6·21	− 6·22	− 6·24	− 6·13	− 6·20	− 6·21	− 6·28	− 6·28	− 6·35
RICHMOND: Normal 1000+	12·75	12·68	12·52	12·29	12·21	12·22	12·35	12·51	12·73	12·85	12·90	12·84	12·69
1916 Departure.	− 9·90	− 9·86	− 9·80	− 9·78	− 9·76	− 9·72	− 9·67	− 9·60	− 9·69	− 9·64	− 9·54	− 9·52	− 9·37
APRIL.													
ABERDEEN: Normal 1000+	9·60	9·42	9·28	9·10	8·99	8·98	9·16	9·29	9·43	9·48	9·54	9·51	9·51
1916 Departure.	− 4·04	− 4·04	− 4·07	− 4·10	− 4·08	− 4·09	− 4·11	− 4·15	− 4·26	− 4·32	− 4·37	− 4·41	− 4·48
ESKDALEMUIR: [Normal] 900+	88·65	88·53	88·44	88·31	88·22	88·18	88·34	88·46	88·55	88·54	88·50	88·38	88·29
1916 Departure.	− 6·97	− 7·02	− 7·14	− 7·11	− 7·13	− 7·04	− 7·09	− 7·06	− 7·08	− 7·06	− 7·09	− 7·00	− 7·05
CAHIRCIVEEN: Normal 1000+	11·75	11·62	11·41	11·23	11·10	11·05	11·19	11·36	11·54	11·60	11·70	11·75	11·73
1916 Departure.	+ 1·48	+ 1·45	+ 1·47	+ 1·50	+ 1·54	+ 1·56	+ 1·60	+ 1·71	+ 1·69	+ 1·74	+ 1·77	+ 1·79	+ 1·70
RICHMOND: Normal 1000+	13·00	12·84	12·69	12·57	12·48	12·53	12·76	12·92	13·01	13·05	13·04	12·91	12·70
1916 Departure.	− 0·74	− 1·06	− 1·12	− 0·82	− 0·90	− 0·94	− 0·97	− 1·01	− 1·03	− 1·12	− 1·07	− 1·06	− 1·08
MAY.													
ABERDEEN: Normal 1000+	12·04	11·87	11·73	11·57	11·51	11·54	11·66	11·75	11·86	11·88	11·90	11·90	11·89
1916 Departure.	− 2·08	− 1·80	− 2·03	− 2·07	− 2·11	− 2·12	− 2·17	− 2·16	− 2·18	− 2·22	− 2·17	− 2·24	− 2·24
ESKDALEMUIR: [Normal] 900+	87·64	87·52	87·41	87·25	87·16	87·20	87·29	87·40	87·48	87·43	87·33	87·22	87·14
1916 Departure.	− 3·04	− 3·02	− 3·07	− 3·10	− 3·09	− 3·03	− 3·14	− 3·20	− 3·26	− 3·22	− 3·21	− 3·10	− 3·09
CAHIRCIVEEN: Normal 1000+	14·22	14·02	13·82	13·63	13·48	13·46	13·61	13·74	13·88	13·95	14·01	14·06	14·08
1916 Departure.	− 2·41	− 2·37	− 2·35	− 2·30	− 2·25	− 2·19	− 2·18	− 2·12	− 2·11	− 2·06	− 2·12	− 2·03	− 2·05
RICHMOND: Normal 1000+	15·01	14·88	14·75	14·62	14·58	14·69	14·87	14·99	15·06	15·02	14·95	14·85	14·67
1916 Departure.	− 2·26	− 2·27	− 2·26	− 2·18	− 2·23	− 2·24	− 2·28	− 2·28	− 2·34	− 2·37	− 2·30	− 2·30	− 2·30
JUNE.													
ABERDEEN: Normal 1000+	12·20	12·05	11·91	11·75	11·73	11·75	11·85	11·94	12·03	12·02	12·04	12·04	12·03
1916 Departure.	− 4·81	− 4·81	− 4·84	− 4·96	− 4·97	− 5·06	− 5·03	− 4·98	− 4·94	− 4·90	− 4·83	− 4·88	− 4·85
ESKDALEMUIR: [Normal] 900+	86·91	86·77	86·62	86·46	86·41	86·43	86·53	86·64	86·73	86·71	86·66	86·60	86·59
1916 Departure.	− 3·27	− 3·28	− 3·27	− 3·24	− 3·23	− 3·27	− 3·37	− 3·46	− 3·50	− 3·58	− 3·63	− 3·62	− 3·65
CAHIRCIVEEN: Normal 1000+	14·61	14·43	14·23	14·03	13·91	13·94	14·08	14·20	14·36	14·45	14·52	14·57	14·62
1916 Departure.	+ 0·12	+ 0·11	+ 0·10	+ 0·07	+ 0·05	− 0·01	− 0·03	− 0·03	− 0·15	− 0·16	− 0·24	− 0·26	− 0·26
RICHMOND: Normal 1000+	15·32	15·21	15·06	14·94	14·96	15·06	15·21	15·32	15·41	15·35	15·31	15·26	15·10
1916 Departure.	− 2·41	− 2·44	− 2·41	− 2·42	− 2·48	− 2·51	− 2·57	− 2·55	− 2·66	− 2·62	− 2·56	− 2·55	− 2·52

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

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

NORMALS AND DEPARTURES THEREFROM IN 1916.

JANUARY TO JUNE.

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.	**JANUARY.**
7·41	7·32	7·29	7·41	7·46	7·59	7·63	7·74	7·74	7·77	7·70	7·66	7·53	Normal. ABERDEEN.
− 2·86	− 2·89	− 2·88	− 2·85	− 2·73	− 2·62	− 2·52	− 2·28	− 2·07	− 2·12	− 1·94	− 1·66	− 2·72	1916 Dep. ,,
83·13	82·92	82·83	82·89	82·95	83·03	83·08	83·21	83·20	83·24	83·26	83·30	83·25	[Normal.] ESKDALEMUIR.
+ 1·09	+ 1·18	+ 1·30	+ 1·30	+ 1·68	+ 1·89	+ 2·07	+ 2·32	+ 2·45	+ 2·34	+ 2·36	+ 2·32	+ 1·43	1916 Dep. ,,
12·55	12·27	12·21	12·29	12·38	12·53	12·65	12·77	12·82	12·84	12·81	12·77	12·54	Normal. CAHIRCIVEEN.
+ 5·16	+ 5·27	+ 5·47	+ 5·52	+ 5·64	+ 5·59	+ 5·60	+ 5·70	+ 5·89	+ 5·85	+ 5·90	+ 5·97	+ 5·11	1916 Dep. ,,
15·86	15·66	15·67	15·77	15·85	15·99	16·10	16·20	16·22	16·23	16·19	16·12	16·04	Normal. RICHMOND.
+ 5·20	+ 5·28	+ 5·39	+ 5·50	+ 5·59	+ 5·72	+ 5·79	+ 5·83	+ 5·91	+ 5·97	+ 6·09	+ 6·25	+ 5·53	1916 Dep. ,,
													FEBRUARY.
7·24	7·11	6·98	7·05	7·13	7·36	7·42	7·50	7·48	7·51	7·46	7·45	7·25	Normal. ABERDEEN.
− 6·01	− 5·93	− 5·95	− 6·01	− 6·08	− 6·21	− 6·25	− 6·38	− 6·45	− 6·50	− 6·38	− 6·45	− 6·18	1916 Dep. ,,
78·69	78·47	78·32	78·26	78·23	78·43	78·47	78·47	78·44	78·48	78·42	78·41	78·45	[Normal.] ESKDALEMUIR.
− 1·63	− 1·49	− 1·43	− 1·36	− 1·30	− 1·22	− 1·06	− 1·21	− 1·40	− 1·46	− 1·54	− 1·68	− 1·47	1916 Dep. ,,
11·47	11·21	10·98	10·95	10·99	11·20	11·40	11·46	11·46	11·50	11·44	11·42	11·26	Normal. CAHIRCIVEEN.
− 2·72	− 2·87	− 2·83	− 2·92	− 3·05	− 3·12	− 3·25	− 3·41	− 3·69	− 3·81	− 3·66	− 3·69	− 2·94	1916 Dep. ,,
14·30	14·03	13·92	13·95	14·05	14·33	14·46	14·56	14·63	14·67	14·62	14·62	14·40	Normal. RICHMOND.
− 7·27	− 7·10	− 7·03	− 6·86	− 6·82	− 6·86	− 6·94	− 7·09	− 7·17	− 7·30	− 7·58	− 7·70	− 7·21	1916 Dep. ,,
													MARCH.
6·51	6·36	6·26	6·25	6·31	6·55	6·71	6·84	6·84	6·86	6·81	6·67	6·51	Normal. ABERDEEN.
− 1·06	− 1·10	− 1·20	− 1·25	− 1·22	− 1·24	− 1·23	− 1·20	− 1·14	− 1·11	− 1·15	− 1·01	− 1·27	1916 Dep. ,,
78·51	78·38	78·27	78·24	78·26	78·45	78·57	78·70	78·66	78·64	78·59	78·52	78·31	[Normal.] ESKDALEMUIR.
+ 0·35	+ 0·38	+ 0·39	+ 0·43	+ 0·54	+ 0·58	+ 0·62	+ 0·69	+ 0·71	+ 0·65	+ 0·58	+ 0·61	+ 0·33	1916 Dep. ,,
11·44	11·23	11·05	10·99	11·00	11·18	11·39	11·57	11·67	11·74	11·71	11·67	11·31	Normal. CAHIRCIVEEN.
− 6·40	− 6·50	− 6·43	− 6·43	− 6·35	− 6·32	− 6·16	− 5·97	− 5·72	− 5·68	− 5·55	− 5·54	− 6·18	1916 Dep. ,,
12·41	12·14	11·98	11·90	11·98	12·27	12·49	12·68	12·75	12·80	12·76	12·72	12·49	Normal. RICHMOND.
− 9·32	− 9·24	− 9·15	− 8·98	− 8·87	− 8·80	− 8·70	− 8·59	− 8·44	− 8·55	− 8·50	− 8·53	− 9·27	1916 Dep. ,,
													APRIL.
9·44	9·36	9·22	9·21	9·21	9·37	9·55	9·81	9·85	9·85	9·79	9·72	9·42	Normal. ABERDEEN.
− 4·42	− 4·48	− 4·39	− 4·32	− 4·30	− 4·28	− 4·30	− 4·24	− 4·23	− 4·26	− 4·23	− 4·15	− 4·25	1916 Dep. ,,
88·23	88·12	87·98	87·97	87·98	88·11	88·32	88·62	88·73	88·79	88·79	88·80	88·38	[Normal.] ESKDALEMUIR.
− 7·02	− 7·07	− 7·05	− 7·05	− 7·05	− 7·01	− 7·06	− 7·02	− 7·07	− 7·18	− 7·27	− 7·32	− 7·08	1916 Dep. ,,
11·65	11·60	11·41	11·31	11·27	11·34	11·43	11·65	11·84	11·87	11·80	11·76	11·51	Normal. CAHIRCIVEEN.
+ 1·68	+ 1·65	+ 1·62	+ 1·49	+ 1·40	+ 1·29	+ 1·23	+ 1·17	+ 1·21	+ 1·10	+ 1·09	+ 1·01	+ 1·49	1916 Dep. ,,
12·53	12·28	12·07	11·98	12·02	12·19	12·46	12·85	13·00	13·08	13·09	13·06	12·67	Normal. RICHMOND.
− 1·08	− 1·14	− 1·16	− 1·16	− 1·11	− 1·18	− 1·19	− 1·20	− 1·15	− 1·27	− 1·26	− 1·35	− 1·09	1916 Dep. ,,
													MAY.
11·84	11·80	11·69	11·65	11·60	11·69	11·81	12·03	12·18	12·23	12·17	12·09	11·83	Normal. ABERDEEN.
− 2·26	− 2·24	− 2·18	− 2·19	− 2·32	− 2·37	− 2·44	− 2·50	− 2·59	− 2·60	− 2·66	− 2·66	− 2·26	1916 Dep. ,,
87·04	86·94	86·83	86·76	86·73	86·85	87·02	87·30	87·56	87·71	87·71	87·65	87·25	[Normal.] ESKDALEMUIR.
− 3·01	− 3·02	− 2·98	− 3·02	− 3·10	− 3·25	− 3·21	− 3·22	− 3·22	− 3·24	− 3·26	− 3·30	− 3·14	1916 Dep. ,,
14·05	14·03	13·94	13·87	13·83	13·84	13·92	14·06	14·30	14·39	14·33	14·24	13·94	Normal. CAHIRCIVEEN.
− 2·01	− 2·05	− 2·03	− 2·09	− 2·14	− 2·24	− 2·23	− 2·35	− 2·36	− 2·46	− 2·47	− 2·47	− 2·21	1916 Dep. ,,
14·50	14·34	14·16	14·05	14·00	14·11	14·31	14·68	14·96	15·09	15·10	15·03	14·68	Normal. RICHMOND.
− 2·25	− 2·20	− 2·23	− 2·21	− 2·16	− 2·18	− 2·13	− 2·10	− 2·05	− 2·05	− 2·05	− 2·03	− 2·22	1916 Dep. ,,
													JUNE.
11·95	11·92	11·82	11·77	11·70	11·77	11·85	12·02	12·21	12·30	12·26	12·20	11·95	Normal. ABERDEEN.
− 4·81	− 4·76	− 4·66	− 4·57	− 4·51	− 4·50	− 4·53	− 4·59	− 4·63	− 4·65	− 4·66	− 4·67	− 4·77	1916 Dep. ,,
86·53	86·49	86·35	86·30	86·24	86·31	86·45	86·62	86·87	86·95	86·94	86·86	86·59	[Normal.] ESKDALEMUIR.
− 3·65	− 3·63	− 3·59	− 3·56	− 3·44	− 3·38	− 3·34	− 3·27	− 3·28	− 3·27	− 3·25	− 3·21	− 3·42	1916 Dep. ,,
14·60	14·56	14·50	14·44	14·37	14·36	14·43	14·51	14·68	14·83	14·75	14·65	14·42	Normal. CAHIRCIVEEN.
− 0·17	− 0·14	− 0·02	− 0·01	+ 0·04	+ 0·07	+ 0·10	+ 0·14	+ 0·24	+ 0·13	+ 0·09	0·00	− 0·02	1916 Dep. ,,
14·92	14·75	14·61	14·47	14·40	14·48	14·64	14·92	15·25	15·38	15·41	15·33	15·03	Normal. RICHMOND.
− 2·40	− 2·43	− 2·41	− 2·32	− 2·33	− 2·29	− 2·34	− 2·46	− 2·51	− 2·58	− 2·62	− 2·60	− 2·48	1916 Dep. ,,

The values for 1916 are given by the departure from the normal; + indicates excess, − defect.
The pressures are for station level, corrected for temperature and gravity, measured at each exact hour, G.M.T.
The normals are for the period 1871–1915. (Eskdalemuir 1911–15 only).

Mean values are calculated by the formula, $\text{mean} = \frac{1}{24}\left\{(1 + \cdots + 23) + \frac{1}{2}(0 + 24)\right\}$

HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS:

PRESSURE IN MILLIBARS.

Hour, G.M.T.	0.	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.	mb.
ABERDEEN: Normal 1000+	9·85	9·69	9·54	9·36	9·34	9·36	9·46	9·55	9·64	9·63	9·64	9·66	9·66
1916 Departure.	+ 2·01	+ 2·02	+ 2·06	+ 2·06	+ 2·07	+ 2·08	+ 2·16	+ 2·16	+ 2·21	+ 2·18	+ 2·24	+ 2·21	+ 2·27
ESKDALEMUIR: [Normal] 900+	86·77	86·63	86·51	86·37	86·33	86·30	86·39	86·42	86·55	86·55	86·48	86·43	86·41
1916 Departure.	+ 0·81	+ 0·81	+ 0·80	+ 0·87	+ 0·88	+ 0·93	+ 0·96	+ 1·01	+ 1·00	+ 0·98	+ 0·96	+ 1·00	+ 1·01
CAHIRCIVEEN: Normal 1000+	14·36	14·18	13·96	13·74	13·59	13·59	13·70	13·81	13·97	14·04	14·10	14·17	14·23
1916 Departure.	+ 3·31	+ 3·27	+ 3·28	+ 3·32	+ 3·32	+ 3·33	+ 3·39	+ 3·43	+ 3·47	+ 3·51	+ 3·47	+ 3·53	+ 3·55
RICHMOND: Normal 1000+	14·60	14·46	14·32	14·20	14·21	14·30	14·46	14·59	14·68	14·65	14·60	14·54	14·41
1916 Departure.	+ 1·68	+ 1·82	+ 1·89	+ 1·92	+ 1·90	+ 1·96	+ 1·95	+ 1·97	+ 2·02	+ 2·02	+ 2·03	+ 2·05	+ 2·04
AUGUST.													
ABERDEEN: Normal 1000+	8·70	8·53	8·41	8·23	8·14	8·14	8·27	8·37	8·49	8·54	8·57	8·59	8·57
1916 Departure.	+ 0·81	+ 0·86	+ 0·76	+ 0·75	+ 0·73	+ 0·71	+ 0·69	+ 0·61	+ 0·61	+ 0·58	+ 0·60	+ 0·52	+ 0·49
ESKDALEMUIR: [Normal] 900+	85·82	85·70	85·62	85·46	85·35	85·37	85·50	85·57	85·67	85·69	85·65	85·60	85·56
1916 Departure.	− 1·04	− 1·11	− 1·16	− 1·22	− 1·22	− 1·29	− 1·24	− 1·20	− 1·24	− 1·22	− 1·31	− 1·30	− 1·35
CAHIRCIVEEN: Normal 1000+	13·02	12·85	12·64	12·44	12·25	12·20	12·33	12·48	12·65	12·75	12·86	12·91	12·92
1916 Departure.	− 1·12	− 1·10	− 1·19	− 1·19	− 1·21	− 1·23	− 1·27	− 1·26	− 1·39	− 1·34	− 1·45	− 1·49	− 1·54
RICHMOND: Normal 1000+	14·15	14·00	13·87	13·74	13·66	13·72	13·91	14·05	14·17	14·20	14·16	14·06	13·91
1916 Departure.	− 1·22	− 1·17	− 1·15	− 1·06	− 1·09	− 1·09	− 1·09	− 1·07	− 1·08	− 1·06	− 1·05	− 1·12	− 1·21
SEPTEMBER.													
ABERDEEN: Normal 1000+	10·79	10·67	10·56	10·36	10·24	10·20	10·24	10·48	10·63	10·71	10·75	10·69	10·66
1916 Departure.	+ 2·36	+ 2·37	+ 2·40	+ 2·46	+ 2·48	+ 2·37	+ 2·53	+ 2·42	+ 2·37	+ 2·33	+ 2·34	+ 2·33	+ 2·30
ESKDALEMUIR: [Normal] 900+	89·25	89·13	89·02	88·83	88·73	88·70	88·84	89·00	89·16	89·26	89·23	89·14	89·05
1916 Departure.	− 0·68	− 0·58	− 0·45	− 0·35	− 0·38	− 0·39	− 0·32	− 0·29	− 0·35	− 0·34	− 0·35	− 0·27	− 0·30
CAHIRCIVEEN: Normal 1000+	14·41	14·25	14·04	13·82	13·65	13·59	13·71	13·94	14·14	14·29	14·44	14·44	14·41
1916 Departure.	+ 2·47	+ 2·57	+ 2·68	+ 2·75	+ 2·83	+ 2·82	+ 2·78	+ 2·87	+ 2·85	+ 2·91	+ 2·89	+ 2·95	+ 2·89
RICHMOND: Normal 1000+	15·80	15·69	15·53	15·38	15·29	15·31	15·52	15·72	15·90	16·02	16·00	15·88	15·72
1916 Departure.	+ 0·47	+ 0·44	+ 0·42	+ 0·38	+ 0·37	+ 0·34	+ 0·27	+ 0·31	+ 0·36	+ 0·41	+ 0·52	+ 0·49	+ 0·50
OCTOBER.													
ABERDEEN: Normal 1000+	7·52	7·38	7·25	7·04	6·97	6·92	7·03	7·19	7·43	7·52	7·63	7·62	7·55
1916 Departure.	− 6·34	− 6·24	− 6·22	− 6·24	− 6·28	− 6·35	− 6·44	− 6·51	− 6·48	− 6·52	− 6·78	− 6·95	− 7·06
ESKDALEMUIR: [Normal] 900+	85·68	85·55	85·42	85·15	85·02	85·04	85·12	85·31	85·54	85·55	85·57	85·60	85·47
1916 Departure.	− 7·61	− 7·58	− 7·58	− 7·52	− 7·54	− 7·59	− 7·77	− 7·96	− 8·18	− 8·23	− 8·46	− 8·75	− 8·78
CAHIRCIVEEN: Normal 1000+	10·73	10·60	10·45	10·21	10·08	10·08	10·13	10·25	10·56	10·74	10·89	10·93	10·90
1916 Departure.	− 5·62	− 5·85	− 5·87	− 5·97	− 5·93	− 5·97	− 6·08	− 6·12	− 6·06	− 5·83	− 5·68	− 5·40	− 5·20
RICHMOND: Normal 1000+	12·71	12·61	12·43	12·23	12·19	12·18	12·27	12·51	12·78	12·88	12·89	12·84	12·59
1916 Departure.	− 1·71	− 1·74	− 1·58	− 1·58	− 1·58	− 1·54	− 1·59	− 1·72	− 1·73	− 1·79	− 1·78	− 1·75	− 1·71
NOVEMBER.													
ABERDEEN: Normal 1000+	6·79	6·63	6·58	6·42	6·35	6·30	6·35	6·46	6·72	6·81	6·95	6·92	6·74
1916 Departure.	− 8·32	− 8·28	− 8·14	− 8·15	− 8·17	− 8·18	− 8·27	− 8·37	− 8·27	− 8·21	− 8·11	− 8·16	− 8·07
ESKDALEMUIR: [Normal] 900+	80·80	80·59	80·52	80·33	80·16	80·11	80·09	80·19	80·42	80·52	80·56	80·53	80·35
1916 Departure.	− 5·90	− 5·80	− 5·66	− 5·73	− 5·60	− 5·66	− 5·65	− 5·66	− 5·68	− 5·69	− 5·73	− 5·70	− 5·75
CAHIRCIVEEN: Normal 1000+	11·34	11·19	11·02	10·91	10·75	10·72	10·74	10·82	11·09	11·33	11·51	11·58	11·39
1916 Departure.	− 8·85	− 8·90	− 8·99	− 9·09	− 9·19	− 9·24	− 9·30	− 9·29	− 9·29	− 9·25	− 9·29	− 9·09	− 9·07
RICHMOND: Normal 1000+	13·09	12·91	12·85	12·70	12·61	12·61	12·66	12·83	13·13	13·26	13·41	13·33	13·02
1916 Departure.	− 5·42	− 5·38	− 5·28	− 5·36	− 5·24	− 5·32	− 5·33	− 5·43	− 5·39	− 5·49	− 5·47	− 5·60	− 5·55
DECEMBER.													
ABERDEEN: Normal 1000+	4·32	4·18	4·17	4·05	3·92	3·80	3·81	3·87	4·07	4·26	4·50	4·46	4·28
1916 Departure.	− 7·51	− 7·47	− 7·51	− 7·46	− 7·41	− 7·44	− 7·49	− 7·37	− 7·09	− 7·10	− 7·23	− 7·20	− 7·18
ESKDALEMUIR: [Normal] 900+	75·23	75·15	75·21	75·18	75·03	74·88	74·81	74·80	74·97	75·13	75·22	75·17	74·95
1916 Departure.	− 2·28	− 2·35	− 2·40	− 2·38	− 2·31	− 2·41	− 2·35	− 2·21	− 2·06	− 2·05	− 2·09	− 2·10	− 2·20
CAHIRCIVEEN: Normal 1000+	9·59	9·39	9·24	9·23	9·07	8·95	8·92	8·99	9·19	9·46	9·77	9·91	9·69
1916 Departure.	− 7·66	− 7·65	− 7·69	− 7·67	− 7·68	− 7·72	− 7·78	− 7·67	− 7·60	− 7·40	− 7·49	− 7·46	− 7·45
RICHMOND: Normal 1000+	12·72	12·55	12·58	12·49	12·34	12·22	12·29	12·40	12·65	12·88	13·14	13·02	12·69
1916 Departure.	− 8·80	− 8·96	− 9·16	− 9·25	− 9·51	− 9·84	−10·08	−10·23	−10·28	−10·34	−10·45	−10·45	−10·33
YEAR.													
ABERDEEN: Normal 1000+	8·65	8·50	8·39	8·22	8·13	8·09	8·17	8·28	8·45	8·53	8·63	8·62	8·56
1916 Departure.	− 3·19	− 3·13	− 3·14	− 3·15	− 3·15	−3·21	− 3·24	− 3·26	− 3·23	− 3·17	− 3·25	− 3·28	− 3·27
ESKDALEMUIR: [Normal] 900+	83·93	83·80	83·72	83·56	83·46	83·43	83·51	83·61	83·77	83·85	83·85	83·82	83·74
1916 Departure.	− 2·49	− 2·49	− 2·49	− 2·48	− 2·48	− 2·50	− 2·54	− 2·54	− 2·58	− 2·59	− 2·64	− 2·62	− 2·65
CAHIRCIVEEN: Normal 1000+	12·49	12·33	12·15	11·99	11·83	11·78	11·86	11·97	12·18	12·33	12·48	12·55	12·51
1916 Departure.	− 1·91	− 1·90	− 1·91	− 1·91	− 1·91	− 1·91	− 1·93	− 1·89	− 1·92	− 1·83	− 1·87	− 1·80	− 1·78
RICHMOND: Normal 1000+	14·17	14·03	13·92	13·78	13·71	13·72	13·85	14·00	14·19	14·27	14·32	14·25	14·03
1916 Departure.	− 2·60	− 2·64	− 2·63	− 2·65	− 2·71	− 2·76	− 2·80	− 2·82	− 2·84	− 2·85	− 2·83	− 2·85	− 2·80

NORMALS AND DEPARTURES THEREFROM IN 1916.

JULY TO DECEMBER AND YEAR.

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.	Hour, G.M.T.
													JULY.
mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	mb.	
9·61	9·60	9·54	9·46	9·40	9·47	9·56	9·72	9·87	9·95	9·89	9·82	9·60	Normal. ABERDEEN.
+ 2·28	+ 2·34	+ 2·45	+ 2·43	+ 2·43	+ 2·41	+ 2·40	+ 2·45	+ 2·41	+ 2·43	+ 2·40	+ 2·43	+ 2·26	1916 Dep. ,,
86·35	86·29	86·22	86·13	86·07	86·10	86·21	86·41	86·64	86·71	86·71	86·65	86·41	[Normal.] ESKDALEMUIR.
+ 1·07	+ 1·10	+ 1·17	+ 1·21	+ 1·24	+ 1·20	+ 1·24	+ 1·19	+ 1·16	+ 1·21	+ 1·21	+ 1·29	+ 1·06	1916 Dep. ,,
14·24	14·25	14·20	14·13	14·07	14·09	14·16	14·27	14·45	14·55	14·51	14·40	14·10	Normal. CAHIRCIVEEN.
+ 3·58	+ 3·54	+ 3·58	+ 3·52	+ 3·60	+ 3·55	+ 3·51	+ 3·55	+ 3·68	+ 3·63	+ 3·64	+ 3·62	+ 3·49	1916 Dep. ,,
14·26	14·12	13·99	13·84	13·75	13·79	13·94	14·22	14·52	14·67	14·69	14·64	14·33	Normal. RICHMOND.
+ 2·00	+ 1·98	+ 1·97	+ 1·91	+ 1·93	+ 1·87	+ 1·88	+ 1·78	+ 1·87	+ 1·81	+ 1·81	+ 1·83	+ 1·92	1916 Dep. ,,
													AUGUST.
8·53	8·49	8·40	8·34	8·30	8·36	8·48	8·72	8·78	8·81	8·74	8·66	8·48	Normal. ABERDEEN.
+ 0·39	+ 0·39	+ 0·36	+ 0·32	+ 0·25	+ 0·22	+ 0·18	+ 0·18	+ 0·23	+ 0·26	+ 0·31	+ 0·35	+ 0·48	1916 Dep. ,,
85·56	85·50	85·44	85·37	85·36	85·42	85·57	85·88	86·02	86·08	86·07	86·01	85·62	[Normal.] ESKDALEMUIR.
− 1·42	− 1·42	− 1·48	− 1·56	− 1·62	− 1·69	− 1·76	− 1·74	− 1·71	− 1·68	− 1·70	− 1·66	− 1·41	1916 Dep. ,,
12·93	12·92	12·83	12·74	12·69	12·70	12·77	12·96	13·14	13·15	13·09	12·99	12·76	Normal. CAHIRCIVEEN.
− 1·53	− 1·55	− 1·53	− 1·50	− 1·45	− 1·47	− 1·47	− 1·51	− 1·37	− 1·42	− 1·41	− 1·35	− 1·38	1916 Dep. ,,
13·76	13·60	13·45	13·32	13·25	13·33	13·53	13·90	14·07	14·18	14·19	14·12	13·84	Normal. RICHMOND.
− 1·18	− 1·22	− 1·25	− 1·36	− 1·38	− 1·53	− 1·52	− 1·45	− 1·35	− 1·39	− 1·38	− 1·39	− 1·23	1916 Dep. ,,
													SEPTEMBER.
10·56	10·46	10·33	10·30	10·33	10·50	10·70	10·89	10·88	10·89	10·82	10·74	10·57	Normal. ABERDEEN.
+ 2·23	+ 2·21	+ 2·22	+ 2·14	+ 2·17	+ 2·19	+ 2·23	+ 2·47	+ 2·64	+ 2·81	+ 2·92	+ 3·09	+ 2·40	1916 Dep. ,,
88·95	88·81	88·67	88·59	88·59	88·72	88·93	89·13	89·21	89·27	89·27	89·20	88·98	[Normal.] ESKDALEMUIR.
− 0·34	− 0·33	− 0·41	− 0·47	− 0·45	− 0·42	− 0·34	− 0·28	− 0·20	− 0·20	− 0·17	− 0·09	− 0·35	1916 Dep. ,,
14·35	14·24	14·07	13·96	13·95	14·04	14·16	14·39	14·47	14·44	14·37	14·27	14·14	Normal. CAHIRCIVEEN.
+ 2·96	+ 2·89	+ 2·98	+ 2·89	+ 2·88	+ 2·85	+ 2·88	+ 2·80	+ 2·92	+ 2·85	+ 2·78	+ 2·71	+ 2·84	1916 Dep. ,,
15·49	15·29	15·10	15·01	15·04	15·19	15·45	15·72	15·79	15·84	15·79	15·71	15·56	Normal. RICHMOND.
+ 0·62	+ 0·53	+ 0·58	+ 0·64	+ 0·74	+ 0·72	+ 0·77	+ 0·79	+ 0·87	+ 0·83	+ 0·83	+ 0·77	+ 0·56	1916 Dep. ,,
													OCTOBER.
7·38	7·28	7·18	7·21	7·31	7·56	7·62	7·69	7·69	7·68	7·59	7·55	7·39	Normal. ABERDEEN.
− 7·16	− 7·24	− 7·32	− 7·40	− 7·50	− 7·54	− 7·61	− 7·67	− 7·66	− 7·67	− 7·55	− 7·42	− 6·97	1916 Dep. ,,
85·25	85·10	84·96	84·95	85·11	85·35	85·47	85·56	85·59	85·58	85·52	85·47	85·35	[Normal.] ESKDALEMUIR.
− 8·81	− 8·78	− 8·75	− 8·73	− 8·83	− 8·71	− 8·62	− 8·46	− 8·35	− 8·25	− 8·20	− 8·23	− 8·27	1916 Dep. ,,
10·69	10·54	10·41	10·40	10·45	10·65	10·81	10·88	10·93	10·94	10·84	10·73	10·59	Normal. CAHIRCIVEEN.
− 5·10	− 5·10	− 5·00	− 5·09	− 5·06	− 5·19	− 5·19	− 5·33	− 5·45	− 5·70	− 5·89	− 6·10	− 5·58	1916 Dep. ,,
12·33	12·17	12·08	12·10	12·25	12·56	12·69	12·80	12·89	12·89	12·81	12·75	12·53	Normal. RICHMOND.
− 1·79	− 1·72	− 1·76	− 1·77	− 1·78	− 1·80	− 1·85	− 1·81	− 1·91	− 1·96	− 2·01	− 2·13	− 1·76	1916 Dep. ,,
													NOVEMBER.
6·56	6·47	6·39	6·49	6·56	6·72	6·74	6·77	6·77	6·74	6·67	6·66	6·62	Normal. ABERDEEN.
− 8·08	− 7·91	− 7·80	− 7·71	− 7·66	− 7·62	− 7·67	− 7·58	− 7·62	− 7·57	− 7·51	− 7·47	− 7·96	1916 Dep. ,,
80·21	80·11	80·06	80·17	80·31	80·53	80·61	80·69	80·71	80·70	80·64	80·62	80·41	[Normal.] ESKDALEMUIR.
− 5·78	− 5·80	− 5·76	− 5·69	− 5·63	− 5·59	− 5·47	− 5·48	− 5·33	− 5·29	− 5·21	− 5·14	− 5·62	1916 Dep. ,,
11·09	10·88	10·70	10·79	10·89	11·11	11·25	11·33	11·37	11·37	11·35	11·35	11·11	Normal. CAHIRCIVEEN.
− 8·79	− 8·66	− 8·33	− 8·32	− 8·20	− 8·12	− 8·16	− 8·19	− 8·17	− 8·32	− 8·33	− 8·41	− 8·74	1916 Dep. ,,
12·76	12·55	12·53	12·62	12·76	12·96	13·04	13·12	13·17	13·15	13·10	13·04	12·92	Normal RICHMOND.
− 5·72	− 5·70	− 5·71	− 5·67	− 5·67	− 5·56	− 5·44	− 5·35	− 5·27	− 5·09	− 5·06	− 4·98	− 5·42	1916 Dep. ,,
													DECEMBER.
4·06	4·02	4·00	4·17	4·20	4·34	4·37	4·45	4·44	4·46	4·41	4·38	4·19	Normal. ABERDEEN.
− 7·23	− 7·25	− 7·23	− 7·39	− 7·44	− 7·54	− 7·50	− 7·50	− 7·50	− 7·56	− 7·60	− 7·74	− 7·38	1916 Dep. ,,
74·66	74·50	74·51	74·66	74·67	74·78	74·83	75·00	75·10	75·25	75·36	75·48	74·97	[Normal.] ESKDALEMUIR.
− 2·22	− 2·14	− 2·02	− 2·06	− 2·02	− 2·02	− 1·95	− 1·98	− 2·06	− 2·22	− 2·43	− 2·61	− 2·19	1916 Dep. ,,
9·37	9·15	9·08	9·16	9·36	9·51	9·59	9·67	9·68	9·69	9·62	9·58	9·39	Normal. CAHIRCIVEEN.
− 7·44	− 7·32	− 7·21	− 7·21	− 7·33	− 7·39	− 7·43	− 7·42	− 7·31	− 7·42	− 7·33	− 7·37	− 7·49	1916 Dep. ,,
12·40	12·24	12·29	12·41	12·50	12·63	12·76	12·88	12·91	12·94	12·94	12·84	12·62	Normal. RICHMOND.
−10·27	− 9·98	− 9·70	− 9·44	− 9·21	− 9·04	− 8·92	− 8·77	− 8·81	− 8·77	− 8·84	− 8·96	− 9·86	1916 Dep. ,,
													YEAR.
8·42	8·35	8·26	8·28	8·29	8·44	8·54	8·68	8·73	8·75	8·69	8·63	8·44	Normal. ABERDEEN.
− 3·24	− 3·25	− 3·22	− 3·24	− 3·24	− 3·26	− 3·27	− 3·23	− 3·22	− 3·21	− 3·17	− 3·11	− 3·21	1916 Dep. ,,
83·59	83·47	83·37	83·36	83·38	83·51	83·63	83·80	83·90	83·95	83·94	83·91	83·66	[Normal.] ESKDALEMUIR.
− 2·61	− 2·59	− 2·55	− 2·55	− 2·50	− 2·47	− 2·41	− 2·37	− 2·36	− 2·38	− 2·41	− 2·42	− 2·51	1916 Dep. ,,
12·37	12·24	12·12	12·08	12·10	12·21	12·33	12·46	12·57	12·61	12·55	12·49	12·25	Normal. CAHIRCIVEEN.
− 1·73	− 1·74	− 1·65	− 1·67	− 1·66	− 1·71	− 1·71	− 1·74	− 1·68	− 1·77	− 1·76	− 1·81	− 1·79	1916 Dep. ,,
13·79	13·61	13·49	13·45	13·49	13·65	13·82	14·04	14·18	14·24	14·22	14·16	13·93	Normal. RICHMOND.
− 2·79	− 2·76	− 2·71	− 2·64	− 2·59	− 2·57	− 2·55	− 2·53	− 2·50	− 2·53	− 2·54	− 2·56	− 2·69	1916 Dep. ,,

HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS:

TEMPERATURE (in degrees absolute).

Hour, G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
JANUARY.	a.	a.	a.	a.	a.	a.	a.	a.	a.	a.	a.	a.	a.
ABERDEEN: Normal 200+	76·16	76·13	76·07	76·05	75·98	75·98	75·94	75·95	75·96	76·10	76·32	76·78	77·11
1916 Departure.	+ 2·54	+ 2·46	+ 2·53	+ 2·50	+ 2·54	+ 2·37	+ 2·41	+ 2·21	+ 2·39	+ 2·50	+ 2·66	+ 2·63	+ 2·74
ESKDALEMUIR: [Normal] 200+	75·05	75·00	74·97	74·83	74·73	74·60	74·63	74·55	74·56	74·63	75·15	75·57	76·04
1916 Departure.	+ 3·15	+ 2·94	+ 3·01	+ 3·13	+ 3·26	+ 3·26	+ 3·37	+ 3·32	+ 3·22	+ 3·31	+ 3·10	+ 3·01	+ 2·80
CAHIRCIVEEN: Normal 200+	79·81	79·82	79·76	79·77	79·73	79·74	79·69	79·72	79·69	79·77	79·94	80·30	80·61
1916 Departure.	+ 2·27	+ 2·04	+ 2·04	+ 2·04	+ 2·02	+ 2·05	+ 2·12	+ 1·99	+ 2·03	+ 2·14	+ 2·21	+ 2·18	+ 2·10
RICHMOND: Normal 200+	76·45	76·37	76·29	76·28	76·20	76·18	76·10	76·11	76·08	76·31	76·78	77·38	77·86
1916 Departure.	+ 4·09	+ 3·99	+ 3·96	+ 3·82	+ 3·78	+ 3·90	+ 3·97	+ 3·94	+ 3·98	+ 3·98	+ 4·09	+ 4·20	+ 4·12
FEBRUARY.													
ABERDEEN: Normal 200+	76·13	76·06	75·98	75·91	75·82	75·79	75·76	75·76	75·80	76·13	76·62	77·24	77·69
1916 Departure.	− 0·30	− 0·28	− 0·23	− 0·27	− 0·23	− 0·19	− 0·23	− 0·18	− 0·28	− 0·33	− 0·34	− 0·42	− 0·28
ESKDALEMUIR: [Normal] 200+	75·39	75·30	75·18	75·12	75·02	74·93	74·95	74·85	74·95	75·36	76·04	76·70	77·26
1916 Departure.	− 1·57	− 1·48	− 1·29	− 1·28	− 1·20	− 1·23	− 1·16	− 1·12	− 1·18	− 1·31	− 1·55	− 1·73	− 1·85
CAHIRCIVEEN: Normal 200+	79·57	79·58	79·51	79·48	79·41	79·39	79·32	79·37	79·33	79·60	79·97	80·49	80·87
1916 Departure.	− 0·96	− 0·92	− 1·10	− 1·12	− 1·15	− 1·36	− 1·23	− 1·30	− 1·40	− 1·59	− 1·46	− 1·33	− 1·57
RICHMOND: Normal 200+	76·78	76·66	76·52	76·44	76·34	76·31	76·23	76·23	76·28	76·85	77·48	78·34	78·91
1916 Departure.	− 0·08	+ 0·14	+ 0·22	+ 0·47	+ 0·51	+ 0·63	+ 0·55	+ 0·48	+ 0·45	+ 0·24	+ 0·13	+ 0·02	− 0·15
MARCH.													
ABERDEEN: Normal 200+	76·45	76·34	76·23	76·16	76·04	75·97	75·92	76·06	76·48	77·24	77·88	78·48	78·86
1916 Departure.	− 1·27	− 1·16	− 1·15	− 1·17	− 1·14	− 1·02	− 1·10	− 1·20	− 1·41	− 1·74	− 2·04	− 2·23	− 2·29
ESKDALEMUIR: [Normal] 200+	75·22	75·06	75·02	74·90	74·87	74·72	74·69	74·75	75·38	76·12	76·95	77·62	78·10
1916 Departure.	− 2·46	− 2·33	− 2·36	− 2·32	− 2·25	− 2·07	− 2·12	− 1·99	− 2·01	− 2·07	− 2·20	− 2·54	− 2·72
CAHIRCIVEEN: Normal 200+	79·62	79·55	79·43	79·37	79·26	79·22	79·13	79·16	79·39	80·04	80·62	81·19	81·55
1916 Departure.	− 2·25	− 2·36	− 2·36	− 2·35	− 2·17	− 2·32	− 2·29	− 2·13	− 2·20	− 2·21	− 2·14	− 2·13	− 2·19
RICHMOND: Normal 200+	77·37	77·21	76·97	76·81	76·62	76·54	76·42	76·59	77·21	78·24	79·17	80·15	80·77
1916 Departure.	− 1·14	− 0·96	− 0·91	− 0·83	− 0·75	− 0·71	− 0·71	− 0·76	− 1·06	− 1·39	− 1·78	− 2·03	− 2·12
APRIL.													
ABERDEEN: Normal 200+	77·91	77·73	77·55	77·43	77·30	77·24	77·45	78·22	78·93	79·72	80·23	80·67	80·91
1916 Departure.	+ 0·47	+ 0·49	+ 0·25	+ 0·32	+ 0·21	+ 0·07	+ 0·02	0·00	0·00	+ 0·12	+ 0·29	+ 0·43	+ 0·58
ESKDALEMUIR: [Normal] 200+	76·66	76·36	76·23	76·10	75·95	75·78	76·17	77·22	78·73	79·94	80·71	81·19	81·84
1916 Departure.	− 0·01	− 0·19	− 0·37	− 0·36	− 0·23	− 0·07	− 0·27	− 0·41	− 0·76	− 0·90	− 0·63	− 0·76	− 1·04
CAHIRCIVEEN: Normal 200+	80·94	80·80	80·65	80·56	80·41	80·36	80·29	80·69	81·31	82·10	82·65	83·25	83·59
1916 Departure.	− 0·33	− 0·27	− 0·20	− 0·07	+ 0·05	+ 0·04	+ 0·12	+ 0·17	+ 0·25	+ 0·09	− 0·17	− 0·36	− 0·46
RICHMOND: Normal 200+	79·41	79·13	78·79	78·57	78·32	78·21	78·34	79·20	80·20	81·44	82·36	83·37	83·97
1916 Departure.	+ 0·42	+ 0·19	+ 0·24	+ 0·15	+ 0·14	+ 0·12	+ 0·21	+ 0·25	+ 0·29	+ 0·45	+ 0·56	+ 0·39	+ 0·63
MAY													
ABERDEEN: Normal 200+	80·02	79·84	79·62	79·44	79·29	79·65	80·36	81·24	81·75	82·28	82·64	83·01	83·22
1916 Departure.	+ 0·29	+ 0·24	+ 0·25	+ 0·23	+ 0·17	+ 0·04	+ 0·15	− 0·03	− 0·03	− 0·16	− 0·24	− 0·22	+ 0·04
ESKDALEMUIR: [Normal] 200+	78·95	78·59	78·37	78·16	78·13	78·40	79·33	80·38	81·63	82·53	83·43	84·06	84·72
1916 Departure.	− 0·42	− 0·28	− 0·01	− 0·14	− 0·26	− 0·31	− 0·20	+ 0·39	+ 0·26	+ 0·26	− 0·16	− 0·27	− 0·72
CAHIRCIVEEN: Normal 200+	82·84	82·66	82·48	82·35	82·19	82·15	82·35	83·20	83·95	84·77	85·21	85·73	85·98
1916 Departure.	− 0·47	− 0·52	− 0·68	− 0·66	− 0·65	− 0·44	− 0·15	− 0·06	− 0·02	− 0·01	− 0·10	− 0·37	− 0·28
RICHMOND: Normal 200+	82·15	81·73	81·33	81·09	80·81	81·00	81·57	82·81	83·85	85·00	85·81	86·70	87·23
1916 Departure.	+ 1·17	+ 1·17	+ 1·06	+ 1·03	+ 1·05	+ 1·07	+ 1·21	+ 1·42	+ 1·47	+ 1·82	+ 1·74	+ 1·79	+ 1·89
JUNE.													
ABERDEEN: Normal 200+	82·92	82·64	82·39	82·23	82·19	82·77	83·62	84·43	84·88	85·34	85·68	86·02	86·13
1916 Departure.	− 1·21	− 1·11	− 0·93	− 0·75	− 0·66	− 0·84	− 1·19	− 1·69	− 1·78	− 2·05	− 2·05	− 1·96	− 1·78
ESKDALEMUIR: [Normal] 200+	81·77	81·39	81·29	81·02	81·00	81·45	82·48	83·58	84·70	85·50	86·33	86·88	87·45
1916 Departure.	− 1·39	− 1·41	− 1·54	− 1·72	− 1·65	− 1·80	− 1·80	− 1·93	− 1·76	− 1·73	− 2·06	− 2·14	− 2·19
CAHIRCIVEEN: Normal 200+	85·28	85·12	84·95	84·85	84·72	84·75	85·11	85·86	86·50	87·20	87·65	88·16	88·41
1916 Departure.	− 1·40	− 1·34	− 1·24	− 1·20	− 1·33	− 1·27	− 0·93	− 1·09	− 1·04	− 1·22	− 1·44	− 1·67	− 1·75
RICHMOND: Normal 200+	85·44	85·02	84·62	84·31	84·05	84·51	85·13	86·18	87·14	88·26	89·03	89·95	90·49
1916 Departure.	− 1·98	− 1·85	− 1·83	− 1·77	− 1·71	− 1·74	− 1·94	− 1·89	− 2·12	− 2·52	− 2·58	− 2·86	− 3·10

The Temperature is obtained photographically from a mercurial thermometer with a large cylindrical bulb 10 cm. 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 North wall of the Observatory, except at Eskdalemuir, where the screen stands in the open, 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 60 cm. from the wall. Two such thermometers are in the screen, one being used as a dry bulb and the other as a wet bulb; the screen also contains two control thermometers with bulbs of the same size.

NORMALS AND DEPARTURES THEREFROM IN 1916.

JANUARY TO JUNE.

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.	Hour, G.M.T.
													JANUARY.
a.	a.	a.	a.	a.	a.	a.	a.	a.	a.	a.	a.	a.	
77·38	77·43	77·33	77·05	76·80	76·62	76·54	76·40	76·34	76·27	76·23	76·16	76·46	Normal. ABERDEEN.
+ 2·82	+ 2·86	+ 2·80	+ 2·75	+ 2·46	+ 2·52	+ 2·47	+ 2·48	+ 2·36	+ 2·56	+ 2·64	+ 2·46	+ 2·54	1916 Dep. ,,
76·20	76·33	76·18	75·83	75·51	75·42	75·26	75·21	75·04	75·13	74·98	74·92	75·22	[Normal.] ESKDALEMUIR.
+ 2·71	+ 2·65	+ 2·79	+ 2·95	+ 2·99	+ 3·03	+ 3·00	+ 2·95	+ 3·16	+ 3·06	+ 3·13	+ 3·24	+ 3·06	1916 Dep. ,,
80·89	80·90	80·88	80·65	80·32	80·11	80·03	79·93	79·91	79·83	79·85	79·78	80·07	Normal. CAHIRCIVEEN.
+ 1·97	+ 1·99	+ 1·89	+ 1·83	+ 1·96	+ 2·06	+ 2·03	+ 2·01	+ 2·06	+ 2·13	+ 2·18	+ 2·19	+ 2·05	1916 Dep. ,,
78·30	78·43	78·39	78·01	77·59	77·28	77·12	76·95	76·83	76·69	76·61	76·47	76·94	Normal. RICHMOND.
+ 4·14	+ 4·19	+ 3·97	+ 4·12	+ 4·06	+ 4·04	+ 3·96	+ 3·91	+ 3·93	+ 3·99	+ 3·84	+ 3·90	+ 4·00	1916 Dep. ,,
													FEBRUARY.
78·06	78·16	78·10	77·82	77·39	77·02	76·77	76·57	76·43	76·29	76·21	76·13	76·65	Normal. ABERDEEN.
− 0·52	− 0·50	− 0·70	− 0·89	− 0·79	− 0·75	− 0·67	− 0·66	− 0·55	− 0·37	− 0·37	− 0·36	− 0·44	1916 Dep. ,,
77·43	77·63	77·42	77·26	76·72	76·30	76·02	75·90	75·74	75·72	75·59	75·53	75·95	[Normal.] ESKDALEMUIR.
− 1·84	− 2·06	− 1·89	− 2·17	− 2·23	− 2·03	− 1·88	− 1·80	− 1·80	− 1·83	− 1·82	− 1·87	− 1·64	1916 Dep. ,,
81·13	81·18	81·19	81·00	80·72	80·25	80·03	79·88	79·82	79·72	79·68	79·59	80·02	Normal. CAHIRCIVEEN.
− 1·66	− 1·52	− 1·48	− 1·39	− 1·39	− 1·16	− 1·01	− 0·93	− 1·02	− 0·92	− 1·00	− 1·10	− 1·25	1916 Dep. ,,
79·37	79·55	79·59	79·28	78·83	78·22	77·81	77·50	77·32	77·12	76·96	76·78	77·54	Normal. RICHMOND.
− 0·33	− 0·39	− 0·40	− 0·47	− 0·54	− 0·55	− 0·38	− 0·30	− 0·19	− 0·18	− 0·12	− 0·02	− 0·01	1916 Dep. ,,
													MARCH.
79·09	79·13	79·11	78·90	78·56	78·01	77·53	77·22	77·02	76·80	76·65	76·49	77·34	Normal. ABERDEEN.
− 2·34	− 2·38	− 2·43	− 2·30	− 2·29	− 2·20	− 1·93	− 1·67	− 1·53	− 1·39	− 1·29	− 1·13	− 1·69	1916 Dep. ,,
78·34	78·54	78·46	78·12	77·66	77·03	76·43	76·09	75·76	75·56	75·34	75·26	76·28	[Normal.] ESKDALEMUIR.
− 2·88	− 3·10	− 3·18	− 3·00	− 3·09	− 3·11	− 3·06	− 2·91	− 2·74	− 2·53	− 2·41	− 2·34	− 2·56	1916 Dep. ,,
81·90	81·95	82·00	81·84	81·57	81·10	80·60	80·26	80·10	79·91	79·81	79·63	80·36	Normal. CAHIRCIVEEN.
− 2·26	− 2·33	− 2·34	− 2·31	− 2·28	− 2·18	− 2·21	− 2·29	− 2·35	− 2·29	− 2·18	− 2·18	− 2·26	1916 Dep. ,,
81·32	81·51	81·68	81·44	81·01	80·17	79·45	78·87	78·47	78·04	77·72	77·42	78·74	Normal. RICHMOND.
− 2·25	− 2·19	− 2·23	− 2·32	− 2·26	− 2·02	− 1·80	− 1·74	− 1·64	− 1·45	− 1·29	− 1·21	− 1·51	1916 Dep. ,,
													APRIL.
81·09	81·07	81·02	80·75	80·49	80·11	79·58	79·06	78·77	78·46	78·19	77·97	79·16	Normal. ABERDEEN.
+ 0·25	+ 0·58	+ 0·16	+ 0·25	+ 0·40	+ 0·34	+ 0·16	+ 0·18	+ 0·27	+ 0·34	+ 0·32	+ 0·36	+ 0·27	1916 Dep. ,,
82·05	82·30	82·25	82·00	81·52	80·73	79·46	78·52	77·83	77·40	76·96	76·66	78·91	[Normal.] ESKDALEMUIR.
− 1·02	− 0·89	− 1·01	− 1·04	− 1·05	− 1·10	− 0·90	− 0·83	− 0·51	− 0·31	− 0·25	− 0·06	− 0·62	1916 Dep. ,,
83·89	83·95	84·00	83·85	83·63	83·14	82·51	81·93	81·61	81·34	81·17	80·99	82·03	Normal. CAHIRCIVEEN.
− 0·45	− 0·60	− 0·69	− 0·77	− 0·89	− 0·75	− 0·57	− 0·40	− 0·31	− 0·23	− 0·22	− 0·21	− 0·29	1916 Dep. ,,
84·53	84·80	84·92	84·71	84·32	83·59	82·47	81·56	80·93	80·32	79·92	79·48	81·39	Normal. RICHMOND.
+ 0·74	+ 0·73	+ 0·90	+ 0·99	+ 1·14	+ 1·18	+ 1·09	+ 0·97	+ 0·87	+ 0·83	+ 0·63	+ 0·50	+ 0·59	1916 Dep. ,,
													MAY.
83·39	83·35	83·31	83·09	82·95	82·59	82·19	81·59	81·12	80·73	80·38	80·12	81·55	Normal. ABERDEEN.
+ 0·02	− 0·34	− 0·71	− 0·44	− 0·42	− 0·39	− 0·38	− 0·17	− 0·04	+ 0·15	+ 0·26	+ 0·33	− 0·07	1916 Dep. ,,
84·93	85·19	85·02	84·89	84·37	83·74	82·70	81·46	80·40	79·81	79·32	79·08	81·61	[Normal.] ESKDALEMUIR.
− 0·43	− 0·54	− 0·51	− 0·34	− 0·18	0·00	+ 0·18	− 0·14	− 0·04	− 0·18	− 0·29	− 0·39	− 0·18	1916 Dep. ,,
86·22	86·30	86·39	86·27	86·15	85·65	85·09	84·37	83·80	83·44	83·18	82·91	84·28	Normal. CAHIRCIVEEN.
− 0·45	− 0·48	− 0·56	− 0·57	− 0·66	− 0·80	− 0·65	− 0·65	− 0·58	− 0·59	− 0·60	− 0·54	− 0·46	1916 Dep. ,,
87·80	88·02	88·28	88·16	87·92	87·33	86·37	85·09	84·16	83·41	82·77	82·25	84·60	Normal. RICHMOND.
+ 1·56	+ 1·77	+ 2·05	+ 2·06	+ 2·12	+ 2·26	+ 2·06	+ 1·66	+ 1·49	+ 1·32	+ 1·29	+ 1·16	+ 1·57	1916 Dep. ,,
													JUNE.
86·32	86·27	86·22	86·03	85·96	85·61	85·23	84·70	84·11	83·70	83·35	83·02	84·53	Normal. ABERDEEN.
− 1·93	− 1·88	− 1·86	− 1·77	− 2·09	− 1·99	− 2·02	− 1·88	− 1·82	− 1·68	− 1·56	− 1·31	− 1·60	1916 Dep. ,,
87·64	87·89	87·91	87·64	87·27	86·74	85·87	84·76	83·54	82·86	82·27	81·88	84·55	[Normal.] ESKDALEMUIR.
− 2·15	− 2·31	− 2·10	− 1·95	− 2·19	− 2·25	− 2·29	− 2·05	− 2·02	− 1·96	− 1·78	− 1·60	− 1·92	1916 Dep. ,,
88·68	88·75	88·82	88·75	88·65	88·06	87·58	86·98	86·25	85·87	85·63	85·37	86·78	Normal. CAHIRCIVEEN.
−1·80	− 1·69	− 1·73	− 1·63	− 1·62	− 1·58	− 1·62	− 1·69	− 1·48	− 1·49	− 1·54	− 1·51	− 1·46	1916 Dep. ,,
91·14	91·39	91·68	91·54	91·35	90·83	90·02	88·71	87·55	86·74	86·11	85·55	87·97	Normal. RICHMOND.
− 3·46	− 3·32	− 3·58	− 3·63	− 3·55	− 3·49	− 3·10	− 2·73	− 2·52	− 2·37	− 2·11	− 2·16	− 2·58	1916 Dep. ,,

The heights of the thermometers above the ground are :—

At Aberdeen	12·5 metres.
,, Eskdalemuir	0·9 ,,
,, Cahirciveen (Valencia Observatory)	1·3 ,,
,, Richmond (Kew Observatory)	3·0 ,,

The normals for temperature are for the 45 years, 1871–1915 (Eskdalemuir, 1911–1915 only).
The values for 1915 are given by the departure from the normal ; + indicates excess, − defect.
Temperature values are measured at each exact hour G.M.T.

Mean values are calculated by the formula $\frac{1}{24}\left\{(1+\ldots 23)+\frac{1}{2}(0+24)\right\}$

HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS:

TEMPERATURE (in degrees absolute).

Hour, G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
JULY.	a.	a.	a.	a.	a.	a.	a.	a.	a.	a.	a.	a.	a.
ABERDEEN: Normal 200+	84·88	84·66	84·45	84·25	84·12	84·52	85·18	86·03	86·58	87·10	87·46	87·83	87·99
1916 Departure.	− 0·04	+ 0·05	+ 0·17	+ 0·18	+ 0·27	+ 0·23	+ 0·02	− 0·24	− 0·30	− 0·15	− 0·05	− 0·11	− 0·21
ESKDALEMUIR: [Normal] 200+	83·60	83·27	83·05	82·90	82·83	83·07	84·00	85·09	86·12	86·84	87·62	88·09	88·62
1916 Departure.	− 0·26	− 0·30	− 0·15	− 0·13	− 0·06	− 0·08	− 0·05	− 0·03	+ 0·07	+ 0·31	+ 0·40	+ 0·35	+ 0·14
CAHIRCIVEEN: Normal 200+	86·66	86·52	86·37	86·29	86·18	86·18	86·40	87·04	87·59	88·29	88·73	89·17	89·42
1916 Departure	− 0·21	− 0·35	− 0·46	− 0·58	− 0·51	− 0·51	− 0·47	− 0·11	+ 0·22	+ 0·27	+ 0·48	+ 0·34	+ 0·40
RICHMOND: Normal 200+	87·46	87·07	86·66	86·35	86·08	86·29	86·94	88·01	89·00	90·11	90·93	91·81	92·32
1916 Departure	− 0·68	− 0·77	− 0·74	− 0·79	− 0·97	− 1·01	− 1·22	− 1·25	− 1·33	− 1·19	− 1·28	− 1·18	− 1·16
AUGUST.													
ABERDEEN: Normal 200+	84·85	84·64	84·42	84·24	84·07	84·06	84·52	85·41	86·14	86·86	87·28	87·72	87·96
1916 Departure.	− 0·26*	− 0·18*	− 0·05*	− 0·11*	− 0·11*	− 0·15*	− 0·25*	− 0·47	− 0·57	− 0·68	− 0·75	− 0·95	− 0·89
ESKDALEMUIR: [Normal] 200+	83·46	83·17	83·03	82·78	82·63	82·57	83·09	84·00	85·31	86·43	87·19	87·70	88·21
1916 Departure.	+ 0·62	+ 0·71	+ 0·63	+ 0·71	+ 0·86	+ 0·79	+ 0·58	+ 0·66	+ 0·83	+ 0·94	+ 1·06	+ 1·09	+ 1·30
CAHIRCIVEEN: Normal 200+	86·93	86·82	86·66	86·61	86·51	86·46	86·46	86·95	87·55	88·28	88·77	89·29	89·56
1916 Departure.	+ 1·58	+ 1·60	+ 1·69	+ 1·66	+ 1·66	+ 1·63	+ 1·52	+ 1·61	+ 1·84	+ 1·96	+ 2·00	+ 1·97	+ 2·07
RICHMOND: Normal 200+	87·15	86·79	86·41	86·17	85·94	85·86	86·16	87·21	88·30	89·58	90·45	91·41	91·99
1916 Departure.	+ 1·04	+ 0·99	+ 0·97	+ 1·02	+ 1·08	+ 1·07	+ 0·97	+ 0·90	+ 0·77	+ 0·72	+ 0·78	+ 0·65	+ 0·72
SEPTEMBER.													
ABERDEEN: Normal 200+	83·21	83·02	82·81	82·69	82·55	82·45	82·44	83·03	83·87	84·86	85·51	86·05	86·31
1916 Departure.	+ 0·41	+ 0·41	+ 0·57	+ 0·45	+ 0·41	+ 0·39	+ 0·43	+ 0·33	+ 0·32	+ 0·05	− 0·04	− 0·27	− 0·22
ESKDALEMUIR: [Normal] 200+	81·23	80·90	80·67	80·53	80·48	80·27	80·30	80·93	82·42	83·75	84·90	85·40	86·03
1916 Departure.	+ 0·77	+ 0·67	+ 0·78	+ 0·85	+ 0·80	+ 0·88	+ 0·93	+ 1·02	+ 0·62	+ 0·33	+ 0·12	+ 0·17	− 0·17
CAHIRCIVEEN: Normal 200+	85·72	85·63	85·51	85·45	85·32	85·29	85·21	85·35	85·89	86·63	87·24	87·86	88·18
1916 Departure.	+ 0·95	+ 0·97	+ 1·01	+ 0·87	+ 0·94	+ 0·95	+ 0·91	+ 0·89	+ 0·95	+ 0·91	+ 0·79	+ 0·57	+ 0·64
RICHMOND: Normal 200+	84·92	84·66	84·35	84·15	83·94	83·83	83·77	84·38	85·38	86·76	87·82	88·92	89·53
1916 Departure.	− 0·15	− 0·13	− 0·05	+ 0·20	+ 0·17	+ 0·30	+0·37	+ 0·11	− 0·27	− 0·63	− 0·68	− 0·74	− 0·79
OCTOBER.													
ABERDEEN: Normal 200+	80·65	80·53	80·41	80·33	80·25	80·20	80·14	80·18	80·54	81·27	81·99	82·60	82·98
1916 Departure.	+ 0·82	+ 0·83	+ 0·90	+ 0·72	+ 0·71	+ 0·66	+ 0·59	+ 0·56	+ 0·60	+0·43	+ 0·44	+ 0·40	+ 0·73
ESKDALEMUIR: [Normal] 200+	79·16	79·02	79·03	78·95	78·90	78·72	78·73	78·75	79·43	80·44	81·49	82·08	82·60
1916 Departure.	+ 0·18	+ 0·06	− 0·06	+ 0·01	− 0·10	− 0·27	− 0·15	+ 0·03	− 0·06	− 0·07	− 0·22	− 0·17	− 0·38
CAHIRCIVEEN: Normal 200+	83·28	83·23	83·12	83·10	83·04	83·04	82·97	82·96	83·09	83·71	84·22	84·83	85·10
1916 Departure.	+ 1·70	+ 1·71	+ 1·92	+ 1·97	+ 2·02	+ 2·11	+ 2·17	+ 2·21	+ 2·19	+ 1·86	+ 1·72	+ 1·29	+ 1·17
RICHMOND: Normal 200+	81·57	81·43	81·23	81·14	81·01	80·94	80·84	80·95	81·44	82·50	83·54	84·53	85·10
1916 Departure.	+ 2·02	+ 2·16	+ 2·18	+ 2·19	+ 2·29	+ 2·24	+ 2·28	+ 2·23	+ 2·20	+ 2·14	+ 2·05	+ 1·82	+ 1·67
NOVEMBER.													
ABERDEEN: Normal 200+	78·29	78·22	78·17	78·11	78·05	78·03	78·00	78·05	78·11	78·41	78·83	79·35	79·75
1916 Departure.	+ 1·54	+1·58	+ 1·53	+ 1·50	+ 1·52	+ 1·52	+ 1·46	+ 1·57	+ 1·49	+ 1·57	+ 1·50	+ 1·38	+ 1·08
ESKDALEMUIR: [Normal] 200+	76·29	76·26	76·28	76·21	76·21	76·15	76·26	76·13	76·25	76·64	77·48	78·05	78·58
1916 Departure.	+ 2·05	+ 1·99	+ 1·89	+ 1·76	+ 1·80	+ 1·82	+ 1·83	+ 1·89	+ 1·79	+ 1·92	+ 1·65	+ 1·36	+ 1·08
CAHIRCIVEEN: Normal 200+	81·27	81·30	81·20	81·19	81·12	81·11	81·07	81·07	81·02	81·26	81·66	82·18	82·45
1916 Departure.	+ 0·17	+ 0·28	+ 0·43	+ 0·61	+ 0·65	+ 0·64	+ 0·60	+ 0·45	+ 0·52	+ 0·43	+ 0·36	− 0·02	− 0·09
RICHMOND: Normal 200+	78·90	78·82	78·70	78·66	78·57	78·54	78·42	78·42	78·52	79·05	79·77	80·56	81·09
1916 Departure.	− 0·03	0·00	− 0·01	0·00	− 0·05	+ 0·13	+ 0·16	+ 0·24	+ 0·37	+ 0·42	+ 0·45	+ 0·52	+ 0·52
DECEMBER.													
ABERDEEN: Normal 200+	76·52	76·47	76·45	76·42	76·38	76·40	76·37	76·38	76·36	76·46	76·68	77·05	77·32
1916 Departure.	− 0·69	− 0·72	− 0·74	− 0·70	− 0·58	− 0·63	− 0·63	− 0·50	− 0·52	− 0·43	− 0·41	− 0·23	− 0·20
ESKDALEMUIR: [Normal] 200+	75·88	75·81	75·82	75·76	75·74	75·65	75·72	75·63	75·73	75·75	76·15	76·52	76·92
1916 Departure.	− 1·82	− 1·79	− 1·83	− 1·83	− 1·84	− 1·81	− 1·79	− 1·83	− 1·85	− 1·81	− 1·78	− 1·79	− 1·67
CAHIRCIVEEN: Normal 200+	80·31	80·35	80·29	80·28	80·21	80·21	80·13	80·14	80·11	80·18	80·35	80·80	81·05
1916 Departure.	− 2·56	− 2·71	− 2·50	− 2·31	− 2·21	− 2·34	− 2·29	− 2·24	− 2·38	− 2·39	− 2·35	− 2·27	− 2·08
RICHMOND: Normal 200+	77·18	77·13	77·01	76·98	76·90	76·91	76·86	76·90	76·88	77·17	77·55	78·17	78·60
1916 Departure.	− 2·02	− 1·94	− 1·78	− 1·69	− 1·64	− 1·72	− 1·69	− 1·64	− 1·62	− 1·70	− 1·69	− 1·80	− 1·79
YEAR.													
ABERDEEN: Normal 200+	79·83	79·69	79·55	79·44	79·34	79·42	79·64	80·06	80·45	80·98	81·43	81·90	82·19
1916 Departure.	+ 0·19	+ 0·22	+ 0·25	+ 0·24	+ 0·26	+ 0·21	+ 0·31	+ 0·03	0·01	− 0·07	− 0·09	− 0·13	− 0·06
ESKDALEMUIR: [Normal] 200+	78·56	78·34	78·25	78·11	78·04	78·03	78·36	78·82	79·60	80·33	81·12	81·66	82·20
1916 Departure.	− 0·10	− 0·11	− 0·11	− 0·12	− 0·07	− 0·08	− 0·07	0·00	− 0·07	− 0·07	− 0·19	− 0·29	− 0·45
CAHIRCIVEEN: Normal 200+	82·69	82·62	82·49	82·44	82·34	82·33	82·35	82·63	82·87	83·49	83·92	84·44	84·75
1916 Departure.	− 0·13	− 0·16	− 0·12	− 0·09	− 0·05	− 0·07	0·00	+ 0·03	+ 0·16	+ 0·02	− 0·01	− 0·15	− 0·19
RICHMOND: Normal 200+	81·23	81·00	80·74	80·58	80·40	80·43	80·57	81·08	81·69	82·61	83·39	84·27	84·82
1916 Departure.	+ 0·22	+ 0·25	+ 0·28	+ 0·32	+ 0·32	+ 0·36	+ 0·34	− 0·08	+ 0·26	+ 0·19	+ 0·15	+ 0·07	+ 0·04

* Mean of 30 days only.

NORMALS AND DEPARTURES THEREFROM IN 1916.

JULY TO DECEMBER AND YEAR.

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.	Hour, G.M.T.
a.	a.	a.	a.	a.	a.	a.	a.	a.	a.	a.	a.	a.	JULY.
88·18	88·16	88·14	87·90	87·79	87·44	87·06	86·48	85·94	85·50	85·15	84·89	86·37	Normal. ABERDEEN.
− 0·49	− 0·40	− 0·51	− 0·44	− 0·52	− 0·41	− 0·61	− 0·43	− 0·47	− 0·25	− 0·20	− 0·02	− 0·21	1916 Dep. ,,
88·81	89·17	89·08	88·95	88·54	88·06	87·23	86·20	85·13	84·44	83·94	83·63	86·03	[Normal.] ESKDALEMUIR.
+ 0·26	− 0·05	− 0·31	− 0·39	− 0·26	− 0·16	− 0·08	− 0·12	− 0·16	− 0·12	− 0·02	− 0·21	− 0·05	1916 Dep. ,,
89·70	89·74	89·84	89·74	89·65	89·10	88·65	88·01	87·37	87·05	86·88	86·68	87·94	Normal. CAHIRCIVEEN.
+ 0·51	+ 0·58	+ 0·35	+ 0·39	+ 0·29	+ 0·21	+ 0·15	+ 0·07	+ 0·08	+ 0·11	+ 0·01	− 0·07	+ 0·05	1916 Dep. ,,
92·99	93·30	93·58	93·47	93·31	92·76	91·99	90·57	89·50	88·72	88·07	87·47	89·89	Normal. RICHMOND.
− 0·99	− 1·04	− 0·89	− 0·78	− 0·80	− 0·67	− 0·52	− 0·39	− 0·31	− 0·44	− 0·53	− 0·49	− 0·87	1916 Dep. ,,
													AUGUST.
88·17	88·16	88·11	87·88	87·61	87·22	86·73	86·09	85·66	85·29	85·06	84·81	86·17	Normal. ABERDEEN.
− 0·88	− 0·90	− 0·88	− 0·73	− 0·45	− 0·24	− 0·33	− 0·24	− 0·07*	+ 0·02*	− 0·25*	− 0·21*	− 0·41	1916 Dep. ,,
88·43	88·68	88·61	88·51	88·08	87·40	86·26	85·28	84·51	84·07	83·71	83·43	85·55	[Normal.] ESKDALEMUIR.
+ 1·45	+ 1·42	+ 1·47	+ 1·51	+ 1·41	+ 1·34	+ 1·23	+ 1·06	+ 1·12	+ 0·92	+ 0·68	+ 0·77	+ 1·02	1916 Dep. ,,
89·87	89·92	89·95	89·76	89·57	89·06	88·58	87·86	87·42	87·18	87·07	86·91	88·05	Normal. CAHIRCIVEEN.
+ 2·00	+ 1·91	+ 1·87	+ 2·01	+ 1·89	+ 1·87	+ 1·70	+ 1·70	+ 1·76	+ 1·76	+ 1·65	+ 1·49	+ 1·78	1916 Dep. ,,
92·60	92·85	93·06	92·89	92·61	91·91	90·80	89·58	88·79	88·12	87·58	87·11	89·34	Normal. RICHMOND.
+ 0·76	+ 0·66	+ 0·75	+ 1·00	+ 1·02	+ 1·15	+ 1·17	+ 1·00	+ 0·94	+ 0·96	+ 1·02	+ 1·04	+ 0·92	1916 Dep. ,,
													SEPTEMBER.
86·53	86·54	86·43	86·15	85·79	85·20	84·65	84·18	83·89	83·62	83·40	83·18	84·38	Normal. ABERDEEN.
− 0·19	− 0·05	− 0·16	+ 0·03	− 0·25	− 0·13	− 0·10	+ 0·10	+ 0·22	+ 0·30	+ 0·22	+ 0·23	+ 0·13	1916 Dep. ,,
86·31	86·60	86·48	86·19	85·50	84·38	83·21	82·64	82·05	81·73	81·36	81·09	83·09	[Normal.] ESKDALEMUIR.
− 0·21	− 0·39	− 0·20	− 0·04	+ 0·01	+ 0·18	+ 0·33	+ 0·29	+ 0·30	+ 0·31	+ 0·54	+ 0·66	+ 0·37	1916 Dep. ,,
88·50	88·50	88·51	88·24	87·94	87·36	86·76	86·33	86·16	85·96	85·86	85·68	86·64	Normal. CAHIRCIVEEN.
+ 0·45	+ 0·49	+ 0·51	+ 0·59	+ 0·47	+ 0·69	+ 0·81	+ 1·01	+ 1·10	+ 0·98	+ 0·99	+ 0·99	+ 0·81	1916 Dep. ,,
90·13	90·35	90·46	90·18	89·68	88·59	87·42	86·66	86·11	85·62	85·19	84·84	86·78	Normal. RICHMOND.
− 0·96	− 0·91	− 0·68	− 0·67	− 0·88	− 0·68	− 0·49	− 0·44	− 0·39	− 0·36	− 0·29	− 0·25	− 0·38	1916 Dep. ,,
													OCTOBER.
83·22	83·25	83·11	82·72	82·22	81·75	81·39	81·15	80·99	80·80	80·69	80·54	81·39	Normal. ABERDEEN.
+ 0·78	+ 0·69	+ 0·61	+ 0·73	+ 0·74	+ 0·76	+ 0·86	+ 0·92	+ 0·87	+ 1·02	+ 1·02	+ 0·95	+ 0·73	1916 Dep. ,,
82·88	83·05	82·77	82·32	81·28	80·41	79·92	79·64	79·29	79·29	79·12	79·08	80·30	[Normal.] ESKDALEMUIR.
− 0·42	− 0·47	− 0·39	− 0·13	+ 0·21	+ 0·53	+ 0·43	+ 0·45	+ 0·45	+ 0·41	+ 0·25	+ 0·25	+ 0·01	1916 Dep. ,,
85·32	85·34	85·29	85·04	84·66	84·11	83·87	83·67	83·56	83·38	83·30	83·18	83·88	Normal. CAHIRCIVEEN.
+ 1·04	+ 1·02	+ 0·98	+ 0·91	+ 0·97	+ 1·26	+ 1·39	+ 1·38	+ 1·40	+ 1·46	+ 1·59	+ 1·61	+ 1·56	1916 Dep. ,,
85·60	85·72	85·63	85·16	84·41	83·60	83·05	82·60	82·31	82·00	81·76	81·48	82·83	Normal. RICHMOND.
+ 1·53	+ 1·45	+ 1·46	+ 1·30	+ 1·26	+ 1·54	+ 1·68	+ 1·81	+ 1·87	+ 1·94	+ 1·95	+ 2·06	+ 1·89	1916 Dep. ,,
													NOVEMBER.
79·97	79·97	79·78	79·38	79·04	78·84	78·71	78·58	78·52	78·41	78·32	78·20	78·70	Normal. ABERDEEN.
+ 1·11	+ 1·07	+ 1·16	+ 1·23	+ 1·33	+ 1·48	+ 1·55	+ 1·64	+ 1·60	+ 1·60	+ 1·58	+ 1·55	+ 1·44	1916 Dep. ,,
78·71	78·67	78·31	77·79	77·23	77·03	76·82	76·66	76·44	76·41	76·20	76·23	76·96	[Normal.] ESKDALEMUIR.
+ 0·96	+ 1·07	+ 1·17	+ 1·24	+ 1·34	+ 1·49	+ 1·52	+ 1·68	+ 1·95	+ 1·95	+ 2·08	+ 2·04	+ 1·64	1916 Dep. ,,
82·71	82·73	82·65	82·33	81·98	81·74	81·63	81·48	81·42	81·32	81·29	81·21	81·63	Normal. CAHIRCIVEEN.
− 0·28	− 0·30	− 0·26	− 0·15	− 0·17	− 0·19	− 0·25	− 0·24	− 0·24	− 0·17	− 0·20	− 0·09	+ 0·14	1916 Dep. ,,
81·49	81·56	81·40	80·93	80·40	80·01	79·77	79·47	79·29	79·09	78·97	78·80	79·60	Normal. RICHMOND.
+ 0·44	+ 0·33	+ 0·32	+ 0·24	+ 0·16	+ 0·07	− 0·12	− 0·02	+ 0·11	+ 0·03	− 0·11	− 0·18	+ 0·17	1916 Dep. ,,
													DECEMBER.
77·54	77·52	77·34	77·10	76·96	76·84	76·78	76·69	76·68	76·61	76·58	76·50	76·75	Normal. ABERDEEN.
+ 0·14	+ 0·23	+ 0·18	+ 0·05	0·00	+ 0·04	− 0·15	− 0·24	− 0·35	− 0·39	− 0·57	− 0·60	− 0·34	1916 Dep. ,,
77·08	77·11	76·83	76·55	76·37	76·33	76·19	76·13	76·12	76·03	75·92	75·90	76·16	[Normal.] ESKDALEMUIR.
− 1·60	− 1·45	− 1·52	− 1·69	− 1·76	− 1·84	− 1·86	− 1·82	− 1·70	− 1·64	− 1·56	− 1·61	− 1·74	1916 Dep. ,,
81·27	81·30	81·22	81·01	80·77	80·59	80·55	80·44	80·44	80·36	80·37	80·31	80·53	Normal. CAHIRCIVEEN.
− 1·86	− 1·71	− 1·70	− 1·83	− 1·82	− 1·88	− 1·96	− 1·97	− 2·08	− 2·13	− 2·25	− 2·32	− 2·15	1916 Dep. ,,
78·95	79·01	78·89	78·45	78·14	77·88	77·72	77·56	77·46	77·35	77·27	77·16	77·62	Normal. RICHMOND.
− 1·76	− 1·71	− 1·73	− 1·75	− 1·73	− 1·71	− 1·76	− 1·71	− 1·66	− 1·74	− 1·70	− 1·65	− 1·73	1916 Dep. ,,
													YEAR.
82·41	82·42	82·33	82·06	81·80	81·44	81·10	80·73	80·46	80·21	80·02	79·83	80·79	Normal. ABERDEEN.
− 0·10	− 0·09	− 0·19	− 0·12	− 0·16	− 0·09	− 0·10	0·00	+ 0·14	+ 0·16	+ 0·15	+ 0·14	+ 0·03	1916 Dep. ,,
82·40	82·60	82·41	82·17	81·67	81·13	80·45	79·86	79·32	79·04	78·73	78·56	80·05	[Normal.] ESKDALEMUIR.
− 0·43	− 0·50	− 0·44	0·42	− 0·40	− 0·33	− 0·29	− 0·25	− 0·16	− 0·16	− 0·12	− 0·10	− 0·22	1916 Dep. ,,
85·00	85·05	85·06	84·89	84·63	84·19	83·66	83·43	83·16	82·97	82·82	82·69	83·51	Normal. CAHIRCIVEEN.
− 0·23	− 0·22	− 0·27	− 0·26	− 0·27	− 0·20	− 0·02	− 0·18	− 0·14	− 0·14	− 0·10	− 0·13	− 0·12	1916 Dep. ,,
85·35	85·54	85·63	85·35	84·96	84·36	83·67	82·93	82·39	81·94	81·58	81·32	82·77	Normal. RICHMOND.
− 0·05	− 0·03	0·00	+ 0·01	0·00	+ 0·08	+ 0·14	+ 0·17	+ 0·21	+ 0·21	+ 0·21	+ 0·14	+ 0·17	1916 Dep. ,,

HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS:

RELATIVE HUMIDITY

Hours, G.M.T.	0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
JANUARY.	%	%	%	%	%	%	%	%	%	%	%	%	%
ABERDEEN: Normal.	81·1	81·1	81·2	81·4	81·5	81·7	81·8	81·8	81·8	81·8	81·1	79·9	78·7
1916 Departure.	− 4·1	− 3·1	− 4·2	− 3·4	− 3·5	− 2·7	− 2·8	− 2·8	− 3·8	− 4·8	− 4·1	− 3·9	− 3·7
ESKDALEMUIR: [Normal].	87·3	87·3	87·8	88·4	87·9	87·9	88·2	89·0	88·6	88·6	86·0	86·4	85·4
1916 Departure.	+ 1·1	+ 0·7	+ 0·1	− 0·5	− 1·1	− 1·4	− 1·3	− 0·7	− 0·1	+ 0·4	+ 2·6	+ 1·0	+ 0·5
CAHIRCIVEEN: Normal.	86·8	86·6	87·1	86·9	87·2	87·0	87·1	87·1	87·1	86·8	86·8	86·0	85·3
1916 Departure.	+ 3·3	+ 4·5	+ 3·2	+ 3·1	+ 2·9	+ 2·7	+ 2·1	+ 3·3	+ 3·2	+ 3·2	+ 3·0	+ 2·9	+ 3·2
RICHMOND: Normal.	86·4	86·2	86·6	86·4	86·5	86·2	86·8	86·7	86·7	86·1	85·4	82·8	81·5
1916 Departure.	− 0·3	+ 0·6	+ 0·2	+ 0·8	+ 1·3	+ 0·8	+ 0·2	0·0	+ 0·6	+ 1·3	− 0·3	− 0·8	+0·2
FEBRUARY.													
ABERDEEN: Normal.	80·8	81·1	81·1	81·4	81·5	81·5	81·6	81·6	81·4	80·7	79·3	77·8	76·2
1916 Departure.	− 0·8	− 1·1	− 1·1	− 0·4	− 1·5	− 1·5	− 0·6	− 1·6	− 0·4	− 0·7	− 0·3	− 0·8	− 3·2
ESKDALEMUIR: [Normal].	86·8	87·3	86·9	87·6	87·1	87·7	86·4	86·7	87·1	88·1	84·7	84·4	83·4
1916 Departure.	− 0·6	− 1·2	− 1·1	− 1·4	− 0·1	− 1·0	+ 1·2	+ 1·4	+ 1·2	+ 0·1	+ 0·3	− 0·5	− 2·1
CAHIRCIVEEN: Normal.	87·2	87·1	87·3	87·5	87·5	87·5	87·7	87·1	87·5	87·1	86·4	84·7	82·8
1916 Departure.	− 1·9	− 3·2	− 1·8	− 2·4	− 3·1	− 1·9	− 3·7	− 3·5	− 2·8	− 2·1	− 3·6	− 3·8	− 1·6
RICHMOND: Normal.	84·9	84·7	85·2	85·1	85·6	85·3	85·8	85·4	85·5	83·9	82·1	78·5	76·4
1916 Departure.	+ 0·7	0·0	+ 1·0	+ 0·9	+ 1·2	+ 1·0	+ 1·1	+ 1·1	+ 0·9	+ 1·0	+ 0·1	− 0·8	− 1·5
MARCH.													
ABERDEEN: Normal.	81·4	82·2	82·2	82·5	82·7	83·0	83·0	82·9	81·2	79·1	76·4	74·8	73·0
1916 Departure.	+ 2·6	− 0·2	− 0·2	+ 0·5	+ 0·3	0·0	+ 2·0	+ 1·1	+ 0·8	+ 1·9	+ 3·6	+ 4·2	+ 4·0
ESKDALEMUIR: [Normal].	86·1	87·0	87·0	88·2	87·3	87·8	87·5	87·9	87·0	85·6	81·6	80·5	79·0
1916 Departure.	− 1·8	− 2·4	− 3·0	− 4·0	− 3·8	− 3·1	− 2·8	− 3·3	− 2·9	− 2·9	− 2·1	+ 0·1	+ 0·4
CAHIRCIVEEN: Normal.*	86·5	86·6	86·8	87·0	87·2	87·1	87·2	87·3	86·8	85·1	83·1	80·8	79·3
1916 Departure.	− 4·5	− 4·0	− 3·3	− 3·9	− 4·1	− 3·5	− 3·7	− 4·4	− 4·3	− 3·7	− 3·7	− 2·4	− 2·3
RICHMOND: Normal.	85·3	85·4	86·6	86·5	87·1	86·8	87·2	86·4	84·9	81·2	77·9	73·4	71·2
1916 Departure.	+ 3·2	+ 3·2	+ 1·9	+ 1·9	+ 0·9	+ 1·6	+ 1·3	+ 1·2	+ 1·8	+ 3·0	+ 3·4	+ 5·8	+ 5·4
APRIL.													
ABERDEEN: Normal.	82·6	83·3	83·7	84·0	84·3	84·4	83·7	82·0	79·1	76·0	73·4	72·0	70·9
1916 Departure.	− 1·6	− 2·3	− 1·7	− 2·0	− 2·3	− 2·4	− 2·7	− 4·0	− 1·1	0·0	− 1·4	0·0	+ 0·1
ESKDALEMUIR: [Normal].	86·3	86·6	86·2	86·9	87·1	87·7	86·9	85·4	81·5	77·7	74·1	71·6	69·1
1916 Departure.	+ 0·9	+ 0·8	+ 1·4	− 0·2	+ 1·2	+ 0·7	+ 1·6	+ 1·7	+ 3·0	+ 3·7	+ 1·1	+ 5·1	+ 6·3
CAHIRCIVEEN: Normal.	85·8	86·2	86·7	86·6	86·9	86·9	87·0	86·5	84·1	81·9	79·6	77·2	76·3
1916 Departure.	+ 0·7	+ 0·6	0·0	− 0·5	− 0·8	− 0·5	− 0·7	− 1·4	− 0·7	− 1·4	+ 1·2	+ 1·2	+ 1·0
RICHMOND: Normal.	83·4	84·2	85·5	86·0	86·9	86·7	86·7	83·6	79·9	74·9	70·2	66·3	63·5
1916 Departure.	− 2·2	− 1·0	− 1·8	− 1·2	− 1·4	− 0·7	− 1·3	− 0·7	− 1·4	− 0·7	− 2·2	− 1·2	− 1·3
MAY.													
ABERDEEN: Normal.	84·3	84·9	85·3	85·8	86·1	85·5	83·5	80·2	77·6	75·4	74·0	72·8	71·9
1916 Departure.	+ 1·7	+ 1·1	+ 0·7	+ 1·2	+ 0·9	+ 1·5	+ 1·5	+ 2·8	+ 0·4	+ 0·6	0·0	− 0·8	+ 0·1
ESKDALEMUIR: [Normal].	87·5	88·0	88·0	88·7	88·9	88·7	87·2	84·7	79·8	76·4	73·1	70·7	68·8
1916 Departure.	+ 3·2	+ 3·1	+ 2·7	+ 2·0	+ 1·8	+ 2·1	+ 2·9	+ 0·3	+ 1·0	0·0	+ 1·3	+ 1·8	+ 2·5
CAHIRCIVEEN: Normal.	86·7	87·1	87·2	87·4	87·8	87·9	87·5	85·6	82·2	79·2	77·3	75·6	74·7
1916 Departure.	+ 1·0	+ 0·8	+ 1·3	+ 1·5	+ 1·8	+ 0·6	− 0·5	− 0·9	0·0	− 0·5	− 0·3	+ 1·4	+ 1·0
RICHMOND: Normal.†	83·2	84·5	86·2	86·8	87·5	86·7	85·2	81·0	76·2	71·3	68·0	65·0	62·7
1916 Departure.	+ 2·8	+ 3·0	+ 3·0	+ 3·9	+ 4·4	+ 3·7	+ 3·8	+ 3·8	+ 3·6	+ 1·8	+ 1·5	+ 2·2	+ 2·6
JUNE.													
ABERDEEN: Normal.	84·3	85·0	85·9	86·1	86·4	85·1	82·0	78·7	76·2	74·6	73·3	72·2	71·8
1916 Departure.	+ 1·7	+ 1·0	− 0·9	− 1·1	− 1·4	− 1·1	0·0	+ 1·3	+ 1·8	+ 2·4	+ 2·7	+ 0·8	+ 0·2
ESKDALEMUIR: [Normal].	88·7	89·1	89·5	89·9	90·0	89·6	87·6	84·3	80·0	76·9	74·6	72·1	71·0
1916 Departure.	− 2·9	− 2·0	− 2·4	− 1·6	− 2·9	− 2·9	− 3·1	− 2·1	− 2·7	− 3·2	− 2·4	− 1·9	− 1·6
CAHIRCIVEEN: Normal.	87·0	87·2	87·9	87·9	88·2	88·2	87·3	85·3	82·5	79·9	77·9	76·5	76·0
1916 Departure.	− 3·7	− 3·8	− 3·5	− 3·8	− 2·8	− 3·6	− 3·7	− 3·2	− 2·5	− 2·5	− 0·9	− 0·5	− 1·6
RICHMOND: Normal.†	83·2	84·5	86·0	87·3	87·8	85·9	83·8	79·6	75·6	71·2	67·7	64·7	62·3
1916 Departure.	+ 1·1	+ 1·4	+ 0·4	− 0·1	− 0·3	− 0·8	+ 0·2	+ 0·6	0·0	+ 0·3	+ 0·6	+ 1·3	+ 3·4

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 on p. 12) by means of Glaisher's factors; complete saturation being taken as 100.

The normals for humidity are obtained from the observations for 30 years, 1886–1915 (Eskdalemuir 1911–1915 only).

* Cahirciveen Normals for March are for 29 years only, 1892 being omitted. † The Richmond Normals for May and June are for 29 years only, 1891 being omitted.

NORMALS AND DEPARTURES THEREFROM IN 1916.

JANUARY TO JUNE.

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.	Hour, G.M.T.
													JANUARY.
%	%	%	%	%	%	%	%	%	%	%	%	%	
78·2	78·0	78·4	79·8	80·4	80·8	81·0	81·1	81·1	81·1	81·1	81·0	80·7	Normal. ABERDEEN.
− 6·2	− 6·0	− 4·4	− 3·8	− 3·4	− 2·8	− 4·0	− 5·1	− 4·1	− 4·1	−4·1	− 4·0	− 3·7	1916 Dep. ,,
85·9	85·6	84·9	86·0	86·8	87·1	87·5	87·9	87·7	86·4	86·9	87·1	87·1	[Normal.] ESKDALEMUIR.
− 0·3	+ 0·6	+ 1·3	+ 1·0	+ 0·6	− 0·8	− 1·5	− 0·8	− 0·1	+ 1·3	+ 1·5	+ 1·4	+ 0·2	1916 Dep. ,,
84·3	84·0	84·3	84·8	85·6	86·1	86·3	86·5	86·6	86·5	86·4	86·7	86·2	Normal. CAHIRCIVEEN.
+ 4·1	+ 3·6	+ 3·5	+ 3·8	+ 3·5	+ 2·7	+ 3·2	+ 2·7	+ 2·8	+ 3·0	+ 3·4	+ 3·3	+ 3·2	1916 Dep. ,,
79·7	79·4	79·6	81·4	82·5	83·9	84·3	85·1	85·1	85·9	85·7	86·4	84·5	Normal. RICHMOND.
− 0·4	− 1·8	− 1·1	− 1·0	− 0·5	− 0·4	− 0·3	− 0·2	+ 0·8	0·0	+ 1·3	+ 0·1	0·0	1916 Dep. ,,
													FEBRUARY.
75·8	75·4	75·7	76·7	78·4	79·6	80·2	80·2	80·4	80·6	80·7	81·0	79·6	Normal. ABERDEEN.
− 1·8	− 2·4	− 1·7	− 1·7	− 0·4	− 2·6	− 1·2	− 0·2	− 0·4	− 0·6	− 0·7	− 2·0	− 1·6	1916 Dep. ,,
83·8	83·6	84·8	84·1	85·2	86·1	86·1	86·4	87·7	86·8	86·8	87·0	86·1	[Normal.] ESKDALEMUIR.
− 3·0	− 0·7	− 2·0	− 0·1	+ 0·3	− 2·1	− 0·7	− 1·6	− 2·5	− 1·9	− 1·1	− 0·8	− 0·8	1916 Dep. ,,
81·7	81·3	81·5	82·1	83·4	84·9	85·4	86·1	86·1	86·3	86·8	87·1	85·5	Normal. CAHIRCIVEEN.
− 0·4	− 0·5	− 0·6	− 0·6	− 1·2	− 1·0	− 1·0	− 3·7	− 3·4	− 2·5	− 2·1	− 2·5	− 2·2	1916 Dep. ,,
74·6	73·7	73·7	74·7	77·1	79·8	81·2	82·7	83·2	84·0	84·4	84·8	81·6	Normal. RICHMOND.
− 1·7	− 2·4	− 2·6	− 1·3	− 1·4	− 0·4	− 1·5	− 1·0	− 0·3	+ 0·6	+ 0·9	+ 0·8	− 0·2	1916 Dep. ,,
													MARCH.
72·4	72·1	72·4	73·4	75·1	77·3	79·0	80·1	80·7	81·2	81·4	81·6	78·7	Normal. ABERDEEN.
+ 4·6	+ 4·9	+ 4·6	+ 3·6	+ 4·9	+ 6·7	+ 5·0	+ 3·9	+ 1·3	+ 1·8	+ 0·6	+ 0·4	+ 2·3	1916 Dep. ,,
78·7	78·7	78·3	79·8	80·6	83·7	84·8	85·4	85·9	86·1	86·6	86·1	84·2	[Normal.] ESKDALEMUIR.
+ 1·1	+ 0·6	+ 2·4	− 0·4	+ 0·1	− 2·6	− 1·9	− 2·5	− 2·7	− 2·2	− 3·6	− 2·0	− 1·8	1916 Dep. ,,
78·2	78·2	78·1	78·7	79·7	81·3	83·5	84·7	85·0	85·6	85·8	86·5	83·7	Normal.* CAHIRCIVEEN.
− 2·2	− 1·2	− 1·9	− 2·7	− 2·4	− 2·8	− 4·3	− 3·4	− 2·8	− 3·1	− 4·1	− 3·7	− 3·2	1916 Dep. ,,
68·9	67·7	67·7	68·4	70·6	74·1	77·2	80·2	81·4	83·4	84·4	85·5	79·3	Normal. RICHMOND.
+ 7·7	+ 7·6	+ 7·2	+ 8·1	+ 7·8	+ 7·5	+ 6·6	+ 5·5	+ 5·8	+ 3·1	+ 3·1	+ 2·7	+ 4·4	1916 Dep. ,,
													APRIL.
70·5	70·6	70·9	71·6	73·0	74·6	77·0	79·2	80·3	81·3	82·3	82·8	78·0	Normal. ABERDEEN.
+ 1·5	+ 0·4	+ 1·1	+ 1·4	0·0	− 1·6	+ 1·0	+ 0·8	+ 0·7	− 0·3	− 1·3	− 1·8	− 1·0	1916 Dep. ,,
68·8	68·5	67·8	68·9	70·6	73·5	78·6	81·1	83·7	85·1	86·2	86·3	79·2	[Normal.] ESKDALEMUIR.
+ 5·7	+ 3·7	+ 5·2	+ 4·6	+ 5·3	+ 6·4	+ 3·1	+ 4·0	+ 2·7	+ 1·5	+ 1·2	+ 1·3	+ 2·9	1916 Dep. ,,
75·8	75·5	75·7	75·9	77·1	78·8	81·0	83·4	84·5	85·2	85·7	85·9	82·1	Normal. CAHIRCIVEEN.
+ 0·5	+ 1·3	+ 0·7	+ 2·3	+ 3·1	+ 1·5	+ 2·3	+ 0·7	0·0	+ 0·6	+ 0·5	− 0·1	+ 0·5	1916 Dep. ,,
62·0	60·8	60·7	61·0	62·6	65·6	69·7	74·0	76·9	79·5	81·5	83·0	74·7	Normal. RICHMOND.
− 1·4	− 1·5	− 2·2	− 2·2	− 2·6	− 3·7	− 3·1	− 3·5	− 3·2	− 2·5	− 1·8	− 2·1	− 1·9	1916 Dep. ,,
													MAY.
71·9	71·8	72·0	72·5	73·2	74·2	76·2	78·7	80·7	82·1	83·5	84·3	78·5	Normal ABERDEEN.
− 0·9	+ 2·2	+ 5·0	+ 4·5	+ 3·8	+ 5·8	+ 5·8	+ 5·3	+ 4·3	+ 2·9	+ 2·5	+ 1·7	+ 2·5	1916 Dep. ,,
68·6	68·1	68·1	69·1	69·8	72·1	76·6	80·7	83·8	85·9	87·0	87·4	79·2	[Normal.] ESKDALEMUIR.
+ 0·8	+ 2·1	+ 2·9	+ 1·4	+ 2·0	+ 2·1	+ 0·6	+ 2·6	+ 2·4	+ 2·8	+ 2·7	+ 3·2	+ 1·9	1916 Dep. ,,
74·5	74·3	74·6	74·6	74·6	77·0	78·9	81·7	83·8	85·2	86·1	86·6	81·2	Normal. CAHIRCIVEEN.
+ 2·0	+ 1·7	+ 1·7	+ 2·0	+ 2·2	+ 1·9	+ 0·7	+ 1·0	+ 0·8	+ 1·8	+ 1·6	+ 1·8	+ 1·2	1916 Dep. ,,
60·8	59·9	59·4	59·6	60·6	62·7	66·6	71·8	75·5	78·8	81·0	83·2	73·4	Normal.† RICHMOND.
+ 3·5	+ 3·1	+ 1·3	+ 1·3	+ 0·8	+ 0·3	− 0·1	+ 0·5	+ 0·5	+ 1·3	+ 2·2	+ 2·8	+ 2·3	1916 Dep. ,,
													JUNE.
71·3	71·2	72·0	72·5	72·6	73·9	75·5	77·6	80·1	82·0	83·6	84·3	78·1	Normal. ABERDEEN.
+ 1·7	+ 3·8	+ 2·0	+ 2·5	+ 4·4	+ 5·1	+ 5·5	+ 5·4	+ 3·9	+ 3·0	+ 1·4	+ 2·7	+ 1·9	1916 Dep. ,,
69·6	69·4	68·8	70·8	71·7	73·8	77·1	81·1	84·5	86·3	87·6	88·9	80·2	[Normal.] ESKDALEMUIR.
− 0·3	0·0	− 0·2	− 2·3	− 2·1	− 2·0	− 2·0	− 2·7	− 3·0	− 3·1	− 2·4	− 3·1	− 2·2	1916 Dep. ,,
75·4	75·3	75·3	74·7	74·7	77·2	79·1	81·7	84·3	85·5	86·2	87·0	81·7	Normal. CAHIRCIVEEN.
− 1·6	− 2·2	− 2·0	− 1·9	− 1·9	− 2·7	− 3·3	− 4·3	− 4·3	− 3·7	− 3·8	− 3·9	− 2·8	1916 Dep. ,,
60·3	59·2	58·5	58·8	59·8	61·9	65·4	70·5	74·9	78·4	80·8	83·2	72·8	Normal.† RICHMOND.
+ 4·8	+ 3·8	+ 7·4	+ 7·5	+ 7·4	+ 7·0	+ 6·1	+ 4·6	+ 4·7	+ 3·7	+ 2·5	+ 1·1	+ 2·9	1916 Dep. ,,

The values for 1916 are given by the departure from the normal; + indicates excess, − defect.

The mean values are calculated by the formula, mean $= \frac{1}{24}\left\{(1 + \cdots 23) + \frac{1}{2}(0+24)\right\}$

* Cahirciveen Normals for March are for 29 years only, 1892 being omitted.

† The Richmond Normals for May and June are for 29 years only, 1891 being omitted.

HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS:

RELATIVE HUMIDITY.

Hour, G.M.T.		0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.
JULY.		%	%	%	%	%	%	%	%	%	%	%	%	%
ABERDEEN :	Normal.	84·9	85·2	85·8	86·0	86·4	85·2	82·9	80·0	77·0	74·7	73·1	72·0	71·9
	1916 Departure.	+ 5·1	+ 3·8	+ 3·2	+ 4·0	+ 2·6	+ 2·8	+ 3·1	+ 5·0	+ 5·0	+ 6·3	+ 6·9	+ 6·0	+ 6·1
ESKDALEMUIR :	[Normal].	89·9	90·6	90·9	91·2	90·5	90·5	88·9	86·1	82·2	78·5	76·1	74·4	73·4
	1916 Departure.	+ 2·2	+ 2·4	+ 1·8	+ 1·5	+ 2·5	+ 2·8	+ 2·6	+ 2·3	+ 1·6	+ 1·6	+ 1·2	+ 1·3	+ 2·4
CAHIRCIVEEN :	Normal.	88·2	88·4	88·7	89·0	89·2	89·6	89·0	87·7	85·5	83·1	81·2	79·4	78·6
	1916 Departure.	+ 0·8	+ 1·4	+ 1·8	+ 2·1	+ 1·5	+ 0·8	+ 1·0	+ 0·9	+ 0·3	− 0·2	− 1·5	+ 0·2	− 0·1
RICHMOND :	Normal.	83·8	85·3	86·5	87·3	88·2	87·2	85·5	81·0	76·1	70·9	67·3	63·6	61·7
	1916 Departure.	+ 2·5	+ 2·3	+ 2·1	+ 2·1	+ 2·0	+ 1·4	+ 1·8	+ 2·7	+ 4·5	+ 4·0	+ 4·1	+ 3·8	+ 3·7
AUGUST.														
ABERDEEN :	Normal.*	85·0	85·6	86·1	86·5	87·1	87·1	85·7	82·5	79·7	76·1	74·3	72·7	71·6
	1916 Departure.	+ 4·0	+ 3·4	+ 2·9	+ 2·5	+ 0·9	+ 0·9	+ 2·3	+ 4·5	+ 5·3	+ 2·9	+ 5·7	+ 8·3	+ 8·4
ESKDALEMUIR :	[Normal].	90·6	90·6	90·7	91·1	91·2	91·0	90·4	89·0	85·5	81·9	79·0	77·2	76·1
	1916 Departure.	+ 1·5	+ 2·1	+ 2·1	+ 2·5	+ 2·4	+ 2·1	+ 2·3	+ 2·4	+ 2·7	+ 0·9	+ 1·4	+ 0·2	− 0·9
CAHIRCIVEEN :	Normal.	88·7	88·9	89·5	89·3	89·6	89·6	89·5	88·9	87·1	84·5	82·4	80·5	79·3
	1916 Departure.	+ 1·3	+ 0·5	0·0	+ 0·5	+ 0·4	+ 0·4	+ 1·0	+ 0·4	0·0	+ 0·5	+ 0·3	− 0·7	− 0·2
RICHMOND :	Normal.	86·0	87·0	87·9	88·8	89·3	89·4	88·6	85·3	80·7	74·8	70·3	65·8	63·8
	1916 Departure.	− 1·6	− 2·0	− 0·6	− 1·1	− 1·0	− 1·4	− 1·6	− 1·9	− 1·0	− 0·9	+ 0·6	+ 2·4	+ 0·7
SEPTEMBER.														
ABERDEEN :	Normal.*	85·0	85·4	85·7	85·9	86·2	86·2	86·3	84·9	82·2	78·6	75·7	73·5	72·4
	1916 Departure.	0·0	+ 0·6	− 0·7	+ 0·1	− 0·2	− 0·2	− 0·3	+ 0·1	− 0·2	+ 0·4	+ 1·3	+ 2·5	+ 3·6
ESKDALEMUIR :	[Normal].	87·7	87·9	87·9	88·0	87·3	87·6	87·1	86·7	84·5	82·2	76·8	75·2	73·5
	1916 Departure.	+ 2·0	+ 2·6	+ 2·1	+ 1·6	+ 2·0	+ 2·6	+ 2·9	+ 3·2	+ 2·8	+ 2·0	+ 3·5	+ 3·1	+ 4·3
CAHIRCIVEEN :	Normal.	87·4	87·7	87·8	88·1	88·3	88·0	88·3	88·0	87·3	84·7	82·2	79·8	78·7
	1916 Departure.	0·0	0·0	− 0·2	+ 0·4	+ 0·3	+ 0·1	+ 0·1	+ 0·5	+ 0·6	+ 0·2	− 0·2	+ 0·9	− 0·1
RICHMOND :	Normal.	87·8	88·5	89·5	89·6	90·1	90·1	90·5	88·5	85·0	79·8	74·7	70·0	66·9
	1916 Departure.	+ 1·2	+ 1·3	+ 1·0	+ 0·4	+ 0·2	− 0·2	+ 0·1	+ 1·0	+ 1·7	+ 2·7	+ 4·3	+ 4·2	+ 3·3
OCTOBER.														
ABERDEEN :	Normal.	85·2	85·6	85·7	85·8	85·7	85·8	86·0	86·0	84·8	83·0	80·2	77·9	76·3
	1916 Departure.	− 2·2	− 3·6	− 2·7	− 1·8	− 2·7	− 3·8	− 3·0	− 3·0	− 2·8	− 5·0	− 3·2	+ 0·1	− 1·3
ESKDALEMUIR :	[Normal].	89·3	90·2	89·7	89·9	89·5	89·6	89·0	89·6	88·6	87·7	83·9	82·0	79·9
	1916 Departure.	− 1·8	− 0·7	− 0·2	+ 0·2	− 0·2	+ 1·3	+ 0·4	+ 0·9	+ 1·6	+ 1·5	+ 1·7	+ 2·0	+ 3·1
CAHIRCIVEEN :	Normal.	86·6	86·8	87·0	87·0	87·0	87·0	86·9	87·2	86·9	85·8	84·1	81·6	80·2
	1916 Departure.	+ 0·3	+ 1·0	+ 0·3	+ 0·3	+ 1·1	+ 0·8	+ 1·6	+ 1·7	+ 1·4	+ 2·7	+ 2·2	+ 4·2	+ 5·3
RICHMOND :	Normal.	90·0	90·0	90·7	90·6	91·3	91·1	91·3	90·7	89·4	86·1	82·6	78·2	75·2
	1916 Departure.	− 1·1	− 1·2	− 2·3	− 3·4	− 3·4	− 3·5	− 3·5	− 2·4	− 3·1	− 2·3	− 3·5	− 3·4	− 2·5
NOVEMBER.														
ABERDEEN :	Normal.	83·6	83·6	83·7	83·6	83·6	83·8	83·6	83·7	83·5	82·9	81·5	80·1	78·8
	1916 Departure.	− 1·6	− 0·6	− 1·7	− 1·6	− 0·6	− 0·8	− 1·6	− 0·7	+ 1·5	+ 1·1	+ 0·5	+ 0·9	+ 2·2
ESKDALEMUIR :	[Normal].	85·0	85·1	85·8	86·2	85·8	85·5	85·8	86·0	85·1	85·4	84·2	82·4	81·2
	1916 Departure.	+ 3·2	+ 3·9	+ 3·2	+ 2·8	+ 3·6	+ 5·2	+ 4·0	+ 4·9	+ 6·2	+ 4·6	+ 4·5	+ 5·2	+ 5·4
CAHIRCIVEEN :	Normal.	86·7	86·7	87·1	87·3	87·3	87·5	87·6	87·7	87·7	87·2	86·4	84·8	83·4
	1916 Departure.	+ 0·8	0·0	+ 0·1	− 0·7	− 0·8	− 0·2	+ 0·1	+ 0·2	− 1·4	− 1·9	− 1·5	+ 1·7	+ 2·5
RICHMOND :	Normal.	88·9	88·7	89·3	89·2	89·3	89·0	89·6	89·2	89·2	87·5	85·9	83·0	80·7
	1916 Departure.	+ 3·2	+ 0·6	+ 0·9	+ 0·9	+ 2·2	+ 1·0	+ 0·9	+ 1·8	+ 1·5	+ 1·4	+ 0·5	− 0·6	+ 0·8
DECEMBER.														
ABERDEEN :	Normal.	82·6	83·0	83·2	83·3	83·4	83·4	83·0	83·2	83·2	82·8	82·5	81·6	80·7
	1916 Departure.	+ 4·4	+ 5·0	+ 3·8	+ 3·7	+ 3·6	+ 3·6	+ 5·0	+ 3·8	+ 3·8	+ 4·2	+ 1·5	+ 3·4	+ 3·3
ESKDALEMUIR :	[Normal].	88·3	88·6	87·7	88·4	88·1	87·9	88·2	88·7	88·8	89·2	89·1	87·1	86·9
	1916 Departure.	+ 1·6	+ 1·4	+ 2·4	+ 2·0	+ 2·1	+ 3·2	+ 2·0	+ 2·3	+ 3·1	+ 0·9	− 0·5	+ 1·7	+ 0·6
CAHIRCIVEEN :	Normal.	87·9	88·0	87·6	87·7	88·0	87·6	87·9	88·0	87·9	87·7	87·5	86·4	86·1
	1916 Departure.	+ 2·7	+ 2·4	+ 2·0	+ 1·1	+ 0·8	+ 2·6	+ 1·8	+ 0·7	+ 1·1	+ 1·2	+ 1·6	+ 1·8	+ 1·4
RICHMOND :	Normal.	87·6	87·2	87·8	87·4	87·8	87·6	88·0	87·5	87·8	87·0	86·3	84·1	82·7
	1916 Departure.	+ 1·3	+ 2·6	+ 3·0	+ 2·6	+ 3·6	+ 4·0	+ 4·3	+ 4·1	+ 4·2	+ 4·2	+ 4·2	+ 3·7	+ 3·2
YEAR.														
ABERDEEN :	Normal.	83·4	83·8	84·1	84·4	84·6	84·4	83·6	82·3	80·6	78·8	77·1	75·6	74·5
	1916 Departure.	+ 0·8	+ 0·4	− 0·2	+ 0·1	− 0·4	− 0·3	+ 0·2	+ 0·5	+ 0·9	+ 0·8	+ 1·1	+ 1·7	+ 1·7
ESKDALEMUIR :	[Normal].	87·9	88·2	88·2	88·5	88·3	88·4	87·6	87·0	84·9	83·4	80·3	79·0	77·6
	1916 Departure.	+ 0·6	+ 0·9	+ 0·7	+ 0·6	+ 0·7	+ 1·0	+ 1·2	+ 1·1	+ 1·5	+ 0·6	+ 1·0	+ 1·3	+ 1·5
CAHIRCIVEEN :	Normal.	86·8	87·3	87·6	87·7	87·8	87·8	87·8	87·2	86·0	84·4	82·9	81·1	80·1
	1916 Departure.	+ 0·4	+ 0·1	− 0·1	− 0·2	− 0·2	− 0·1	− 0·5	− 0·5	− 0·4	− 0·3	− 0·3	+ 0·6	+ 0·7
RICHMOND :	Normal.	85·9	86·3	87·3	87·6	88·1	87·7	87·4	86·1	83·1	79·6	76·5	73·0	70·7
	1916 Departure.	+ 0·9	+ 1·0	+ 0·8	+ 0·6	+ 0·8	+ 0·5	+ 0·7	+ 0·2	+ 1·1	+ 1·3	+ 1·2	+ 1·3	+ 1·5

* The Aberdeen Normals for August and September are for 29 years only, 1893 being omitted

NORMALS AND DEPARTURES THEREFROM IN 1916.

JULY TO DECEMBER AND YEAR.

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Mean.	Hour, G.M.T.
													JULY.
%	%	%	%	%	%	%	%	%	%	%	%	%	
71·3	71·5	71·8	72·7	73·5	74·7	76·4	79·1	81·5	83·0	83·9	84·8	78·5	Normal. ABERDEEN.
+ 6·7	+ 5·5	+ 5·2	+ 6·3	+ 6·5	+ 6·3	+ 5·6	+ 4·9	+ 6·5	+ 5·0	+ 5·1	+ 4·2	+ 5·5	1916 Dep. ,,
73·0	72·7	72·4	74·0	75·6	77·4	80·8	84·6	86·9	88·2	89·7	90·0	82·4	[Normal.] ESKDALEMUIR.
+ 1·9	+ 1·9	+ 3·0	+ 2·5	+ 2·4	+ 3·3	+ 2·8	+ 1·6	+ 2·8	+ 2·6	+ 1·8	+ 2·3	+ 2·2	1916 Dep. ,,
77·9	77·6	77·0	77·1	76·9	79·1	81·1	83·7	85·9	87·1	87·6	88·2	83·7	Normal. CAHIRCIVEEN.
− 1·1	− 1·3	+ 0·2	+ 0·3	+ 0·8	+ 0·5	+ 0·9	+ 0·6	+ 0·3	− 0·3	+ 0·6	+ 0·8	+ 0·4	1916 Dep. ,,
59·6	58·6	58·0	58·3	59·3	61·5	65·2	71·0	75·8	79·2	81·8	84·0	73·0	Normal. RICHMOND.
+ 2·6	+ 2·9	+ 2·8	+ 2·7	+ 3·3	+ 4·0	+ 2·3	+ 2·6	+ 2·0	+ 2·4	+ 3·2	+ 2·6	+ 2·9	1916 Dep. ,,
													AUGUST.
71·3	70·9	71·9	72·6	74·2	76·1	78·7	81·3	82·5	83·6	84·3	85·0	79·5	Normal.* ABERDEEN.
+ 7·7	+ 8·1	+ 7·1	+ 6·4	+ 5·8	+ 3·9	+ 3·3	+ 4·7	+ 4·5	+ 3·4	+ 3·7	+ 3·0	+ 4·5	1916 Dep. ,,
75·2	74·6	74·9	75·2	77·0	80·4	84·9	87·3	89·5	89·8	89·9	90·7	84·3	[Normal.] ESKDALEMUIR.
− 2·0	− 1·0	− 1·5	− 1·6	− 0·4	− 0·5	0·0	− 0·1	− 2·0	− 0·5	+ 1·2	+ 1·0	+ 0·5	1916 Dep. ,,
78·5	78·2	78·2	78·7	79·1	81·1	83·2	85·5	86·9	87·8	88·1	88·3	84·7	Normal. CAHIRCIVEEN.
− 0·7	− 0·3	0·0	− 0·6	+ 0·5	− 0·1	+ 0·6	+ 0·9	+ 0·4	+ 0·1	+ 0·7	+ 1·3	+ 0·3	1916 Dep. ,,
61·3	60·1	60·1	60·2	62·0	65·3	70·6	76·1	79·6	82·5	84·3	86·0	75·8	Normal. RICHMOND.
+ 1·5	+ 2·3	+ 2·0	+ 2·2	+ 1·3	+ 1·3	+ 1·1	0·0	0·0	− 1·2	− 1·7	− 1·6	0·0	1916 Dep. ,,
													SEPTEMBER.
71·9	72·1	72·5	73·9	75·8	78·4	80·7	82·1	83·2	84·0	84·5	84·9	80·3	Normal.* ABERDEEN.
+ 4·1	+ 3·9	+ 5·5	+ 4·1	+ 4·2	+ 3·8	+ 3·3	+ 1·9	+ 0·8	0·0	+ 0·5	+ 0·1	+ 1·7	1916 Dep. ,,
72·9	72·2	72·8	73·8	77·3	81·3	84·4	85·1	87·3	87·1	87·4	87·4	82·3	[Normal.] ESKDALEMUIR.
+ 3·6	+ 4·5	+ 3·7	+ 3·3	+ 3·4	+ 2·6	+ 1·9	+ 2·7	+ 1·6	+ 1·4	+ 1·7	+ 2·3	+ 2·7	1916 Dep. ,,
77·8	77·6	77·7	78·7	79·6	82·2	84·2	85·6	86·2	86·7	87·2	87·4	84·2	Normal. CAHIRCIVEEN.
+ 0·4	+ 1·0	+ 0·1	+ 0·2	+ 0·3	− 2·2	− 2·1	− 2·5	− 2·2	− 1·6	− 1·2	− 0·2	− 0·3	1916 Dep. ,,
64·7	63·6	63·4	64·6	67·4	72·5	77·5	81·1	83·2	85·2	86·4	87·8	79·2	Normal. RICHMOND.
+ 4·2	+ 4·7	+ 3·3	+ 3·0	+ 3·9	+ 3·0	+ 3·6	+ 1·8	+ 1·3	+ 1·5	+ 0·6	+ 0·9	+ 2·2	1916 Dep. ,,
													OCTOBER.
75·9	75·2	76·4	77·9	80·3	82·1	83·5	83·8	84·3	84·7	84·8	85·2	82·4	Normal. ABERDEEN.
− 2·9	− 1·2	− 1·4	− 1·9	− 2·3	− 1·1	− 0·5	− 0·8	− 2·3	− 1·7	− 1·8	− 2·2	− 2·4	1916 Dep. ,,
78·5	78·0	79·6	81·1	84·8	86·7	87·7	88·0	89·6	89·0	89·5	89·2	86·3	[Normal.] ESKDALEMUIR.
+ 3·4	+ 3·7	+ 2·9	+ 3·3	+ 1·3	+ 0·8	+ 0·9	0·0	− 1·5	− 1·4	− 1·5	− 1·9	+ 0·9	1916 Dep. ,,
79·4	79·0	79·1	80·3	81·8	83·9	84·5	85·1	85·6	86·1	86·3	86·8	84·4	Normal. CAHIRCIVEEN.
+ 6·0	+ 6·4	+ 6·0	+ 5·5	+ 4·6	+ 2·8	+ 2·1	+ 2·0	+ 1·7	+ 0·6	+ 0·5	+ 0·7	+ 2·5	1916 Dep. ,,
73·1	72·0	72·6	74·8	78·9	82·9	85·1	87·2	87·6	88·7	89·1	90·0	84·6	Normal. RICHMOND.
− 2·2	− 1·4	− 1·3	− 0·2	− 0·2	− 2·3	− 1·6	− 1·6	− 1·0	− 1·2	− 0·4	− 0·7	− 2·1	1916 Dep. ,,
													NOVEMBER.
78·5	78·5	79·5	80·5	81·5	82·0	82·5	82·5	82·9	82·8	83·2	83·3	82·1	Normal. ABERDEEN.
+ 1·5	+ 1·5	+ 0·5	+ 0·5	+ 0·5	− 1·0	− 0·5	− 0·5	− 0·9	− 0·8	− 1·2	− 0·3	− 0·1	1916 Dep. ,,
81·9	82·1	83·2	83·4	84·3	84·7	85·0	85·2	85·3	85·9	86·2	85·4	84·6	[Normal.] ESKDALEMUIR.
+ 4·1	+ 3·6	+ 2·9	+ 3·5	+ 4·0	+ 3·5	+ 3·4	+ 3·0	+ 2·8	+ 2·2	+ 2·2	+ 3·0	+ 3·9	1916 Dep. ,,
82·4	82·0	82·4	83·6	84·8	85·3	85·6	86·2	86·2	86·4	86·5	86·8	85·8	Normal. CAHIRCIVEEN.
+ 3·4	+ 3·8	+ 2·9	+ 3·0	+ 2·2	+ 1·8	+ 0·4	+ 1·5	+ 1·1	+ 2·1	+ 1·8	+ 0·8	+ 0·9	1916 Dep. ,,
78·8	78·3	78·7	81·4	83·5	85·1	85·8	86·8	87·2	88·1	88·3	88·7	85·9	Normal. RICHMOND.
+ 0·4	+ 1·2	+ 1·3	+ 0·5	+ 0·2	+ 0·7	+ 0·8	+ 1·4	+ 0·6	+ 0·2	+ 0·1	+ 0·4	+ 0·8	1916 Dep. ,,
													DECEMBER.
80·1	80·0	81·0	81·5	81·9	82·3	82·6	82·5	82·6	82·7	82·7	82·6	82·3	Normal. ABERDEEN.
+ 0·9	+ 1·0	+ 3·0	+ 3·5	+ 3·1	+ 2·7	+ 3·4	+ 4·5	+ 4·4	+ 4·3	+ 5·3	+ 4·4	+ 3·7	1916 Dep. ,,
87·0	87·1	88·1	88·3	89·0	88·7	88·8	88·5	89·2	88·7	89·3	88·4	88·3	[Normal.] ESKDALEMUIR.
− 0·1	+ 0·4	+ 1·3	+ 1·3	+ 1·5	+ 1·4	+ 2·6	+ 3·2	+ 1·6	+ 1·6	+ 1·6	+ 1·6	+ 1·6	1916 Dep. ,,
85·5	85·3	85·5	86·4	86·7	87·0	87·0	87·5	87·8	87·7	87·9	87·8	87·2	Normal. CAHIRCIVEEN.
+ 0·4	− 0·2	+ 1·0	+ 2·0	+ 2·0	+ 2·9	+ 2·7	+ 2·4	+ 2·6	+ 3·0	+ 2·7	+ 2·9	+ 1·8	1916 Dep. ,,
81·6	81·0	81·8	83·8	84·8	85·9	86·0	86·6	86·6	87·2	87·0	87·6	85·9	Normal. RICHMOND.
+ 2·1	+ 2·9	+ 3·9	+ 2·9	+ 2·4	+ 2·3	+ 2·2	+ 2·9	+ 2·6	+ 2·2	+ 2·3	+ 1·4	+ 3·0	1916 Dep. ,,
													YEAR.
74·1	74·0	74·6	75·5	76·7	78·0	79·4	80·7	81·7	82·4	83·0	83·4	79·9	Normal. ABERDEEN.
+ 1·4	+ 1·8	+ 2·2	+ 2·1	+ 2·3	+ 2·1	+ 2·3	+ 2·1	+ 1·6	+ 1·1	+ 0·8	− 0·3	+ 1·1	1916 Dep. ,,
77·3	76·9	77·1	78·2	79·7	81·6	83·8	85·4	86·9	87·3	87·9	87·9	83·8	[Normal.] ESKDALEMUIR.
+ 0·9	+ 1·4	+ 1·7	+ 1·1	+ 1·2	+ 0·7	+ 0·5	+ 0·5	0·0	+ 0·2	+ 0·3	+ 0·6	+ 0·9	1916 Dep. ,,
79·3	79·0	79·1	79·6	80·3	82·0	83·3	84·8	85·7	86·3	86·7	87·1	84·2	Normal. CAHIRCIVEEN.
+ 0·9	+ 1·0	+ 1·0	+ 1·1	+ 1·2	+ 0·4	+ 0·2	− 0·2	− 0·2	− 0·2	+ 0·1	+ 0·1	+ 0·2	1916 Dep. ,,
68·8	67·9	67·9	68·9	70·8	73·4	76·2	79·4	81·4	83·4	84·5	85·8	79·2	Normal. RICHMOND.
+ 1·7	+ 1·8	+ 1·8	+ 2·0	+ 1·8	+ 1·7	+ 1·4	+ 1·1	+ 1·2	+ 0·9	+ 1·1	+ 0·8	+ 1·2	1916 Dep. ,,

*The Aberdeen Normals for August and September are for 29 years only, 1893 being omitted.

HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS:

WIND SPEED (in Metres per second).

Hour, G.M.T	0.	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.	m/s.
ABERDEEN: Normal.	4·49	4·42	4·41	4·39	4·37	4·39	4·49	4·45	4·55	4·58	4·57	4·66	4·81
1916 Departure.	+ 0·55	+ 0·97	+ 1·25	+ 0·78	+ 0·44	+ 0·64	+ 0·65	+ 0·56	+ 0·79	+ 0·30	+ 1·23	+ 1·06	+ 1·17
ESKDALEMUIR: [Normal].	5·52	5·70	5·62	5·38	5·49	5·32	5·19	5·11	5·20	5·33	5·82	6·10	6·52
1916 Departure.	+ 4·08	+ 3·76	+ 3·61	+ 3·86	+ 4·04	+ 3·65	+ 3·89	+ 4·01	+ 3·98	+ 4·06	+ 4·26	+ 4·19	+ 3·43
CAHIRCIVEEN: Normal.	6·52	6·45	6·42	6·34	6·33	6·33	6·29	6·31	6·32	6·41	6·30	6·26	6·85
1916 Departure.	+ 0·62	+ 0·32	+ 0·28	+ 0·42	+ 0·44	+ 0·56	+ 0·53	+ 0·64	+ 0·57	+ 0·54	+ 0·22	+ 0·81	+ 0·74
RICHMOND: Normal.	3·39	3·27	3·31	3·31	3·27	3·33	3·33	3·33	3·40	3·50	3·74	4·14	4·32
1916 Departure.	+ 0·73	+ 0·65	+ 0·64	+ 0·59	+ 0·96	+ 0·91	+ 0·97	+ 0·71	+ 0·67	+ 0·44	+ 0·67	+ 0·73	+ 0·84
FEBRUARY.													
ABERDEEN: Normal.	4·32	4·28	4·23	4·27	4·26	4·21	4·28	4·30	4·35	4·41	4·55	4·80	5·08
1916 Departure.	+ 0·62	+ 0·51	+ 0·58	+ 0·38	+ 0·40	+ 0·40	+ 0·54	+ 0·21	+ 0·39	− 0·01	+ 0·66	+ 0·60	+ 0·71
ESKDALEMUIR: [Normal].	5·65	5·71	5·64	5·91	5·79	5·79	5·77	5·65	5·86	6·03	6·45	6·90	7·38
1916 Departure.	+ 0·85	+ 1·28	+ 1·27	+ 0·84	+ 1·23	+ 1·15	+ 1·55	+ 1·68	+ 1·89	+ 1·79	+ 1·27	+ 1·31	+ 1·51
CAHIRCIVEEN: Normal.	6·21	6·10	6·07	6·11	6·01	6·03	5·97	5·96	5·92	6·00	5·94	5·97	6·66
1916 Departure.	+ 1·06	+ 1·41	+ 1·45	+ 1·17	+ 1·50	+ 1·30	+ 1·51	+ 1·50	+ 1·22	+ 0·84	+ 1·15	+ 1·86	+ 1·44
RICHMOND: Normal.	3·40	3·38	3·40	3·34	3·34	3·34	3·36	3·35	3·46	3·76	4·13	4·69	4·91
1916 Departure.	+ 0·90	+ 1·11	+ 1·32	+ 1·53	+ 1·48	+ 1·48	+ 1·49	+ 1·22	+ 0·98	+ 0·72	+ 0·52	+ 0·68	+ 0·77
MARCH.													
ABERDEEN: Normal.	4·15	4·09	4·06	4·12	4·08	4·16	4·14	4·29	4·47	4·76	5·00	5·26	5·57
1916 Departure.	+ 1·06	+ 0·86	+ 0·72	+ 0·58	+ 0·68	+ 0·53	+ 0·56	+ 0·29	+ 0·30	+ 0·01	+ 0·34	+ 0·15	+ 0·20
ESKDALEMUIR: [Normal].	5·37	5·45	5·50	5·40	5·40	5·31	5·46	5·64	5·93	6·50	6·90	7·48	7·68
1916 Departure.	+ 1·69	+ 1·64	+ 1·64	+ 1·91	+ 1·69	+ 2·20	+ 1·82	+ 1·38	+ 1·32	+ 1·24	+ 1·15	+ 0·79	+ 0·69
CAHIRCIVEEN: Normal.	5·51	5·50	5·44	5·36	5·24	5·20	5·29	5·22	5·36	5·62	5·82	5·94	6·58
1916 Departure.	− 0·66	− 0·76	− 0·76	− 0·62	− 0·69	− 0·61	− 0·43	− 0·11	− 0·02	+ 0·39	+ 0·45	+ 1·00	− 0·04
RICHMOND: Normal.	3·20	3·20	3·23	3·14	3·14	3·15	3·23	3·35	3·72	4·30	4·76	5·14	5·23
1916 Departure.	+ 0·09	+ 0·34	+ 0·16	+ 0·31	+ 0·31	+ 0·33	+ 0·45	+ 0·19	− 0·03	− 0·35	− 0·76	− 0·72	− 0·73
APRIL.													
ABERDEEN: Normal.	3·30	3·26	3·33	3·30	3·27	3·31	3·33	3·64	4·14	4·56	4·90	5·14	5·33
1916 Departure.	− 0·22	+ 0·11	+ 0·07	− 0·05	− 0·05	+ 0·09	− 0·02	− 0·18	− 0·30	− 0·32	− 0·13	− 0·48	− 0·12
ESKDALEMUIR: [Normal].	4·71	4·65	4·60	4·38	4·37	4·48	4·44	4·83	5·62	6·41	7·07	7·46	7·69
1916 Departure.	+ 0·11	− 0·06	− 0·05	+ 0·32	+ 0·70	+ 0·81	+ 0·48	+ 0·40	+ 0·39	+ 0·55	+ 0·46	+ 0·30	+ 0·35
CAHIRCIVEEN: Normal.	4·75	4·67	4·66	4·61	4·62	4·60	4·64	4·74	5·03	5·41	5·72	5·83	6·40
1916 Departure.	+ 1·07	+ 1·14	+ 0·95	+ 1·39	+ 1·26	+ 1·10	+ 0·82	+ 0·60	+ 0·54	+ 0·65	+ 0·39	+ 1·02	+ 0·69
RICHMOND: Normal.	2·75	2·71	2·71	2·63	2·63	2·61	2·83	3·31	3·83	4·30	4·71	5·03	5·22
1916 Departure.	− 0·27	− 0·02	+ 0·10	+ 0·06	+ 0·14	+ 0·01	+ 0·10	0·00	− 0·05	+ 0·18	+ 0·14	+ 0·04	− 0·21
MAY.													
ABERDEEN: Normal.	2·74	2·72	2·67	2·70	2·74	2·85	3·03	3·43	3·93	4·27	4·51	4·68	4·82
1916 Departure.	− 0·48	− 0·44	− 0·54	− 0·54	− 0·50	− 0·55	− 0·51	− 0·56	− 0·76	− 1·16	− 0·84	− 0·81	− 0·94
ESKDALEMUIR: [Normal].	3·59	3·50	3·48	3·47	3·49	3·61	3·86	4·29	4·88	5·46	5·77	5·84	5·97
1916 Departure.	− 1·17	− 1·07	− 0·87	− 0·89	− 0·83	− 1·00	− 0·69	− 0·55	− 0·16	− 0·17	− 0·04	+ 0·14	+ 0·25
CAHIRCIVEEN: Normal.	4·15	4·09	4·06	4·09	4·03	4·05	4·07	4·24	4·56	5·01	5·31	5·41	5·93
1916 Departure.	− 0·44	− 0·30	− 0·23	− 0·37	− 0·20	− 0·11	− 0·17	− 0·01	− 0·21	0·00	+ 0·33	+ 0·64	+ 0·23
RICHMOND: Normal.	2·39	2·32	2·28	2·22	2·21	2·21	2·58	3·11	3·55	3·95	4·24	4·54	4·65
1916 Departure.	− 0·54	− 0·64	− 0·53	− 0·52	− 0·46	− 0·43	− 0·64	− 0·83	− 1·03	− 0·91	− 0·92	− 0·73	− 0·70
JUNE.													
ABERDEEN: Normal.	2·39	2·40	2·38	2·40	2·45	2·54	2·76	3·11	3·48	3·81	4·00	4·30	4·46
1916 Departure.	+ 0·93	+ 0·93	+ 1·01	+ 1·27	+ 0·85	+ 1·08	+ 1·36	+ 1·46	+ 1·40	+ 1·09	+ 1·17	+ 0·94	+ 0·75
ESKDALEMUIR: [Normal].	3·06	3·13	3·22	3·32	3·42	3·59	3·91	4·47	4·98	5·24	5·63	5·82	5·87
1916 Departure.	+ 0·67	+ 0·38	+ 0·42	+ 0·21	− 0·24	− 0·07	+ 0·17	+ 0·08	+ 0·08	+ 0·44	+ 0·20	+ 0·21	+ 0·09
CAHIRCIVEEN: Normal.	3·80	3·70	3·65	3·62	3·62	3·63	3·73	3·97	4·30	4·72	4·97	5·17	5·57
1916 Departure.	− 0·18	− 0·03	− 0·18	− 0·10	− 0·20	− 0·01	+ 0·06	+ 0·30	+ 0·61	+ 0·11	+ 0·30	+ 0·33	+ 0·09
RICHMOND: Normal.	2·16	2·09	2·03	1·97	1·95	2·07	2·52	2·95	3·25	3·56	3·82	4·13	4·17
1916 Departure.	+ 0·20	+ 0·19	+ 0·12	+ 0·25	+ 0·23	+ 0·22	− 0·02	+ 0·10	+ 0·29	+ 0·22	+ 0·30	+ 0·26	+ 0·36

At Aberdeen, Cahirciveen, and Richmond, the speed 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 mean speed is found from the travel of the cups in the sixty minutes centering at the hour G.M.T., by multiplying by the factor 2·2, and is converted to metres per second.

At Eskdalemuir the speeds are obtained from the records of a Dines' pressure-tube anemometer. They represent mean values for sixty minutes centering at the hour G.M.T.

NORMALS AND DEPARTURES THEREFROM IN 1916.

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.
4·89	4·87	4·77	4·70	4·68	4·66	4·65	4·62	4·52	4·47	4·49	4·49	4·58	Normal. ABERDEEN.
+ 1·10	+ 1·03	+ 1·20	+ 0·95	+ 0·52	+ 0·37	+ 0·49	+ 0·17	+ 0·19	+ 0·36	+ 0·81	+ 0·49	+ 0·73	1916 Dep. ,,
6·33	6·53	6·38	6·19	5·85	5·86	5·89	5·63	5·79	5·73	5·68	5·51	5·76	[Normal.] ESKDALEMUIR.
+ 3·85	+ 3·38	+ 3·10	+ 3·07	+ 2·83	+ 2·46	+ 2·69	+ 2·50	+ 2·75	+ 3·51	+ 3·57	+ 3·81	+ 3·51	1916 Dep. ,,
7·07	7·13	7·08	6·82	6·63	6·43	6·39	6·29	6·37	6·47	6·54	6·51	6·52	Normal. CAHIRCIVEEN.
+ 0·78	+ 0·66	+ 0·27	+ 0·07	− 0·05	+ 0·02	+ 0·17	+ 0·07	− 0·09	− 0·12	+ 0·11	+ 0·36	+ 0·35	1916 Dep. ,,
4·33	4·35	4·10	3·84	3·73	3·68	3·70	3·67	3·57	3·56	3·39	3·39	3·65	Normal. RICHMOND.
+ 0·86	+ 1·14	+ 0·80	+ 0·71	+ 0·53	+ 0·74	+ 0·53	+ 0·69	+ 0·69	+ 0·63	+ 0·50	+ 0·48	+ 0·72	1916 Dep. ,,
													FEBRUARY.
5·10	5·16	4·97	4·68	4·41	4·34	4·31	4·27	4·33	4·30	4·22	4·31	4·48	Normal. ABERDEEN.
+ 0·82	+ 0·81	+ 0·33	+ 0·82	+ 0·95	+ 1·06	+ 1·04	+ 1·17	+ 1·22	+ 1·22	+ 0·74	+ 0·72	+ 0·67	1916 Dep. ,,
7·73	7·85	7·42	6·96	6·46	6·20	6·06	6·01	5·97	5·94	5·74	5·73	6·29	[Normal.] ESKDALEMUIR.
+ 1·07	+ 0·99	+ 1·77	+ 1·85	+ 1·83	+ 1·56	+ 1·25	+ 1·50	+ 1·42	+ 0·99	+ 0·93	+ 0·84	+ 1·36	1916 Dep. ,,
6·94	6·98	6·70	6·79	6·55	6·20	6·12	6·05	6·13	6·19	6·14	6·19	6·25	Normal. CAHIRCIVEEN.
+ 1·56	+ 1·50	+ 1·55	+ 1·37	+ 1·05	+ 1·30	+ 1·55	+ 1·72	+ 1·45	+ 1·29	+ 1·42	+ 1·26	+ 1·38	1916 Dep. ,,
4·99	4·93	4·77	4·46	4·06	3·85	3·77	3·69	3·66	3·54	3·47	3·40	3·88	Normal. RICHMOND.
+ 0·73	+ 0·99	+ 0·82	+ 0·54	+ 0·58	+ 0·58	+ 0·54	+ 0·72	+ 0·89	+ 0·99	+ 0·86	+ 1·07	+ 0·94	1916 Dep. ,,
													MARCH.
5·52	5·46	5·37	5·14	4·72	4·44	4·21	4·09	4·10	4·07	4·12	4·13	4·56	Normal. ABERDEEN.
+ 0·19	+ 0·31	+ 0·44	+ 0·66	+ 0·49	+ 0·79	+ 0·78	+ 0·86	+ 0·90	+ 1·13	+ 0·99	+ 0·97	+ 0·57	1916 Dep. ,,
7·77	8·05	8·00	7·59	7·04	6·46	5·96	5·60	5·52	5·42	5·36	5·33	6·28	[Normal.] ESKDALEMUIR.
+ 1·08	+ 0·57	+ 0·37	+ 0·37	+ 0·15	+ 0·29	+ 0·36	+ 0·34	+ 0·93	+ 1·93	+ 1·73	+ 1·64	+ 1·14	1916 Dep. ,,
6·82	6·89	6·83	6·76	6·56	6·20	5·86	5·71	5·65	5·56	5·49	5·49	5·85	Normal. CAHIRCIVEEN.
− 0·17	− 0·35	− 0·08	+ 0·08	− 0·15	− 0·21	− 0·05	+ 0·03	− 0·49	− 0·21	− 0·36	− 0·80	− 0·20	1916 Dep. ,,
5·26	5·29	5·10	4·97	4·54	4·01	3·69	3·58	3·55	3·33	3·22	3·19	3·97	Normal. RICHMOND.
− 0·61	− 0·72	− 0·26	− 0·45	+ 0·01	+ 0·47	+ 0·32	+ 0·43	+ 0·46	+ 0·19	+ 0·11	− 0·04	− 0·02	1916 Dep. ,,
													APRIL.
5·39	5·36	5·28	5·06	4·71	4·36	3·81	3·47	3·43	3·31	3·26	3·28	4·09	Normal. ABERDEEN.
− 0·27	− 0·39	− 0·16	− 0·23	− 0·57	− 0·61	− 0·27	− 0·36	− 0·60	− 0·41	− 0·25	− 0·19	− 0·23	1916 Dep. ,,
7·71	7·77	7·74	7·54	7·05	6·29	5·63	5·24	5·01	4·83	4·80	4·72	5·85	[Normal.] ESKDALEMUIR.
+ 0·38	+ 0·47	+ 0·46	− 0·07	− 0·35	− 0·60	− 0·52	− 0·65	− 0·54	− 0·48	− 0·17	+ 0·11	+ 0·11	1916 Dep. ,,
6·61	6·64	6·64	6·61	6·39	6·04	5·54	5·09	4·94	4·77	4·73	4·73	5·40	Normal. CAHIRCIVEEN.
+ 0·40	+ 0·45	+ 0·50	+ 0·56	+ 0·60	+ 0·99	+ 0·99	+ 1·18	+ 0·92	+ 0·79	+ 0·99	+ 1·05	+ 0·84	1916 Dep. ,,
5·29	5·28	5·31	5·19	4·91	4·39	3·88	3·50	3·30	3·09	2·89	2·74	3·85	Normal. RICHMOND.
− 0·29	− 0·33	− 0·23	− 0·22	− 0·15	− 0·16	− 0·24	− 0·28	− 0·44	− 0·48	− 0·42	− 0·18	− 0·13	1916 Dep. ,,
													MAY.
4·88	4·89	4·79	4·63	4·38	4·09	3·61	3·13	2·91	2·78	2·75	2·72	3·66	Normal. ABERDEEN.
− 0·92	− 0·78	− 0·94	− 1·03	− 1·35	− 1·03	− 0·91	− 0·75	− 0·48	− 0·22	− 0·27	− 0·39	− 0·72	1916. Dep. ,,
6·10	6·14	6·15	6·30	6·21	5·80	4·77	3·83	3·40	3·31	3·35	3·59	4·69	[Normal.] ESKDALEMUIR.
− 0·15	− 0·09	− 0·32	− 0·67	− 0·91	− 0·78	− 0·63	− 0·66	− 0·40	− 0·33	− 0·63	− 0·91	− 0·52	1916 Dep. ,,
6·16	6·21	6·19	6·16	5·97	5·63	5·14	4·65	4·30	4·13	4·13	4·13	4·90	Normal. CAHIRCIVEEN.
+ 0·05	+ 0·04	− 0·04	− 0·26	− 0·13	+ 0·04	+ 0·09	+ 0·14	− 0·10	− 0·17	− 0·32	− 0·23	− 0·06	1916 Dep. ,,
4·76	4·69	4·71	4·70	4·50	4·12	3·61	3·16	2·87	2·66	2·48	2·38	3·44	Normal. RICHMOND.
− 0·79	− 0·64	− 0·63	− 0·86	− 0·81	− 0·57	− 0·46	− 0·40	− 0·65	− 0·70	− 0·57	− 0·55	− 0·67	1916 Dep. ,,
													JUNE.
4·49	4·48	4·41	4·18	3·94	3·64	3·26	2·87	2·55	2·47	2·38	2·38	3·30	Normal. ABERDEEN.
+ 0·64	+ 0·66	+ 0·39	+ 0·68	+ 0·74	+ 0·76	+ 0·66	+ 1·00	+ 0·89	+ 0·93	+ 1·07	+ 0·84	+ 0·94	1916 Dep. ,,
5·97	5·94	5·95	5·97	5·96	5·60	4·92	4·15	3·47	3·33	3·04	3·00	4·58	[Normal.] ESKDALEMUIR.
+ 0·15	+ 0·21	+ 0·21	+ 0·12	− 0·09	− 0·30	− 0·01	+ 0·02	+ 0·32	+ 0·50	+ 0·54	+ 0·32	+ 0·17	1916 Dep. ,,
5·81	5·89	5·88	5·76	5·59	5·31	4·85	4·39	4·06	3·82	3·74	3·79	4·56	Normal. CAHIRCIVEEN.
+ 0·35	+ 0·53	+ 0·57	+ 0·80	+ 0·59	+ 0·55	+ 0·48	+ 0·27	+ 0·16	− 0·19	− 0·21	− 0·39	+ 0·21	1916 Dep. ,,
4·21	4·33	4·35	4·27	4·20	3·95	3·45	2·92	2·69	2·46	2·29	2·16	3·16	Normal. RICHMOND.
+ 0·15	+ 0·15	+ 0·19	− 0·02	− 0·05	− 0·05	− 0·23	− 0·03	− 0·20	− 0·23	+ 0·19	+ 0·18	+ 0·11	1916 Dep. ,,

The heights of the anemometers (centres of cups of Robinson anemometers) above the general surface of the ground are :—Aberdeen, 22·9 metres ; Eskdalemuir, 15·0 metres ; Cahirciveen, 13·9 metres ; Richmond, 19·8 metres. The heights above the roofs of the buildings on which the instruments are erected are :—Aberdeen, 3·7 metres ; Eskdalemuir, 6·7 metres ; Cahirciveen, 2·1 metres ; Richmond, 2·1 metres.

The normals for wind speed are for the 35 years, 1881–1915 (Eskdalemuir, 1911–15 only).

The values for 1915 are given by the departure from the normal ; + indicates excess, − defect.

The mean values are calculated by the formula, mean $= \frac{1}{24}\left\{(1+\cdots 23)+\frac{1}{2}(0+24)\right\}$

HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS:

WIND SPEED (in Metres per Second).

Hour, G.M.T.		0.	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.	m/s.
ABERDEEN :	Normal.	2·37	2·35	2·34	2·38	2·35	2·38	2·56	2·95	3·36	3·69	3·88	4·13	4·17
	1916 Departure.	− 0·70	− 0·61	− 0·50	− 0·59	− 0·58	− 0·49	− 0·64	− 0·83	− 0·90	− 1·06	− 1·09	− 0·96	− 0·86
ESKDALEMUIR :	[Normal].	2·96	2·76	2·72	2·79	2·74	2·83	3·14	3·82	4·37	4·69	5·13	5·28	5·42
	1916 Departure.	− 1·33	− 1·01	− 0·99	− 1·10	− 0·99	− 1·22	− 1·29	− 1·66	− 1·50	− 1·53	− 1·56	− 1·40	− 1·66
CAHIRCIVEEN :	Normal.	3·72	3·65	3·68	3·64	3·67	3·60	3·67	3·86	4·22	4·64	4·87	5·01	5·51
	1916 Departure.	− 1·47	− 1·20	− 0·96	− 1·19	− 1·32	− 1·11	− 1·25	− 1·34	− 1·53	− 1·52	− 1·33	− 1·17	− 1·60
RICHMOND :	Normal.	1·98	1·89	1·86	1·81	1·79	1·82	2·18	2·63	3·03	3·39	3·64	3·90	3·99
	1916 Departure.	− 0·51	− 0·33	− 0·24	− 0·21	− 0·24	− 0·11	− 0·52	− 0·57	− 0·76	− 0·74	− 0·82	− 1·01	− 0·82
AUGUST.														
ABERDEEN :	Normal.	2·47	2·47	2·41	2·42	2·44	2·39	2·50	2·76	3·25	3·62	3·88	4·12	4·28
	1916 Departure.	− 0·28	− 0·44	− 0·22	− 0·20	− 0·06	− 0·10	− 0·27	− 0·33	− 0·32	− 0·63	− 0·52	− 0·71	− 0·74
ESKDALEMUIR :	[Normal].	2·76	2·60	2·61	2·68	2·85	2·77	2·82	3·27	3·89	4·38	4·70	4·91	5·23
	1916 Departure.	− 0·77	− 0·59	− 0·86	− 0·81	− 1·18	− 0·90	− 1·04	− 1·35	− 1·41	− 1·43	− 1·13	− 0·89	− 1·04
CAHIRCIVEEN :	Normal.	3·96	3·92	3·89	3·89	3·91	3·90	3·84	3·94	4·30	4·71	4·95	5·12	5·60
	1916 Departure.	− 0·79	− 0·95	− 0·92	− 1·04	− 1·13	− 1·17	− 1·04	− 1·09	− 1·12	− 1·36	− 1·27	− 1·00	− 0·84
RICHMOND :	Normal.	2·09	2·02	1·92	1·88	1·88	1·89	2·07	2·48	3·06	3·48	3·76	4·04	4·14
	1916 Departure.	+ 0·09	+ 0·05	0·00	+ 0·12	+ 0·11	+ 0·09	+ 0·02	− 0·18	− 0·32	− 0·43	− 0·83	− 0·48	− 0·38
SEPTEMBER.														
ABERDEEN :	Normal.	2·86	2·79	2·79	2·84	2·83	2·84	2·84	2·96	3·30	3·62	3·90	4·19	4·32
	1916 Departure.	+ 0·21	+ 0·38	+ 0·35	+ 0·19	+ 0·14	+ 0·10	+ 0·10	+ 0·06	+ 0·43	+ 0·51	+ 0·38	+ 0·02	− 0·24
ESKDALEMUIR :	[Normal].	3·10	3·30	3·24	3·43	3·32	3·49	3·48	3·64	3·97	4·52	5·02	5·26	5·63
	1916 Departure.	+ 0·37	− 0·06	− 0·11	− 0·28	− 0·09	− 0·26	− 0·07	+ 0·09	+ 0·28	+ 0·39	+ 0·50	+ 0·30	− 0·11
CAHIRCIVEEN :	Normal.	4·22	4·15	4·21	4·20	4·28	4·25	4·24	4·24	4·31	4·69	4·92	5·05	5·60
	1916 Departure.	− 0·44	+ 0·04	− 0·14	− 0·06	− 0·33	− 0·63	− 0·82	− 0·61	− 0·36	− 0·34	− 0·42	− 0·09	− 0·46
RICHMOND :	Normal.	1·93	1·88	1·84	1·89	1·89	1·86	1·94	2·14	2·61	3·14	3·58	3·95	3·98
	1916 Departure.	+ 0·24	+ 0·16	+ 0·27	+ 0·27	+ 0·13	+ 0·29	+ 0·33	+ 0·18	− 0·01	− 0·36	− 0·42	− 0·52	− 0·31
OCTOBER.														
ABERDEEN :	Normal.	3·82	3·82	3·83	3·81	3·80	3·75	3·77	3·85	4·00	4·18	4·43	4·62	4·81
	1916 Departure.	− 0·07	+ 0·13	− 0·11	− 0·22	− 0·01	+ 0·04	+ 0·12	− 0·06	− 0·22	− 0·21	− 0·12	− 0·18	+ 0·17
ESKDALEMUIR :	[Normal].	3·44	3·51	3·61	3·71	3·84	3·87	3·82	3·68	3·89	4·40	5·02	5·34	5·58
	1916 Departure.	+ 1·18	+ 1·22	+ 1·24	+ 0·95	+ 0·61	+ 0·47	+ 0·39	+ 1·17	+ 1·61	+ 1·25	+ 1·23	+ 1·81	+ 1·31
CAHIRCIVEEN :	Normal.	5·01	4·97	5·00	4·96	5·03	5·06	5·06	5·03	5·09	5·21	5·39	5·55	6·07
	1916 Departure.	+ 1·29	+ 2·14	+ 2·25	+ 2·39	+ 2·33	+ 2·31	+ 2·36	+ 2·04	+ 1·95	+ 1·77	+ 1·96	+ 2·14	+ 1·20
RICHMOND :	Normal.	2·39	2·36	2·38	2·35	2·34	2·36	2·44	2·49	2·70	3·16	3·54	4·09	4·23
	1916 Departure.	+ 1·08	+ 1·08	+ 0·96	+ 1·08	+ 1·16	+ 1·17	+ 1·38	+ 1·45	+ 1·67	+ 1·61	+ 1·79	+ 1·66	+ 1·55
NOVEMBER.														
ABERDEEN :	Normal.	4·22	4·18	4·15	4·10	4·09	4·09	4·14	4·17	4·29	4·33	4·35	4·54	4·72
	1916 Departure.	+ 0·09	+ 0·65	+ 0·33	+ 0·61	+ 0·68	+ 0·54	+ 0·94	+ 0·94	+ 0·70	+ 0·60	+ 0·86	+ 0·77	+ 0·54
ESKDALEMUIR :	[Normal].	5·38	5·62	5·45	5·56	5·79	5·63	5·64	5·60	5·64	5·73	6·24	6·53	6·83
	1916 Departure.	+ 0·68	+ 0·37	+ 0·24	+ 0·40	+ 0·43	+ 0·76	+ 0·63	+ 0·71	+ 0·16	+ 0·57	+ 0·79	+ 1·20	+ 1·09
CAHIRCIVEEN :	Normal.	5·86	5·83	5·68	5·73	5·67	5·75	5·65	5·72	5·62	5·76	5·71	5·68	6·28
	1916 Departure.	+ 0·52	+ 0·46	+ 0·86	+ 0·79	+ 0·63	+ 0·55	+ 0·18	+ 0·50	+ 0·63	+ 0·63	+ 0·67	+ 1·30	+ 0·77
RICHMOND :	Normal.	3·01	2·98	2·99	2·99	3·05	3·00	2·96	2·99	3·04	3·30	3·53	4·06	4·28
	1916 Departure.	+ 0·04	+ 0·25	+ 0·02	− 0·01	+ 0·05	+ 0·06	+ 0·37	+ 0·44	+ 0·68	+ 0·70	+ 0·74	+ 1·20	+ 1·34
DECEMBER.														
ABERDEEN :	Normal.	4·40	4·39	4·42	4·40	4·39	4·42	4·38	4·38	4·45	4·44	4·46	4·53	4·70
	1916 Departure.	− 1·03	− 1·44	− 1·37	− 0·98	− 1·31	− 1·47	− 1·53	− 1·37	− 1·29	− 1·38	− 1·35	− 1·11	− 1·37
ESKDALEMUIR :	[Normal].	6·12	5·91	5·90	5·77	5·69	5·83	5·96	6·03	6·22	6·40	6·60	6·97	7·24
	1916 Departure.	− 2·45	− 2·09	− 2·23	− 2·14	− 1·91	− 1·95	− 1·68	− 1·89	− 2·59	− 2·70	− 2·67	− 3·03	− 3·17
CAHIRCIVEEN :	Normal.	6·55	6·50	6·51	6·56	6·47	6·50	6·41	6·37	6·32	6·33	6·20	6·18	6·70
	1916 Departure.	− 2·29	− 2·37	− 2·09	− 2·12	− 2·14	− 2·30	− 2·22	− 2·12	− 2·08	− 2·49	− 2·20	− 1·40	− 1·38
RICHMOND :	Normal.	3·57	3·45	3·49	3·42	3·47	3·44	3·45	3·50	3·56	3·67	3·83	4·17	4·39
	1916 Departure.	− 1·14	− 0·91	− 0·78	− 0·69	− 0·72	− 0·83	− 0·88	− 1·10	− 1·08	− 1·28	− 1·28	− 0·98	− 0·82
YEAR.														
ABERDEEN :	Normal.	3·46	3·43	3·42	3·43	3·42	3·44	3·52	3·69	3·96	4·19	4·37	4·58	4·76
	1916 Departure.	+ 0·06	+ 0·14	+ 0·13	+ 0·10	+ 0·06	+ 0·07	+ 0·10	+ 0·02	+ 0·02	− 0·19	+ 0·05	− 0·06	− 0·06
ESKDALEMUIR :	[Normal].	4·31	4·32	4·30	4·15	4·35	4·38	4·62	4·67	5·04	5·42	5·86	6·16	6·42
	1916 Departure.	+ 0·32	+ 0·31	+ 0·28	+ 0·54	+ 0·29	+ 0·30	+ 0·18	+ 0·34	+ 0·34	+ 0·38	+ 0·37	+ 0·41	+ 0·23
CAHIRCIVEEN :	Normal.	5·02	4·96	4·94	4·93	4·91	4·91	4·91	4·97	5·11	5·38	5·51	5·60	6·15
	1916 Departure.	− 0·14	− 0·01	+ 0·03	+ 0·05	+ 0·01	− 0·01	− 0·04	− 0·01	+ 0·02	− 0·07	+ 0·02	+ 0·45	+ 0·10
RICHMOND :	Normal.	2·69	2·63	2·62	2·58	2·58	2·59	2·77	2·97	3·27	3·65	3·94	4·32	4·46
	1916 Departure.	+ 0·11	+ 0·16	+ 0·17	+ 0·23	+ 0·26	+ 0·27	+ 0·22	+ 0·13	+ 0·08	− 0·04	− 0·07	− 0·15	+ 0·07

NORMALS AND DEPARTURES THEREFROM IN 1916.

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.
4·23	4·22	4·19	4·00	3·76	3·48	3·06	2·70	2·43	2·32	2·33	2·37	3·15	Normal. ABERDEEN.
− 0·68	− 0·71	− 0·66	− 0·81	− 0·83	− 0·85	− 0·62	− 0·63	− 0·60	− 0·26	− 0·52	− 0·63	− 0·71	1916 Dep. ,,
5·56	5·63	5·57	5·50	5·45	5·06	4·49	3·64	3·33	3·14	2·99	2·95	4·13	[Normal.] ESKDALEMUIR.
− 1·40	− 1·40	− 1·59	− 1·36	− 1·97	− 2·06	− 1·63	− 1·08	− 1·03	− 1·13	− 1·21	− 1·32	− 1·38	1916 Dep. ,,
5·72	5·78	5·79	5·64	5·53	5·26	4·85	4·30	3·96	3·78	3·69	3·72	4·50	Normal. CAHIRCIVEEN.
− 1·23	− 0·98	− 0·85	− 0·68	− 0·93	− 1·04	− 1·18	− 1·29	− 1·37	− 1·34	− 1·05	− 1·40	− 1·20	1916 Dep. ,,
4·07	4·18	4·14	4·07	3·94	3·61	3·17	2·69	2·44	2·26	2·07	1·98	2·94	Normal. RICHMOND.
− 0·81	− 1·05	− 0·90	− 0·97	− 0·71	− 0·67	− 0·53	− 0·64	− 0·61	− 0·52	− 0·60	− 0·56	− 0·62	1916 Dep. ,,
													AUGUST.
4·28	4·24	4·12	3·97	3·65	3·29	2·90	2·69	2·62	2·60	2·51	2·48	3·16	Normal. ABERDEEN.
− 0·68	− 0·88	− 0·88	− 0·97	− 0·81	− 0·74	− 0·52	− 0·65	− 0·62	− 0·52	− 0·39	− 0·27	− 0·52	1916 Dep. ,,
5·44	5·57	5·46	5·43	5·03	4·60	3·93	3·36	3·20	3·02	2·91	2·85	3·89	[Normal.] ESKDALEMUIR.
− 1·22	− 1·37	− 1·22	− 1·19	− 0·77	− 0·91	− 0·88	− 0·92	− 0·85	− 0·79	− 0·62	− 0·64	− 1·00	1916 Dep. ,,
5·82	5·87	5·90	5·73	5·52	5·17	4·62	4·23	4·06	3·94	3·95	3·97	4·61	Normal. CAHIRCIVEEN.
− 0·82	− 0·70	− 0·74	− 0·49	− 0·49	− 0·50	− 0·51	− 0·43	− 0·49	− 0·59	− 0·73	− 0·72	− 0·84	1916 Dep. ,,
4·20	4·28	4·23	4·12	3·94	3·53	2·97	2·65	2·48	2·28	2·15	2·09	2·98	Normal. RICHMOND.
− 0·41	− 0·58	− 0·54	− 0·59	− 0·47	− 0·61	− 0·42	− 0·21	− 0·22	− 0·06	− 0·05	+ 0·22	− 0·26	1916 Dep. ,,
													SEPTEMBER.
4·34	4·37	4·25	3·99	3·58	3·18	2·95	2·93	2·85	2·90	2·84	2·88	3·35	Normal. ABERDEEN.
− 0·24	− 0·31	− 0·17	− 0·20	− 0·11	+ 0·17	+ 0·10	+ 0·23	+ 0·26	+ 0·01	+ 0·25	+ 0·17	+ 0·10	1916 Dep. ,,
5·83	5·74	5·52	5·27	4·75	4·13	3·83	3·67	3·35	3·16	3·05	3·14	4·16	[Normal.] ESKDALEMUIR.
− 0·17	− 0·09	+ 0·02	+ 0·20	− 0·01	+ 0·24	− 0·11	− 0·04	+ 0·22	+ 0·27	+ 0·52	+ 0·11	+ 0·07	1916 Dep. ,,
5·84	5·73	5·77	5·59	5·35	4·86	4·49	4·27	4·30	4·26	4·21	4·24	4·71	Normal. CAHIRCIVEEN.
− 0·32	− 0·08	− 0·23	+ 0·03	− 0·01	0·00	− 0·05	+ 0·04	+ 0·27	− 0·17	− 0·13	− 0·41	− 0·22	1916 Dep. ,,
4·07	4·11	3·99	3·80	3·39	2·88	2·53	2·47	2·31	2·18	2·06	1·93	2·77	Normal. RICHMOND.
− 0·27	− 0·27	− 0·22	− 0·24	− 0·22	− 0·31	− 0·11	+ 0·07	− 0·03	+ 0·12	+ 0·06	+ 0·18	− 0·05	1916 Dep. ,,
													OCTOBER.
4·74	4·70	4·51	4·12	3·89	3·75	3·75	3·78	3·78	3·78	3·85	3·84	4·05	Normal. ABERDEEN.
+ 0·47	+ 0·15	+ 0·05	+ 0·17	− 0·01	+ 0·08	+ 0·06	+ 0·15	− 0·07	− 0·04	− 0·28	− 0·07	0·00	1916 Dep. ,,
5·67	5·59	5·31	4·79	4·27	3·85	3·71	3·63	3·38	3·64	3·57	3·55	4·22	[Normal.] ESKDALEMUIR.
+ 1·07	+ 0·75	+ 0·78	+ 1·17	+ 1·43	+ 1·67	+ 1·46	+ 1·63	+ 1·91	+ 1·69	+ 1·55	+ 1·40	+ 1·23	1916 Dep. ,,
6·22	6·27	6·22	5·97	5·66	5·39	5·22	5·16	5·10	5·07	5·06	5·04	5·37	Normal. CAHIRCIVEEN.
+ 1·06	+ 0·78	+ 0·91	+ 0·90	+ 0·74	+ 0·85	+ 0·91	+ 0·89	+ 1·39	+ 1·35	+ 1·34	+ 1·18	+ 1·55	1916 Dep. ,,
4·24	4·14	3·87	3·51	3·05	2·82	2·71	2·65	2·59	2·55	2·48	2·41	2·98	Normal. RICHMOND.
+ 1·26	+ 1·53	+ 1·70	+ 1·35	+ 1·42	+ 1·59	+ 1·53	+ 1·41	+ 1·28	+ 1·33	+ 1·31	+ 1·15	+ 1·39	1916 Dep. ,,
													NOVEMBER.
4·70	4·53	4·37	4·20	4·19	4·26	4·21	4·24	4·19	4·17	4·13	4·23	4·27	Normal. ABERDEEN.
+ 0·49	+ 0·68	+ 0·50	+ 0·69	+ 0·47	+ 0·86	+ 1·06	+ 1·00	+ 0·51	+ 0·28	+ 0·31	+ 0·04	+ 0·63	1916 Dep. ,,
6·91	6·91	6·48	6·18	5·98	5·92	5·89	5·70	5·53	5·51	5·49	5·45	5·92	[Normal.] ESKDALEMUIR.
+ 1·15	+ 1·06	+ 1·00	+ 0·57	+ 0·15	− 0·22	− 0·53	− 0·21	− 0·13	− 0·12	+ 0·42	+ 0·25	+ 0·46	1916 Dep. ,,
6·43	6·48	6·43	6·19	5·98	5·95	5·91	5·89	5·86	5·90	5·88	5·89	5·91	Normal. CAHIRCIVEEN.
+ 0·50	− 0·18	+ 0·12	+ 0·08	+ 0·26	+ 0·21	+ 0·16	− 0·26	− 0·07	+ 0·54	+ 0·27	+ 0·37	+ 0·42	1916 Dep. ,,
4·34	4·28	3·99	3·60	3·41	3·33	3·29	3·25	3·19	3·15	3·07	3·03	3·38	Normal. RICHMOND.
+ 1·10	+ 1·00	+ 0·89	+ 0·76	+ 0·59	+ 0·63	+ 0·43	+ 0·31	+ 0·05	− 0·05	− 0·10	− 0·10	+ 0·47	1916 Dep. ,,
													DECEMBER.
4·62	4·50	4·46	4·39	4·41	4·36	4·38	4·37	4·40	4·42	4·36	4·40	4·43	Normal. ABERDEEN.
− 0·70	− 1·02	− 1·08	− 1·18	− 1·17	− 1·07	− 1·17	− 1·24	− 1·04	− 1·15	− 1·12	− 1·07	− 1·20	1916 Dep. ,,
7·41	7·59	7·22	6·82	6·65	6·71	6·80	6·77	6·57	6·30	6·08	6·14	6·48	[Normal.] ESKDALEMUIR.
− 3·21	− 3·40	− 3·19	− 3·14	− 2·90	− 3·21	− 3·22	− 3·20	− 2·65	− 2·28	− 1·99	− 2·18	− 2·61	1916 Dep. ,,
6·86	6·88	6·76	6·65	6·53	6·45	6·46	6·38	6·45	6·49	6·50	6·56	6·50	Normal. CAHIRCIVEEN.
− 1·58	− 1·30	− 1·62	− 1·72	− 1·74	− 1·95	− 1·99	− 2·10	− 2·16	− 2·23	− 2·17	− 2·11	− 1·99	1916 Dep. ,,
4·46	4·33	4·03	3·78	3·74	3·72	3·66	3·66	3·69	3·60	3·57	3·57	3·74	Normal. RICHMOND.
− 0·91	− 0·73	− 1·04	− 0·85	− 0·98	− 0·75	− 0·78	− 0·75	− 1·05	− 0·90	− 1·14	− 1·07	− 0·93	1916 Dep. ,,
													YEAR.
4·77	4·73	4·62	4·42	4·19	3·99	3·76	3·60	3·51	3·47	3·44	3·46	3·92	Normal. ABERDEEN.
+ 0·01	− 0·04	− 0·08	− 0·04	− 0·14	− 0·02	+ 0·06	+ 0·08	+ 0·05	+ 0·11	+ 0·11	+ 0·05	+ 0·03	1916 Dep. ,,
6·54	6·61	6·43	6·21	5·69	5·54	5·16	4·77	4·53	4·44	4·34	4·33	5·19	[Normal.] ESKDALEMUIR.
+ 0·21	+ 0·09	+ 0·12	+ 0·08	+ 0·15	− 0·15	− 0·15	− 0·06	+ 0·18	+ 0·32	+ 0·39	+ 0·29	+ 0·21	1916 Dep. ,,
6·36	6·40	6·35	6·22	6·02	5·74	5·45	5·20	5·10	5·03	5·01	5·02	5·42	Normal. CAHIRCIVEEN.
+ 0·05	+ 0·03	+ 0·03	+ 0·06	− 0·02	+ 0·02	+ 0·05	+ 0·02	− 0·05	− 0·09	− 0·07	− 0·15	+ 0·02	1916 Dep. ,,
4·52	4·52	4·38	4·19	3·95	3·67	3·38	3·16	3·03	2·89	2·76	2·69	3·40	Normal. RICHMOND.
0·00	+ 0·04	+ 0·05	− 0·07	− 0·02	+ 0·06	+ 0·04	+ 0·11	+ 0·01	+ 0·03	+ 0·01	+ 0·06	+ 0·07	1916 Dep. ,,

HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS:

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	0·08	0·08	0·08	0·09	0·09	0·09	0·09	0·08	0·06	0·07
1916 Departure.	0·00	− 0·02	+ 0·03	− 0·06	− 0·05	− 0·07	− 0·01	− 0·05	− 0·07	− 0·05	− 0·01	− 0·04
ESKDALEMUIR: [Normal].	0·11	0·13	0·12	0·14	0·13	0·15	0·16	0·20	0·15	0·17	0·14	0·17
1916 Departure.	+ 0·38	+ 0·21	+ 0·23	+ 0·34	+ 0·26	+ 0·04	+ 0·14	+ 0·13	+ 0·25	+ 0·28	+ 0·26	+ 0·27
CAHIRCIVEEN: Normal.	0·22	0·21	0·22	0·21	0·21	0·18	0·20	0·21	0·22	0·19	0·16	0·18
1916 Departure.	− 0·02	− 0·08	− 0·06	− 0·03	− 0·03	+ 0·03	+ 0·01	− 0·04	− 0·12	− 0·11	− 0·09	− 0·11
RICHMOND: Normal.	0·06	0·06	0·07	0·07	0·07	0·06	0·06	0·08	0·07	0·06	0·05	0·05
1916 Departure.	− 0·03	− 0·04	0·00	− 0·03	− 0·07	− 0·06	− 0·06	− 0·05	− 0·04	− 0·05	+ 0·07	+ 0·03
FALMOUTH: Normal.	0·16	0·17	0·16	0·18	0·16	0·16	0·18	0·16	0·16	0·15	0·13	0·15
1916 Departure.	− 0·06	− 0·10	− 0·11	− 0·13	− 0·13	− 0·07	− 0·08	− 0·08	− 0·02	− 0·05	− 0·08	− 0·11
FEBRUARY.												
ABERDEEN: Normal.	0·09	0·09	0·08	0·09	0·09	0·08	0·09	0·08	0·10	0·11	0·07	0·08
1916 Departure.	− 0·07	− 0·02	+ 0·02	− 0·01	− 0·01	− 0·06	0·00	+ 0·02	+ 0·02	0·00	− 0·01	− 0·05
ESKDALEMUIR: [Normal].	0·23	0·28	0·25	0·22	0·22	0·27	0·26	0·25	0·25	0·17	0·18	0·20
1916 Departure.	+ 0·02	− 0·05	− 0·02	− 0·05	− 0·09	+ 0·04	+ 0·01	+ 0·13	+ 0·16	+ 0·02	+ 0·04	− 0·04
CAHIRCIVEEN: Normal.	0·20	0·20	0·21	0·21	0·21	0·18	0·19	0·19	0·17	0·17	0·19	0·19
1916 Departure.	+ 0·05	+ 0·10	+ 0·13	+ 0·06	+ 0·07	+ 0·04	+ 0·11	− 0·04	+ 0·06	+ 0·03	− 0·09	− 0·02
RICHMOND: Normal.	0·07	0·07	0·06	0·06	0·07	0·06	0·05	0·06	0·06	0·07	0·05	0·05
1916 Departure.	+ 0·06	+ 0·05	+ 0·07	+ 0·14	+ 0·06	+ 0·02	+ 0·08	+ 0·12	+ 0·08	+ 0·02	+ 0·01	+ 0·03
FALMOUTH: Normal.	0·15	0·14	0·18	0·14	0·15	0·14	0·12	0·15	0·15	0·15	0·10	0·11
1916 Departure.	+ 0·15	+ 0·31	+ 0·10	+ 0·09	+ 0·05	+ 0·14	0·00	+ 0·02	− 0·01	+ 0·05	+ 0·12	+ 0·03
MARCH.												
ABERDEEN: Normal.	0·07	0·08	0·08	0·08	0·09	0·09	0·09	0·10	0·12	0·11	0·07	0·06
1916 Departure.	+ 0·01	+ 0·03	+ 0·07	+ 0·04	+ 0·01	+ 0·06	+ 0·05	+ 0·05	+ 0·01	− 0·02	− 0·04	− 0·03
ESKDALEMUIR: [Normal].	0·19	0·17	0·20	0·18	0·19	0·21	0·19	0·23	0·18	0·14	0·13	0·18
1916 Departure.	− 0·05	− 0·08	− 0·14	− 0·09	− 0·09	− 0·06	− 0·15	− 0·22	− 0·06	− 0·07	− 0·07	+ 0·02
CAHIRCIVEEN: Normal.	0·17	0·16	0·19	0·16	0·17	0·18	0·19	0·20	0·16	0·16	0·13	0·13
1916 Departure.	− 0·10	− 0·15	− 0·14	− 0·07	− 0·10	− 0·13	− 0·15	− 0·15	− 0·13	− 0·07	+ 0·02	− 0·07
RICHMOND: Normal.	0·05	0·05	0·05	0·05	0·05	0·07	0·06	0·05	0·05	0·05	0·04	0·05
1916 Departure.	+ 0·14	+ 0·02	+ 0·08	+ 0·11	+ 0·08	+ 0·01	+ 0·02	+ 0·11	+ 0·06	+ 0·07	+ 0·09	+ 0·07
FALMOUTH: Normal.	0·13	0·15	0·14	0·12	0·11	0·11	0·12	0·12	0·13	0·13	0·10	0·10
1916 Departure.	+ 0·09	+ 0·07	+ 0·10	+ 0·11	+ 0·12	+ 0·10	+ 0·18	+ 0·17	+ 0·12	+ 0·13	+ 0·11	+ 0·01
APRIL.												
ABERDEEN: Normal.	0·07	0·07	0·06	0·07	0·08	0·08	0·09	0·09	0·08	0·06	0·06	0·06
1916 Departure.	+ 0·03	0·00	+ 0·04	− 0·01	+ 0·04	+ 0·07	+ 0·05	− 0·02	− 0·03	+ 0·01	− 0·04	− 0·01
ESKDALEMUIR: [Normal].	0·20	0·14	0·13	0·17	0·17	0·15	0·12	0·09	0·11	0·13	0·13	0·15
1916 Departure.	+ 0·01	+ 0·05	+ 0·09	+ 0·06	+ 0·12	+ 0·06	+ 0·15	+ 0·08	+ 0·05	+ 0·06	+ 0·11	+ 0·10
CAHIRCIVEEN: Normal.	0·16	0·14	0·15	0·15	0·15	0·15	0·15	0·14	0·15	0·12	0·11	0·13
1916 Departure.	+ 0·04	+ 0·07	− 0·06	− 0·08	0·00	− 0·05	− 0·07	− 0·10	− 0·14	− 0·11	− 0·09	− 0·12
RICHMOND: Normal.	0·05	0·05	0·06	0·06	0·06	0·06	0·06	0·06	0·06	0·06	0·05	0·05
1916 Departure.	− 0·01	+ 0·03	+ 0·03	− 0·05	− 0·05	− 0·01	− 0·04	0·00	− 0·04	− 0·05	− 0·02	− 0·03
FALMOUTH: Normal.	0·12	0·12	0·11	0·12	0·12	0·12	0·13	0·13	0·12	0·09	0·06	0·10
1916 Departure.	− 0·11	− 0·10	− 0·07	− 0·06	− 0·05	+ 0·02	+ 0·04	− 0·04	− 0·02	− 0·04	− 0·06	− 0·09
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
1916 Departure.	+ 0·06	+ 0·07	+ 0·11	+ 0·08	− 0·01	− 0·02	+ 0·09	+ 0·19	+ 0·19	+ 0·02	0·00	− 0·02
ESKDALEMUIR: [Normal].	0·09	0·10	0·09	0·09	0·09	0·11	0·09	0·07	0·07	0·08	0·08	0·09
1916 Departure.	+ 0·12	+ 0·13	+ 0·06	+ 0·18	+ 0·16	+ 0·11	+ 0·03	− 0·02	+ 0·02	+ 0·03	+ 0·03	− 0·02
CAHIRCIVEEN: Normal.	0·11	0·12	0·14	0·14	0·13	0·13	0·13	0·12	0·12	0·10	0·07	0·10
1916 Departure.	− 0·06	+ 0·03	− 0·02	+ 0·08	+ 0·04	+ 0·06	+ 0·07	+ 0·11	− 0·07	+ 0·02	0·00	− 0·07
RICHMOND: Normal.	0·06	0·06	0·05	0·05	0·08	0·07	0·06	0·06	0·06	0·06	0·04	0·06
1916 Departure.	+ 0·10	+ 0·14	+ 0·04	− 0·01	− 0·05	− 0·04	+ 0·01	− 0·01	− 0·05	− 0·03	+ 0·01	+ 0·06
FALMOUTH: Normal.	0·08	0·09	0·10	0·10	0·09	0·09	0·09	0·09	0·08	0·08	0·06	0·07
1916 Departure.	− 0·03	0·00	− 0·01	− 0·04	− 0·05	+ 0·02	+ 0·02	− 0·04	− 0·04	− 0·08	− 0·01	− 0·04
JUNE.												
ABERDEEN: Normal.	0·06	0·06	0·06	0·06	0·06	0·07	0·06	0·06	0·05	0·08	0·07	0·07
1916 Departure.	+ 0·10	+ 0·11	+ 0·05	− 0·02	+ 0·06	0·00	+ 0·01	+ 0·03	+ 0·04	+ 0·02	+ 0·03	+ 0·15
ESKDALEMUIR: [Normal].	0·09	0·08	0·26	0·13	0·11	0·08	0·09	0·06	0·03	0·05	0·09	0·17
1916 Departure.	+ 0·11	+ 0·07	− 0·06	0·00	+ 0·08	+ 0·08	+ 0·01	+ 0·02	+ 0·16	+ 0·04	+ 0·07	+ 0·05
CAHIRCIVEEN: Normal.	0·14	0·14	0·13	0·15	0·14	0·14	0·16	0·15	0·15	0·11	0·09	0·10
1916 Departure.	− 0·03	− 0·01	− 0·01	+ 0·01	+ 0·06	+ 0·02	− 0·08	− 0·10	− 0·10	− 0·05	− 0·04	− 0·01
RICHMOND: Normal.	0·07	0·06	0·06	0·07	0·08	0·07	0·08	0·07	0·06	0·07	0·07	0·09
1916 Departure.	− 0·05	− 0·05	− 0·05	− 0·06	− 0·06	− 0·03	− 0·06	− 0·06	− 0·03	− 0·03	0·00	+ 0·04
FALMOUTH: Normal.	0·08	0·10	0·12	0·11	0·10	0·11	0·09	0·08	0·08	0·07	0·07	0·08
1916 Departure.	− 0·07	− 0·07	− 0·10	− 0·09	− 0·05	− 0·01	+ 0·02	+ 0·10	+ 0·04	+ 0·05	0·00	− 0·01

The amounts of rainfall are obtained at each observatory from the autographic records of a Beckley rain-gauge for each sixty minutes centering at the hour G.M.T.

The heights of the receiving surfaces 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 „
Cahirciveen (Valencia Observatory)	0·6 „	9·7 „
Richmond (Kew Observatory)	0·5 „	6·0 „
Falmouth	0·6 „	51·4 „

NORMALS AND DEPARTURES THEREFROM IN 1916.

JANUARY TO JUNE.

13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Day.	Hour, G.M.T.
mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	JANUARY.
0·07	0·06	0·06	0·07	0·06	0·07	0·07	0·07	0·07	0·06	0·07	0·07	1·75	Normal. ABERDEEN.
− 0·06	− 0·05	− 0·02	− 0·02	+ 0·03	− 0·05	− 0·02	− 0·06	− 0·07	− 0·04	− 0·02	− 0·04	− 0·82	1916 Dep. ,,
0·18	0·20	0·16	0·18	0·14	0·14	0·14	0·18	0·15	0·11	0·12	0·10	3·57	[Normal.] ESKDALEMUIR.
+ 0·23	+ 0·20	+ 0·38	+ 0·24	+ 0·27	+ 0·20	+ 0·12	+ 0·07	+ 0·07	+ 0·18	+ 0·13	+ 0·35	+ 5·23	1916 Dep. ,,
0·18	0·20	0·20	0·16	0·17	0·21	0·18	0·20	0·22	0·22	0·21	0·23	4·79	Normal. CAHIRCIVEEN.
− 0·07	− 0·17	− 0·13	− 0·04	− 0·05	− 0·14	+ 0·03	+ 0·02	+ 0·06	− 0·08	− 0·06	− 0·16	− 1·44	1916 Dep. ,,
0·06	0·06	0·07	0·06	0·07	0·07	0·07	0·06	0·06	0·05	0·06	0·06	1·51	Normal. RICHMOND.
− 0·04	− 0·06	− 0·05	− 0·05	− 0·04	− 0·07	− 0·05	− 0·01	− 0·01	+ 0·13	+ 0·06	+ 0·04	− 0·48	1916 Dep. ,,
0·16	0·19	0·16	0·16	0·17	0·14	0·15	0·14	0·15	0·17	0·16	0·18	3·85	Normal. FALMOUTH.
− 0·08	− 0·14	− 0·11	− 0·07	− 0·11	− 0·05	− 0·01	+ 0·02	− 0·08	− 0·12	− 0·12	− 0·12	− 2·01	1916 Dep. ,,
													FEBRUARY.
0·08	0·07	0·08	0·08	0·08	0·07	0·08	0·07	0·07	0·07	0·08	0·09	1·97	Normal. ABERDEEN.
− 0·04	− 0·06	+ 0·01	+ 0·05	+ 0·01	+ 0·02	+ 0·02	+ 0·01	− 0·01	− 0·03	− 0·03	− 0·06	− 0·28	1916 Dep. ,,
0·26	0·29	0·31	0·36	0·28	0·33	0·28	0·33	0·32	0·23	0·27	0·21	6·25	[Normal.] ESKDALEMUIR.
− 0·12	− 0·12	− 0·08	− 0·14	− 0·09	− 0·13	− 0·07	− 0·11	− 0·12	− 0·04	− 0·07	− 0·09	− 0·83	1916 Dep. ,,
0·16	0·16	0·18	0·20	0·21	0·18	0·19	0·21	0·20	0·20	0·21	0·22	4·63	Normal. CAHIRCIVEEN.
− 0·09	− 0·08	+ 0·01	− 0·02	− 0·03	+ 0·19	+ 0·03	+ 0·15	+ 0·27	0·00	− 0·07	− 0·05	+ 0·81	1916 Dep. ,,
0·06	0·07	0·05	0·06	0·06	0·05	0·06	0·05	0·06	0·05	0·05	0·06	1·41	Normal. RICHMOND.
− 0·01	− 0·06	+ 0·01	− 0·02	+ 0·02	+ 0·06	+ 0·05	+ 0·03	+ 0·11	+ 0·17	+ 0·11	+ 0·09	+ 1·30	1916 Dep. ,,
0·13	0·14	0·14	0·14	0·13	0·14	0·15	0·15	0·17	0·17	0·16	0·16	3·46	Normal. FALMOUTH.
+ 0·09	+ 0·10	+ 0·01	+ 0·22	+ 0·20	+ 0·41	+ 0·38	+ 0·08	+ 0·13	+ 0·14	+ 0·31	+ 0·11	+ 3·23	1916 Dep. ,,
													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	1·95	Normal. ABERDEEN.
− 0·05	− 0·04	− 0·02	− 0·02	+ 0·02	+ 0·06	+ 0·02	− 0·03	− 0·02	− 0·03	− 0·04	− 0·02	+ 0·07	1916 Dep. ,,
0·16	0·18	0·17	0·15	0·15	0·18	0·20	0·24	0·22	0·20	0·20	0·15	4·39	[Normal.] ESKDALEMUIR.
− 0·03	− 0·03	− 0·07	− 0·06	− 0·10	− 0·11	− 0·11	− 0·13	− 0·11	− 0·07	− 0·14	− 0·04	− 2·06	1916 Dep. ,,
0·15	0·14	0·12	0·12	0·12	0·13	0·13	0·14	0·13	0·13	0·14	0·16	3·61	Normal. CAHIRCIVEEN.
− 0·08	+ 0·05	− 0·02	− 0·06	− 0·02	− 0·04	− 0·10	− 0·09	− 0·12	− 0·13	− 0·11	− 0·03	− 1·99	1916 Dep. ,,
0·06	0·05	0·06	0·06	0·06	0·07	0·05	0·06	0·06	0·06	0·06	0·05	1·32	Normal. RICHMOND.
+ 0·01	− 0·02	+ 0·01	+ 0·01	+ 0·04	+ 0·04	+ 0·12	+ 0·14	+ 0·12	+ 0·26	+ 0·19	+ 0·11	+ 1·89	1916 Dep. ,,
0·11	0·13	0·10	0·10	0·10	0·13	0·12	0·11	0·12	0·11	0·12	0·11	2·82	Normal. FALMOUTH.
0·00	+ 0·11	+ 0·07	+ 0·19	+ 0·13	0·00	+ 0·12	− 0·03	− 0·08	− 0·03	− 0·04	0·00	+ 1·75	1916 Dep. ,,
													APRIL.
0·07	0·07	0·07	0·08	0·07	0·08	0·06	0·06	0·06	0·06	0·07	0·07	1·69	Normal. ABERDEEN.
0·00	+ 0·06	0·00	+ 0·09	+ 0·06	− 0·01	+ 0·03	+ 0·14	+ 0·03	+ 0·04	− 0·03	− 0·02	+ 0·52	1916 Dep. ,,
0·15	0·13	0·11	0·11	0·13	0·21	0·18	0·16	0·15	0·13	0·18	0·18	3·51	[Normal.] ESKDALEMUIR.
+ 0·01	0·00	+ 0·01	+ 0·04	− 0·04	− 0·12	− 0·05	+ 0·11	+ 0·09	+ 0·01	− 0·04	+ 0·02	+ 0·98	1916 Dep. ,,
0·13	0·13	0·12	0·12	0·13	0·14	0·12	0·14	0·13	0·13	0·13	0·12	3·24	Normal. CAHIRCIVEEN.
− 0·12	+ 0·01	+ 0·12	+ 0·20	+ 0·16	+ 0·12	+ 0·23	+ 0·13	+ 0·12	+ 0·14	+ 0·27	+ 0·25	+ 0·92	1916 Dep. ,,
0·06	0·07	0·06	0·07	0·07	0·06	0·05	0·05	0·06	0·05	0·05	0·05	1·37	Normal. RICHMOND.
− 0·02	− 0·03	0·00	+ 0·02	− 0·04	− 0·05	− 0·04	− 0·05	− 0·04	+ 0·02	− 0·02	− 0·02	− 0·51	1916 Dep. ,,
0·09	0·08	0·07	0·07	0·07	0·10	0·09	0·10	0·09	0·10	0·08	0·09	2·37	Normal. FALMOUTH.
− 0·09	− 0·07	− 0·01	− 0·05	− 0·04	− 0·08	− 0·09	− 0·10	− 0·09	− 0·05	− 0·02	− 0·01	− 1·28	1916 Dep. ,,
													MAY.
0·08	0·08	0·10	0·09	0·11	0·11	0·08	0·07	0·08	0·09	0·08	0·08	1·86	Normal. ABERDEEN.
− 0·06	− 0·07	− 0·05	− 0·01	− 0·04	− 0·06	+ 0·05	+ 0·06	+ 0·12	+ 0·08	+ 0·05	+ 0·02	+ 0·85	1916 Dep. ,,
0·11	0·12	0·08	0·05	0·13	0·09	0·10	0·09	0·09	0·11	0·10	0·08	2·20	[Normal.] ESKDALEMUIR.
− 0·06	+ 0·02	+ 0·18	+ 0·14	+ 0·05	+ 0·20	+ 0·02	+ 0·03	0·00	+ 0·04	+ 0·08	+ 0·11	+ 1·64	1916 Dep. ,,
0·10	0·09	0·10	0·09	0·10	0·09	0·10	0·10	0·09	0·10	0·09	0·11	2·57	Normal. CAHIRCIVEEN.
0·00	0·00	− 0·01	+ 0·09	− 0·03	+ 0·03	− 0·05	+ 0·02	+ 0·08	+ 0·16	+ 0·07	+ 0·01	+ 0·56	1916 Dep. ,,
0·05	0·07	0·07	0·09	0·08	0·06	0·06	0·04	0·04	0·04	0·04	0·05	1·40	Normal. RICHMOND.
+ 0·10	+ 0·01	0·00	− 0·03	− 0·07	− 0·06	− 0·06	− 0·03	− 0·03	0·00	− 0·02	− 0·02	− 0·04	1916 Dep. ,,
0·05	0·06	0·06	0·07	0·06	0·07	0·07	0·08	0·08	0·07	0·08	0·08	1·85	Normal. FALMOUTH.
− 0·04	− 0·04	− 0·05	− 0·02	0·00	− 0·02	− 0·02	− 0·05	− 0·04	− 0·01	0·00	− 0·04	− 0·63	1916 Dep. ,,
													JUNE.
0·07	0·07	0·07	0·08	0·09	0·08	0·07	0·06	0·07	0·07	0·05	0·05	1·59	Normal. ABERDEEN.
+ 0·09	+ 0·16	+ 0·12	+ 0·17	+ 0·22	+ 0·21	+ 0·11	+ 0·18	+ 0·19	+ 0·04	+ 0·08	+ 0·21	+ 2·36	1916 Dep. ,,
0·12	0·11	0·09	0·26	0·17	0·09	0·06	0·12	0·11	0·11	0·10	0·08	2·66	[Normal.] ESKDALEMUIR.
− 0·02	− 0·04	+ 0·09	− 0·02	+ 0·31	+ 0·21	+ 0·08	− 0·08	− 0·09	− 0·10	− 0·04	+ 0·05	+ 0·98	1916 Dep. ,,
0·10	0·09	0·11	0·11	0·13	0·13	0·12	0·12	0·12	0·12	0·14	0·15	3·04	Normal. CAHIRCIVEEN.
− 0·05	− 0·07	− 0·09	− 0·10	− 0·12	− 0·10	− 0·10	− 0·05	+ 0·01	− 0·07	− 0·07	+ 0·01	− 1·14	1916 Dep. ,,
0·08	0·08	0·09	0·09	0·11	0·08	0·09	0·09	0·09	0·09	0·07	0·07	1·88	Normal. RICHMOND.
− 0·02	+ 0·07	+ 0·13	− 0·01	+ 0·19	− 0·02	+ 0·01	− 0·03	+ 0·04	− 0·04	+ 0·02	+ 0·04	− 0·06	1916 Dep. ,,
0·10	0·08	0·08	0·08	0·08	0·07	0·06	0·08	0·08	0·08	0·09	0·10	2·07	Normal. FALMOUTH.
+ 0·11	+ 0·23	+ 0·01	− 0·02	− 0·07	− 0·06	− 0·03	− 0·06	− 0·02	− 0·04	− 0·07	− 0·09	− 0·30	1916 Dep. ,,

The normals for rainfall are based upon the hourly tabulations of rainfall during the period of 45 years, 1871–1915 (Eskdalemuir 1911-1915).

The values for 1915 are given by the departure 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.

HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS:

RAINFALL IN MILLIMETERS.

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.	0·07	0·08	0·08	0·09	0·09	0·07	0·07	0·08	0·07	0·08	0·08	0·12
	1916 Departure.	+ 0·03	− 0·04	0·00	+ 0·08	+ 0·08	+ 0·09	− 0·01	+ 0·03	+ 0·04	+ 0·02	− 0·02	− 0·04
ESKDALEMUIR :	[Normal].	0·04	0·04	0·07	0·13	0·13	0·12	0·08	0·10	0·09	0·12	0·10	0·12
	1916 Departure.	+ 0·05	+ 0·07	+ 0·12	+ 0·02	− 0·05	+ 0·01	− 0·01	+ 0·03	− 0·01	− 0·06	0·00	+ 0·04
CAHIRCIVEEN :	Normal.	0·15	0·15	0·16	0·16	0·16	0·17	0·17	0·18	0·16	0·13	0·10	0·11
	1916 Departure.	+ 0·23	+ 0·20	− 0·03	− 0·12	− 0·14	− 0·11	− 0·16	− 0·15	− 0·13	− 0·12	− 0·08	− 0·11
RICHMOND :	Normal.	0·06	0·07	0·07	0·06	0·06	0·06	0·08	0·06	0·06	0·06	0·08	0·09
	1916 Departure.	− 0·06	− 0·07	+ 0·01	− 0·04	+ 0·10	− 0·04	+ 0·08	+ 0·06	+ 0·04	− 0·05	− 0·06	− 0·01
FALMOUTH :	Normal.	0·11	0·11	0·15	0·13	0·12	0·13	0·11	0·11	0·11	0·10	0·06	0·09
	1916 Departure.	− 0·11	− 0·11	− 0·10	− 0·08	+ 0·01	− 0·12	− 0·09	− 0·08	+ 0·04	+ 0·13	− 0·02	− 0·03
AUGUST.													
ABERDEEN :	Normal.	0·10	0·10	0·10	0·11	0·11	0·11	0·11	0·10	0·09	0·11	0·07	0·08
	1916 Departure.	+ 0·05	+ 0·09	− 0·06	− 0·06	− 0·02	+ 0·04	+ 0·15	+ 0·18	+ 0·14	+ 0·05	+ 0·08	− 0·02
ESKDALEMUIR :	[Normal].	0·08	0·12	0·13	0·11	0·13	0·16	0·12	0·08	0·07	0·07	0·13	0·20
	1916 Departure.	− 0·02	+ 0·30	+ 0·17	+ 0·04	+ 0·21	+ 0·12	− 0·05	− 0·03	− 0·02	+ 0·07	− 0·08	− 0·12
CAHIRCIVEEN :	Normal.	0·18	0·16	0·15	0·20	0·22	0·22	0·21	0·19	0·19	0·16	0·14	0·14
	1916 Departure.	− 0·06	− 0·05	− 0·08	− 0·06	− 0·10	− 0·03	+ 0·09	− 0·03	− 0·02	− 0·10	− 0·09	− 0·06
RICHMOND :	Normal.	0·06	0·07	0·07	0·05	0·06	0·05	0·07	0·06	0·07	0·07	0·07	0·09
	1916 Departure.	+ 0·08	0·00	− 0·02	− 0·05	− 0·03	0·00	+ 0·16	− 0·01	− 0·02	+ 0·24	+ 0·09	+ 0·17
FALMOUTH :	Normal.	0·12	0·12	0·14	0·13	0·13	0·15	0·12	0·12	0·13	0·11	0·11	0·10
	1916 Departure.	− 0·06	+ 0·03	− 0·11	− 0·07	0·00	− 0·04	+ 0·09	+ 0·14	+ 0·01	− 0·01	− 0·07	− 0·04
SEPTEMBER.													
ABERDEEN :	Normal.	0·07	0·07	0·06	0·08	0·08	0·09	0·11	0·11	0·11	0·11	0·09	0·08
	1916 Departure.	− 0·02	+ 0·02	− 0·03	− 0·05	− 0·07	− 0·06	− 0·09	− 0·08	− 0·06	0·00	+ 0·05	− 0·06
ESKDALEMUIR :	[Normal].	0·10	0·06	0·07	0·06	0·09	0·07	0·07	0·11	0·11	0·06	0·13	0·13
	1916 Departure.	− 0·05	+ 0·01	− 0·06	− 0·03	− 0·03	− 0·01	+ 0·02	− 0·02	+ 0·03	+ 0·07	+ 0·03	+ 0·08
CAHIRCIVEEN :	Normal.	0·17	0·17	0·19	0·17	0·17	0·15	0·16	0·16	0·17	0·13	0·14	0·14
	1916 Departure.	− 0·13	− 0·02	− 0·11	+ 0·06	− 0·05	− 0·03	− 0·07	− 0·12	− 0·08	− 0·08	− 0·14	− 0·06
RICHMOND :	Normal.	0·09	0·07	0·08	0·08	0·09	0·06	0·06	0·05	0·07	0·06	0·05	0·05
	1916 Departure.	− 0·05	− 0·07	− 0·07	− 0·03	+ 0·01	+ 0·02	+ 0·07	+ 0·02	− 0·05	+ 0·13	− 0·04	+ 0·02
FALMOUTH :	Normal.	0·15	0·15	0·14	0·13	0·12	0·12	0·14	0·12	0·13	0·12	0·10	0·10
	1916 Departure.	+ 0·08	− 0·14	− 0·14	− 0·13	− 0·12	− 0·07	− 0·07	− 0·09	− 0·08	− 0·11	− 0·05	− 0·05
OCTOBER.													
ABERDEEN :	Normal.	0·08	0·10	0·11	0·11	0·10	0·12	0·12	0·12	0·12	0·12	0·09	0·09
	1916 Departure.	+ 0·11	+ 0·09	− 0·07	+ 0·03	0·00	− 0·04	+ 0·01	− 0·07	+ 0·09	+ 0·04	− 0·04	− 0·02
ESKDALEMUIR :	[Normal].	0·10	0·09	0·14	0·13	0·11	0·15	0·18	0·15	0·21	0·18	0·20	0·14
	1916 Departure.	+ 0·44	+ 0·05	+ 0·03	− 0·04	+ 0·05	+ 0·08	+ 0·26	+ 0·39	+ 0·25	+ 0·42	+ 0·35	+ 0·36
CAHIRCIVEEN :	Normal.	0·20	0·21	0·21	0·21	0·21	0·22	0·20	0·18	0·18	0·18	0·17	0·19
	1916 Departure.	+ 0·28	+ 0·22	+ 0·32	+ 0·24	+ 0·34	+ 0·20	+ 0·17	+ 0·01	+ 0·09	+ 0·01	− 0·04	+ 0·06
RICHMOND :	Normal.	0·10	0·10	0·08	0·09	0·09	0·10	0·09	0·09	0·09	0·09	0·08	0·11
	1916 Departure.	+ 0·13	+ 0·06	− 0·05	− 0·04	− 0·03	+ 0·08	+ 0·08	+ 0·06	+ 0·04	+ 0·04	+ 0·03	+ 0·04
FALMOUTH :	Normal.	0·22	0·19	0·20	0·21	0·22	0·21	0·20	0·21	0·17	0·17	0·13	0·17
	1916 Departure.	+ 0·23	+ 0·05	+ 0·20	− 0·01	− 0·04	0·00	− 0·01	− 0·01	− 0·04	+ 0·05	+ 0·02	+ 0·10
NOVEMBER.													
ABERDEEN :	Normal.	0·12	0·13	0·11	0·14	0·13	0·12	0·11	0·11	0·11	0·11	0·11	0·10
	1916 Departure.	− 0·07	− 0·10	− 0·08	+ 0·05	+ 0·05	+ 0·14	+ 0·05	− 0·01	− 0·05	0·00	+ 0·02	− 0·01
ESKDALEMUIR :	[Normal].	0·26	0·25	0·22	0·22	0·21	0·18	0·19	0·21	0·23	0·22	0·24	0·23
	1916 Departure.	+ 0·07	− 0·06	− 0·07	0·00	− 0·03	+ 0·06	+ 0·25	+ 0·15	+ 0·13	− 0·05	+ 0·03	+ 0·23
CAHIRCIVEEN :	Normal.	0·22	0·21	0·22	0·21	0·21	0·19	0·22	0·22	0·19	0·19	0·18	0·18
	1916 Departure.	+ 0·01	+ 0·18	+ 0·27	+ 0·11	+ 0·12	+ 0·01	+ 0·03	+ 0·03	+ 0·03	+ 0·14	+ 0·04	+ 0·21
RICHMOND :	Normal.	0·08	0·09	0·08	0·08	0·09	0·08	0·08	0·07	0·06	0·06	0·06	0·07
	1916 Departure.	+ 0·11	+ 0·01	+ 0·08	+ 0·06	+ 0·12	0·00	− 0·03	− 0·02	+ 0·01	− 0·03	+ 0·01	+ 0·06
FALMOUTH :	Normal.	0·18	0·17	0·19	0·22	0·16	0·19	0·18	0·20	0·18	0·18	0·16	0·17
	1916 Departure.	+ 0·08	+ 0·07	+ 0·07	+ 0·09	+ 0·33	+ 0·16	+ 0·07	+ 0·18	+ 0·35	+ 0·64	+ 0·21	+ 0·04
DECEMBER.													
ABERDEEN :	Normal.	0·11	0·11	0·12	0·13	0·13	0·12	0·12	0·11	0·11	0·12	0·10	0·10
	1916 Departure.	+ 0·04	− 0·02	− 0·01	+ 0·03	− 0·02	− 0·01	+ 0·01	+ 0·04	− 0·01	− 0·01	+ 0·05	+ 0·14
ESKDALEMUIR :	[Normal].	0·25	0·21	0·18	0·26	0·25	0·26	0·30	0·31	0·34	0·32	0·30	0·24
	1916 Departure.	− 0·13	− 0·08	− 0·05	− 0·10	− 0·13	− 0·21	− 0·17	− 0·14	− 0·26	− 0·13	+ 0·02	− 0·01
CAHIRCIVEEN :	Normal.	0·23	0·22	0·24	0·26	0·24	0·24	0·25	0·24	0·21	0·20	0·19	0·21
	1916 Departure.	− 0·05	+ 0·20	+ 0·10	− 0·02	+ 0·11	− 0·01	− 0·09	− 0·11	− 0·16	− 0·02	− 0·01	− 0·05
RICHMOND :	Normal.	0·07	0·08	0·08	0·09	0·08	0·07	0·07	0·07	0·08	0·07	0·07	0·07
	1916 Departure.	− 0·06	− 0·02	0·00	+ 0·17	+ 0·23	+ 0·10	+ 0·09	+ 0·11	+ 0·16	+ 0·06	− 0·02	− 0·05
FALMOUTH :	Normal.	0·21	0·24	0·23	0·24	0·23	0·21	0·21	0·21	0·20	0·23	0·19	0·19
	1916 Departure.	+ 0·57	+ 0·32	+ 0·07	− 0·04	− 0·08	− 0·03	− 0·02	− 0·15	− 0·13	− 0·17	+ 0·02	− 0·07
YEAR.													
ABERDEEN :	Normal.	0·08	0·09	0·08	0·09	0·09	0·09	0·09	0·09	0·09	0·10	0·08	0·08
	1916 Departure.	+ 0·03	+ 0·01	+ 0·01	+ 0·01	+ 0·01	+ 0·02	+ 0·03	+ 0·03	+ 0·03	0·00	0·00	0·00
ESKDALEMUIR :	[Normal].	0·14	0·14	0·15	0·15	0·15	0·16	0·15	0·15	0·15	0·14	0·15	0·17
	1916 Departure.	+ 0·09	+ 0·05	+ 0·03	+ 0·03	+ 0·04	+ 0·03	+ 0·05	+ 0·05	+ 0·06	+ 0·06	+ 0·07	+ 0·08
CAHIRCIVEEN :	Normal.	0·18	0·17	0·18	0·19	0·19	0·18	0·19	0·18	0·17	0·15	0·14	0·15
	1916 Departure.	+ 0·01	+ 0·06	+ 0·03	+ 0·01	+ 0·02	0·00	− 0·02	− 0·05	− 0·06	− 0·04	− 0·05	− 0·03
RICHMOND :	Normal.	0·07	0·07	0·07	0·07	0·07	0·07	0·07	0·07	0·07	0·07	0·06	0·07
	1916 Departure.	+ 0·03	0·00	+ 0·01	+ 0·01	+ 0·03	0·00	+ 0·03	+ 0·02	+ 0·01	+ 0·02	+ 0·02	+ 0·04
FALMOUTH :	Normal.	0·14	0·15	0·16	0·15	0·14	0·15	0·14	0·14	0·14	0·13	0·11	0·12
	1916 Departure.	+ 0·07	+ 0·02	− 0·01	− 0·03	0·00	0·00	+ 0·02	+ 0·01	+ 0·01	+ 0·05	+ 0·01	− 0·02

NORMALS AND DEPARTURES THEREFROM IN 1916.

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	0·15	0·12	0·12	0·10	0·09	0·08	0·10	0·07	0·09	2·33	Normal. ABERDEEN.
+ 0·14	+ 0·08	+ 0·11	+ 0·11	− 0·11	− 0·08	− 0·05	− 0·06	− 0·02	− 0·06	− 0·04	0·00	+ 0·28	1916 Dep. ,,
0·10	0·14	0·07	0·14	0·12	0·16	0·10	0·12	0·13	0·05	0·08	0·08	2·43	[Normal.] ESKDALEMUIR.
+ 0·05	+ 0·20	+ 0·21	+ 0·27	+ 0·46	+ 0·22	+ 0·45	+ 0·19	+ 0·07	+ 0·17	+ 0·06	+ 0·01	+ 2·57	1916 Dep. ,,
0·10	0·11	0·10	0·11	0·12	0·12	0·12	0·12	0·11	0·12	0·13	0·15	3·21	Normal. CAHIRCIVEEN.
− 0·06	− 0·11	− 0·09	− 0·11	− 0·12	− 0·09	− 0·11	− 0·12	− 0·11	− 0·10	− 0·11	− 0·09	− 1·94	1916 Dep. ,,
0·13	0·11	0·12	0·11	0·08	0·09	0·09	0·10	0·07	0·08	0·08	0·07	1·94	Normal. RICHMOND.
− 0·12	− 0·09	− 0·10	− 0·10	− 0·01	− 0·03	− 0·07	+ 0·05	− 0·06	− 0·07	− 0·08	− 0·07	− 0·79	1916 Dep. ,,
0·10	0·12	0·12	0·09	0·09	0·08	0·10	0·11	0·08	0·09	0·10	0·09	2·50	Normal. FALMOUTH.
− 0·04	− 0·11	− 0·12	− 0·06	− 0·09	− 0·07	− 0·09	− 0·06	− 0·04	− 0·06	− 0·02	− 0·04	− 1·36	1916 Dep. ,,
													AUGUST.
0·10	0·10	0·10	0·11	0·14	0·10	0·11	0·11	0·11	0·09	0·10	0·07	2·43	Normal. ABERDEEN.
− 0·07	− 0·08	− 0·03	− 0·06	− 0·02	− 0·02	− 0·02	+ 0·02	− 0·04	− 0·01	+ 0·05	+ 0·03	+ 0·37	1916 Dep. ,,
0·18	0·18	0·18	0·25	0·28	0·15	0·14	0·09	0·11	0·10	0·11	0·09	3·26	[Normal.] ESKDALEMUIR.
+ 0·06	+ 0·01	− 0·10	− 0·11	− 0·14	0·00	− 0·01	+ 0·10	+ 0·05	+ 0·06	+ 0·05	+ 0·05	+ 0·62	1916 Dep. ,,
0·13	0·13	0·15	0·15	0·15	0·17	0·17	0·16	0·15	0·16	0·16	0·17	4·01	Normal. CAHIRCIVEEN.
− 0·03	+ 0·04	+ 0·05	+ 0·07	− 0·03	− 0·06	− 0·07	+ 0·11	− 0·04	+ 0·06	+ 0·31	+ 0·08	− 0·10	1916 Dep. ,,
0·08	0·11	0·12	0·10	0·11	0·11	0·09	0·08	0·09	0·06	0·05	0·05	1·84	Normal. RICHMOND.
− 0·02	+ 0·14	+ 0·03	− 0·07	+ 0·17	− 0·01	+ 0·16	− 0·01	+ 0·09	+ 0·11	+ 0·18	+ 0·01	+ 1·39	1916 Dep. ,,
0·11	0·08	0·11	0·09	0·10	0·12	0·12	0·11	0·11	0·13	0·11	0·12	2·79	Normal. FALMOUTH.
+ 0·14	+ 0·17	− 0·08	0·00	+ 0·07	+ 0·03	− 0·07	− 0·08	− 0·10	− 0·13	+ 0·01	− 0·02	− 0·19	1916 Dep. ,,
													SEPTEMBER.
0·09	0·08	0·09	0·08	0·10	0·08	0·08	0·09	0·08	0·09	0·09	0·08	2·09	Normal. ABERDEEN.
− 0·08	− 0·05	− 0·08	− 0·07	− 0·06	+ 0·01	+ 0·01	− 0·03	− 0·02	+ 0·02	+ 0·08	+ 0·09	− 0·63	1916 Dep. ,,
0·10	0·10	0·10	0·08	0·09	0·13	0·11	0·11	0·08	0·07	0·08	0·16	2·27	[Normal.] ESKDALEMUIR.
+ 0·04	+ 0·01	+ 0·18	+ 0·05	+ 0·11	− 0·05	− 0·07	− 0·09	+ 0·03	0·00	− 0·04	− 0·12	+ 0·09	1916 Dep. ,,
0·11	0·13	0·13	0·14	0·17	0·16	0·17	0·16	0·15	0·17	0·19	0·18	3·78	Normal. CAHIRCIVEEN.
− 0·01	− 0·07	− 0·11	− 0·12	− 0·15	− 0·16	− 0·16	− 0·14	− 0·11	− 0·12	− 0·12	− 0·14	− 2·24	1916 Dep. ,,
0·07	0·06	0·05	0·07	0·09	0·07	0·08	0·09	0·09	0·06	0·08	0·08	1·70	Normal. RICHMOND.
− 0·04	+ 0·06	− 0·02	− 0·02	+ 0·03	− 0·01	− 0·06	− 0·05	− 0·06	− 0·02	− 0·06	− 0·05	− 0·34	1916 Dep. ,,
0·10	0·09	0·10	0·09	0·11	0·10	0·12	0·12	0·10	0·10	0·11	0·13	2·79	Normal. FALMOUTH.
− 0·10	− 0·07	− 0·08	− 0·07	− 0·10	− 0·08	+ 0·01	+ 0·03	0·00	+ 0·03	+ 0·06	+ 0·07	− 1·27	1916 Dep. ,,
													OCTOBER.
0·10	0·09	0·08	0·08	0·10	0·12	0·11	0·12	0·11	0·09	0·09	0·09	2·46	Normal. ABERDEEN.
− 0·04	+ 0·02	− 0·01	+ 0·09	+ 0·12	+ 0·08	+ 0·06	+ 0·05	0·00	− 0·03	− 0·03	+ 0·08	+ 0·52	1916 Dep. ,,
0·08	0·07	0·12	0·14	0·15	0·12	0·11	0·10	0·13	0·12	0·13	0·12	3·17	[Normal.] ESKDALEMUIR.
+ 0·50	+ 0·35	+ 0·24	+ 0·20	+ 0·20	+ 0·28	+ 0·20	+ 0·20	+ 0·04	+ 0·12	+ 0·22	+ 0·19	+ 5·39	1916 Dep. ,,
0·18	0·17	0·16	0·18	0·20	0·19	0·23	0·20	0·19	0·19	0·21	0·19	4·65	Normal. CAHIRCIVEEN.
+ 0·04	+ 0·27	+ 0·25	+ 0·16	+ 0·25	+ 0·05	+ 0·03	+ 0·11	+ 0·16	+ 0·49	+ 0·13	+ 0·28	+ 4·12	1916 Dep. ,,
0·12	0·09	0·10	0·10	0·10	0·09	0·10	0·10	0·09	0·08	0·07	0·06	2·22	Normal. RICHMOND.
− 0·07	− 0·05	+ 0·01	+ 0·03	− 0·03	− 0·01	+ 0·03	+ 0·01	+ 0·03	+ 0·19	+ 0·03	+ 0·19	+ 0·80	1916 Dep ,,
0·15	0·15	0·14	0·16	0·16	0·17	0·16	0·16	0·17	0·18	0·16	0·21	4·27	Normal. FALMOUTH.
+ 0·15	+ 0·05	+ 0·01	+ 0·10	+ 0·03	− 0·06	− 0·08	− 0·06	+ 0·10	+ 0·08	+ 0·36	+ 0·15	+ 1·37	1916 Dep. ,,
													NOVEMBER.
0·10	0·10	0·10	0·09	0·10	0·11	0·10	0·10	0·12	0·13	0·12	0·12	2·69	Normal. ABERDEEN.
− 0·01	− 0·06	0·00	+ 0·03	+ 0·01	− 0·02	+ 0·04	+ 0·22	+ 0·05	− 0·07	− 0·07	− 0·08	+ 0·03	1916 Dep. ,,
0·22	0·24	0·18	0·20	0·24	0·25	0·20	0·19	0·23	0·24	0·20	0·30	5·35	[Normal.] ESKDALEMUIR.
+ 0·01	− 0·02	+ 0·07	+ 0·28	+ 0·01	− 0·15	− 0·11	− 0·13	− 0·16	− 0·19	− 0·05	− 0·04	+ 0·23	1916 Dep. ,,
0·17	0·16	0·18	0·16	0·18	0·20	0·17	0·17	0·18	0·20	0·21	0·20	4·62	Normal. CAHIRCIVEEN.
+ 0·23	+ 0·10	+ 0·06	+ 0·17	+ 0·07	+ 0·19	+ 0·33	+ 0·30	+ 0·07	+ 0·15	+ 0·11	− 0·03	+ 2·93	1916 Dep. ,,
0·07	0·07	0·09	0·09	0·10	0·08	0·08	0·08	0·08	0·08	0·09	0·09	1·90	Normal. RICHMOND.
+ 0·06	+ 0·13	+ 0·18	+ 0·15	+ 0·04	0·00	− 0·01	+ 0·14	+ 0·15	+ 0·18	+ 0·01	+ 0·02	+ 1·43	1916 Dep. ,,
0·16	0·20	0·17	0·18	0·21	0·20	0·19	0·18	0·18	0·17	0·16	0·17	4·35	Normal. FALMOUTH.
+ 0·05	− 0·11	+ 0·08	+ 0·06	+ 0·16	+ 0·11	− 0·12	− 0·04	+ 0·13	+ 0·14	+ 0·07	0·00	+ 2·82	1916 Dep. ,,
													DECEMBER.
0·10	0·10	0·10	0·11	0·11	0·10	0·10	0·11	0·12	0·10	0·10	0·09	2·62	Normal. ABERDEEN.
+ 0·02	+ 0·06	+ 0·01	+ 0·03	+ 0·05	+ 0·15	+ 0·12	+ 0·11	+ 0·09	+ 0·01	+ 0·05	+ 0·04	+ 0·97	1916 Dep. ,,
0·29	0·25	0·35	0·38	0·35	0·31	0·31	0·34	0·35	0·25	0·29	0·20	6·89	[Normal.] ESKDALEMUIR.
− 0·08	+ 0·01	+ 0·01	− 0·15	− 0·17	− 0·14	+ 0·07	− 0·22	− 0·06	− 0·03	− 0·06	− 0·10	− 2·31	1916 Dep. ,,
0·20	0·21	0·21	0·20	0·20	0·20	0·23	0·25	0·25	0·23	0·21	0·21	5·33	Normal. CAHIRCIVEEN.
− 0·12	− 0·17	− 0·12	− 0·01	+ 0·07	+ 0·06	+ 0·12	− 0·14	− 0·14	− 0·16	− 0·14	+ 0·01	− 0·85	1916 Dep. ,,
0·08	0·07	0·09	0·09	0·07	0·08	0·07	0·07	0·07	0·07	0·07	0·08	1·81	Normal. RICHMOND.
− 0·07	− 0·06	− 0·08	− 0·08	− 0·05	− 0·07	− 0·05	− 0·04	− 0·05	− 0·05	− 0·06	− 0·07	+ 0·04	1916 Dep. ,,
0·19	0·22	0·22	0·19	0·19	0·19	0·18	0·20	0·20	0·22	0·22	0·21	5·02	Normal. FALMOUTH.
− 0·09	− 0·09	− 0·08	+ 0·01	− 0·07	− 0·05	− 0·05	− 0·08	− 0·13	− 0·05	+ 0·11	+ 0·42	+ 0·14	1916 Dep. ,,
													YEAR.
0·09	0·09	0·09	0·09	0·10	0·09	0·09	0·09	0·09	0·08	0·08	0·08	2·11	Normal. ABERDEEN.
− 0·01	− 0·01	+ 0·01	+ 0·04	+ 0·02	+ 0·03	+ 0·03	+ 0·05	+ 0·02	0·00	+ 0·01	+ 0·02	+ 0·39	1916 Dep. ,,
0·16	0·17	0·16	0·18	0·19	0·18	0·16	0·17	0·17	0·14	0·15	0·14	3·77	[Normal.] ESKDALEMUIR.
+ 0·05	+ 0·05	+ 0·10	+ 0·07	+ 0·07	+ 0·04	+ 0·04	0·00	− 0·01	+ 0·02	+ 0·01	+ 0·06	+ 1·14	1916 Dep. ,,
0·14	0·14	0·15	0·15	0·16	0·16	0·16	0·16	0·16	0·16	0·17	0·17	3·95	Normal. CAHIRCIVEEN.
− 0·03	−0·01	− 0·01	+ 0·01	0·00	0·00	+ 0·02	+ 0·03	+ 0·02	+ 0·03	+ 0·02	+ 0·02	− 0·02	1916 Dep. ,,
0·08	0·08	0·08	0·08	0·08	0·08	0·07	0·07	0·07	0·06	0·06	0·06	1·70	Normal. RICHMOND.
− 0·02	0·00	+ 0·01	− 0·01	+ 0·03	− 0·02	+ 0·01	+ 0·02	+ 0·03	+ 0·08	+ 0·04	+ 0·03	+ 0·42	1916 Dep. ,,
0·12	0·13	0·12	0·12	0·12	0·13	0·13	0·13	0·13	0·13	0·13	0·14	3·20	Normal. FALMOUTH.
+ 0·01	0·00	− 0·02	+ 0·02	+ 0·01	0·00	− 0·01	− 0·03	− 0·02	− 0·01	+ 0·05	+ 0·03	+ 0·16	1916 Dep. ,,

HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS: NORMALS AND DEPARTURES THEREFROM IN 1916.

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.	..	..	..	..	..	0·04	0·16	0·23	0·24	0·23	0·18	0·07	..	..	..	..	..	1·15
1916 Departure.		..	..	..	..	+0·11	+0·16	+0·17	+0·26	+0·27	+0·21	+0·08	..	..	..	..	..	+1·26
ESKDALEMUIR: [Normal].	..	..	..	..	0·01	0·08	0·12	0·16	0·16	0·17	0·17	0·09	0·01	..	..	..	..	0·97
1916 Departure.	..	..	..	..	0·00	+0·03	+0·04	0·00	−0·01	−0·02	−0·05	−0·04	−0·01	..	..	..	..	−0·06
CAHIRCIVEEN: Normal.	..	..	..	..	0·01	0·11	0·23	0·27	0·28	0·27	0·23	0·15	0·03	..	..	..	..	1·58
1916 Departure.	..	..	..	..	−0·01	−0·06	−0·06	−0·05	−0·09	−0·09	−0·06	−0·06	−0·02	..	..	..	..	−0·50
RICHMOND: Normal.	..	..	..	..	..	0·08	0·18	0·23	0·26	0·25	0·23	0·11	0·01	..	..	..	..	1·35
1916 Departure.	..	..	..	..	..	−0·03	−0·02	+0·02	+0·01	+0·01	+0·04	+0·06	+0·01	..	..	..	..	+0·10
FALMOUTH: Normal.	..	..	..	..	0·02	0·18	0·28	0·33	0·29	0·28	0·25	0·17	0·02	..	..	..	..	1·82
1916 Departure.	..	..	..	..	+0·01	−0·06	−0·07	−0·11	0·00	+0·02	−0·02	+0·08	+0·04	..	..	..	..	−0·11
FEBRUARY.																		
ABERDEEN: Normal.	..	..	..	..	0·06	0·24	0·34	0·38	0·38	0·38	0·35	0·27	0·10	0·01	..	..	..	2·51
1916 Departure.	..	..	..	..	−0·01	−0·01	+0·05	+0·04	+0·08	+0·10	+0·10	+0·03	+0·06	−0·01	..	..	..	+0·43
ESKDALEMUIR: [Normal].	..	..	..	0·01	0·09	0·17	0·21	0·24	0·21	0·24	0·20	0·13	0·07	..	..	..	..	1·57
1916 Departure.	..	..	..	−0·01	−0·01	+0·05	+0·09	+0·04	+0·15	+0·05	+0·13	+0·15	+0·10	..	..	..	..	+0·74
CAHIRCIVEEN: Normal.	..	..	..	..	0·10	0·25	0·32	0·34	0·34	0·33	0·33	0·27	0·16	0·02	..	..	..	2·46
1916 Departure.	..	..	..	..	+0·03	+0·09	+0·12	+0·09	+0·06	+0·03	−0·05	+0·02	−0·02	+0·01	..	..	..	+0·38
RICHMOND: Normal.	..	..	..	..	0·06	0·19	0·27	0·30	0·31	0·33	0·30	0·24	0·10	..	..	..	..	2·10
1916 Departure.	..	..	..	..	0·00	+0·01	+0·13	+0·08	+0·10	+0·04	+0·03	+0·05	+0·03	..	..	..	..	+0·47
FALMOUTH: Normal.	..	..	..	0·01	0·17	0·32	0·36	0·40	0·41	0·40	0·37	0·32	0·17	0·01	..	..	..	2·94
1916 Departure.	..	..	..	−0·01	−0·02	−0·07	−0·02	+0·01	−0·04	−0·02	−0·05	−0·09	−0·04	0·00	..	..	..	−0·35
MARCH.																		
ABERDEEN: Normal.	..	..	0·00	0·09	0·23	0·29	0·33	0·33	0·33	0·31	0·30	0·27	0·23	0·11	0·01	..	..	2·83
1916 Departure.	..	..	+0·01	+0·04	−0·02	−0·07	−0·08	−0·03	+0·02	+0·03	+0·02	−0·03	−0·05	−0·07	0·00	..	..	−0·23
ESKDALEMUIR: [Normal].	..	..	0·00	0·12	0·23	0·31	0·34	0·37	0·36	0·37	0·35	0·30	0·22	0·10	0·01	..	..	3·08
1916 Departure.	..	..	+0·02	+0·07	+0·03	−0·03	+0·02	−0·06	−0·03	−0·11	−0·12	0·00	+0·04	+0·06	0·00	..	..	−0·11
CAHIRCIVEEN: Normal.	..	..	..	0·13	0·32	0·39	0·42	0·45	0·45	0·43	0·42	0·39	0·34	0·19	0·02	..	..	3·95
1916 Departure.	..	..	..	−0·08	−0·04	+0·03	+0·03	+0·03	−0·08	−0·06	−0·04	−0·04	−0·09	+0·01	+0·02	..	..	−0·31
RICHMOND: Normal.	..	..	0·00	0·09	0·23	0·33	0·37	0·40	0·40	0·40	0·37	0·35	0·28	0·13	0·01	..	..	3·36
1916 Departure.	..	..	+0·02	+0·01	−0·09	−0·14	−0·15	−0·18	−0·15	−0·20	−0·16	−0·20	−0·14	−0·07	0·00	..	..	−1·45
FALMOUTH: Normal.	..	..	0·01	0·16	0·37	0·43	0·46	0·49	0·48	0·48	0·47	0·44	0·39	0·21	0·01	..	..	4·40
1916 Departure.	..	..	−0·01	−0·06	−0·12	−0·14	−0·11	−0·14	+0·01	−0·03	−0·03	+0·02	−0·03	+0·04	+0·03	..	..	−0·57
APRIL.																		
ABERDEEN: Normal.	..	0·02	0·12	0·24	0·31	0·35	0·36	0·37	0·37	0·38	0·36	0·35	0·32	0·27	0·13	0·02	..	3·97
1916 Departure.	..	+0·01	+0·07	+0·13	+0·09	+0·03	+0·05	+0·12	+0·17	+0·14	+0·08	+0·10	+0·09	+0·07	+0·06	+0·02	..	+1·23
ESKDALEMUIR: [Normal].	..	0·02	0·15	0·31	0·37	0·40	0·43	0·42	0·41	0·42	0·43	0·44	0·38	0·34	0·19	0·03	..	4·74
1916 Departure.	..	−0·01	−0·04	+0·03	+0·04	+0·06	0·00	−0·05	+0·03	+0·02	−0·08	−0·06	−0·08	−0·05	−0·04	−0·01	..	−0·24
CAHIRCIVEEN: Normal.	..	0·01	0·16	0·35	0·42	0·46	0·48	0·48	0·49	0·49	0·48	0·47	0·43	0·39	0·22	0·02	..	5·35
1916 Departure.	..	0·00	−0·05	−0·08	−0·04	−0·06	−0·01	−0·04	+0·01	+0·03	+0·03	+0·04	−0·02	+0·01	0·00	+0·01	..	−0·17
RICHMOND: Normal.	..	0·01	0·13	0·31	0·40	0·45	0·48	0·50	0·49	0·49	0·49	0·46	0·43	0·35	0·18	0·01	..	5·18
1916 Departure.	..	−0·01	0·00	+0·03	+0·13	+0·12	+0·10	+0·05	+0·07	+0·13	+0·08	+0·12	+0·11	+0·11	+0·03	−0·01	..	+1·06
FALMOUTH: Normal.	..	0·01	0·18	0·39	0·47	0·51	0·54	0·55	0·55	0·56	0·55	0·54	0·52	0·41	0·22	0·07	..	6·07
1916 Departure.	..	0·00	+0·07	+0·22	+0·18	+0·18	+0·19	+0·21	+0·15	+0·22	+0·23	+0·26	+0·33	+0·36	+0·11	−0·05	..	+2·66
MAY.																		
ABERDEEN: Normal.	0·01	0·14	0·25	0·29	0·32	0·34	0·34	0·35	0·36	0·36	0·36	0·36	0·36	0·34	0·31	0·26	0·16	0·02	4·57
1916 Departure.	0·00	+0·09	+0·10	+0·11	+0·15	+0·06	+0·05	+0·05	+0·02	+0·05	+0·05	−0·01	0·00	−0·03	0·00	+0·01	0·00	+0·70
ESKDALEMUIR: [Normal].	0·02	0·11	0·22	0·28	0·32	0·42	0·43	0·45	0·45	0·44	0·41	0·40	0·39	0·38	0·33	0·18	0·01	5·24
1916 Departure.	−0·01	0·00	+0·03	+0·02	0·00	+0·01	−0·04	−0·05	−0·11	−0·08	−0·06	−0·04	−0·07	−0·01	+0·01	+0·07	+0·02	−0·31
CAHIRCIVEEN: Normal.	..	0·15	0·36	0·42	0·45	0·48	0·50	0·51	0·52	0·53	0·52	0·52	0·50	0·47	0·39	0·22	0·01	6·55
1916 Departure.	..	+0·01	−0·03	+0·01	+0·02	+0·10	+0·10	+0·11	+0·08	+0·02	+0·04	−0·08	−0·04	−0·03	+0·03	+0·09	+0·02	+0·45
RICHMOND: Normal.	..	0·10	0·34	0·44	0·49	0·51	0·52	0·54	0·52	0·52	0·50	0·49	0·47	0·44	0·38	0·19	0·01	6·46
1916 Departure.	..	−0·02	−0·03	−0·03	0·00	−0·03	−0·04	−0·05	−0·06	−0·12	−0·07	−0·03	−0·02	−0·01	+0·05	+0·01	−0·01	−0·46
FALMOUTH: Normal.	..	0·13	0·39	0·48	0·51	0·55	0·57	0·58	0·58	0·59	0·59	0·61	0·59	0·55	0·48	0·16	0·00	7·36
1916 Departure.	..	−0·01	−0·08	−0·10	−0·12	−0·12	−0·16	−0·19	−0·20	−0·14	−0·17	−0·16	−0·19	−0·19	−0·19	+0·08	+0·01	−1·93
JUNE.																		
ABERDEEN: Normal.	0·05	0·18	0·24	0·27	0·30	0·32	0·33	0·35	0·35	0·35	0·36	0·34	0·32	0·30	0·28	0·21	0·07	4·62
1916 Departure.	−0·01	+0·02	−0·01	−0·10	−0·07	−0·11	−0·13	−0·07	−0·09	−0·08	−0·08	−0·11	−0·13	−0·14	−0·11	−0·08	−0·01	−1·31
ESKDALEMUIR: [Normal].	0·03	0·16	0·24	0·31	0·36	0·37	0·43	0·45	0·44	0·44	0·44	0·41	0·36	0·40	0·34	0·23	0·04	5·45
1916 Departure.	0·00	0·00	+0·03	0·00	0·00	−0·04	−0·12	−0·13	−0·10	−0·06	−0·05	0·00	+0·07	0·00	+0·04	+0·03	+0·05	−0·28
CAHIRCIVEEN: Normal.	0·02	0·20	0·32	0·39	0·42	0·44	0·46	0·46	0·48	0·50	0·50	0·49	0·47	0·43	0·37	0·27	0·04	6·26
1916 Departure.	+0·01	+0·09	+0·02	+0·08	+0·03	+0·03	−0·05	−0·02	+0·03	+0·10	+0·12	+0·02	0·00	+0·10	+0·12	+0·01	+0·03	+0·72
RICHMOND: Normal.	..	0·16	0·34	0·41	0·44	0·48	0·50	0·50	0·52	0·51	0·51	0·50	0·48	0·45	0·42	0·28	0·03	6·53
1916 Departure.	..	0·00	−0·06	−0·09	−0·10	−0·16	−0·15	−0·13	−0·15	−0·16	−0·08	−0·14	−0·19	−0·14	−0·15	−0·07	−0·01	−1·78
FALMOUTH: Normal.	0·01	0·23	0·38	0·44	0·47	0·49	0·53	0·53	0·54	0·57	0·58	0·58	0·58	0·55	0·49	0·30	0·01	7·28
1916 Departure.	−0·01	−0·06	+0·03	+0·01	−0·03	−0·05	−0·04	−0·06	−0·07	−0·04	−0·06	−0·02	−0·04	−0·03	+0·08	+0·14	+0·02	−0·23

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 10 cm. 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 „
Cahirciveen (Valencia Observatory)	12·8 „
Richmond (Kew Observatory)	13·3 „
Falmouth	10·4 „

The values for 1916 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 35 years, from 1881–1915 (Eskdalemuir 1911–15 only).

HOURLY VALUES OF THE METEOROLOGICAL ELEMENTS: NORMALS AND DEPARTURES THEREFROM IN 1916.

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.	0·03	0·15	0·20	0·25	0·28	0·29	0·29	0·29	0·30	0·30	0·29	0·28	0·28	0·25	0·21	0·15	0·04	3·88
1916 Departure.	+0·01	−0·03	−0·04	−0·04	0·00	+0·02	+0·02	+0·06	+0·04	+0·04	+0·02	+0·06	−0·02	+0·02	−0·03	−0·05	−0·03	+0·05
ESKDALEMUIR : [Normal].	0·02	0·12	0·25	0·32	0·32	0·36	0·38	0·39	0·39	0·39	0·41	0·43	0·41	0·35	0·28	0·15	0·02	4·99
1916 Departure.	−0·01	−0·03	−0·11	−0·02	−0·02	+0·02	+0·03	−0·01	−0·04	−0·06	−0·13	−0·13	−0·18	−0·11	−0·11	−0·03	−0·02	−0·96
CAHIRCIVEEN : Normal.	0·01	0·11	0·23	0·28	0·32	0·36	0·39	0·41	0·43	0·43	0·44	0·44	0·41	0·39	0·31	0·19	0·02	5·17
1916 Departure.	−0·01	+0·01	+0·01	0·00	−0·07	+0·03	+0·01	0·00	+0·11	+0·10	+0·09	+0·10	+0·09	+0·09	+0·16	+0·15	+0·03	+0·90
RICHMOND : Normal.	0·00	0·13	0·34	0·42	0·46	0·50	0·52	0·52	0·51	0·52	0·51	0·49	0·47	0·44	0·40	0·25	0·02	6·50
1916 Departure.	..	−0·03	−0·11	−0·14	−0·12	−0·10	−0·07	−0·10	−0·08	−0·05	−0·08	−0·10	−0·11	−0·11	−0·06	−0·06	−0·02	−1·34
FALMOUTH : Normal.	..	0·19	0·37	0·44	0·48	0·51	0·54	0·56	0·55	0·56	0·56	0·58	0·56	0·56	0·47	0·26	0·00	7·19
1916 Departure.	..	+0·05	+0·12	+0·12	+0·10	+0·03	+0·03	+0·09	+0·10	+0·13	+0·13	+0·10	+0·21	+0·14	+0·12	+0·06	+0·01	+1·54
AUGUST.																		
ABERDEEN : Normal.	..	0·05	0·17	0·23	0·28	0·30	0·31	0·32	0·33	0·33	0·32	0·31	0·28	0·22	0·15	0·04	0·00	3·64
1916 Departure.	..	0·00	+0·03	0·00	−0·03	−0·02	−0·07	−0·07	−0·06	−0·01	+0·01	+0·02	+0·02	+0·10	+0·09	+0·07	+0·01	+0·09
ESKDALEMUIR : [Normal].	..	0·03	0·13	0·26	0·35	0·38	0·36	0·39	0·40	0·38	0·39	0·37	0·36	0·31	0·17	0·03	..	4·31
1916 Departure.	..	0·00	+0·02	−0·02	−0·06	−0·04	−0·01	+0·03	+0·08	+0·09	+0·06	+0·03	+0·04	+0·03	+0·09	+0·04	..	+0·38
CAHIRCIVEEN : Normal.	..	0·03	0·19	0·29	0·34	0·39	0·42	0·43	0·44	0·46	0·45	0·45	0·42	0·37	0·27	0·07	..	5·02
1916 Departure.	..	+0·01	0·00	+0·05	+0·04	0·00	+0·05	+0·07	+0·10	+0·13	+0·21	+0·18	+0·17	+0·14	+0·12	+0·02	..	+1·29
RICHMOND : Normal.	..	0·02	0·22	0·37	0·47	0·51	0·54	0·54	0·53	0·52	0·52	0·50	0·47	0·43	0·32	0·07	..	6·03
1916 Departure.	..	−0·01	−0·06	−0·05	−0·09	−0·11	−0·06	−0·04	−0·04	−0·08	−0·12	−0·03	0·00	−0·07	−0·04	−0·01	..	−0·81
FALMOUTH : Normal.	..	0·04	0·29	0·44	0·50	0·55	0·56	0·58	0·59	0·59	0·60	0·57	0·55	0·51	0·47	0·05	..	6·89
1916 Departure.	..	−0·03	−0·07	−0·04	0·00	0·00	+0·03	+0·03	0·00	−0·04	−0·01	+0·04	+0·07	+0·01	−0·04	+0·04	..	−0·01
SEPTEMBER.																		
ABERDEEN : Normal.	..	..	0·03	0·16	0·26	0·30	0·32	0·32	0·33	0·32	0·31	0·29	0·27	0·18	0·03	..	..	3·12
1916 Departure.	..	..	+0·06	+0·17	+0·11	+0·09	+0·07	+0·07	+0·06	+0·05	+0·01	+0·05	+0·04	+0·03	+0·02	..	..	+0·83
ESKDALEMUIR : [Normal].	..	..	0·01	0·18	0·34	0·40	0·43	0·45	0·45	0·45	0·47	0·45	0·37	0·25	0·04	..	..	4·29
1916 Departure.	..	..	+0·03	+0·02	−0·04	+0·01	−0·03	−0·09	−0·09	−0·14	−0·18	−0·07	−0·04	−0·03	+0·03	..	..	−0·62
CAHIRCIVEEN : Normal.	..	..	0·02	0·18	0·33	0·40	0·45	0·46	0·47	0·47	0·47	0·45	0·40	0·27	0·06	..	..	4·43
1916 Departure.	..	..	0·00	+0·02	−0·04	−0·09	−0·19	−0·12	−0·10	−0·06	−0·11	−0·07	−0·13	−0·08	−0·01	..	..	−0·98
RICHMOND : Normal.	..	..	0·02	0·18	0·33	0·43	0·50	0·52	0·52	0·52	0·51	0·51	0·44	0·31	0·05	..	..	4·84
1916 Departure.	..	..	−0·01	−0·12	−0·14	−0·17	−0·10	−0·12	−0·13	−0·22	−0·12	−0·10	−0·11	−0·10	−0·01	..	..	−1·45
FALMOUTH : Normal.	..	..	0·06	0·27	0·43	0·49	0·52	0·54	0·55	0·56	0·54	0·53	0·49	0·36	0·07	..	..	5·41
1916 Departure.	..	..	−0·04	−0·10	−0·14	−0·08	−0·07	−0·11	−0·08	−0·02	−0·04	−0·03	−0·05	−0·06	−0·01	..	..	−0·83
OCTOBER.																		
ABERDEEN : Normal.	..	..	..	0·02	0·12	0·25	0·29	0·30	0·31	0·31	0·30	0·25	0·15	0·02	..	..	..	2·32
1916 Departure.	..	..	..	+0·02	+0·04	+0·07	+0·03	+0·03	+0·11	+0·06	−0·04	+0·01	−0·01	+0·01	..	..	..	+0·33
ESKDALEMUIR : [Normal].	..	..	..	0·03	0·17	0·28	0·30	0·30	0·31	0·33	0·29	0·25	0·19	0·03	..	..	..	2·48
1916 Departure.	..	..	..	−0·01	−0·06	−0·08	−0·07	−0·03	−0·02	0·00	−0·06	−0·01	−0·03	−0·02	..	..	..	−0·39
CAHIRCIVEEN : Normal.	..	..	..	0·01	0·20	0·34	0·38	0·41	0·42	0·43	0·40	0·36	0·25	0·06	..	..	..	3·26
1916 Departure.	..	..	..	−0·01	−0·16	−0·20	−0·23	−0·23	−0·21	−0·15	−0·10	−0·13	−0·18	−0·06	..	..	..	−1·66
RICHMOND : Normal.	..	..	..	0·03	0·17	0·28	0·35	0·39	0·38	0·39	0·38	0·32	0·21	0·04	..	..	..	2·94
1916 Departure.	..	..	..	−0·02	−0·01	+0·05	+0·08	+0·01	+0·02	−0·02	−0·02	0·00	−0·05	−0·03	..	..	..	+0·01
FALMOUTH : Normal.	..	..	..	0·05	0·29	0·40	0·44	0·45	0·45	0·44	0·43	0·38	0·28	0·07	..	..	..	3·68
1916 Departure.	..	..	..	−0·03	−0·06	−0·05	−0·08	−0·07	−0·06	−0·12	−0·08	−0·13	−0·14	−0·06	..	..	..	−0·88
NOVEMBER.																		
ABERDEEN : Normal.	..	..	..	..	0·00	0·09	0·20	0·23	0·25	0·25	0·21	0·11	0·01	..	..	..	..	1·35
1916 Departure.	..	..	..	..	+0·01	+0·03	0·00	0·00	−0·01	−0·04	−0·06	−0·05	−0·01	..	..	..	..	−0·13
ESKDALEMUIR : [Normal].	..	..	..	..	0·05	0·19	0·28	0·30	0·28	0·28	0·28	0·18	0·02	..	..	..	..	1·86
1916 Departure.	..	..	..	..	−0·05	−0·01	−0·11	−0·12	−0·11	−0·15	−0·16	−0·12	−0·02	..	..	..	..	−0·85
CAHIRCIVEEN : Normal.	..	..	..	..	0·02	0·20	0·31	0·35	0·35	0·35	0·31	0·22	0·06	..	..	..	..	2·17
1916 Departure.	..	..	..	..	−0·01	−0·06	−0·12	−0·15	−0·16	−0·17	−0·14	−0·09	−0·02	..	..	..	..	−0·92
RICHMOND : Normal.	..	..	..	..	0·01	0·10	0·21	0·28	0·31	0·30	0·28	0·20	0·04	..	..	..	..	1·73
1916 Departure.	..	..	..	..	+0·06	+0·07	+0·07	+0·06	+0·03	+0·12	+0·08	+0·09	+0·02	..	..	..	..	+0·60
FALMOUTH : Normal.	..	..	..	..	0·07	0·28	0·35	0·38	0·38	0·37	0·33	0·25	0·07	..	..	..	..	2·48
1916 Departure.	..	..	..	..	+0·02	−0·10	−0·11	−0·07	−0·06	−0·04	−0·10	−0·08	−0·04	..	..	..	..	−0·58
DECEMBER.																		
ABERDEEN : Normal.	..	..	..	..	..	0·01	0·11	0·19	0·21	0·19	0·13	0·02	..	..	..	..	..	0·86
1916 Departure.	..	..	..	..	..	−0·01	+0·01	−0·08	−0·04	−0·02	+0·07	+0·02	..	..	..	..	..	−0·05
ESKDALEMUIR : [Normal].	..	..	..	..	0·00	0·03	0·10	0·11	0·16	0·13	0·10	0·03	..	..	..	..	..	0·66
1916 Departure.	..	..	..	..	+0·01	+0·08	+0·04	+0·07	+0·08	+0·12	+0·16	+0·04	..	..	..	..	..	+0·60
CAHIRCIVEEN : Normal.	..	..	..	..	..	0·06	0·20	0·26	0·26	0·24	0·19	0·10	0·00	..	..	..	..	1·31
1916 Departure.	..	..	..	..	..	+0·02	+0·09	+0·06	+0·01	+0·08	+0·07	+0·11	+0·01	..	..	..	..	+0·45
RICHMOND : Normal.	..	..	..	..	..	0·05	0·17	0·21	0·22	0·23	0·20	0·09	..	..	..	..	..	1·17
1916 Departure.	..	..	..	..	..	−0·04	−0·10	−0·14	−0·08	−0·01	−0·08	−0·06	..	..	..	..	..	−0·51
FALMOUTH : Normal.	..	..	..	..	0·01	0·14	0·27	0·31	0·32	0·29	0·25	0·13	0·01	..	..	..	..	1·73
1916 Departure.	..	..	..	..	0·00	+0·07	+0·12	+0·07	+0·06	+0·08	+0·10	+0·03	+0·01	..	..	..	..	+0·54
YEAR.																		
ABERDEEN : Normal.	0·01	0·05	0·08	0·13	0·18	0·24	0·28	0·31	0·31	0·31	0·29	0·24	0·19	0·14	0·09	0·05	0·01	2·91
1916 Departure.	0·00	0·00	+0·02	+0·03	+0·02	+0·01	+0·02	+0·02	+0·05	+0·05	+0·03	+0·02	0·00	0·00	0·00	0·00	0·00	+0·27
ESKDALEMUIR : [Normal].	0·01	0·04	0·08	0·15	0·22	0·28	0·32	0·34	0·34	0·34	0·33	0·29	0·23	0·18	0·11	0·05	0·01	3·32
1916 Departure.	−0·01	−0·01	0·00	+0·01	−0·02	+0·01	−0·02	−0·04	−0·02	−0·03	−0·05	−0·02	−0·01	−0·01	0·00	+0·01	0·00	−0·21
CAHIRCIVEEN : Normal.	..	0·04	0·11	0·17	0·24	0·32	0·38	0·40	0·41	0·41	0·40	0·36	0·29	0·22	0·14	0·06	0·01	3·96
1916 Departure.	..	+0·01	−0·01	0·00	−0·02	−0·01	−0·02	−0·02	−0·02	0·00	0·00	0·00	−0·02	+0·01	+0·03	+0·03	0·00	−0·04
RICHMOND : Normal.	..	0·04	0·12	0·19	0·25	0·32	0·37	0·40	0·40	0·40	0·39	0·35	0·28	0·22	0·15	0·07	0·01	3·96
1916 Departure.	..	−0·01	−0·03	−0·04	−0·03	−0·03	−0·01	−0·03	−0·03	−0·03	−0·03	−0·02	−0·03	−0·04	−0·02	−0·01	−0·01	−0·40
FALMOUTH : Normal.	..	0·05	0·14	0·22	0·32	0·40	0·45	0·48	0·47	0·47	0·46	0·43	0·35	0·27	0·19	0·07	..	4·77
1916 Departure.	..	0·00	0·00	0·00	−0·02	−0·03	−0·02	−0·03	−0·01	0·00	−0·01	0·00	+0·01	+0·02	0·00	+0·02	..	−0·07

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

Eskdalemuir. (X.) **January, 1916.**

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	γ
1	1004	1003	1003	1001	1003	1005	1006	1006	1005	1003	997	992	993	1000	1005	1006	1009	1011	1012	1010	1013	1011	1010	1008	1009	1005
2 c	1008	1009	1007	1008	1012	1016	1014	1014	1012	1007	1004	1005	1004	1010	1012	1011	1008	1007	1009	1005	1009	1015	1012	1011	1009	1010
3	1008	1010	1009	1013	1013	1015	1014	1016	1014	1008	995	991	994	1001	1005	1011	1008	1007	1008	1013	1008	1010	1006	1009	1011	1008
4	1010	1002	1003	1008	1007	1010	1012	1007	1015	1007	1000	995	993	1002	1002	980	982	996	1006	1005	1003	1001	1007	1007	1007	1002
5	1006	1007	998	1000	1006	1001	1006	1002	1001	1000	1003	1001	1001	996	994	990	991	991	984	983	991	990	999	1005	1006	998
6	1005	1005	1005	1005	1005	1006	1009	1007	1009	1000	998	996	995	997	1000	1000	1000	1005	1010	1004	1005	1006	1004	1000	1010	1003
7	1009	1001	1003	1005	1006	1007	1008	1006	1005	1004	1000	996	994	996	999	994	991	998	1003	1003	1006	1005	1004	1003	1002	1002
8 c	1002	1003	1004	1004	1005	1007	1010	1012	1009	1006	997	991	989	994	1000	1002	999	1001	1004	1006	1004	1002	1001	1003	1007	1002
9	1006	1008	1008	1010	1012	1014	1015	1016	1015	1012	1005	1000	998	1003	1008	1002	987	980	998	1004	1007	1009	1007	1011	1004	1006
10	1003	1006	1006	1006	1006	1008	1009	1010	1008	1007	1003	1003	1008	1015	1014	1021	1018	991	982	987	1007	1017	987	981	1007	1004
11	1007	987	983	986	993	1012	1012	1002	978	954	971	965	970	964	986	997	999	1007	976	972	972	1056	975	946	1001	986
12	1000	961	957	956	975	981	981	979	976	979	976	977	978	981	985	987	985	992	986	981	976	1012	976	981	982	980
13	982	1008	962	939	949	992	991	981	981	‡	..	..	..	..	..	..	..	..	..	..	..	..	..	..	‡	..
14	‡	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	‡	..
15 c	‡	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	‡	..
16	989	987	988	989	990	994	995	993	992	990	983	976	971	971	975	979	987	986	990	984	984	992	987	990	994	986
17 c	993	988	991	993	996	998	998	993	993	986	982	978	979	982	984	985	987	988	989	991	992	993	992	994	993	989
18	993	992	992	997	999	1000	998	998	998	998	993	985	983	985	989	989	985	990	992	993	1000	996	995	994	996	993
19 c	995	996	997	997	997	997	999	998	997	993	991	988	987	987	991	996	992	992	992	993	996	999	998	995	995	994
20	995	998	1002	1007	1009	1002	1001	992	999	1012	1012	1012	1002	994	962	931	962	982	982	997	982	981	982	998	987	991
21	986	981	984	986	983	989	992	991	990	987	982	976	972	975	976	981	985	981	982	986	997	996	993	993	994	985
22	994	996	989	988	994	1007	1003	994	996	993	963	968	974	965	961	961	986	987	992	993	981	980	987	989	996	985
23	995	1020	983	979	985	990	994	986	977	973	971	964	958	956	955	968	979	984	1021	971	977	980	980	980	975	980
24	975	983	982	981	984	985	990	990	985	973	976	964	961	976	985	989	987	987	988	992	993	990	991	992	991	984
25	991	990	992	991	988	998	988	994	984	965	971	966	950	957	966	967	969	983	990	965	974	981	986	994	990	979
26	989	988	984	987	990	986	986	985	982	977	971	968	966	975	979	980	987	991	992	997	994	992	990	989	990	984
27	990	989	988	988	986	992	999	998	993	986	979	975	974	974	986	991	991	992	989	990	992	999	994	991	989	989
28	989	989	986	988	989	994	994	998	989	983	978	975	974	979	988	992	990	993	991	995	999	994	983	995	997	989
29	996	993	989	998	993	997	995	998	997	988	980	977	973	976	974	981	985	981	986	993	993	991	992	992	994	988
30	994	993	992	993	994	996	993	996	993	988	982	980	981	978	983	988	990	990	998	993	990	986	993	1004	996	990
31	996	994	993	995	998	998	1003	1007	998	991	985	978	970	973	977	981	987	993	992	996	992	1003	1000	988	992	991
Mean †	997	996	994	995	997	1000	1001	1000	997	992	987	984	982	984	987	988	990	992	994	993	994	1000	994	994	997	993

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

Eskdalemuir. (−Y.) **January, 1916.**

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.
											4000 γ (·04 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	γ
1	1046	1046	1047	1050	1049	1049	1050	1049	1048	1051	1056	1061	1067	1068	1067	1061	1061	1060	1057	1056	1054	1054	1054	1054	1051	1055
2 c	1051	1051	1051	1051	1054	1055	1054	1053	1053	1052	1055	1063	1066	1068	1067	1062	1057	1058	1060	1056	1053	1050	1052	1053	1053	1056
3	1053	1055	1056	1057	1059	1058	1058	1054	1051	1051	1058	1067	1078	1074	1068	1061	1062	1061	1049	1052	1056	1051	1051	1026	1030	1056
4	1030	1034	1040	1047	1054	1054	1052	1051	1056	1056	1058	1068	1072	1075	1072	1068	1067	1060	1057	1056	1052	1050	1046	1051	1047	1056
5	1047	1026	1031	1041	1048	1058	1054	1051	1048	1050	1057	1061	1064	1067	1064	1061	1063	1064	1050	1046	1051	1046	1044	1041	1051	1051
6	1051	1051	1056	1054	1056	1056	1053	1053	1052	1050	1050	1055	1059	1063	1064	1063	1060	1059	1062	1057	1045	1049	1047	1041	1030	1054
7	1030	1042	1049	1051	1053	1051	1051	1052	1051	1051	1053	1055	1059	1065	1063	1060	1067	1061	1057	1054	1050	1051	1050	1051	1051	1054
8 c	1051	1051	1054	1055	1056	1056	1056	1055	1051	1051	1051	1050	1053	1058	1060	1057	1056	1057	1056	1054	1050	1048	1048	1048	1051	1053
9	1051	1052	1055	1057	1056	1057	1057	1057	1056	1056	1055	1055	1061	1064	1065	1061	1061	1065	1064.	1057	1055	1053	1050	1048	1050	1057
10	1050	1051	1051	1053	1057	1057	1056	1056	1056	1057	1061	1062	1064	1065	1061	1067	1084	1094	1089	1084	1062	1054	1041	1016	1023	1060
11	1023	1030	1037	1054	1049	1044	1051	1064	1083	1075	1070	1059	1062	1063	1061	1054	1051	1053	1050	968	1025	927	922	994	999	1036
12	999	1024	1001	1041	1027	1036	1047	1047	1051	1056	1058	1060	1058	1057	1057	1056	1053	1057	1052	1049	1040	981	992	1006	1024	1038
13	1024	1035	1056	1084	1081	1053	1052	1040	‡	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	‡	..
14	‡	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	‡	1040	1030	1037	1036	1041	..
15 c	1041	1041	1041	1048	1040	1035	1036	1037	1036	1034	1036	1042	1050	1056	1051	1047	1046	1045	1041	1040	1042	1036	1031	1040	1040	1041
16	1040	1043	1041	1040	1041	1041	1040	1041	1041	1042	1045	1046	1053	1058	1057	1046	1046	1039	1031	1037	1031	1013	1030	1036	1039	1041
17 c	1039	1037	1046	1045	1040	1041	1043	1039	1040	1036	1035	1035	1041	1046	1046	1046	1041	1043	1042	1040	1040	1039	1040	1041	1041	1041
18	1041	1040	1047	1036	1033	1040	1045	1044	1041	1040	1037	1040	1045	1050	1051	1048	1046	1047	1046	1030	1026	1040	1041	1040	1040	1041
19 c	1040	1040	1042	1043	1044	1045	1041	1040	1040	1040	1038	1041	1048	1052	1051	1047	1048	1047	1046	1046	1040	1035	1040	1040	1040	1043
20	1040	1043	1046	1047	1051	1047	1042	1041	1046	1045	1047	1044	1051	1061	1064	1068	1060	1047	1027	998	1032	1027	1028	993	1010	1041
21	1010	1012	1030	1030	1035	1035	1039	1039	1038	1034	1034	1040	1046	1053	1056	1050	1054	1052	1053	1052	1024	1040	1036	1036	1036	1039
22	1036	1041	1037	1042	1034	1030	1034	1040	1041	1042	1044	1064	1062	1069	1082	1053	1063	1057	1056	1056	1028	1041	1032	1019	1005	1045
23	1005	975	982	989	1002	1005	1030	1060	1042	1033	1035	1039	1051	1057	1056	1051	1049	1043	1017	1042	1038	1030	1020	1032	1045	1029
24	1045	1033	1028	1036	1034	1034	1040	1040	1042	1046	1048	1045	1041	1049	1051	1050	1048	1048	1046	1044	1041	1038	1035	1035	1041	1041
25	1035	1040	1042	1042	1042	1032	1045	1046	1047	1068	1053	1063	1056	1069	1065	1051	1048	1033	990	1034	1039	1032	1034	1024	1034	1043
26	1034	1045	1056	1027	1024	1032	1033	1036	1039	1041	1047	1054	1056	1058	1056	1050	1035	1045	1045	1023	1036	1045	1039	1034	1038	1041
27	1038	1032	1038	1035	1034	1034	1038	1038	1044	1041	1046	1051	1057	1058	1056	1050	1047	1048	1048	1050	1046	1042	1037	1034	1034	1043
28	1034	1032	1033	1032	1034	1035	1035	1035	1035	1034	1039	1045	1050	1056	1053	1050	1047	1047	1047	1046	1045	1024	1033	1045	1045	1040
29	1045	1035	1060	1049	1028	1033	1036	1038	1040	1039	1041	1046	1051	1062	1059	1053	1044	1044	1040	1046	1042	1040	1021	1026	1040	1042
30	1040	1042	1043	1042	1041	1040	1048	1042	1039	1035	1036	1042	1048	1051	1051	1049	1046	1044	1044	1046	1045	1032	1025	1045	1042	1042
31	1042	1045	1045	1043	1042	1044	1045	1044	1041	1039	1037	1038	1040	1046	1055	1055	1052	1050	1040	1041	1042	1039	1030	1030	1041	1043
Mean †	1037	1037	1041	1042	1042	1043	1045	1047	1047	1047	1048	1052	1056	1060	1060	1055	1054	1053	1047	1044	1042	1035	1033	1034	1037	1046

c International quiet day. † Mean of 28 days only—13th, 14th, and 15th omitted. ‡ Clock stopped.

III.—READINGS OF THE VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE FOR EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (Z.) **January, 1916.**

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	145	146	146	146	146	146	146	146	146	147	148	149	150	150	150	147	147	147	147	148	147	146	146	146	146	147
2 c	146	146	145	145	143	143	143	143	144	146	147	145	144	146	148	146	146	146	146	148	148	146	146	146	145	145
3	144	143	142	140	138	136	138	138	140	142	143	140	140	145	148	148	147	146	148	147	144	144	145	146	144	143
4	144	141	140	138	138	138	137	137	135	137	139	140	139	136	141	148	148	147	145	144	144	145	144	143	143	141
5	143	143	141	136	130	128	130	135	138	136	139	140	139	140	145	147	148	149	154	157	153	153	150	147	140	142
6	140	139	141	141	141	140	139	139	139	141	140	139	138	139	141	142	144	143	142	142	149	147	146	147	145	142
7	144	143	142	142	141	140	139	139	138	137	137	139	140	139	143	145	145	144	144	143	142	141	141	141	140	141
8 c	140	141	141	141	141	140	139	139	139	138	141	143	141	141	141	143	144	143	143	143	142	141	141	140	138	141
9	138	138	139	139	140	139	139	138	136	136	139	139	137	138	140	143	147	148	146	146	144	143	141	141	141	141
10	141	140	140	140	139	137	137	137	137	137	137	136	135	133	135	135	135	140	161	170	181	166	166	159	130	145
11	130	134	139	138	134	132	133	135	135	139	143	147	151	158	160	155	151	149	162	210	201	158	129	171	134	150
12	133	142	138	124	118	137	142	146	150	153	154	151	152	154	155	154	151	149	150	152	155	149	138	126	124	145
13	124	129	134	120	117	129	138	145	149	151	‡	..	..	..	..	..	..	..	..	..	..	..	..	..	‡	..
14	‡	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	‡	..
15 c	‡	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	‡	..
16	131	131	131	131	131	130	130	130	131	131	132	133	133	135	138	138	140	139	140	140	141	139	136	134	132	134
17 c	130	130	130	129	130	130	130	131	132	134	138	138	136	138	139	138	138	137	136	136	136	136	136	136	136	134
18	134	134	131	130	131	130	130	130	131	133	134	134	134	134	135	136	138	136	135	136	135	134	134	134	134	133
19 c	133	132	131	131	130	129	129	129	129	131	132	133	131	131	130	131	131	131	131	131	131	132	131	130	131	131
20	131	130	129	126	123	123	123	124	121	119	122	124	124	124	136	155	153	149	149	148	140	140	140	139	135	133
21	133	133	129	129	129	128	128	127	127	128	131	131	131	128	131	134	135	135	135	134	135	133	131	131	131	131
22	130	127	127	125	124	121	121	121	121	120	123	125	128	132	133	141	140	136	135	135	148	152	144	137	121	131
23	120	86	94	99	83	93	92	92	104	116	123	125	127	131	136	141	141	141	138	136	137	132	134	132	121	119
24	120	124	129	130	130	129	128	127	125	126	125	128	130	128	130	132	132	130	130	130	128	130	130	129	127	128
25	126	125	124	123	123	123	120	116	117	116	118	120	127	129	134	148	157	161	159	150	145	139	134	131	125	132
26	125	118	111	115	122	122	123	125	126	126	125	123	124	124	127	129	130	128	128	130	125	124	125	126	125	124
27	125	125	125	125	125	125	122	120	119	119	122	125	125	125	127	129	127	127	127	127	127	126	124	125	125	125
28	124	124	124	124	124	123	123	122	124	126	125	124	121	121	122	124	124	123	123	123	123	124	127	122	119	123
29	118	119	113	95	108	113	114	116	118	121	122	121	121	121	122	123	123	125	126	124	123	123	124	123	118	119
30	118	117	117	118	118	118	116	118	120	123	123	121	120	118	118	121	121	121	121	120	123	126	126	116	115	120
31	115	116	116	116	115	116	115	114	116	120	123	124	125	123	124	126	126	123	124	124	123	122	119	121	120	120
Mean †	132	131	131	129	128	129	129	129	130	131	133	133	134	134	137	139	140	139	140	142	142	139	137	136	132	134

c International quiet day. † Mean of 28 days only—13th, 14th, and 15th omitted. ‡ Clock stopped.

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, 1916.**

Date.	Time, G.M.T.† From	Time, G.M.T.† To	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0-2).	Date.
Jan.	h m	h m	γ	° ′ ″	° ′	d 280+		
						3·6	0	1
7	10 54	11 9			69 37·3	3·6	0	2
						3·6	1	3
						3·6	1	4
11	14 37	15 15			69 37·5	3·6	1	5
13	10 23	10 37		17 31 32		3·6	1	6
						3·6	0	7
						3·6	1	8
						3·7	0	9
						3·7	2	10
18	11 2	11 35	16762	17 31 42	69 37·7	3·7	2	11
						3·7	2	12
						3·7	2	13
						3·7	..	14
						3·7	0	15
26	10 30	11 13	16739	17 33 40	69 38·3	3·7	1	16
						3·7	0	17
						3·7	1	18
						3·6	0	19
						3·6	2	20
						3·5	1	21
						3·6	1	22
						3·6	2	23
						3·6	1	24
						3·5	1	25
						3·5	1	26
						3·5	0	27
						3·6	1	28
						3·5	1	29
						3·5	1	30
						3·5	0	31

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

† The times are those of the Declination and Dip observations only. The Horizontal Force values given refer to the mean time of the Declination observations, being derived by a combined use of the actual observations and curve measurements.

JANUARY, 1916.

The average magnetic character figure was 0·9. The only considerable disturbance during the month began on the 10th. This really consisted of two parts. The first lasted from $10^d\ 16^h$ to $11^d\ 2^h$, and included one principal oscillation centering at $10^d\ 20^h\ 33^m$. The second began with a "sudden commencement" at $11^d\ 4^h\ 11^m$, the immediate change being $+16\,\gamma$, N; $+34\,\gamma$, W; $-23\,\gamma$, V. This was followed by rapid oscillations of small amplitude until $11^d\ 18^h$, when the larger movements of the storm were exhibited. The scale of these may be gauged from the fact that the total magnetic "activity," taken from the W trace, averaged about 100 times, and from 22^h–23^h was 575 times, that of an average quiet day. The absolute range for the day was $250\,\gamma$, N; $229\,\gamma$, W; $130\,\gamma$, V. Between $11^d\ 21^h$ and $12^d\ 0^h$ there were movements on the W trace which strongly resembled those of 24 hours previously and 24 hours subsequently.

V.—READINGS OF THE NORTH COMPONENT OF TERRESTRIAL MAGNETIC FORCE FOR EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (X.) **February, 1916.**

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	992	991	989	991	992	996	996	997	997	988	976	974	972	975	982	988	990	992	995	998	998	997	995	996	998	990
2	997	995	993	992	991	998	1002	1001	997	994	*986*	981	976	972	977	982	987	988	996	995	997	997	996	994	994	991
3	994	993	992	993	996	997	997	997	996	992	981	974	974	977	982	986	989	992	992	998	998	997	994	992	996	991
4	996	996	995	997	998	1001	1003	1005	1003	1000	987	978	982	987	994	997	988	986	987	980	977	991	991	994	994	992
5	994	995	994	994	996	997	1002	1003	1004	1002	994	979	978	980	981	993	988	981	986	982	981	982	990	1007	991	991
6 c	991	989	987	987	988	991	992	993	992	991	986	979	974	975	977	986	987	988	992	996	997	995	995	993	990	989
7	989	991	987	989	991	995	998	999	1000	996	991	998	984	981	981	987	991	993	997	999	1001	999	1001	1002	1006	994
8	1006	998	994	996	1005	1011	1013	1008	1005	1001	990	985	971	953	960	974	980	969	975	957	966	974	986	990	988	986
9	988	986	986	990	988	988	991	991	984	985	976	967	962	967	974	981	986	979	984	*981*	*987*	*995*	*994*	*993*	*1001*	*984*
10	1001	1002	991	987	991	992	993	996	994	989	978	965	960	968	971	979	984	986	991	994	994	999	997	997	997	987
11	997	1000	992	993	994	997	1004	1005	1000	992	986	977	971	971	974	974	980	991	993	988	982	985	992	996	995	989
12	995	993	995	992	995	997	1001	1002	1002	997	981	971	961	961	966	972	983	976	987	985	988	996	992	988	990	986
13	989	990	995	993	996	995	1000	1000	998	997	981	973	975	976	979	982	984	991	996	995	995	994	1013	1030	990	992
14	990	992	995	985	988	988	1000	1005	998	994	985	978	975	977	977	977	985	990	998	998	996	995	996	995	995	990
15	995	993	995	989	998	985	1006	1000	998	995	986	978	977	982	988	990	991	991	993	994	993	998	998	997	995	992
16 c	995	994	992	992	996	999	1000	1000	999	994	982	976	980	985	989	990	981	980	996	1000	1001	1002	1001	1000	999	993
17	999	999	999	1000	1000	1001	1003	1007	1006	1001	987	977	975	979	988	986	984	981	981	985	994	996	997	999	1028	993
18	1028	995	975	984	990	991	997	997	992	965	970	975	975	978	974	975	980	992	985	982	986	985	985	988	991	984
19	991	1001	1002	990	985	991	995	1000	995	989	979	975	970	966	965	979	980	976	986	990	1000	1005	995	992	992	987
20	992	992	994	994	990	1000	1000	1006	1000	992	984	982	975	974	983	987	986	987	994	988	997	994	993	991	992	991
21 c	991	990	990	989	994	995	998	999	995	993	985	978	974	979	979	978	979	993	997	997	996	998	998	998	998	990
22	998	999	998	995	999	995	1001	999	1000	986	969	965	969	966	968	976	981	985	988	992	994	993	994	995	993	988
23	993	993	993	990	992	997	999	996	994	993	978	969	968	973	980	975	984	990	994	999	990	971	976	977	988	986
24	988	989	984	984	987	988	989	991	988	984	975	966	960	961	970	979	986	990	992	995	996	994	993	994	994	984
25 c	994	993	993	993	994	994	992	995	994	994	990	984	980	980	983	988	994	1000	1000	1002	999	998	999	994	995	993
26	995	994	995	995	995	995	996	999	999	997	987	981	978	978	986	985	992	984	989	997	999	999	1000	1014	1003	993
27	1003	995	995	997	1000	1000	1011	1003	1004	999	984	973	969	973	974	988	996	975	979	969	1006	974	989	993	995	989
28	995	999	991	993	993	994	998	993	991	984	972	965	963	968	970	972	979	990	996	998	999	996	1000	998	995	987
29	995	994	994	994	995	997	999	995	994	988	979	969	962	961	969	977	984	990	993	998	996	999	997	1005	999	989
Mean †	996	994	992	992	994	996	999	1000	998	992	982	976	972	973	977	982	985	987	991	991	993	993	995	997	996	990

VI.—READINGS OF THE WEST COMPONENT OF TERRESTRIAL MAGNETIC FORCE FOR EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (−Y.) **February, 1916.**

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.
													4000 γ (·04 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	γ
1 c	1041	1041	1043	1042	1041	1039	1038	1035	1035	1032	1035	1040	1046	1054	1053	1049	1045	1043	1041	1041	1041	1040	1039	1040	1036	1041
2	1036	1041	1041	1036	1046	1040	1040	1039	1037	1036	*1040*	1045	1051	1054	1062	1054	1047	1040	1041	1041	1040	1040	1033	1033	1029	1042
3	1029	1045	1041	1043	1042	1041	1038	1036	1034	1032	1032	1036	1046	1050	1051	1049	1046	1044	1041	1040	1040	1040	1039	1039	1040	1041
4	1040	1041	1045	1046	1045	1043	1042	1040	1038	1034	1030	1039	1051	1056	1059	1061	1057	1063	1060	1059	1041	1037	1035	1034	1036	1046
5	1036	1038	1041	1043	1042	1043	1042	1038	1035	1031	1041	1040	1046	1068	1061	1062	1070	1052	1062	1053	1008	1026	1031	1024	1022	1043
6 c	1022	1030	1030	1035	1037	1035	1035	1034	1035	1035	1040	1045	1051	1058	1061	1057	1054	1051	1048	1040	1034	1030	1019	1025	1026	1039
7	1026	1030	1034	1036	1035	1038	1038	1037	1036	1038	1039	1041	1048	1050	1054	1055	1051	1047	1046	1046	1045	1041	1040	1040	1035	1041
8	1035	1025	1030	1032	1034	1040	1043	1041	1040	1038	1040	1056	1064	1072	1072	1065	1057	1046	1037	1046	1003	986	1008	1028	1030	1039
9	1030	1040	1039	1038	1038	1040	1039	1036	1030	1025	1028	1039	1046	1062	1059	1057	1056	1042	1036	1040	1029	1035	1036	1035	1030	1040
10	1030	1041	1040	1041	1040	1041	1040	1039	1034	1028	1032	1035	1041	1048	1051	1051	1051	1051	1050	1047	1040	1034	1032	1038	1039	1041
11	1039	1026	1035	1038	1041	1043	1042	1040	1038	1030	1030	1040	1045	1055	1056	1061	1058	1051	1050	1045	1041	1035	1036	1039	1040	1042
12	1040	1040	1042	1045	1045	1039	1037	1038	1035	1031	1031	1046	1056	1066	1065	1056	1052	1057	1044	1035	1005	1031	1035	1038	1039	1042
13	1039	1039	1040	1067	1035	1037	1038	1036	1037	1034	1029	1035	1046	1051	1052	1050	1046	1045	1043	1045	1039	1040	1025	1013	1026	1040
14	1026	1030	1031	1030	1039	1038	1041	1040	1042	1040	1029	1036	1043	1058	1060	1050	1046	1031	1043	1045	1042	1036	1033	1030	1037	1039
15	1037	1039	1040	1048	1039	1049	1041	1040	1040	1035	1036	1041	1051	1060	1061	1055	1047	1045	1045	1042	1041	1037	1032	1035	1036	1043
16 c	1036	1040	1040	1048	1044	1038	1038	1036	1035	1030	1030	1036	1047	1054	1052	1050	1047	1045	1043	1043	1042	1041	1041	1041	1041	1042
17	1041	1041	1041	1041	1041	1041	1040	1039	1040	1031	1030	1041	1046	1051	1055	1048	1048	1041	1024	1046	1045	1040	1038	1034	1023	1041
18	1023	979	998	1026	1023	1027	1026	1030	1031	1035	1043	1037	1054	1062	1072	1051	1057	1036	1050	1039	997	1012	1020	1033	1035	1032
19	1035	1034	1031	1024	1029	1028	1024	1028	1030	1028	1025	1045	1053	1063	1063	1067	1056	1051	1045	1041	1031	1028	1028	1035	1040	1039
20	1040	1040	1036	1036	1045	1036	1034	1033	1032	1027	1029	1040	1053	1056	1058	1062	1053	1040	1042	1045	1007	1031	1030	1025	1031	1039
21 c	1031	1031	1037	1040	1042	1040	1039	1035	1031	1024	1023	1032	1045	1064	1068	1065	1053	1049	1042	1041	1040	1040	1039	1039	1038	1041
22	1038	1036	1030	1033	1036	1035	1034	1030	1031	1023	1021	1021	1053	1065	1067	1062	1057	1046	1041	1041	1036	1034	1035	1035	1036	1039
23	1036	1040	1041	1040	1041	1038	1036	1034	1031	1025	1028	1031	1040	1054	1070	1062	1050	1047	1045	1046	1034	1008	1001	998	1008	1036
24	1008	966	1015	1029	1030	1035	1030	1025	1025	1023	1024	1032	1044	1050	1056	1051	1045	1042	1040	1039	1037	1041	1040	1038	1038	1033
25 c	1038	1037	1037	1036	1036	1035	1035	1034	1031	1027	1025	1029	1039	1050	1055	1056	1051	1046	1045	1045	1046	1044	1034	1038	1038	1040
26	1038	1035	1034	1033	1034	1035	1035	1035	1034	1031	1034	1035	1050	1056	1067	1064	1065	1042	1057	1052	1046	1041	1036	1021	1013	1042
27	1013	1028	1035	1040	1037	1041	1041	1040	1035	1030	1029	1030	1044	1062	1056	1061	1057	1051	1051	1019	981	1012	1034	1035	1040	1036
28	1040	1033	1034	1036	1036	1035	1035	1043	1033	1025	1023	1030	1040	1047	1055	1055	1050	1045	1042	1041	1041	1039	1031	1036	1036	1038
29	1036	1039	1039	1039	1039	1039	1037	1036	1031	1030	1028	1035	1046	1057	1063	1052	1045	1045	1042	1043	1040	1039	1039	1039	1034	1041
Mean †	1033	1032	1035	1039	1038	1038	1037	1036	1035	1031	1031	1037	1048	1057	1060	1056	1052	1046	1045	1043	1032	1032	1032	1032	1033	1040

c International quiet day. † Mean of 28 days only; 9th omitted, the North Component being unreliable from 19 h. owing to a discontinuity in the base value.

VII.—READINGS OF THE VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE FOR EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (Z.) **February, 1916.**

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 c	120	119	119	118	118	117	117	116	117	120	120	118	118	118	119	119	119	119	118	116	117	118	118	118	117	118
2	118	117	117	117	116	115	115	115	115	117	*117*	118	120	120	120	122	123	124	121	121	121	120	121	120	119	119
3	119	115	117	117	117	116	115	115	115	117	117	117	117	119	119	120	118	117	116	116	115	115	115	116	115	117
4	115	115	115	115	114	114	113	112	113	115	116	114	112	112	112	117	121	121	122	126	132	130	127	123	120	118
5	121	119	119	118	118	116	115	114	113	113	110	114	114	113	115	118	122	127	126	133	143	139	130	122	120	120
6 c	120	119	121	120	120	119	118	118	116	114	115	116	119	119	118	120	122	122	121	121	121	122	123	120	120	119
7	121	120	119	121	121	119	117	116	114	112	112	113	116	117	118	120	121	121	120	119	118	118	118	117	116	118
8	117	120	120	120	118	116	115	114	114	114	112	110	113	117	120	123	125	133	140	150	158	146	124	107	111	123
9	113	118	121	122	122	121	121	120	122	122	121	118	115	115	118	121	125	128	132	130	130	124	121	119	116	122
10	117	111	111	114	116	117	116	116	117	117	116	116	115	116	117	120	121	121	121	121	121	121	119	117	116	117
11	117	114	115	115	115	114	113	114	114	114	111	109	112	114	115	118	122	121	122	124	126	128	125	121	119	117
12	121	120	119	117	115	115	116	116	117	119	119	115	115	117	120	127	128	134	132	134	145	131	126	124	121	123
13	122	120	119	109	107	112	114	115	116	116	116	114	115	119	123	123	123	121	121	121	121	121	120	102	100	117
14	102	110	111	106	106	106	110	111	115	117	118	116	115	114	118	123	125	127	122	121	121	123	123	122	120	116
15	122	121	120	119	116	116	114	114	117	119	118	116	115	116	119	120	122	122	121	121	121	122	122	121	120	119
16 c	121	121	121	118	117	117	117	118	117	118	119	119	118	120	121	123	123	123	122	120	119	121	121	121	120	120
17	122	121	121	121	121	121	120	119	119	120	115	113	113	113	114	119	126	134	141	133	129	128	127	126	111	122
18	112	98	100	109	112	117	118	118	116	116	110	111	110	114	120	129	135	140	135	137	142	135	133	129	128	121
19	130	121	114	113	115	115	117	116	118	120	121	119	120	124	127	131	138	139	135	133	131	129	128	126	126	124
20	128	128	129	129	128	125	125	123	124	125	125	122	121	125	128	131	135	138	138	137	141	134	132	133	131	129
21 c	133	132	131	131	130	131	130	129	130	128	125	121	121	125	127	134	133	134	134	132	132	131	130	130	130	130
22	131	131	131	132	130	127	116	121	127	131	130	128	125	128	135	140	143	142	140	137	135	135	133	132	131	132
23	133	131	131	133	133	133	132	131	131	132	131	129	127	126	126	137	140	140	137	136	139	148	146	137	111	134
24	112	111	118	125	130	131	131	132	131	131	126	124	124	122	127	133	134	136	136	134	134	134	134	133	132	129
25 c	134	134	133	134	134	134	133	132	133	135	135	132	128	126	129	133	135	138	136	136	135	135	135	134	133	133
26	135	135	135	135	135	135	133	132	132	132	131	128	123	123	127	133	141	150	149	142	139	137	137	134	130	135
27	131	132	131	132	132	132	131	131	132	133	130	127	123	122	125	127	136	149	154	167	161	146	142	140	136	136
28	138	133	135	135	135	135	135	134	137	139	139	137	136	134	134	135	138	141	141	139	139	139	138	137	137	137
29	138	138	138	137	136	136	136	137	138	139	140	137	132	133	134	138	141	143	142	140	140	140	139	137	135	138
Mean †	123	122	122	122	122	121	121	121	121	122	121	120	119	120	122	126	129	131	131	131	132	130	128	125	122	124

c International quiet day. † Mean of 28 days; 9th omitted.

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, 1916.**

Date.	Time, G.M.T.† From	Time, G.M.T.† To	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
Feb.	h m	h m	γ	° ′ ″	° ′	d 280+		
1	10 39	11 30	16738	17 30 33	69 38·2	3·5	0	1
						3·5	0	2
						3·5	0	3
						3·5	1	4
						3·5	1	5
						3·5	0	6
						3·5	0	7
8	10 45	11 17	16770	17 35 55	69 36·3	[illegible]	2	8
						3·5	1	9
						3·5	1	10
						3·5	0	11
						3·5	1	12
						3·5	1	13
						3·4	1	14
15	10 33	11 19	16764	17 30 26	69 37·7	3·4	1	15
						3·4	0	16
						3·4	1	17
						3·4	1	18
						3·4	1	19
						3·4	1	20
						3·4	0	21
22	10 33	11 9	16745	17 28 47	69 38·9	3·4	1	22
						3·4	1	23
						3·3	1	24
						3·3	0	25
						3·3	1	26
						3·2	2	27
						3·2	0	28
29	10 34	11 14	16739	17 30 51	69 38·4	3·2	0	29

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

† The times are those of the Declination and Dip observations only. The Horizontal Force values given refer to the mean time of the Declination observations, being derived by a combined use of the actual observations and curve measurements.

FEBRUARY, 1916.

With an average character of 0·7, the month on the whole was quiet and free from any disturbance of a considerable kind. Prominent "bays" on the traces were recorded, centering at the following times:—$5^d\ 22^h\ 45^m$ (+N), $10^d\ 1^h\ 7^m$ (+W), $13^d\ 2^h\ 54^m$ (+W), $18^d\ 19^h\ 35^m$ (−N), $18^d\ 19^h\ 47^m$ (−W), $24^d\ 0^h\ 30^m$ (+N, −W), $27^d\ 19^h\ 54^m$ (+N, −W). The range of the second last of these was 166 γ, N, 27 γ, W; and the beginning and end were comparatively sharp. Another feature worthy of note was at $19^d\ 20^h\ 46^m$ a movement (+N, −W, −V) began, which developed a "bay" on the traces, accompanied by pulsations of about 1^m period, and centering about $19^d\ 21^h\ 1^m$. About 23 hours later, *i.e* $20^d\ 19^h\ 41^m$, a very similar change took place, centering at $20^d\ 20^h\ 8^m$.

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

Eskdalemuir. (X.) **March, 1916.**

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	999	994	994	995	997	998	1000	1002	999	988	982	974	968	966	970	979	993	996	999	999	1000	1000	999	1000	999	991
2	999	999	999	999	1001	1002	1005	1006	1005	1002	992	980	973	970	977	984	991	999	1005	1010	1019	1016	1014	1005	1010	998
3	1010	1003	994	999	1006	1001	1013	997	1001	999	984	968	964	963	971	994	997	993	989	989	994	999	1005	980	1024	993
4	1024	998	998	983	982	986	987	984	982	975	968	963	964	967	973	984	981	988	991	991	994	995	994	994	999	985
5	999	1000	994	983	990	992	993	994	991	984	965	959	951	956	971	980	974	980	984	987	974	991	1004	984	988	982
6	988	990	989	989	990	994	997	996	997	994	975	973	970	964	975	990	994	989	994	985	984	997	970	974	974	985
7	974	980	950	972	976	983	982	990	994	989	970	960	962	977	992	992	995	994	999	999	1000	997	988	990	990	984
8**	990	999	995	999	1003	1008	1009	1004	1009	1020	1016	994	986	1016	979	964	940	951	953	950	954	972	967	966	965	985
9**	965	970	973	1006	958	940	923	915	918	904	882	887	935	928	952	991	969	1082	1018	1000	943	949	959	938	979	955
10	979	979	939	951	959	965	983	976	973	963	954	948	941	950	965	967	962	959	995	959	976	957	959	968	979	964
11	979	973	975	974	975	989	993	992	992	989	970	960	954	951	955	960	975	987	993	990	989	994	1006	998	995	980
12	995	990	986	985	994	996	999	997	991	989	980	968	964	970	980	969	976	980	989	991	995	999	993	991	990	986
13 c	990	989	989	988	990	992	995	996	993	985	975	970	964	964	973	974	980	984	989	990	996	998	999	999	998	986
14	998	997	998	999	999	1000	999	1000	995	989	982	979	980	988	992	994	999	989	995	996	1001	994	993	994	994	994
15 c	994	995	993	993	994	997	997	997	990	982	975	970	967	974	980	989	991	990	990	994	997	1000	1008	1011	999	990
16	999	996	995	997	998	998	999	998	995	990	982	979	977	980	984	990	994	995	1001	999	1004	1009	1009	1007	1009	995
17	1009	1019	1014	1018	1005	958	915	923	972	978	978	975	954	959	964	972	1004	977	982	988	989	1004	983	994	999	980
18	999	985	985	984	970	977	988	989	984	973	955	953	958	963	973	979	988	980	983	989	992	1005	983	978	984	979
19	984	984	973	993	992	993	984	979	969	968	962	958	955	969	978	980	984	979	1009	1008	983	986	1014	985	983	982
20	983	994	980	983	989	987	986	985	984	977	954	937	954	958	963	984	975	979	989	1001	1026	993	989	991	985	981
21	985	983	990	999	1011	985	984	984	968	949	964	958	963	964	969	993	995	997	994	1009	994	993	997	1000	996	985
22	996	994	990	990	999	999	1001	998	984	980	968	957	957	962	979	988	992	995	998	1014	1000	998	998	999	1000	989
23 c	1000	994	995	995	995	995	994	993	984	973	960	949	945	949	963	973	982	991	996	997	1003	1004	1014	1012	1000	986
24	1000	998	996	1000	998	999	1003	1001	1002	990	973	964	964	974	984	984	1005	998	1005	1004	995	983	978	983	1009	991
25	1009	994	982	994	994	1000	995	991	984	974	964	954	955	954	969	978	989	999	1009	997	970	952	958	971	990	980
26	990	985	985	983	984	987	1000	988	989	985	975	963	934	937	955	976	984	990	998	999	999	995	995	996	994	982
27 c	994	995	993	992	995	999	1001	999	993	979	963	953	949	954	965	979	989	997	998	999	1000	1000	1000	999	999	987
28	999	999	999	999	999	999	999	998	990	977	963	957	957	964	976	987	999	1006	1009	1013	1016	1014	1013	1012	1011	994
29	1011	1015	1013	1012	1011	1020	1033	1004	1000	990	969	951	936	940	964	1008	977	950	974	992	984	981	979	953	929	984
30	929	974	968	947	977	978	973	939	937	941	928	920	946	965	973	949	968	990	1013	994	999	999	1039	988	994	969
31	994	990	988	989	988	990	987	958	921	964	965	949	912	935	944	978	964	979	990	999	997	998	1014	1006	983	975
Mean †	992	992	987	990	991	990	990	986	983	977	966	958	956	961	971	982	986	990	996	996	994	993	995	990	993	984

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

Eskdalemuir. (−Y.) **March, 1916.**

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.
											4000 γ (·04 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	1034	1034	1035	1035	1036	1036	1037	1035	1032	1024	1021	1025	1039	1053	1060	1057	1053	1046	1044	1041	1041	1040	1040	1040	1040	1039
2	1040	1040	1040	1040	1040	1040	1038	1036	1034	1025	1019	1024	1041	1059	1063	1062	1056	1051	1048	1051	1054	1054	1043	1015	1019	1042
3	1019	986	1013	1014	1006	1019	1026	1036	1056	1040	1034	1045	1067	1081	1084	1072	1077	1052	1027	1034	1036	1035	990	976	1000	1034
4	1000	1003	1025	1018	1027	1029	1029	1029	1027	1025	1026	1034	1047	1056	1056	1058	1043	1041	1042	1041	1040	1036	1033	1034	1028	1034
5	1028	1027	1017	1026	1026	1024	1027	1029	1026	1024	1028	1046	1060	1073	1073	1081	1072	1064	1051	1043	1019	1010	987	997	1004	1035
6	1004	1005	1020	1035	1034	1032	1030	1029	1024	1024	1022	1035	1055	1061	1068	1065	1063	1050	1025	1020	1027	976	986	987	982	1028
7	982	977	995	965	990	991	1011	1008	1008	1018	1024	1039	1060	1068	1072	1063	1060	1054	1051	1051	1054	1056	1046	1041	1036	1030
8**	1036	1030	1025	1026	1028	1030	1033	1031	1029	1029	1036	1045	1067	1116	1099	1091	1073	1046	1040	1032	1010	966	1024	1035	1033	1041
9**	1033	1034	975	989	1023	1029	1030	994	983	1012	1028	1026	1050	1072	1050	1079	1056	1014	1026	923	1009	997	1032	1003	976	1018
10	976	945	1002	1026	1021	1023	1026	1022	1014	1007	1010	1019	1034	1045	1061	1068	1060	1030	964	1029	1029	1010	1006	1019	1026	1020
11	1026	1025	1028	1025	1031	1029	1029	1028	1024	1024	1024	1031	1046	1056	1062	1059	1057	1051	1048	1042	1037	1034	1030	1035	1034	1037
12	1034	1032	1058	1044	1033	1029	1034	1035	1034	1024	1020	1025	1038	1056	1062	1048	1045	1044	1041	1038	1036	1030	1020	1033	1034	1037
13 c	1034	1033	1032	1032	1032	1033	1032	1030	1023	1018	1019	1029	1040	1050	1056	1051	1048	1041	1041	1036	1037	1038	1038	1038	1037	1036
14	1037	1036	1036	1037	1050	1025	1026	1027	1025	1025	1029	1037	1046	1055	1059	1061	1057	1043	1046	1043	1041	1034	1026	1020	1022	1038
15 c	1022	1029	1029	1030	1031	1028	1026	1023	1020	1024	1024	1035	1043	1055	1056	1053	1046	1039	1036	1040	1038	1039	1034	1027	1030	1035
16	1030	1035	1035	1034	1035	1031	1029	1027	1024	1023	1025	1034	1046	1056	1058	1059	1051	1044	1042	1040	1029	1024	1032	1034	1012	1036
17	1012	982	971	955	1004	1084	1067	1043	1052	1028	1034	1041	1045	1051	1050	1049	1051	1034	1028	1029	1013	999	973	998	1020	1025
18	1020	1028	1029	1013	1016	1019	1009	1018	1019	1019	1030	1044	1067	1072	1074	1062	1061	1048	1035	1032	1027	1029	995	1019	1030	1033
19	1030	1022	1045	1033	1019	1018	1020	1017	1020	1020	1039	1051	1069	1069	1072	1063	1056	1044	1008	1014	1013	1024	1008	1012	1015	1032
20	1015	1027	1027	1036	1024	1025	1024	1020	1015	1019	1025	1042	1061	1077	1080	1079	1061	1052	1019	1012	983	1003	1024	1028	1045	1033
21	1045	1039	987	989	982	1004	1024	1013	1013	1014	1029	1044	1064	1070	1064	1054	1047	1042	1035	1017	1022	1025	1035	1022	1014	1028
22	1014	1017	1023	1022	1026	1020	1018	1013	1009	1010	1021	1035	1046	1051	1059	1056	1050	1040	1041	1021	1029	1032	1034	1025	1019	1030
23 c	1019	1024	1030	1034	1030	1029	1028	1019	1009	1003	1008	1024	1046	1060	1066	1062	1052	1050	1043	1041	1040	1039	1020	1009	1019	1033
24	1019	1025	1030	1030	1026	1032	1024	1017	1012	1009	1022	1045	1073	1092	1107	1120	1136	1111	1072	1061	1010	1013	1027	1024	1002	1047
25	1002	1004	1019	1019	1022	1024	1021	1021	1016	1017	1026	1037	1056	1062	1067	1061	1051	1046	1052	1042	985	967	939	963	1003	1022
26	1003	1015	1024	1031	1029	1019	1021	1016	1014	1019	1025	1045	1053	1060	1059	1052	1044	1035	1036	1036	1036	1035	1034	1034	1035	1033
27 c	1035	1035	1029	1030	1030	1029	1028	1019	1012	1010	1018	1030	1045	1053	1050	1045	1040	1036	1038	1040	1040	1039	1039	1037	1035	1034
28	1035	1034	1034	1032	1031	1028	1024	1015	1007	1007	1014	1029	1042	1053	1061	1056	1050	1046	1045	1048	1044	1044	1043	1041	1040	1036
29	1040	1037	1032	1034	1041	1044	1028	1014	1009	1010	1018	1034	1056	1079	1072	1067	1068	1054	1040	1047	1051	1036	1007	947	953	1034
30	953	955	908	972	1015	1013	1006	1015	1035	1017	1021	1062	1073	1070	1072	1057	1056	1035	1029	1034	1040	1023	1025	1019	1029	1023
31	1029	1032	1026	1028	1028	1027	1018	1020	1052	1041	1030	1046	1054	1072	1085	1076	1054	1044	1025	1032	1037	1027	1021	1002	1005	1037
Mean †	1019	1017	1018	1020	1025	1027	1026	1022	1022	1019	1024	1036	1052	1063	1066	1063	1057	1046	1036	1033	1030	1025	1019	1016	1018	1033

c International quiet day. ** Day "proposed for reproduction" by the International Magnetic Commission (double star). † Mean of 30 days; 8th omitted.

XI.—READINGS OF THE VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE FOR EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (Z.) **March, 1916.**

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 c	137	137	137	136	136	135	134	134	136	140	139	135	130	130	134	136	137	139	137	137	136	135	136	136	136	136
2	138	137	137	136	135	134	134	133	134	134	134	129	120	121	123	126	131	134	133	131	130	131	135	136	132	132
3	134	127	127	130	132	133	131	131	*131*	129	131	129	129	131	135	143	153	151	162	158	150	147	145	124	92	136
4	94	98	102	97	118	129	134	135	136	135	134	132	129	128	130	132	138	139	138	139	139	140	141	140	135	129
5	136	134	134	134	135	137	138	138	138	139	141	132	130	133	141	146	154	161	164	164	169	160	146	141	139	144
6	140	138	139	140	143	144	143	142	142	140	140	135	130	131	136	143	148	150	158	163	162	151	131	130	131	142
7	133	125	80	87	103	99	110	118	126	132	138	137	141	147	153	156	160	162	157	154	152	152	155	156	156	135
8 **	158	156	156	154	151	147	144	144	143	135	127	123	124	127	158	236	>300	243	199	181	187	196	165	158	156	167‡
9 **	158	150	110	48	−6	−40	−20	25	93	126	145	154	161	172	198	191	211	257	268	254	180	180	201	92	82	136
10	83	87	127	145	154	157	157	161	166	167	166	162	156	154	157	162	181	219	239	195	166	162	159	155	135	161
11	136	140	148	147	149	150	150	152	156	156	155	151	149	151	151	153	154	156	155	155	157	155	150	146	149	151
12	150	151	137	127	129	135	139	142	146	149	149	146	144	142	141	148	149	151	152	152	151	152	151	149	149	145
13 c	150	151	150	151	150	150	151	152	153	154	153	150	148	146	147	147	150	151	151	151	151	150	150	150	150	150
14	152	151	150	149	143	143	145	146	148	149	144	143	143	142	142	147	154	155	150	150	153	155	155	154	152	148
15 c	153	151	151	150	149	150	150	151	151	147	143	140	140	139	140	144	148	153	153	153	153	152	151	145	144	148
16	145	147	148	149	149	148	147	147	147	147	142	140	137	134	134	139	145	147	147	150	151	150	148	147	141	145
17	142	119	186	70	65	57	61	84	107	128	138	140	142	146	149	150	158	181	182	180	180	151	135	135	135	133
18	136	141	147	150	147	140	146	149	152	156	151	149	150	155	163	170	170	178	185	183	179	154	159	158	158	157
19	158	156	148	136	142	147	149	149	148	147	142	138	143	147	150	155	166	175	184	172	171	170	149	143	149	153
20	150	143	133	129	142	149	151	153	152	151	149	147	146	152	160	165	172	172	183	183	165	152	154	156	152	155
21	153	119	118	119	120	126	134	142	146	149	144	143	143	149	161	162	161	163	163	164	163	161	152	145	147	146
22	148	150	152	152	149	149	149	150	155	155	155	152	150	150	152	157	160	161	160	161	159	157	156	156	154	154
23 c	154	154	154	154	154	154	154	156	156	154	147	140	138	138	141	147	155	157	160	157	154	153	148	144	144	151
24	145	147	149	150	152	151	150	152	151	148	140	133	130	132	138	145	160	187	230	221	210	186	178	181	186	162
25	186	164	160	153	155	155	155	154	150	145	140	140	139	143	146	148	150	154	155	170	210	167	81	88	85	148
26	86	120	138	142	144	151	152	155	153	152	150	146	152	153	153	156	160	163	160	158	156	156	154	152	151	150
27 c	151	147	149	151	152	152	152	155	154	153	153	150	148	149	149	152	152	151	151	152	152	152	152	152	151	151
28	151	151	151	151	151	152	154	158	159	153	148	142	140	141	144	149	148	147	147	146	148	149	150	149	149	149
29	150	147	146	145	143	140	142	149	150	146	143	143	144	144	175	247	258	227	191	180	185	191	179	142	192	168
30	192	43	53	82	112	142	149	141	126	130	134	141	160	177	180	175	177	192	199	184	169	169	141	145	152	146
31	153	155	155	155	154	154	153	153	139	128	136	142	158	166	177	196	183	178	177	170	164	162	154	132	94	157
Mean †	143	136	137	132	133	134	136	140	143	145	144	142	142	145	150	156	161	167	170	166	162	157	150	143	141	147

c International quiet day. † Mean of 30 days; 8th omitted. ‡ Approximate value.

** Day "proposed for reproduction" by the International Magnetic Commission (double star).

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, 1916.**

Date.	Time, G.M.T.† From	Time, G.M.T.† To	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
Mar.	h m	h m	γ	° ′ ″	° ′	d		
						280+		
7	10 58	11 14			69 39·1	3·1	0	1
						3·1	1	2
						3·1	1	3
						3·0	1	4
						3·0	1	5
						3·0	1	6
						3·0	1	7
8	10 42	10 52	16796	17 32 52		2·9	2	8
						2·9	2	9
						2·9	2	10
						2·9	1	11
						2·8	1	12
						2·8	0	13
15	10 49	11 18	16749	17 30 8	69 38·7	2·8	0	14
						2·8	0	15
						2·8	0	16
						2·8	2	17
						2·8	1	18
						2·8	1	19
						2·7	1	20
						2·7	1	21
						2·7	0	22
22	10 47	11 23	16724	17 32 56	69 39·9	2·6	0	23
						2·6	1	24
						2·6	1	25
						2·6	1	26
						2·6	0	27
						2·6	0	28
						2·6	2	29
						2·6	2	30
28	10 52	11 25	16732	17 30 17	69 40·1	2·6	2	31

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

† The times are those of the Declination and Dip observations only. The Horizontal Force values given refer to the mean time of the Declination observations, being derived by a combined use of the actual observations and curve measurements.

MARCH, 1916.

The month was one of considerable disturbance, there being only nine days on which "0" was assigned as character figure. The principal storms were those of the 8th to the 10th and the 29th to the 31st. The former * was ushered in by a slight sudden commencement at $8^d\ 8^h\ 6^m$, and, as is frequently the case, was followed by several hours of considerable activity, with no great amplitude in the horizontal movements. The most prominent change during this part of the storm was an increase in the downward force, the light spot passing the limits of registration and remaining so from $15^h\ 28^m$ to $16^h\ 10^m$, during which interval the vertical force exceeded its value at 13^h by more than 175 γ. Another movement centered at $8^d\ 20^h\ 40^m$, and showed a change of -27γ, N, -127γ, W, $+47\gamma$, V. During the early hours of the 9th, V fell in value, the reading at 5^h being 218γ below that at 0^h. The recovery from this low value was accompanied by numerous pulsations, of 4^m period, on the V trace—a feature not generally exhibited. The principal movements during the later hours of the 9th consisted of a large and rapid +V change centering at $18^h\ 41^m$ and a rapid −V change beginning at $22^h\ 24^m$. As far as the V trace is concerned, the storm showed a close resemblance to that of 11th January 1916. On the 10th a somewhat unusual phenomenon occurred. Between two periods of comparatively slow change there was intercalated a period, beginning and ending suddenly, of extremely rapid oscillation on N and W, and lasting from $14^h\ 14^m$ to $15^h\ 47^m$. There are indications that this was an intensified "repetition" of similar occurrences on the two previous days at about the same hour.

* See Plate at end of volume.

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

Eskdalemuir. (X.) **April, 1916.**

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	983	968	984	999	973	993	994	967	969	970	960	952	949	966	980	998	1000	990	1002	1019	1015	1000	1005	1002	999	985
2	999	984	981	985	989	988	996	995	986	965	950	952	944	958	974	985	995	1004	1002	1009	1005	1008	1004	997	999	986
3	999	998	999	999	999	1000	1000	997	984	965	951	951	959	965	978	989	993	1002	1005	1005	1009	1007	1006	1009	1021	991
4 c	1021	1008	1002	1000	1002	1000	1000	998	990	973	956	950	950	957	964	975	985	996	1004	1008	1014	1012	1007	1005	1005	990
5 c	1005	1009	1008	1006	1008	1008	1005	1003	996	984	973	963	958	962	975	988	997	1005	1011	1015	1019	1022	1022	1019	1017	999
6	1017	1012	1013	1014	1013	1015	1012	1011	1002	989	966	951	944	949	988	976	989	1001	1009	1008	1008	1008	1011	1013	1015	997
7	1015	1008	1005	1004	1001	1009	1014	1006	1001	985	969	960	955	973	980	995	1010	1014	1009	1008	1009	1009	1013	1038	1024	1000
8	1024	1008	1011	990	1015	1005	1025	1014	1007	993	979	973	969	939	978	959	988	994	994	1004	1006	1006	1004	1000	999	995
9	999	999	999	998	998	999	1001	1000	994	979	965	945	953	956	978	989	994	998	1004	1007	1008	1006	1007	1009	1009	991
10 c	1008	1003	1005	1003	1007	1009	1010	1005	998	982	968	956	954	961	969	982	993	1006	1008	1012	1010	1009	1007	1007	1006	995
11	1006	1006	1005	1006	1007	1008	1009	1008	998	985	973	958	957	962	970	990	999	1006	1012	1012	1013	1004	1014	1000	1004	996
12	1004	1005	1013	1011	1009	1009	1013	1015	1008	997	984	972	974	974	975	990	1003	1003	1003	1010	1008	1010	1009	1011	1013	1001
13 c	1013	1014	1008	1007	1006	1010	1011	1006	1001	990	977	972	974	983	986	989	995	1003	1006	1010	1013	1023	1012	1008	1009	1001
14	1009	1012	1013	1009	1011	1008	1010	1006	996	982	965	965	968	973	983	997	1008	1013	1017	1018	1026	1012	1015	1002	1012	1001
15	1012	1008	1002	997	1004	1004	1007	998	983	981	958	948	972	965	978	982	999	1032	1036	1007	988	988	988	992	986	992
16	986	983	1022	1013	1002	988	983	993	986	968	953	953	954	963	968	993	1006	1014	1030	1023	1010	1014	1003	996	998	992
17	998	999	1000	999	999	999	998	999	996	985	966	958	965	973	985	990	1001	1017	1013	1035	1007	1000	998	1005	1018	996
18	1018	1006	1002	1000	1008	1008	1004	983	950	963	955	947	951	963	963	961	969	992	1007	1011	1010	1007	997	1013	1001	987
19	1001	996	999	1004	1003	1001	998	994	989	978	966	957	949	958	974	988	998	1015	1018	1020	1018	1009	1006	1012	1014	994
20	1014	1009	1013	1010	1013	1020	1021	1013	1003	984	963	956	954	954	968	990	1013	1010	1024	1028	1021	1018	1012	1013	1014	1001
21	1014	1007	1008	1010	1013	1017	1016	1013	998	973	955	952	953	964	978	992	998	1003	1012	1014	1013	1018	1016	1013	1013	998
22	1013	1011	1014	1003	1030	1028	1018	1018	993	992	974	962	953	965	977	989	998	1008	1017	1015	1013	1012	1014	1015	1015	1001
23	1015	1011	1012	1013	1014	1014	1015	993	984	988	977	965	973	977	976	993	995	1013	1013	1004	1008	1009	1008	1008	1009	999
24 c	1009	1007	1008	1007	1007	1006	1003	1006	1008	989	970	966	968	972	978	989	1000	1008	1013	1018	1010	1013	1020	1020	1019	1000
25	1019	1019	1017	1018	1023	1010	1001	1011	1013	993	973	973	979	983	978	1030	1037	1089	1086	1006	982	947	947	929	863	999
26	863	998	952	979	968	962	966	978	972	962	952	954	947	954	977	981	993	993	1001	999	1008	1011	997	991	983	976
27	983	984	993	973	982	983	993	977	964	947	937	943	954	968	972	968	973	1017	1008	1044	1027	1032	1017	996	994	985
28	994	983	980	983	972	973	974	954	933	935	936	933	933	944	958	975	998	993	998	1029	1038	1023	997	1016	1005	977
29	1005	996	909	863	914	908	893	911	901	908	888	873	881	932	974	988	985	967	1016	1022	1013	1008	1010	1000	994	948
30	994	1003	1003	998	1007	1013	1004	994	977	962	940	940	938	948	967	976	983	1015	1042	1015	1005	1005	1002	999	997	989
Mean †	1002	1002	998	996	1000	1000	1000	995	986	975	960	953	953	961	975	986	996	1006	1013	1014	1012	1009	1007	1005	1002	992

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

Eskdalemuir. (−Y.) **April, 1916.**

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.
											4000 γ (·04 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	γ
1	1005	1011	1002	1003	1013	1014	1014	1007	1019	1018	1020	1036	1061	1085	1076	1066	1059	1024	1033	1014	1021	1029	1016	1014	1018	1028
2	1018	1028	1041	1036	1029	1028	1022	1011	1002	1003	1014	1034	1047	1059	1061	1056	1049	1042	1031	1025	1034	1039	1040	1040	1035	1032
3	1035	1041	1040	1034	1028	1025	1023	1011	998	998	1009	1029	1046	1058	1060	1056	1044	1041	1040	1030	1035	1040	1039	1038	1038	1033
4 c	1038	1030	1021	1025	1025	1026	1024	1010	993	988	997	1015	1040	1067	1072	1064	1055	1048	1045	1043	1039	1034	1035	1034	1034	1032
5 c	1034	1029	1027	1026	1028	1029	1027	1018	1005	1000	1009	1024	1042	1061	1072	1070	1065	1059	1056	1055	1051	1048	1045	1040	1038	1038
6	1038	1035	1035	1038	1040	1045	1050	1024	1007	999	1001	1013	1040	1061	1090	1070	1061	1050	1042	1040	1040	1040	1039	1035	1036	1039
7	1036	1035	1036	1036	1040	1037	1035	1021	1002	1005	1013	1028	1042	1061	1067	1061	1053	1042	1029	1032	1035	1035	1036	1023	1014	1035
8	1014	1015	1008	1046	1033	1028	1029	1013	1004	1002	1012	1032	1062	1067	1073	1051	1051	1040	1032	1038	1040	1036	1036	1034	1034	1034
9	1034	1031	1031	1030	1031	1032	1025	1012	1003	1003	1009	1022	1041	1061	1064	1059	1051	1045	1040	1041	1041	1041	1041	1040	1036	1035
10 c	1036	1039	1032	1029	1029	1029	1026	1015	1007	1007	1017	1026	1042	1060	1066	1060	1051	1045	1037	1038	1040	1041	1040	1040	1038	1036
11	1038	1035	1034	1034	1031	1029	1024	1013	1005	1006	1013	1026	1051	1064	1059	1052	1043	1036	1037	1035	1035	1025	1024	1029	1035	1032
12	1035	1030	1030	1026	1029	1032	1032	1019	1008	1009	1019	1035	1057	1065	1057	1056	1051	1044	1041	1038	1035	1028	1030	1034	1036	1035
13 c	1036	1041	1039	1032	1030	1028	1020	1015	1010	1010	1020	1035	1050	1061	1063	1052	1043	1041	1040	1042	1042	1036	1034	1040	1040	1036
14	1040	1039	1035	1034	1031	1027	1021	1013	1010	1007	1011	1025	1045	1060	1062	1061	1058	1052	1044	1039	1048	1034	1002	1019	1032	1034
15	1032	1035	1012	1017	1020	1018	1013	1002	1004	1008	1024	‡	..	..	..	..	..	..	..	..	..	..	..	..	‡	..
16	‡	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	‡	..
17	‡	..	..	..	..	..	..	..	..	..	..	..	‡	1063	1072	1057	1046	1045	1038	1025	1029	1029	1029	1030	1024	..
18	1024	1024	1018	1021	1021	1026	1051	1038	1036	1042	1028	1046	1065	1077	1072	1076	1077	1067	1054	1040	1030	1027	1020	1001	1019	1041
19	1019	1029	1030	1025	1025	1019	1013	1009	1002	998	1009	1025	1041	1057	1072	1067	1059	1057	1050	1046	1048	1042	1042	1038	1030	1034
20	1030	1029	1023	1021	1021	1026	1022	1013	1001	998	1006	1022	1046	1057	1061	1061	1066	1053	1055	1039	1006	1029	1023	1032	1030	1031
21	1030	1035	1053	1034	1030	1028	1025	1014	1006	1009	1020	1032	1053	1067	1071	1062	1054	1047	1043	1040	1039	1029	1036	1035	1037	1037
22	1037	1040	1046	1045	1019	1024	1022	1025	1014	1013	1013	1024	1041	1052	1056	1054	1047	1042	1038	1035	1037	1043	1044	1044	1030	1035
23	1030	1032	1032	1032	1033	1037	1044	1040	1044	1041	1029	1027	1041	1061	1056	1054	1046	1048	1041	1031	1039	1040	1038	1035	1035	1040
24 c	1035	1032	1035	1035	1024	1023	1021	1011	1002	997	1008	1018	1032	1044	1047	1048	1051	1051	1047	1042	1041	1044	1044	1041	1037	1032
25	1037	1035	1033	1032	1028	1021	1028	1028	1016	1004	1013	1040	1048	1067	1084	1113	1120	1101	1088	1012	992	998	988	959	971	1036
26	971	988	959	977	987	1001	1005	1010	1009	1014	1024	1038	1048	1048	1061	1050	1046	1044	1045	1040	1031	1008	1019	1024	1051	1020
27	1051	1028	1014	1019	1031	1023	1026	1019	1007	1013	1018	1039	1057	1073	1084	1062	1051	1076	1039	1045	1024	1015	1020	1013	1013	1035
28	1013	1013	998	1008	995	1005	1034	1018	990	1009	1018	1030	1053	1067	1067	1065	1044	1042	1039	1045	985	1004	1019	1046	1002	1025
29	1002	955	966	975	1029	1004	1030	1021	993	1011	1018	1031	1062	1076	1064	1054	1050	1035	1041	1046	1040	1040	1034	1024	1024	1026
30	1024	1031	1010	1018	1020	998	991	976	979	987	1008	1032	1046	1060	1071	1057	1045	1049	1026	1043	1043	1037	1034	1033	1029	1026
Mean †	1027	1026	1023	1025	1025	1024	1025	1016	1006	1007	1014	1029	1048	1063	1067	1061	1055	1049	1043	1038	1033	1032	1030	1029	1029	1033

c International quiet day. † Mean of 27 days; 15th, 16th, and 17th omitted. ‡ Magnet touching side of case.

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

Eskdalemuir. (Z.) **April, 1916.**

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	94	72	85	94	100	109	122	137	144	149	149	147	144	148	160	170	176	184	177	172	165	160	159	146	137	141
2	138	131	135	139	144	150	155	159	158	155	151	150	151	150	153	156	157	161	164	166	161	156	152	150	152	152
3	152	151	149	150	151	152	155	159	159	156	150	144	141	142	146	151	154	155	156	158	155	153	153	153	144	152
4 c	144	141	142	146	148	150	153	157	159	155	147	140	131	133	139	146	149	150	151	151	152	152	152	152	152	148
5 c	152	151	150	150	150	150	150	155	156	153	143	139	134	131	132	135	142	146	148	148	147	148	148	148	148	146
6	148	150	150	149	148	148	146	146	150	150	147	141	130	129	137	151	156	157	155	153	151	150	149	148	146	147
7	146	146	146	148	148	148	150	151	151	149	145	142	139	138	142	150	155	161	166	163	158	154	150	143	135	149
8	135	127	121	117	117	133	141	147	150	147	145	138	131	143	159	169	162	161	158	153	153	153	151	151	151	145
9	151	152	152	152	152	152	154	156	153	148	141	137	133	135	143	146	150	150	150	148	148	149	149	150	149	148
10 c	149	147	145	146	146	147	148	150	149	147	142	139	134	133	138	143	147	149	150	151	150	148	148	148	148	146
11	148	147	148	148	147	148	150	152	151	146	139	133	131	135	141	146	151	152	153	157	155	154	145	145	144	147
12	144	145	142	143	143	142	142	144	143	142	138	132	128	130	138	139	146	153	151	151	151	151	150	145	142	143
13 c	142	138	139	141	143	145	148	151	148	144	141	138	136	137	141	147	155	157	153	151	151	151	150	149	149	146
14	149	148	148	148	147	147	148	147	145	142	140	133	127	127	130	135	140	142	146	151	150	159	153	141	127	143
15	127	114	130	142	141	142	146	146	144	138	136	135	132	138	145	154	158	175	195	197	182	167	154	134	111	149
16	111	92	87	95	107	122	128	140	146	144	144	142	139	141	146	150	161	169	175	170	163	157	142	148	151	139
17	151	151	151	150	150	150	151	153	153	147	144	142	136	137	142	147	149	154	161	161	159	158	157	154	146	150
18	146	144	145	148	147	144	141	141	141	135	140	140	139	149	159	160	165	173	175	176	173	169	162	141	136	152
19	136	146	149	150	150	150	151	151	151	148	145	141	137	137	141	147	150	153	156	155	153	154	153	151	151	148
20	151	152	151	150	147	146	148	151	150	146	143	141	139	139	142	145	146	151	150	158	167	154	148	144	143	148
21	143	143	140	142	145	146	148	151	152	150	142	141	137	135	142	146	150	154	155	153	151	149	145	144	143	146
22	143	143	142	130	118	119	128	135	140	138	142	139	134	133	139	143	146	150	153	153	150	149	147	144	143	140
23	143	144	146	146	146	146	142	144	141	139	140	141	138	138	146	153	153	155	162	169	161	153	150	148	146	148
24 c	146	146	145	143	142	144	149	151	150	149	144	142	135	135	139	142	146	149	151	154	154	150	147	146	145	146
25	144	144	143	143	143	145	143	141	143	140	137	130	129	132	138	149	183	276	276	221	204	160	114	89	12	154
26	11	7	41	77	96	112	125	144	150	152	146	144	146	148	150	161	169	170	165	160	162	159	156	149	124	132
27	124	90	108	117	122	124	131	133	139	135	133	130	133	141	171	176	167	162	182	184	186	147	133	135	126	142
28	125	115	104	84	44	56	65	79	99	109	120	124	136	148	162	170	173	159	152	148	156	148	147	128	60	122
29	59	− 3	− 50	− 57	1	9	21	75	107	131	141	144	149	150	162	169	162	162	166	161	160	158	152	150	143	105
30	142	128	125	129	130	130	139	142	144	138	134	130	128	130	137	145	156	160	171	162	152	149	148	146	146	142
Mean†	134	128	127	129	130	133	137	143	145	144	142	139	136	138	145	151	156	161	163	160	158	153	148	144	135	145

c International quiet day.

† Mean of 27 days; 15th, 16th, and 17th omitted.

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, 1916.**

Date.	Time, G.M.T.† From	Time, G.M.T.† To	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
Apr.	h m	h m	γ	° ′ ″	° ′	d 280+		
4	10 36	11 13	16717	17 27 31	69 40·7	2·6	1	1
						2·5	0	2
						2·5	0	3
						2·5	0	4
						2·5	0	5
						2·5	1	6
						2·5	1	7
						2·5	1	8
						2·5	1	9
						2·5	0	10
11	11 21	11 53	16736	17 32 48	69 39·7	2·5	1	11
						2·5	0	12
						2·5	0	13
						2·5	1	14
						2·6	2	15
						2·6	2	16
						2·6	1	17
						2·6	1	18
						2·6	0	19
18	11 15	11 55	16730	17 37 0	69 40·1	2·6	1	20
						2·6	0	21
						2·6	0	22
						2·6	0	23
						2·6	0	24
						2·6	2	25
						2·6	2	26
						2·7	2	27
						2·7	2	28
						2·7	2	29
26	10 43	11 26	16724	17 33 11	69 40·1	2·7	1	30

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

† The times are those of the Declination and Dip observations only. The Horizontal Force values given refer to the mean time of the Declination observations, being derived by a combined use of the actual observations and curve measurements.

APRIL, 1916.

The average character was 0·8, the main contribution to it being due to the disturbed period from the 25th to the 29th. This storm may be conveniently divided into two parts. The first and more important began soon after $25^d\ 4^h$, and exhibited the usual rapid oscillations of low amplitude, accompanied by a gradual increase in N, W, and V. The rise in V after $25^d\ 16^h\ 45^m$ to its maximum value at $25^d\ 17^h\ 9^m$ was rapid, and the subsequent fall was even more so. Other rapid falls in V took place, beginning at $18^h\ 56^m$, $21^h\ 16^m$, and $22^h\ 47^m$ on the 25th, and the minimum V was reached at $26^d\ 0^h\ 9^m$. Prominent movements occurred on the N trace, centering at $25^d\ 17^h\ 19^m$ (maximum), and $25^d\ 19^h\ 0^m$, the minimum being reached about $26^d\ 0^h$ (light spot off paper for a few minutes). The absolute range during this part of the storm was 426 γ, N (approx.); 256 γ, W; 399 γ, V. In the remainder, forming the second part of the storm, the most prominent movements were three large waves on the horizontal traces, accompanied by a large and comparatively rapid decrease in V. These oscillations are represented in the vector diagrams for the N—E plane by three counter-clockwise rotations with a period of about forty minutes. A period of intensely rapid oscillation, similar to that referred to under 10th March 1916, was shown on the N trace from $27^d\ 13^h\ 10^m$ until $27^d\ 16^h\ 21^m$, beginning and ending with a sharp rise in N. A noticeable group of short-period pulsations began at $7^d\ 6^h$, and lasted almost continuously for 10 hours; another began at $29^d\ 2^h$, and lasted about the same time.

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

Eskdalemuir. (X.) **May, 1916.**

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	997	998	999	998	998	994	982	980	970	952	938	943	951	961	969	984	996	1005	1013	1011	1013	1014	1013	1018	1010	988
2	1010	984	997	1004	996	986	1003	1007	980	962	957	953	960	970	977	1001	998	1017	1030	998	1004	1004	1008	1016	1022	993
3	1022	1007	1003	1006	1004	1010	1011	992	964	943	947	949	943	958	974	971	1005	1013	1013	1012	1010	1008	1005	1008	1015	991
4	1015	993	999	1001	1004	1007	999	989	973	949	949	956	965	983	982	1006	1007	1008	1013	1015	1008	1006	1005	1005	1007	993
5	1007	1007	1005	1006	1004	978	1004	999	984	965	954	954	960	971	999	1011	1023	1017	1015	1013	1008	1012	1025	1021	1013	998
6	1013	1018	1014	1016	1019	1013	987	993	982	968	948	922	934	959	962	982	988	1002	1017	1018	1009	1008	1005	1003	998	991
7	998	998	998	998	998	1000	997	992	983	975	966	959	957	960	966	983	1002	1021	1001	1018	1017	1013	998	1002	986	991
8	986	993	1000	1005	988	982	989	992	987	973	964	966	957	953	965	978	988	1003	1017	1022	1017	1018	1014	1009	1008	991
9	1008	1004	1004	999	987	1017	996	987	999	988	974	967	966	964	978	988	1000	1013	1019	1014	1019	1009	1011	1010	1010	997
10	1010	1009	1013	1012	1011	1011	1009	1006	993	983	974	963	964	971	968	988	996	1008	1020	1035	1021	1018	1014	1017	1015	1001
11	1015	1008	1001	1001	1006	1009	978	1007	999	990	951	942	973	962	958	968	1001	1001	1028	1021	1018	1006	1017	1009	1005	994
12	1005	1003	987	1007	1012	978	979	989	982	973	958	964	968	969	972	977	984	999	1008	1013	1011	1007	1006	1013	1010	990
13 c	1010	1004	996	995	991	983	994	998	989	975	968	970	966	977	989	990	1003	1013	1013	1012	1018	1017	1011	998	1004	995
14 c	1004	997	1002	1001	1002	998	997	993	983	976	973	967	976	976	978	993	1002	1012	1015	1018	1013	1010	1006	1005	1004	996
15 c	1003	1004	997	997	1000	1005	1003	1001	993	982	965	954	952	960	975	991	1001	1012	1022	1021	1018	1012	1011	1002	1002	995
16	1002	1003	1002	1000	1003	1009	1002	993	990	977	955	938	956	965	973	983	1002	1003	1022	1027	1036	1044	1032	1017	1017	998
17	1017	1021	1016	1013	1012	1001	1002	1002	1002	987	967	965	961	966	968	992	997	1007	1012	1020	1017	1016	1012	1007	1003	999
18 c	1003	1003	1002	1003	1003	1002	1002	997	985	981	968	972	963	982	977	981	988	1013	1020	1019	1018	1013	1012	1010	1011	997
19	1011	1006	1003	1005	1008	1002	1002	1003	992	975	972	977	976	977	987	992	992	1006	1022	1029	1031	1031	1033	1011	1007	1002
20	1007	1002	1003	1003	1005	1003	1002	997	989	981	971	962	960	967	981	996	997	1010	1016	1016	1014	1012	1008	1015	1017	997
21	1017	1021	1017	1001	1004	1006	1015	1012	997	976	962	958	967	971	988	1010	1034	1042	1079	1045	1021	994	987	991	977	1004
22	977	965	1002	982	968	967	958	959	966	922	938	927	914	947	972	981	973	1027	1026	1016	1011	1007	997	1011	967	975
23	967	999	1013	958	972	925	956	951	948	951	937	939	943	950	970	1000	1013	1006	1042	1050	1020	1019	1031	1000	983	982
24	983	992	983	976	977	996	986	976	947	938	960	951	965	974	997	1021	1025	1062	1037	1009	1007	1007	1013	996	993	991
25	992	985	988	999	992	986	978	977	964	955	952	949	948	964	982	990	1027	1031	1045	1036	1023	1011	1011	1002	988	991
26	988	976	987	997	994	993	986	973	964	963	956	957	952	958	968	978	1001	1013	1026	1017	1012	1005	1006	1004	996	987
27 c	996	995	998	990	996	990	994	989	980	970	969	962	953	964	985	995	1006	1006	1016	1011	1021	1015	1002	999	996	992
28	995	993	994	995	996	994	986	982	974	964	960	965	971	983	995	1002	1017	1036	1025	1030	1029	1011	1007	1005	999	996
29	999	1001	998	1006	999	1006	1026	986	971	964	955	953	954	962	979	995	1019	1014	1003	1020	1034	1034	1028	1014	1010	997
30	1010	1018	1010	1005	1004	1006	1003	999	991	981	970	965	978	1000	977	1028	985	1015	1016	1023	1023	1023	1022	1010	1009	1003
31	1009	1005	1008	981	960	936	963	976	957	939	952	966	982	975	975	1043	1059	1059	1036	1032	998	1002	989	994	988	991
Mean	1002	1000	1001	999	997	993	993	990	980	967	959	956	959	968	977	993	1004	1016	1022	1021	1017	1013	1011	1007	1002	994

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

Eskdalemuir. (−Y.) **May, 1916.**

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.
											4000 γ (·04 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	1029	1029	1026	1019	1016	1005	995	989	987	993	1014	1040	1061	1065	1058	1046	1034	1034	1035	1035	1035	1019	1035	1039	1028	1027
2	1028	1053	1036	1007	1001	1002	1007	997	1003	1009	1026	1035	1052	1066	1067	1072	1061	1066	1067	1040	1038	1035	1038	1041	1036	1035
3	1036	1036	1033	1035	1048	1009	1007	992	983	1004	1027	1037	1051	1053	1050	1044	1035	1030	1031	1033	1035	1036	1037	1038	1029	1030
4	1029	1017	1023	1019	1016	1014	1007	998	993	1006	1019	1029	1044	1059	1061	1061	1049	1040	1040	1040	1036	1035	1035	1033	1034	1029
5	1034	1030	1028	1029	1032	1030	1024	991	987	988	1003	1019	1042	1056	1067	1066	1065	1056	1046	1045	1043	1040	1018	1026	1034	1032
6	1034	1029	1025	1030	1042	1035	1046	1044	1035	1045	1029	1043	1053	1072	1061	1056	1041	1033	1040	1040	1040	1036	1029	1028	1028	1040
7	1028	1025	1024	1021	1018	1013	1007	1000	998	1003	1011	1019	1029	1036	1041	1045	1050	1056	1037	1044	1021	1018	1028	1010	1028	1024
8	1028	1014	991	993	1003	1035	1028	1016	1014	1011	1013	1026	1036	1045	1046	1045	1043	1038	1040	1042	1036	1034	1029	1024	1012	1026
9	1012	1025	1003	1019	1035	1030	1024	1028	1019	1019	1021	1024	1035	1040	1043	1042	1040	1037	1035	1034	1035	1034	1034	1032	1029	1030
10	1029	1028	1027	1023	1021	1016	1010	1007	1002	1008	1019	1027	1036	1046	1046	1048	1042	1040	1040	1045	1040	1036	1029	1029	1024	1029
11	1024	1039	1037	985	998	1006	1021	1005	1000	1002	1002	1028	1051	1061	1046	1051	1060	1040	1039	1019	1035	1035	1018	1018	1003	1025
12	1003	1007	1036	1021	1019	1009	998	1002	996	999	1020	1039	1048	1053	1052	1050	1046	1039	1037	1037	1035	1034	1032	1034	1030	1027
13 c	1030	1027	1024	1018	1013	1012	1013	1005	1001	1004	1018	1034	1040	1052	1053	1045	1041	1038	1032	1032	1035	1025	1004	1003	1014	1025
14 c	1014	1013	1025	1012	1016	1014	1004	1000	1007	1013	1019	1037	1061	1068	1060	1051	1045	1041	1036	1032	1029	1030	1029	1030	1034	1029
15 c	1033	1031	1025	1027	1014	1005	997	991	988	991	1011	1033	1047	1059	1061	1056	1047	1039	1033	1032	1034	1034	1032	1027	1039	1027
16	1039	1038	1028	1021	1012	1002	994	989	988	1002	1019	1033	1044	1050	1050	1046	1052	1043	1044	1039	1042	1029	1034	1018	1026	1027
17	1026	1032	1028	1031	1034	1017	1013	994	1002	1006	1023	1038	1047	1056	1048	1046	1042	1041	1034	1033	1034	1035	1035	1033	1028	1030
18 c	1028	1028	1028	1027	1024	1013	1008	1008	1013	1020	1029	1045	1056	1066	1063	1055	1050	1049	1044	1039	1035	1034	1033	1030	1029	1034
19	1029	1033	1039	1033	1019	1016	1022	1016	1016	1023	1030	1043	1048	1048	1050	1055	1051	1044	1044	1042	1039	1018	1024	1025	1019	1033
20	1019	1024	1025	1023	1019	1016	1012	1011	1006	1003	1012	1025	1034	1044	1049	1048	1042	1044	1041	1039	1037	1033	1033	1037	1034	1028
21	1034	1037	1023	1016	1034	1034	1024	1010	1002	1002	1013	1028	1043	1052	1049	1070	1110	1096	1120	1033	1031	1017	1017	1023	1036	1038
22	1036	991	916	990	1009	1008	1012	1032	995	997	1011	1016	1036	1040	1053	1056	1053	1066	1036	1039	1044	1021	1008	1007	984	1019
23	984	1011	986	999	1039	1029	1034	1005	996	997	1011	1029	1048	1058	1060	1058	1060	1043	1039	1039	1040	1028	1035	1009	1010	1027
24	1009	1022	1022	1023	1035	1017	985	982	980	997	1017	1025	1042	1051	1060	1050	1064	1060	1053	1042	1042	1033	1027	1028	1027	1028
25	1027	1045	1027	1013	1007	1004	1000	1000	1000	1013	1027	1044	1058	1067	1070	1062	1066	1059	1049	1034	1036	1025	1027	1011	1023	1032
26	1023	1040	1034	1012	1007	997	980	987	991	1000	1018	1042	1056	1059	1055	1047	1049	1038	1022	1028	1033	1030	1027	1028	1026	1025
27 c	1026	1024	1022	1010	1009	1000	993	984	987	996	1016	1036	1055	1055	1049	1041	1037	1034	1033	1030	1023	1020	1028	1034	1020	1022
28	1020	1019	1018	1016	1015	1002	994	992	996	1004	1017	1039	1060	1063	1061	1053	1054	1055	1044	1028	1037	1036	1032	1027	1019	1028
29	1019	1023	1032	1016	998	992	985	984	986	1003	1015	1031	1040	1048	1058	1057	1060	1054	1042	1044	1048	1032	1029	1027	1023	1026
30	1023	1023	1016	1012	1010	1002	1002	1005	998	1010	1025	1044	1055	1065	1076	1054	1051	1051	1042	1047	1047	1040	1032	1032	1025	1032
31	1025	1039	1049	1018	1030	1001	1008	997	985	1007	1033	1034	1054	1055	1059	1063	1059	1065	1056	1043	1039	1041	1026	1023	1021	1034
Mean	1024	1027	1021	1017	1019	1012	1008	1002	999	1006	1018	1033	1047	1055	1056	1053	1052	1047	1043	1037	1037	1031	1028	1026	1024	1029

c International quiet day.

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

Eskdalemuir. (Z.) **May, 1916.**

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	145	151	151	152	151	152	153	152	151	142	135	137	137	144	149	155	157	154	151	153	154	157	153	144	146	149
2	144	131	112	122	138	131	128	132	131	126	126	129	127	127	131	139	144	145	147	154	154	150	148	144	140	136
3	140	137	139	142	135	128	133	139	141	141	138	134	136	140	148	156	156	155	153	150	147	148	147	145	136	143
4	135	135	142	147	148	148	148	147	147	143	135	132	132	133	138	141	146	149	148	148	148	147	146	145	144	143
5	143	144	144	144	142	140	134	144	145	142	137	134	131	130	134	145	158	170	170	158	152	148	146	138	137	145
6	136	138	141	141	136	132	129	116	120	118	125	129	136	143	147	150	155	156	154	151	148	146	145	145	145	139
7	144	144	144	144	146	146	146	144	140	136	132	131	131	131	132	131	140	155	171	165	164	154	147	140	123	144
8	121	110	116	116	122	124	118	126	130	126	126	124	124	131	138	141	146	151	154	151	151	148	144	140	131	133
9	129	116	104	108	104	102	113	119	119	121	121	119	115	121	127	133	137	137	138	139	138	137	136	136	135	124
10	134	134	133	134	135	136	137	133	131	126	122	118	118	118	119	125	135	139	139	138	139	137	137	135	132	131
11	131	125	102	94	111	119	111	110	112	111	111	117	119	129	142	145	146	148	146	150	143	141	138	130	122	126
12	120	110	90	95	106	103	108	115	120	123	125	121	116	118	121	128	135	139	139	136	134	133	132	127	123	121
13 c	122	122	123	124	125	127	126	128	126	127	126	121	116	116	120	126	131	135	135	135	133	134	134	127	120	127
14 c	118	115	106	111	120	124	125	124	123	120	112	104	104	112	120	123	124	127	129	131	131	129	127	126	125	120
15 c	124	122	120	121	123	126	127	126	127	124	117	113	113	115	118	121	127	132	135	136	134	132	129	128	124	125
16	122	117	120	122	123	125	125	125	122	113	104	103	104	106	113	119	122	129	130	133	130	130	121	121	123	120
17	121	119	119	120	120	122	120	121	117	112	107	106	107	112	117	119	125	131	134	133	129	126	123	122	121	120
18 c	119	118	118	119	119	122	122	121	121	118	114	105	105	109	115	122	126	128	128	128	125	122	120	119	117	119
19	115	114	113	112	113	115	112	110	107	100	95	93	92	99	107	113	119	121	122	124	124	120	108	104	109	110
20	107	109	109	111	113	114	113	112	107	102	98	90	87	89	92	99	105	110	112	113	112	111	111	109	107	106
21	104	98	95	100	101	98	98	100	103	103	98	98	98	103	126	146	156	159	179	185	159	148	131	127	64	121
22	62	4	7	20	54	64	88	85	91	97	100	96	106	117	110	113	130	145	168	153	133	133	124	104	84	96
23	82	61	62	63	54	56	66	83	98	106	111	115	113	113	115	122	128	135	135	131	125	125	103	85	85	100
24	82	90	95	88	70	71	90	95	101	103	98	95	99	104	112	131	136	143	136	131	123	119	114	111	109	106
25	108	99	84	94	96	104	106	107	106	104	100	92	90	92	96	106	115	124	131	127	120	120	108	105	104	106
26	102	97	90	99	108	113	117	114	109	100	94	90	88	88	93	98	107	117	127	125	121	117	114	110	108	106
27 c	106	105	101	104	106	107	107	110	107	100	96	90	90	98	100	103	105	111	114	114	114	115	112	103	103	105
28	102	106	108	109	108	110	110	106	107	105	99	95	96	97	97	101	106	110	116	122	118	114	113	111	110	107
29	108	107	103	96	101	105	108	109	107	103	97	95	96	99	100	101	108	116	121	116	114	115	109	107	108	106
30	106	105	106	107	109	109	108	106	102	98	91	85	82	83	93	122	134	131	127	120	116	114	112	112	110	108
31	108	105	75	73	55	45	64	73	81	85	90	89	92	104	114	130	152	162	150	144	125	115	106	104	106	102
Mean	117	113	109	111	113	113	116	117	118	115	112	110	110	114	119	126	133	138	140	139	134	132	127	123	118	121

c International quiet day.

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, 1916.**

Date.	Time, G.M.T.† From	Time, G.M.T.† To	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
May	h m	h m	γ	° ′ ″	° ′	d 280+		
2	10 40	11 22	16740	17 32 10	69 39·8	2·8	1	1
						2·8	1	2
						2·8	1	3
						2·8	0	4
						2·8	1	5
						2·8	1	6
						2·8	1	7
						2·9	1	8
10	11 26	12 1	16743	17 30 9	69 38·7	2·9	0	9
						2·9	1	10
						2·9	1	11
						3·0	1	12
						3·0	0	13
						3·0	0	14
						3·0	0	15
16	10 44	11 19	16712	17 31 56	69 40·2	3·0	1	16
						3·1	1	17
						3·1	0	18
						3·1	1	19
						3·1	0	20
						3·2	2	21
						3·2	2	22
						3·3	2	23
						3·3	1	24
25	10 18	10 55	16731	17 32 44	69 39·3	3·3	1	25
						3·4	0	26
						3·4	0	27
						3·5	0	28
						3·5	1	29
						3·6	2	30
31	10 42	11 36	16737			3·6	2	31

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

† The times are those of the Declination and Dip observations only. The Horizontal Force values given refer to the mean time of the Declination observations, being derived by a combined use of the actual observations and curve measurements.

MAY, 1916.

The month was on the whole moderately disturbed. Its first noticeable incident was a suddenly occurring, fairly large, disturbance, beginning at $5^d\ 14^h\ 1^m$, and consisting of four oscillations on the horizontal traces, accompanied by a gradual rise in V. The rotations in the horizontal vector diagram were counter-clockwise. Whether the beginning of this disturbance constituted a "sudden commencement" is doubtful, but the sudden drop in V at its start suggests that it was of that character. The range of the last and largest of these oscillations was 87 γ, N, 59 γ, W. A somewhat prolonged period of moderate disturbance began with a "sudden commencement" at $10^d\ 1^h\ 19^m$, but the subsequent motions presented no unusual feature. Two bays occurred on the 12th on the W trace, centering at $22^h\ 47^m$ and $23^h\ 35^m$, and having numerous pulsations superposed. At $16^d\ 22^h\ 49^m$ a curious inverted tooth is shown on N and W. At $20^d\ 23^h\ 1^m$ a "sudden commencement" of a rather slow type appeared, followed by a moderate storm. The full development of activity was only reached about 15 hours after the beginning. The movements on the V trace were of the characteristic type:—a gradual increase to a sharp peak; a gradual decrease to a point where there is a sudden drop; a less rapid decrease to the minimum, and finally a slow recovery. The passage of the minimum of V was accompanied on the horizontal traces by three waves which resembled very closely those noted in connection with the storm beginning 1916 March $25^d\ 4^h$. The only other disturbed period during the month began with a "sudden commencement" at $28^d\ 16^h\ 9^m$. The largest movement during the subsequent storm centered at $30^d\ 14^h$.

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

Eskdalemuir. (X.) **June, 1916.**

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	988	986	987	984	978	964	969	960	961	961	955	940	938	948	977	989	1009	1006	1005	1007	1007	1006	999	996	995	980
2 c	995	992	993	992	994	1001	997	990	982	970	953	949	954	969	979	985	999	1009	1007	1011	1011	1007	1003	999	999	989
3 c	999	997	998	998	995	990	990	988	983	970	957	948	945	947	960	981	992	1003	1004	1005	1007	1008	1004	1002	1004	986
4	1004	1002	1001	1000	1001	1004	1003	996	985	976	966	966	955	963	974	989	986	997	1008	1005	1014	1006	1009	1004	1000	992
5	1000	1000	999	1000	1003	999	1004	1001	988	967	954	963	966	967	974	996	1000	1008	1015	1011	1012	1009	1008	1009	1005	994
6	1005	1004	995	1001	1003	1006	999	1002	994	983	976	977	970	965	977	1000	1004	1011	1020	1026	1021	1025	1010	1007	985	999
7	984	1003	994	997	998	986	1003	1000	994	983	963	959	963	956	984	991	989	993	1002	1021	1019	1020	1012	1004	984	992
8	984	1000	998	999	996	980	1009	992	979	965	944	943	960	966	992	1044	1027	1034	1029	1024	998	998	1000	988	991	994
9	991	987	979	990	989	977	974	975	959	948	952	949	949	950	965	983	997	1007	1014	1018	1010	1003	995	992	991	981
10 c	991	990	990	989	997	996	993	984	980	973	965	963	956	964	978	989	992	1006	1008	1011	1005	1002	1005	998	996	989
11	996	997	996	997	1000	1001	1000	986	977	967	959	957	962	970	980	990	1000	1009	1007	1005	1018	1025	1020	1009	1013	993
12	1012	1011	1016	1009	1011	1004	995	993	997	989	968	967	977	978	990	991	1021	1022	995	1014	1010	1010	1008	1013	1019	1000
13	1019	1014	1000	1004	999	984	995	1001	986	971	955	943	964	955	963	985	1012	1020	1018	1012	1008	1003	1009	1010	993	992
14	993	993	993	998	1002	1005	990	972	972	976	955	953	963	971	982	989	993	1003	1008	1017	1009	1010	1007	1002	1001	990
15 c	1001	1002	1001	999	997	986	989	993	983	976	967	951	951	965	964	983	1003	1008	1008	1013	1016	1013	1007	1004	1006	991
16 c	1006	1009	1002	999	998	1003	1003	993	982	971	963	964	976	982	983	988	993	999	1005	1008	1009	1009	1007	1006	1004	994
17	1004	1001	1003	999	1001	1005	1002	984	973	977	976	980	964	975	965	966	992	1012	1017	1018	1013	1008	1006	1004	1007	994
18	1007	1006	1008	1011	1007	1010	1009	1005	990	978	975	973	987	958	987	994	1002	1012	1013	1019	1017	1020	1028	1000	992	1000
19	992	997	991	963	983	991	985	984	984	977	963	961	951	958	962	1002	1012	1034	1039	1031	1011	998	1005	994	1009	991
20	1009	988	989	993	989	970	973	979	971	957	939	933	942	963	968	1002	1032	1014	1025	1021	1009	998	997	991	991	985
21	991	985	988	990	982	986	976	970	970	970	958	949	965	974	979	998	1022	1047	1039	1033	1017	1007	979	981	982	990
22	982	979	983	988	992	994	992	989	982	972	959	956	958	982	998	1012	1012	1041	1063	1056	1027	1001	977	973	961	994
23	961	963	966	957	958	1003	987	963	944	946	938	927	928	934	959	992	1003	997	992	1004	1007	1007	991	988	984	972
24	985	984	987	989	990	993	987	973	961	954	945	939	939	956	960	974	978	992	1006	1006	1004	1003	1002	1002	1013	980
25	1013	1000	1005	1013	1016	1018	1009	984	971	970	958	946	949	960	974	985	1004	1042	1054	1032	1029	1019	1013	1013	1009	999
26	1009	1003	1003	1008	1007	1013	1003	994	979	961	940	940	946	964	971	980	1013	1024	1017	1043	1028	1005	993	994	994	993
27	994	990	997	999	1004	1003	993	983	975	977	969	960	960	974	1002	1008	1014	1023	1003	1002	1001	1002	1004	1001	1000	993
28	1000	1000	994	984	998	1006	993	975	979	973	962	952	959	979	988	993	999	1004	1000	1017	1023	1006	1002	999	995	991
29	996	994	996	995	1004	1003	996	987	975	964	953	945	955	966	970	980	994	1009	1018	1020	1024	1045	1041	1022	1005	994
30	1005	1009	1014	1011	1010	1009	1000	991	965	955	955	951	955	964	979	1001	991	1006	1024	1030	1015	1006	984	999	1019	993
Mean	997	996	996	995	997	996	994	986	977	969	958	953	957	964	976	992	1003	1013	1015	1018	1013	1009	1004	1000	998	991

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

Eskdalemuir. (−Y.) **June, 1916.**

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.
											4000 γ (·04 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	γ
1	1021	1024	1025	1017	1024	1023	1024	1001	996	994	1003	1023	1039	1049	1063	1059	1050	1034	1026	1022	1024	1026	1026	1026	1026	1026
2 c	1026	1026	1027	1024	1015	1000	1000	996	996	998	1010	1022	1042	1063	1067	1055	1044	1036	1026	1027	1026	1027	1027	1027	1029	1025
3 c	1029	1028	1026	1027	1023	1016	1003	1002	996	992	1007	1027	1047	1056	1059	1058	1049	1041	1029	1023	1023	1025	1027	1028	1028	1027
4	1027	1026	1026	1023	1017	1005	993	994	994	995	1010	1035	1047	1050	1054	1056	1054	1035	1031	1027	1029	1030	1031	1021	1022	1025
5	1022	1024	1022	1021	1018	1021	1010	994	986	993	1006	1017	1038	1043	1047	1049	1044	1044	1041	1037	1032	1031	1029	1018	1020	1024
6	1020	1018	1023	1027	1018	1012	1016	1008	1003	999	1007	1024	1037	1041	1056	1058	1057	1053	1048	1046	1027	1029	1024	1026	999	1028
7	999	990	998	1001	1000	1008	1015	1001	991	989	1017	1032	1049	1059	1070	1070	1054	1047	1040	1045	1035	1024	1026	1043	1027	1026
8	1027	1005	1011	1016	1010	1027	1021	989	979	989	997	1026	1050	1063	1078	1072	1043	1069	1062	1043	1037	1034	1016	1015	1011	1028
9	1011	1011	1029	1018	999	990	994	984	985	988	1006	1016	1026	1039	1040	1046	1048	1041	1033	1027	1027	1023	1021	1018	1019	1018
10 c	1019	1018	1021	1021	1013	1005	995	989	991	994	1006	1021	1031	1044	1054	1055	1050	1049	1042	1040	1031	1026	1025	1022	1021	1023
11	1021	1020	1018	1021	1018	1010	1001	988	989	993	1008	1027	1040	1049	1058	1057	1057	1053	1043	1040	1039	1041	1040	1018	1022	1027
12	1022	1029	1026	1019	1020	1011	1014	1004	993	995	1021	1042	1055	1066	1067	1058	1061	1052	1032	1036	1027	1033	1033	1032	1041	1032
13	1041	1018	1010	1022	1033	1048	1015	1008	994	990	999	1016	1031	1040	1052	1051	1042	1039	1032	1027	1025	1027	1023	1011	1016	1024
14	1016	1017	1021	1027	1006	1000	985	982	989	998	1006	1017	1035	1047	1050	1053	1048	1044	1029	1032	1030	1031	1033	1031	1024	1022
15 c	1024	1022	1016	1015	1014	1015	1016	1005	996	990	999	1011	1026	1044	1040	1047	1044	1039	1034	1032	1031	1027	1026	1022	1030	1022
16 c	1030	1026	1022	1020	1017	1007	1001	1000	993	996	1010	1031	1045	1054	1056	1053	1047	1040	1038	1036	1032	1032	1030	1027	1025	1027
17	1025	1024	1025	1020	1012	1006	998	997	1000	1001	1006	1017	1037	1059	1061	1063	1054	1054	1048	1042	1035	1029	1027	1025	1026	1028
18	1026	1027	1023	1019	1025	1022	1008	1000	1000	1005	1015	1027	1043	1053	1069	1074	1080	1063	1054	1044	1040	1031	1010	1003	1014	1031
19	1014	1014	1016	1037	1022	1001	989	989	989	990	998	1011	1027	1048	1054	1073	1076	1069	1056	1054	1028	1032	1005	1009	978	1024
20	977	982	978	989	988	1004	1003	1018	1002	998	1005	1013	1024	1042	1051	1060	1070	1056	1053	1052	1039	1032	1025	1015	1011	1021
21	1011	1015	1014	1011	1011	1008	990	998	1000	1003	1008	1016	1030	1042	1046	1057	1057	1063	1057	1052	1038	1020	1025	1026	1022	1025
22	1022	1017	1015	1008	1001	998	993	993	993	993	999	1013	1036	1063	1078	1082	1073	1085	1078	1047	1028	1020	993	963	955	1023
23	955	924	983	1003	1019	1000	987	979	986	988	999	1010	1029	1042	1053	1052	1056	1051	1040	1036	1031	1026	1020	1025	1023	1014
24	1023	1011	999	998	993	990	982	984	989	994	1003	1012	1026	1048	1052	1052	1047	1046	1044	1034	1031	1030	1028	1023	1012	1018
25	1012	1009	1015	1014	1004	993	983	979	994	987	992	1004	1022	1035	1048	1052	1046	1060	1049	1037	1036	1025	1021	1037	1027	1019
26	1027	1017	1016	1016	1020	1003	984	981	981	991	1009	1025	1046	1062	1066	1064	1060	1052	1034	1017	1018	1025	1022	1025	1022	1023
27	1022	1016	1015	1014	1009	1004	990	984	983	985	998	1012	1035	1052	1064	1057	1058	1047	1030	1031	1031	1032	1029	1031	1023	1022
28	1023	1021	1035	1038	1023	1009	993	993	993	993	998	1008	1031	1047	1050	1047	1046	1041	1029	1029	1024	1030	1027	1028	1028	1023
29	1028	1037	1009	1004	1000	998	990	990	988	993	999	1013	1029	1037	1041	1041	1041	1037	1036	1033	1034	1026	1041	1014	1005	1019
30	1005	1009	1014	1009	1007	1007	1000	995	995	996	1010	1024	1038	1050	1054	1055	1047	1047	1048	1041	1025	1016	1020	1011	993	1022
Mean	1018	1014	1016	1017	1013	1008	1000	994	992	994	1005	1020	1036	1050	1057	1058	1053	1050	1041	1036	1030	1028	1024	1021	1017	1024

c International quiet day.

XXIII.—READINGS OF THE VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE FOR EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (Z.) **June, 1916.**

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	105	113	115	115	113	109	109	111	112	110	109	104	101	104	108	115	120	122	124	122	119	117	116	115	114	113
2 c	113	114	112	109	109	111	112	111	109	107	102	100	96	97	101	104	112	115	117	116	116	114	113	113	112	109
3 c	110	110	110	111	112	111	110	110	112	110	102	100	98	100	99	101	107	113	116	115	112	110	110	109	108	108
4	107	107	108	109	111	114	113	111	111	106	98	93	92	90	92	97	106	112	112	113	110	109	108	108	106	106
5	105	104	105	106	108	105	104	104	105	103	100	93	86	86	87	91	103	106	109	108	106	105	105	106	104	102
6	103	102	100	98	97	96	95	97	99	99	97	90	87	92	98	101	103	107	110	110	112	110	109	103	93	100
7	92	83	84	91	97	95	85	89	88	89	86	85	82	88	92	99	111	113	113	111	114	112	107	96	63	95
8	62	76	88	95	97	81	70	81	90	90	83	81	81	92	102	128	139	130	133	134	122	116	105	102	99	100
9	98	97	93	92	96	104	105	105	108	108	105	100	97	100	103	104	109	112	118	121	117	114	111	108	107	105
10 c	106	105	104	104	104	107	107	108	107	105	100	96	94	94	94	100	105	107	109	108	109	108	105	103	104	104
11	103	102	102	101	102	103	104	102	98	90	87	83	77	77	81	87	94	97	103	104	102	101	101	103	102	96
12	102	99	94	97	98	98	97	98	97	97	93	94	90	89	90	93	101	117	127	122	118	112	108	103	84	101
13	83	84	93	96	97	89	84	89	92	93	97	95	94	98	101	104	109	113	111	108	108	106	101	97	94	98
14	94	91	89	87	91	97	100	96	90	87	84	84	86	90	93	96	102	105	107	105	105	104	101	96	96	95
15 c	95	97	99	99	98	96	91	92	91	90	88	93	93	89	93	101	107	110	106	104	103	103	102	102	97	98
16 c	96	89	91	94	98	98	98	101	99	97	99	99	95	96	99	98	99	104	104	104	102	101	101	99	99	98
17	98	99	98	98	99	98	100	100	97	93	85	79	81	85	87	90	98	98	100	99	99	99	98	98	97	95
18	97	96	97	98	98	96	97	95	94	85	73	70	72	85	90	90	94	104	107	108	104	99	80	78	81	92
19	81	83	88	74	57	72	84	88	88	90	88	85	82	89	90	90	95	109	120	123	123	105	90	76	69	90
20	68	58	61	53	59	64	65	68	73	81	88	83	83	86	94	103	114	120	118	112	111	102	100	88	90	86
21	90	94	96	98	97	97	98	98	95	96	93	90	86	89	94	97	103	114	123	126	119	110	104	102	100	101
22	99	99	99	101	102	103	105	104	103	101	96	87	81	86	92	101	116	117	126	132	132	125	103	54	57	102
23	57	43	38	33	13	37	75	89	94	92	90	88	80	84	92	104	113	112	110	110	109	102	101	98	91	83
24	91	83	83	89	95	101	102	102	101	98	88	79	78	84	91	94	93	96	103	105	104	101	99	98	95	94
25	95	95	95	94	95	97	98	100	100	93	84	81	83	85	89	92	95	96	110	115	113	111	100	93	83	96
26	83	87	91	91	93	93	97	97	96	93	89	84	84	86	92	102	105	105	110	116	118	112	103	93	96	97
27	96	99	100	101	103	102	103	103	99	90	87	84	81	84	87	97	101	105	113	113	108	104	101	100	98	98
28	97	97	96	90	86	90	96	97	95	95	92	89	87	87	89	94	102	111	120	117	112	107	103	100	98	98
29	98	86	88	92	98	101	99	97	96	99	95	88	84	87	92	94	98	100	101	99	98	96	92	83	87	94
30	86	93	94	96	98	99	101	100	101	101	101	95	92	96	103	111	119	121	127	127	124	117	99	96	72	104
Mean	94	93	94	94	94	95	97	98	98	96	93	89	87	90	94	99	106	110	114	114	112	108	103	97	93	98

c International quiet day.

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, 1916.**

Date.	Time, G.M.T.† From	Time, G.M.T.† To	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
June	h m	h m	γ	° ′ ″	° ′	d 2800+		
6	10 29	11 8	16746	17 27 43	69 37·6	3·6	1	1
						3·7	0	2
						3·8	0	3
						3·8	0	4
						3·8	0	5
						3·8	1	6
						3·8	1	7
						3·8	1	8
						3·9	0	9
						4·0	0	10
14	10 27	11 10	16727	17 26 59	69 39·2	4·0	0	11
						4·0	1	12
						4·0	1	13
						4·0	0	14
						4·0	0	15
						4·0	0	16
						4·1	1	17
						4·1	1	18
						4·2	1	19
						4·2	1	20
21	10 47	11 24	16717	17 27 52	69 39·6	4·2	1	21
						4·2	2	22
						4·2	1	23
						4·3	0	24
						4·3	1	25
						4·4	1	26
						4·4	1	27
						4·4	1	28
						4·5	1	29
27	10 52	11 54	16734	17 29 37	69 38·8	4·5	1	30

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

† The times are those of the Declination and Dip observations only. The Horizontal Force values given refer to the mean time of the Declination observations, being derived by a combined use of the actual observations and curve measurements.

JUNE, 1916.

The month was one of frequent, though moderate, disturbance, there being only five days which were really undisturbed and none on which a large disturbance occurred. Two disturbances may be referred to. The first began with a "sudden commencement" at $17^d\ 16^h\ 24^m$, but no large movements developed until 48 hours later, and even then they were comparatively small. A noticeable "bay" occurred on the N trace, centering about 0^h on the 20th. The horizontal traces for $19^d\ 12^h$ to $20^d\ 0^h$ show a close resemblance, more especially on N, to those of 24 hours later. Moderate activity continued almost without intermission until $29^d\ 20^h\ 25^m$, when a "sudden commencement," preliminary to the second disturbance, was recorded, the immediate change being +73 γ, N, +43 γ, W, −7 γ, V. This was followed on W by two fairly large oscillations of long period, after which activity decreased until, at $30^d\ 23^h\ 21^m$, another "sudden commencement," very similar in character, took place, the change being +86 γ, N, +50 γ, W, −9 γ, V. Pulsations were frequent during the month; one noticeable group, of period below 1^m, beginning about $29^d\ 6^h$ and lasting for six hours.

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

Eskdalemuir. (X.) **July, 1916.**

15,000 γ (·15 C.G.S. unit) +

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.
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	1019	933	1010	1005	1002	994	969	936	895	911	861	886	923	948	950	960	960	971	995	1016	1011	1005	985	984	989	963
2	989	994	990	994	998	995	985	974	975	966	957	953	950	968	969	974	990	1010	1011	1014	1001	994	990	991	984	985
3	984	988	975	992	995	984	978	977	970	956	929	927	946	963	976	980	984	1010	1015	1019	1009	1000	995	985	987	981
4	987	990	988	991	999	998	993	983	968	944	956	964	951	960	979	984	1010	1010	1039	1029	1030	1015	996	989	983	990
5	984	987	991	994	961	980	990	984	972	961	956	956	956	951	975	1006	1020	1015	1029	1025	1020	1009	983	984	986	987
6	986	986	990	981	984	1001	988	965	954	956	936	936	950	963	982	981	1000	1022	1018	1015	1010	1005	1016	977	982	983
7 c	982	981	983	986	990	991	986	976	966	956	944	945	948	956	967	984	995	1011	1011	1015	1020	988	984	980	984	981
8	984	984	985	986	985	988	998	991	983	974	961	951	956	964	971	977	994	1045	1065	1051	1003	933	961	994	995	987
9	995	996	985	986	965	967	962	956	969	970	938	951	949	946	987	991	1005	1011	1008	994	989	986	985	977	969	977
10	970	977	984	981	970	972	971	981	976	932	936	937	962	966	957	967	969	987	1012	1012	1008	1007	1002	992	984	976
11	984	981	960	978	965	961	977	978	953	955	953	948	939	947	967	979	991	1002	1017	1008	997	997	996	995	988	976
12	988	982	982	978	985	990	987	976	962	932	942	939	947	963	971	981	996	997	1007	1007	997	993	996	1000	1003	979
13	1004	986	986	988	989	986	972	957	961	966	962	950	963	971	982	988	993	1004	1021	1015	1017	1001	998	995	998	986
14	998	990	988	993	979	993	985	974	962	953	947	949	961	959	973	994	1000	999	998	1003	1001	998	997	994	992	983
15 c	993	989	992	993	994	992	986	980	971	956	948	948	955	967	979	984	995	999	1006	1000	1004	1004	998	999	999	985
16	999	1000	999	1001	999	1008	1003	994	984	975	966	963	953	963	978	988	978	994	1013	1020	1022	1009	1003	1003	1010	993
17	1010	1015	1003	999	995	996	994	997	990	969	965	958	953	979	987	985	1020	1003	1013	1024	1028	1023	994	989	995	995
18	996	990	982	1000	973	970	970	974	937	941	941	948	953	969	979	979	991	999	1030	1010	1027	1024	1032	997	1000	984
19	1001	1002	992	1001	1004	1001	999	992	974	971	963	956	957	944	962	975	991	992	1020	1020	1016	1001	1000	1000	1016	989
20	1016	1003	986	981	981	1004	994	981	968	965	958	952	954	951	951	968	980	994	1002	1011	1015	1012	998	992	991	984
21	992	990	991	992	996	998	990	980	979	980	981	978	975	966	953	976	995	1002	1022	1020	1017	1008	1002	997	994	991
22	994	994	995	996	997	997	991	982	981	974	966	963	962	966	977	979	988	993	1013	1019	1028	1026	1023	1008	1010	993
23	1011	1012	1019	1016	1018	1024	1032	1029	1013	986	969	967	969	977	973	988	968	1019	1020	1028	1022	1018	1004	1006	1002	1003
24	1002	1001	993	988	993	986	991	985	983	977	954	958	958	965	957	962	984	993	1010	1015	1012	1007	1004	1007	999	987
25	1000	988	994	999	997	996	997	993	980	973	965	966	972	971	974	977	975	1003	1010	1015	1008	1004	999	1000	998	990
26	998	995	999	993	979	995	1004	998	979	972	970	967	957	974	989	995	989	1000	1006	1013	1009	1006	1002	999	996	991
27 c	997	995	990	992	995	1001	1001	991	980	965	956	966	971	983	993	994	995	1009	1007	1010	1008	1004	1000	997	996	992
28 c	996	998	1000	1004	1001	1004	1000	985	969	970	970	969	965	971	987	991	999	1008	1016	1014	1009	1001	1001	1001	997	993
29 c	998	993	996	1000	1001	1001	995	982	966	959	957	965	967	971	974	976	982	989	1000	1010	1005	1006	1003	1007	1006	988
30	1006	1002	1001	1002	1001	1003	1001	995	985	972	966	968	966	972	981	994	1001	989	1008	1011	1015	1020	1005	1008	1003	995
31	1004	1002	1006	1005	998	998	993	997	993	978	963	955	954	964	972	986	993	1003	1012	1016	1017	1002	997	995	996	992
Mean	996	991	991	993	990	993	990	982	971	962	953	953	956	964	973	982	991	1003	1015	1015	1012	1003	998	995	995	986

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

Eskdalemuir. (−Y.) **July, 1916.**

4000 γ (·04 C.G.S. unit) +

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.
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	993	1015	979	989	999	1000	986	981	1005	984	975	1030	1035	1035	1042	1048	1047	1040	1030	1025	1024	1016	1023	1025	1026	1014
2	1026	1020	1015	1014	1010	1001	991	991	993	993	1002	1012	1025	1042	1041	1039	1041	1044	1041	1032	1023	1016	1018	1018	1009	1018
3	1009	1015	1014	1006	994	989	989	990	990	990	994	1010	1031	1038	1050	1051	1044	1045	1037	1032	1015	1025	1025	1006	1014	1016
4	1014	1004	1014	1000	993	987	977	971	966	967	993	1010	1026	1048	1059	1058	1069	1054	1052	1042	1005	1001	999	997	1010	1013
5	1010	1016	1011	1009	1009	1019	1011	993	989	993	1000	1011	1026	1031	1048	1056	1052	1039	1058	1041	1027	1027	1023	1023	1019	1022
6	1019	1015	1014	1012	1016	988	982	976	983	979	987	1009	1025	1034	1041	1047	1052	1031	1037	1041	1037	1022	987	1004	1010	1014
7 c	1009	1013	1014	1013	1007	1000	989	981	976	982	992	1008	1021	1031	1036	1036	1036	1035	1039	1030	1030	1022	1013	1020	1014	1014
8	1014	1008	1008	1004	1008	1012	1007	993	983	978	982	999	1020	1031	1039	1041	1046	1069	1079	1058	973	983	967	1008	1009	1013
9	1009	1003	988	992	1026	1041	1041	1024	992	986	986	999	1018	1029	1045	1041	1030	1049	1040	1031	1023	1019	1003	1004	1016	1018
10	1016	1014	1016	1015	1015	996	995	989	986	992	1004	1006	1017	1029	1030	1034	1030	1026	1026	1037	1030	1000	1007	1018	1018	1014
11	1018	1036	1040	1031	1008	1008	1008	986	975	982	996	1002	1014	1030	1038	1040	1033	1024	1026	1025	1024	1024	1026	1028	997	1017
12	997	999	1008	1010	1008	998	993	989	986	993	1002	1013	1019	1030	1038	1037	1036	1030	1024	1010	1021	1018	1021	1009	1004	1012
13	1004	1000	1008	1008	1009	1007	997	987	986	994	1002	1001	1013	1026	1035	1032	1030	1026	1028	1025	1022	1003	1014	1020	1015	1012
14	1015	1007	1014	1012	1008	1006	997	986	982	989	999	1013	1033	1043	1046	1046	1040	1030	1021	1020	1015	1018	1020	1018	1018	1016
15 c	1018	1016	1014	1014	1013	1002	998	996	993	988	1002	1013	1030	1046	1049	1040	1029	1019	1017	1014	1014	1014	1018	1022	1023	1016
16	1023	1024	1028	1020	1008	990	981	976	976	977	990	1015	1039	1056	1064	1062	1045	1036	1033	1020	1010	1014	1020	1020	1023	1018
17	1023	996	985	992	993	992	988	981	978	978	995	1013	1026	1044	1055	1058	1030	1031	1032	1038	1031	1007	988	1000	1014	1010
18	1014	1041	1018	1018	1011	997	992	992	985	989	997	1002	1016	1033	1049	1048	1047	1043	1046	1024	1031	1018	987	1007	1014	1017
19	1014	1007	1008	1008	991	987	984	982	981	979	983	1000	1026	1036	1054	1056	1053	1037	1039	1017	1015	1018	1017	1019	1010	1013
20	1010	988	974	998	1004	1005	997	992	982	973	978	992	1021	1029	1030	1038	1036	1032	1029	1028	1021	1015	1014	1017	1015	1009
21	1015	1011	1009	1007	1003	997	989	986	984	988	994	1008	1026	1035	1031	1033	1031	1028	1032	1025	1023	1018	1018	1015	1013	1013
22	1013	1010	1009	1008	1008	1002	996	990	984	983	996	1014	1029	1042	1053	1047	1039	1033	1035	1034	1033	1026	1029	1020	1009	1018
23	1009	1022	1025	1021	1026	1033	1001	1008	988	988	1010	1031	1041	1045	1041	1043	1023	1037	1033	1031	1026	1024	1000	1000	1009	1021
24	1009	1012	1023	1031	1024	1010	1002	1007	1007	993	1004	1024	1032	1039	1036	1029	1031	1026	1029	1024	1024	1020	1018	1019	1028	1020
25	1028	1000	1004	1008	997	995	988	983	981	986	998	1018	1032	1039	1040	1046	1035	1026	1023	1018	1021	1020	1019	1024	1037	1014
26	1037	1028	999	1010	1021	1020	999	987	988	992	1005	1026	1036	1047	1048	1045	1032	1024	1016	1015	1017	1019	1020	1015	1015	1018
27 c	1015	1015	1024	1021	1006	994	988	985	982	987	1011	1026	1039	1049	1056	1050	1035	1029	1019	1014	1014	1014	1018	1015	1013	1017
28 c	1013	1012	1010	1013	1013	1003	992	985	988	997	1007	1024	1045	1057	1055	1046	1037	1032	1030	1023	1018	1016	1020	1020	1018	1019
29 c	1018	1013	1009	1008	1004	998	992	983	984	999	1010	1021	1037	1049	1051	1050	1037	1024	1017	1018	1019	1021	1022	1021	1016	1017
30	1016	1019	1017	1015	1014	1002	988	986	987	998	1007	1019	1034	1045	1047	1047	1050	1038	1036	1029	1025	1014	1022	1025	1015	1020
31	1015	1013	1009	1009	1002	988	987	979	981	988	998	1008	1019	1035	1039	1040	1034	1026	1024	1021	1013	1012	1016	1014	1013	1011
Mean	1014	1013	1010	1010	1008	1002	994	988	985	987	997	1012	1027	1039	1045	1045	1039	1034	1033	1027	1020	1016	1013	1015	1015	1016

c International quiet day.

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

Eskdalemuir. (Z.) FOR EACH HOUR OF GREENWICH MEAN TIME. **July, 1916.**

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	72	−48	−1	41	65	76	85	89	83	74	82	77	84	96	104	109	114	118	131	145	134	122	113	108	103	87
2	103	103	105	106	105	108	109	108	104	101	98	94	91	91	97	100	102	101	104	108	109	108	104	101	101	102
3	101	99	97	93	99	101	101	97	95	93	89	93	92	93	94	100	103	111	114	116	119	115	108	105	95	101
4	95	84	75	78	95	101	103	98	91	86	84	83	87	84	86	92	100	112	117	119	118	112	101	93	92	96
5	92	91	91	86	88	85	85	88	89	91	92	84	83	92	104	113	125	138	129	129	124	107	104	104	104	101
6	104	104	104	96	77	83	91	93	87	83	84	84	81	87	96	105	112	121	121	115	114	113	103	93	96	98
7 c	96	97	98	100	102	105	107	108	105	100	93	91	90	93	98	99	103	105	108	114	108	109	107	101	97	102
8	97	98	100	101	101	101	100	99	98	98	98	95	87	84	87	91	97	100	115	147	149	48	53	102	99	98
9	99	83	70	67	69	53	42	56	73	92	97	104	105	109	111	139	166	152	145	134	128	122	116	108	103	102
10	102	87	92	95	91	97	103	103	103	108	108	105	101	101	100	101	104	108	120	116	118	123	112	103	100	104
11	100	91	60	27	36	49	65	83	95	92	90	90	87	87	90	95	104	113	115	111	110	107	104	85	81	87
12	81	87	92	94	92	98	99	101	99	99	92	90	89	90	99	114	118	115	113	115	108	107	102	99	87	100
13	87	84	90	96	98	98	102	103	101	97	95	95	99	99	98	101	103	103	107	108	109	112	102	87	85	99
14	85	87	92	92	95	95	95	99	102	103	95	88	88	91	95	100	111	111	109	107	110	107	105	104	103	99
15 c	103	103	103	103	105	105	106	104	99	95	95	94	94	95	97	102	108	111	113	111	108	106	102	102	101	103
16	101	101	99	99	100	99	100	99	101	99	91	89	86	86	90	96	101	104	107	110	109	109	103	101	99	99
17	99	87	87	91	96	99	99	94	92	87	87	87	86	90	96	106	120	118	115	111	109	104	100	97	88	98
18	88	72	61	48	47	59	74	85	92	90	83	87	87	90	91	95	95	100	107	115	112	107	99	93	95	87
19	95	94	92	93	95	98	95	95	95	91	86	84	83	85	90	99	102	108	111	117	117	111	104	99	87	97
20	87	73	74	79	87	87	88	91	92	90	86	87	86	90	92	94	98	104	108	107	108	107	104	101	101	93
21	101	102	102	103	104	105	109	107	103	100	94	83	79	82	93	95	95	99	103	107	107	107	102	99	99	99
22	99	99	99	100	101	103	102	99	94	93	90	87	86	87	87	90	95	100	101	103	105	107	102	104	100	97
23	100	95	90	92	92	82	77	77	83	88	90	89	87	87	94	107	128	126	124	115	113	114	113	107	103	99
24	104	101	97	74	63	67	76	80	82	88	95	93	87	87	95	99	104	113	116	114	112	110	107	103	95	94
25	95	79	94	98	101	104	105	108	111	106	103	100	91	88	91	101	109	112	112	110	107	106	104	103	96	102
26	96	79	82	88	91	87	88	95	100	97	90	86	88	89	94	103	116	121	117	114	111	111	108	107	103	98
27 c	103	102	101	101	104	106	106	108	105	103	97	90	88	86	91	100	109	112	111	108	108	106	104	105	105	102
28 c	105	103	102	102	103	106	108	106	103	92	86	83	86	91	93	101	109	114	120	121	121	119	114	111	108	104
29 c	108	105	104	104	108	112	113	115	114	108	100	96	96	104	114	119	125	126	125	120	113	111	108	106	105	111
30	105	105	106	107	108	108	109	106	102	102	101	96	95	97	103	108	113	118	120	124	122	120	113	109	109	108
31	109	110	109	109	110	110	109	108	107	104	103	96	91	92	95	101	108	111	110	110	111	109	106	106	106	106
Mean	97	89	89	89	91	93	95	97	97	95	93	90	89	91	96	102	110	113	115	116	115	109	104	101	98	99

c International quiet day.

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

Eskdalemuir. ROOM OF THE MAGNET HOUSE; MAGNETIC NOTES FOR THE MONTH. **July, 1916.**

Date.	Time, G.M.T.† From	Time, G.M.T.† To	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
July	h m	h m	γ	° ′ ″	° ′	d 280+		
4	11 33	12 16	16726	17 30 29	69 39·4	4·5	2	1
						4·5	1	2
						4·6	0	3
						4·7	1	4
						4·7	1	5
						4·7	0	6
						4·7	0	7
						4·8	2	8
						4·8	1	9
						4·8	1	10
11	11 30	12 11	16706	17 28 57	69 39·9	4·8	1	11
						4·8	0	12
						4·9	0	13
						4·9	0	14
						4·9	0	15
						5·0	0	16
						5·0	1	17
						5·0	1	18
						5·0	1	19
19	10 35	11 24	16716	17 25 18	69 39·0	5·1	0	20
						5·1	0	21
						5·2	0	22
						5·2	1	23
						5·2	1	24
						5·3	0	25
						5·3	0	26
						5·4	0	27
						5·4	0	28
						5·4	0	29
						5·5	0	30
26	11 21	13 2	16741	17 31 25	69 38·7	5·6	0	31

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

† The times are those of the Declination and Dip observations only. The Horizontal Force values given refer to the mean time of the Declination observations, being derived by a combined use of the actual observations and curve measurements.

JULY, 1916.

The average character figure was 0·5, and the month, more especially its latter half, was on the whole the quietest of the year. The disturbance which followed the "sudden commencement" previously noted under 30th June was not large: its most prominent feature was a rapid decrease in V, amounting to about 170 γ within 65 minutes, the minimum occurring at $1^d\ 1^h\ 7^m$. During the subsequent recovery in V, the trace shows numerous pulsations of period averaging $4\frac{1}{2}$ minutes. It would appear that this particular type of storm is frequently followed by such pulsations (see Notes under March 10th, 1916). The principal disturbance of the month began soon after 16^h on the 8th. The ranges of the components were N 238 γ, W 175 γ, V 217 γ, the extremes being reached within 6 hours of the beginning of the disturbance. That portion of the N trace recorded between 17^h and 23^h on the 8th has some resemblance to the trace from noon to 16^h on the following day. During the first half of the month pulsations of short period were frequent, especially in the mornings between 6^h and 12^h.

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

Eskdalemuir. (X.) **August, 1916.**

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	997	997	998	999	1002	1000	998	998	988	974	961	960	960	974	982	987	991	1003	1014	1020	1021	1019	1015	1015	1018	995
2	1018	1022	1024	1019	1040	1048	1048	1022	993	952	920	965	976	960	961	958	998	1003	1009	1013	1003	982	989	990	989	996
3	990	983	988	987	974	968	982	983	974	958	947	948	954	958	974	981	989	1001	1009	1011	1004	1000	1000	995	994	982
4	995	998	980	996	994	995	995	995	990	982	972	965	964	968	979	991	996	1003	1015	1015	1014	1015	1017	1020	1016	994
5	1016	1014	1001	989	992	1001	995	990	992	980	971	965	981	978	983	995	1010	998	1019	1015	1009	1014	1015	1011	1030	998
6	1031	994	1000	986	1006	999	973	997	974	940	943	960	960	971	946	973	982	984	1025	1013	1011	1009	991	996	985	985
7	985	988	1000	967	986	995	985	958	947	946	936	937	953	960	971	983	991	1013	1022	1022	1036	1001	996	991	993	982
8	994	993	968	963	1002	987	967	974	981	965	937	960	967	968	950	980	1015	1012	1023	1007	999	997	996	997	992	983
9	993	989	978	992	990	974	974	987	978	967	962	963	973	989	1003	998	995	1014	1009	1012	1011	1004	1004	998	985	990
10	985	993	998	988	984	998	988	975	984	977	966	959	973	982	988	992	994	1003	1000	1002	1002	1008	998	994	995	989
11	996	996	994	994	998	994	995	990	989	981	970	970	975	981	984	997	999	1001	1018	1024	1029	1014	995	1007	995	995
12	995	994	997	996	1006	1004	996	990	979	969	960	962	965	968	979	999	1005	1013	1014	1016	1011	1008	1009	1010	1008	994
13	1009	1003	995	1002	1009	994	995	991	983	966	956	954	966	969	986	996	1000	1001	1003	1005	1007	1006	1009	1027	1010	993
14	1010	1000	997	983	1000	1011	1000	995	985	977	965	965	973	972	972	984	997	1007	1014	1005	1000	999	1000	995	995	992
15 c	996	1000	997	996	996	996	993	986	975	963	958	961	963	967	973	988	992	1001	1005	1008	1006	1006	1001	1003	1001	989
16 c	1001	1001	1000	1000	1001	1001	1002	997	990	981	968	961	965	972	980	987	996	1007	1010	1014	1011	1011	1009	1008	1007	995
17 c	1007	1001	1005	1001	997	1001	1002	993	986	973	961	956	961	982	988	997	1007	1011	1012	1010	1016	1012	1014	1010	1010	996
18	1011	1009	1003	1007	1009	1007	1004	996	986	972	964	962	959	962	975	987	1001	1013	1020	1020	1016	1009	1006	1005	1004	996
19	1004	1007	1008	1011	1008	1011	1007	1004	995	978	957	958	961	956	957	984	988	1023	1017	1023	1017	1021	1038	1011	1007	998
20	1008	993	1002	1002	1008	1029	1010	988	976	959	967	967	956	960	973	984	981	1012	1014	1022	1014	1015	998	1003	997	993
21	997	993	994	997	1001	993	989	998	987	978	974	981	973	974	983	987	988	1010	1002	1017	1013	1007	1005	1003	1013	994
22	1014	990	993	996	999	992	994	989	979	968	968	973	978	975	989	994	1000	989	994	1061	1046	940	939	970	997	988
23	997	963	959	994	962	984	999	994	977	960	963	962	973	960	967	964	994	1032	1048	988	990	1001	983	984	980	983
24	981	976	975	972	973	985	989	969	955	946	940	934	937	954	973	989	1024	1001	996	998	1005	1004	989	990	990	977
25 c	990	985	988	985	987	991	990	986	975	964	953	951	958	973	985	994	995	996	1004	1005	1002	1000	997	994	992	985
26	992	989	988	990	990	998	995	988	984	977	966	965	970	986	991	1000	1004	1014	995	1004	1035	1039	980	950	955	990
27**	955	750	730	755	810	765	895	949	940	918	900	906	934	956	976	978	977	975	973	989	980	981	968	974	978	914
28	979	973	970	948	971	977	968	961	954	955	951	947	951	976	976	981	986	994	991	991	985	986	994	987	972	973
29	972	976	956	965	956	980	985	967	954	935	930	940	952	968	972	964	995	1005	991	987	1002	1007	996	992	976	973
30	976	981	977	971	976	964	970	963	953	950	943	942	956	966	970	976	982	998	991	995	994	995	1003	999	990	975
31	990	985	985	986	981	969	976	970	955	933	932	943	947	962	971	976	990	987	991	996	992	994	996	991	987	975
Mean †	998	993	991	989	993	995	992	986	977	964	955	958	963	970	976	986	996	1005	1009	1011	1010	1004	999	998	996	988

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

Eskdalemuir. (−Y.) **August, 1916.**

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.
											4000 γ (·04 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	γ
1 c	1013	1013	1011	1009	1008	1002	997	992	988	985	996	1017	1034	1050	1051	1046	1034	1026	1024	1021	1023	1022	1018	1017	1015	1017
2	1015	1017	1020	1031	1031	1004	992	975	970	944	993	1026	1045	1056	1057	1046	1050	1041	1034	1025	1024	1021	999	993	1000	1017
3	1000	1008	1011	1000	1013	999	987	988	987	992	993	1003	1021	1036	1033	1036	1030	1026	1026	1022	1015	1014	1013	1009	1009	1011
4	1009	1013	1010	998	994	992	991	986	986	992	995	1009	1020	1024	1032	1032	1024	1019	1023	1024	1025	1026	1024	1021	1009	1011
5	1009	1007	1005	1019	1001	1002	993	998	992	993	996	1009	1031	1045	1054	1041	1020	1031	1030	1035	1033	1031	1024	991	981	1016
6	981	978	1001	1023	1010	1010	1030	1020	1012	1008	1012	1019	1026	1034	1033	1036	1040	1031	1005	1018	1004	993	1010	1016	1030	1016
7	1030	1036	1017	998	1012	999	992	998	990	986	988	1003	1026	1041	1040	1039	1026	1029	1007	1012	1012	1005	1013	1016	1014	1013
8	1014	1018	1040	1023	1014	992	996	984	982	987	989	1003	1019	1029	1024	1028	1014	1024	1009	1017	1015	1015	1018	1013	1024	1011
9	1025	1008	1014	1011	1002	995	996	995	987	989	1001	1014	1029	1040	1049	1039	1032	1024	1022	1009	1021	1017	1011	1009	1026	1014
10	1026	1003	999	1009	1009	1003	997	998	1000	1009	1005	1014	1025	1031	1032	1027	1017	1016	1015	1018	1014	1010	1019	1015	1016	1013
11	1016	1027	1010	1001	1000	997	993	987	987	993	999	1006	1021	1031	1033	1027	1015	1013	1017	1022	1030	1020	997	992	1008	1010
12	1008	1005	1014	1022	1003	993	983	978	973	978	999	1019	1034	1051	1054	1038	1025	1020	1018	1020	1020	1017	1016	1010	1020	1013
13	1020	1031	1019	1014	999	984	988	978	977	983	1000	1014	1036	1045	1042	1037	1030	1020	1018	1015	1020	1020	1015	1008	1005	1013
14	1006	1010	1010	1032	1007	990	983	977	978	982	1001	1017	1043	1052	1052	1042	1027	1010	1015	1012	1014	1015	1014	1011	1010	1013
15 c	1010	1008	1008	1007	1008	998	990	984	986	995	1007	1015	1022	1032	1039	1039	1031	1021	1012	1011	1012	1014	1010	1013	1011	1011
16 c	1011	1011	1011	1008	1005	1000	991	986	986	988	1000	1016	1036	1048	1052	1047	1034	1024	1016	1016	1018	1017	1012	1011	1009	1014
17 c	1009	1008	1010	1004	996	994	984	979	983	985	1002	1021	1032	1038	1038	1035	1032	1030	1026	1026	1026	1015	999	1000	1006	1011
18	1007	1004	1008	1019	1011	1001	991	985	984	990	1005	1022	1042	1050	1051	1047	1041	1033	1029	1024	1027	1022	1019	1016	1012	1018
19	1012	1011	1011	1017	1008	1001	990	981	978	986	1006	1019	1033	1049	1049	1045	1034	1039	1033	1009	1016	1017	996	1009	991	1014
20	991	985	997	996	1007	1002	996	997	988	1000	1011	1021	1024	1027	1032	1028	1015	1010	1014	1013	999	991	1000	1012	1016	1007
21	1016	1012	1009	1005	1001	995	985	985	989	999	1012	1027	1037	1036	1037	1037	1029	1027	1004	1012	1018	1021	1022	1021	1028	1014
22	1028	1006	997	1000	995	991	991	986	991	1001	1009	1024	1040	1041	1042	1035	1021	1011	1014	1033	995	991	946	977	1001	1006
23	1002	1024	1011	1010	991	1006	1003	1003	1001	990	1000	1012	1022	1034	1040	1029	1032	1002	1006	1010	1021	1021	991	961	955	1008
24	955	971	989	1011	1026	1018	1007	985	976	987	1002	1011	1023	1038	1038	1033	1018	1011	1002	1002	1009	1011	1008	1011	1012	1007
25 c	1012	1013	1006	1006	998	990	989	990	990	991	1006	1018	1029	1034	1028	1020	1012	1008	1012	1014	1018	1016	1014	1008	1002	1009
26	1002	997	997	989	986	985	981	990	997	1002	1012	1029	1044	1055	1046	1038	1030	1034	1022	1012	1038	1041	974	959	968	1010
27**	968	868	917	881	935	1004	946	955	961	968	978	993	1012	1021	1029	1021	1011	1008	1009	1017	997	991	1002	1007	1000	980
28	1001	997	988	1003	997	985	977	975	976	981	1001	1025	1034	1038	1026	1018	1008	1011	1014	1019	1015	1018	1002	992	1004	1004
29	1004	1003	1019	1006	975	980	977	971	977	976	987	1015	1023	1031	1035	1035	1030	987	1013	1014	1006	1003	994	976	1001	1001
30	1001	1007	1008	1009	996	998	993	991	986	986	1004	1019	1029	1039	1035	1026	1019	1015	1005	1000	1013	1013	1022	1021	1001	1010
31	1001	1003	1006	1004	998	1003	994	981	982	991	1012	1025	1039	1045	1039	1034	1025	1013	1013	1014	1013	1008	993	1002	1007	1010
Mean †	1008	1008	1009	1009	1003	997	992	987	986	989	1001	1016	1031	1040	1040	1035	1027	1020	1017	1017	1017	1015	1006	1004	1006	1011

c International quiet day. † Mean of 30 days ; 27th omitted.

** Day " proposed for reproduction " by the International Magnetic Commission (double star).

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

Eskdalemuir. (Z.) **August, 1916.**

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 c	106	111	111	111	112	113	113	111	111	114	108	103	101	100	96	101	108	113	113	112	108	106	106	107	106	108
2	106	105	105	103	92	89	88	93	97	93	89	87	95	106	112	116	120	128	126	123	124	117	117	118	112	106
3	112	105	96	100	90	91	102	108	108	108	108	106	103	105	113	117	122	121	118	117	120	118	117	116	115	109
4	115	110	106	105	109	114	114	112	112	108	101	102	102	105	109	114	116	117	113	113	112	109	109	109	108	110
5	108	105	105	104	102	105	108	106	107	105	102	100	95	97	108	122	139	140	134	133	126	118	115	111	88	112
6	88	88	91	82	83	81	80	80	91	96	101	107	110	133	154	157	156	156	164	154	149	136	123	114	106	116
7	106	83	65	61	82	96	108	109	114	113	113	111	109	108	118	125	130	134	143	146	138	123	117	117	115	111
8	116	115	97	76	79	97	105	111	114	112	113	106	103	106	115	126	143	147	149	137	132	127	121	116	98	115
9	98	93	95	101	109	109	110	115	118	120	115	113	110	114	119	127	127	126	123	125	123	122	121	113	106	115
10	107	110	111	110	110	111	114	113	112	111	114	107	102	110	115	122	123	125	130	128	128	125	120	119	118	116
11	118	108	107	112	115	117	115	116	119	117	119	115	112	115	119	123	124	123	119	117	119	120	125	124	120	117
12	120	119	116	107	97	106	110	113	116	113	111	104	98	102	110	116	125	128	124	119	117	119	119	114	112	113
13	113	104	102	99	104	111	112	117	117	113	107	101	99	103	117	122	124	125	125	123	119	116	116	111	105	112
14	105	109	111	103	96	99	108	112	111	108	108	105	100	107	120	129	137	141	137	126	120	118	118	117	117	115
15 c	118	119	120	120	120	122	123	121	117	110	104	98	96	100	105	112	119	123	124	121	120	118	118	117	117	115
16 c	117	118	118	118	119	119	119	120	118	113	108	104	100	101	107	113	117	121	121	118	118	117	117	117	115	115
17 c	116	118	115	118	120	122	122	122	119	114	109	105	107	107	110	114	118	122	122	122	120	122	121	118	114	117
18	114	114	114	114	114	119	121	122	121	118	110	101	100	101	107	114	120	125	126	124	120	119	118	118	118	116
19	119	119	119	115	115	115	119	121	121	119	115	109	105	108	116	117	120	124	144	164	153	137	120	107	98	121
20	98	82	63	70	83	69	83	92	99	104	107	105	104	106	116	132	138	139	134	133	135	131	122	111	112	107
21	113	114	121	123	124	127	130	130	128	123	122	119	117	124	136	139	136	136	143	138	133	129	127	123	107	127
22	108	95	103	112	116	122	124	125	122	119	115	112	114	116	122	133	142	146	139	128	109	16	63	57	75	110
23	76	72	29	70	79	70	71	80	95	105	110	112	117	122	131	138	137	160	173	165	144	132	87	56	82	106
24	83	85	98	109	107	106	107	115	122	120	118	114	117	123	132	140	149	147	144	139	133	128	126	125	101	121
25 c	102	119	117	118	120	124	128	130	128	123	119	110	107	110	115	119	121	125	125	125	126	126	125	124	124	121
26	125	123	122	121	120	120	120	121	122	123	122	117	112	113	117	118	122	126	130	134	125	118	59	47	− 11	113
27⁂	− 10	−155	−186	*	−241	−198	− 9	100	131	144	149	147	143	142	143	146	147	147	144	142	149	143	138	131	123	..
28	124	125	120	114	119	125	132	132	130	127	124	‡	..	..	..	..	..	..	..	..	..	..	..	..	‡	..
29	‡	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	‡	..
30	113	120	127	124	124	128	133	135	138	136	140	138	136	134	139	142	142	144	151	150	143	139	124	116	117	134
31	116	125	129	131	132	133	132	133	132	127	121	123	125	129	131	134	138	141	136	134	134	135	136	133	133	131
Mean †	108	107	104	105	106	108	111	114	115	114	112	108	107	111	118	124	129	132	133	131	127	119	115	110	105	115

c International quiet day. * Violent natural disturbance, which threw light spot from paper. † Mean of 28 days; 27th, 28th, and 29th omitted.
‡ Instrument out of adjustment. ⁂ Day "proposed for reproduction" by the International Magnetic Commission (double star).

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

Eskdalemuir. **August, 1916.**

Date.	Time, G.M.T.† From	Time, G.M.T.† To	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
Aug.	h m	h m	γ	° ′ ″	° ′	d 280+		
2	7 26	8 7	16756	17 17 28	69 36·5	5·6	0	1
						5·7	1	2
						5·7	0	3
						5·8	0	4
						5·8	1	5
						5·9	1	6
						5·9	1	7
						6·0	1	8
						6·0	1	9
						6·1	0	10
						6·1	0	11
						6·1	0	12
						6·2	1	13
						6·3	1	14
						6·3	0	15
11	11 19	12 16	16750	17 28 20	69 39·2	6·3	0	16
						6·4	0	17
						6·4	0	18
						6·5	1	19
						6·5	1	20
						6·6	1	21
						6·7	2	22
						6·7	2	23
						6·8	0	24
						6·8	0	25
						6·8	2	26
						6·9	2	27
						6·9	0	28
						7·0	1	29
30‡	10 38	11 26	16726	17 28 0	69 41·7	7·1	1	30
						7·1	0	31

* Mean of the Corrected Readings of the Thermometers in the N, W, and V Magnetograph Boxes.
† The times are those of the Declination and Dip observations only. The Horizontal Force values given refer to the mean time of the Declination observations, being derived by a combined use of the actual observations and curve measurements.
‡ The observations of Horizontal Force and Declination, made from 30th August to 20th November inclusive, were made with Magnetometer No. 140, instead of No. 60, which was used on all other occasions.

AUGUST, 1916.

The month was, generally, one of moderate disturbance. Two storms of considerable magnitude occurred. The first began with a "sudden commencement" at $22^d\ 18^h\ 28^m$, the immediate change being 88 γ N, 49 γ W, −8 γ V. This was followed about an hour later by three waves of large amplitude on the horizontal traces and by a large decrease in V. The traces indicate counter-clockwise motions on the horizontal vector diagram. The principal motions at this time (20^h–21^h) on the N trace were extremely rapid, one amounting to 443 γ in 9 minutes. On the V trace a change of 171 γ took place at the same time. On the following day, after 22^h, motions of a very similar character occurred. A prominent "tooth" is shown on the N trace at $24^d\ 16^h\ 9^m$ and also at $24^d\ 21^h\ 6^m$. The storm of 26th–28th was perhaps the most considerable of the year, and is fully illustrated by the magnetograms reproduced in this volume. It began with an unusually sharp "sudden commencement" at $26^d\ 19^h\ 43^m$. Including the well-marked preliminary depression, the range amounted to 99 γ N, 29 γ W, −7 γ V. One noticeable feature of the storm shown on the V trace is that there was no initial rise in value, the changes being wholly on the negative side of a hypothetically undisturbed trace. The range of V was evidently large, as the light spot was off the sheet for 75 minutes. The period of recovery of V included a large number of well-marked pulsations of average period 5 minutes—a phenomenon which frequently attends this particular type of disturbance.

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

Eskdalemuir. (X.) FOR EACH HOUR OF GREENWICH MEAN TIME. **September, 1916.**

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	988	986	983	987	979	986	982	972	960	952	943	941	950	962	976	982	980	992	998	1005	999	996	1007	1006	993	980
2	993	987	991	991	991	991	996	996	977	958	951	952	961	965	976	981	983	991	1002	1002	1006	1037	1025	997	991	987
3	991	992	976	972	992	991	986	983	927	927	927	917	949	956	949	981	998	972	1003	1001	999	974	988	984	990	972
4	991	993	992	971	984	993	948	952	962	928	940	946	950	967	965	977	988	993	1004	1013	1013	978	979	967	964	974
5	964	982	930	968	949	971	953	968	948	938	938	939	949	962	972	978	985	984	992	993	994	998	994	992	987	969
6	987	987	988	987	985	989	986	981	975	974	968	969	968	972	973	974	983	983	997	1017	1001	999	1004	993	979	985
7	979	986	996	993	993	993	993	988	973	963	971	966	958	966	968	960	984	983	993	999	1008	998	998	996	995	984
8	995	993	993	993	993	992	989	980	963	949	942	926	959	975	975	978	983	989	992	1000	1001	1001	998	994	994	981
9	995	992	991	994	992	991	988	983	980	977	972	969	970	968	972	974	985	992	1000	1002	999	999	999	999	1000	987
10	1000	999	1003	1003	1001	1003	999	985	977	979	980	977	981	988	995	1003	1002	1005	1014	1019	1014	1014	1015	1058	1026	1001
11	1026	1001	1006	1004	985	994	1001	989	980	974	954	953	968	980	970	975	985	1018	1004	997	995	1002	1046	986	982	990
12	982	986	999	1013	933	1000	974	958	970	962	953	960	964	975	987	998	1005	999	1003	1009	1027	954	988	971	966	982
13	966	985	978	982	989	988	985	973	948	950	945	951	956	961	990	998	998	993	989	996	995	999	998	995	990	980
14	990	990	990	993	991	991	989	986	972	957	951	954	954	960	983	990	988	993	990	994	1002	999	1000	1007	998	984
15	998	994	994	994	986	996	993	988	981	963	927	909	921	948	968	974	978	988	994	984	993	999	1001	999	994	978
16	994	984	989	995	1000	975	1001	987	960	929	933	929	938	960	948	977	978	995	1007	999	994	993	998	997	998	978
17	998	1004	994	1001	985	965	984	973	948	938	923	935	941	968	958	980	983	993	992	985	986	992	1004	994	986	976
18	986	988	989	989	984	994	988	974	978	971	953	941	925	950	954	978	995	987	989	999	993	1000	993	993	993	979
19 c	993	993	989	988	989	990	988	985	970	963	955	954	958	963	973	975	979	983	993	999	1003	1001	999	999	1003	983
20 c	1003	997	995	997	998	998	996	996	990	976	959	960	964	971	977	984	988	994	995	1000	1003	1000	1001	1000	1001	989
21 c	1001	1000	997	997	998	1000	1002	998	985	966	971	971	972	974	980	990	998	1004	1001	1007	1006	1008	1009	999	1001	993
22	1001	999	1002	1004	1003	1000	1002	1000	995	989	981	982	978	983	989	993	998	1006	1008	1019	1014	1004	1008	1010	1003	999
23	1003	982	989	998	1010	1002	985	984	989	979	972	960	964	969	978	983	993	998	1000	1010	1003	1010	999	1007	1008	990
24	1008	991	994	1012	994	995	1003	1001	965	964	964	963	967	976	978	980	989	999	1003	1003	999	1004	1018	1002	995	990
25	995	998	1000	995	1004	1005	996	993	984	978	967	970	967	981	985	993	1003	985	995	1003	1008	1013	1000	1004	1008	993
26	1008	1035	993	995	994	997	1001	997	988	984	980	979	985	980	988	994	998	996	1000	1008	1009	998	1002	1015	974	996
27	974	1008	961	969	994	1000	1000	991	961	914	944	963	960	969	968	982	988	989	1023	989	997	1014	1008	992	995	982
28	995	990	993	991	988	994	999	986	980	974	964	956	957	966	979	988	991	993	995	999	998	998	1008	1005	1004	987
29 c	1004	1000	996	994	999	998	999	1001	997	985	965	957	963	971	979	984	991	996	1000	1003	1004	1003	1002	1002	1001	991
30	1001	1003	1004	1005	1008	1009	1006	1009	1000	983	968	963	938	919	953	969	977	990	979	981	1003	1034	1055	1003	951	989
Mean	994	994	990	993	990	993	990	985	973	961	955	954	958	967	974	982	989	993	999	1001	1002	1001	1005	999	992	985

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

Eskdalemuir. (−Y.) FOR EACH HOUR OF GREENWICH MEAN TIME. **September, 1916.**

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.
											4000 γ (·04 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	γ
1 c	1007	1004	1008	1007	1006	996	987	982	982	987	998	1012	1029	1038	1039	1032	1019	1016	1009	1013	1013	1013	1013	1007	1003	1009
2	1003	1005	1010	1000	998	997	990	988	991	999	1014	1032	1046	1050	1048	1041	1038	1012	1013	1013	1015	979	987	965	947	1009
3	948	920	971	1003	1003	1008	1009	999	1003	1006	1003	1026	1041	1063	1042	1035	1036	1010	1014	994	951	966	964	992	1014	1002
4	1014	1020	1014	1016	1013	1004	1016	1041	1023	1004	1010	1014	1026	1025	1016	1017	1017	1019	1024	1027	962	952	977	939	958	1007
5	958	960	988	994	1002	1031	1010	1014	1002	993	1009	1018	1030	1030	1023	1019	1019	1015	1013	1009	1004	1008	1008	1000	1005	1008
6	1005	1006	1004	1004	1005	1002	997	994	990	995	1004	1015	1028	1037	1036	1031	1025	1019	1008	994	1016	1014	1001	989	1003	1009
7	1003	1007	998	999	999	997	993	983	983	1006	1014	1027	1029	1040	1043	1031	1033	1014	1004	1012	1015	1012	1012	1010	1010	1011
8	1010	1005	1007	1004	1004	1004	1002	1014	1015	1014	1020	1024	1026	1031	1035	1030	1025	1016	1014	1019	1014	1004	1006	1010	1010	1015
9	1010	1008	1009	1006	1006	1003	999	994	991	992	1002	1014	1034	1042	1045	1035	1026	1008	1014	1020	1019	1017	1015	1016	1014	1014
10	1014	1010	1010	1011	999	998	993	999	1011	1005	1013	1026	1036	1040	1041	1037	1026	1025	1030	1014	1005	1009	1011	987	987	1014
11	988	996	996	1003	1019	1005	993	989	992	999	1016	1034	1045	1045	1037	1039	1020	1019	989	997	1015	1020	980	967	957	1008
12	957	990	992	979	1009	1022	1002	1007	1003	995	1004	1022	1035	1036	1034	1037	984	1001	1004	987	999	1011	968	1006	1028	1005
13	1028	1028	993	1001	995	995	995	1000	997	996	1006	1014	1034	1039	1036	1021	1011	1001	1006	1014	1011	999	993	1004	1014	1009
14	1014	1011	1010	1009	1008	1005	1000	990	988	989	998	1016	1037	1047	1045	1036	1020	1011	1012	1009	988	1001	1009	1007	1005	1011
15	1005	1012	1010	1008	1006	1007	1002	991	985	992	1004	1026	1048	1056	1062	1053	1035	1024	1011	1005	1011	1011	1007	1009	1016	1016
16	1016	1031	1022	1010	1006	1005	1020	999	993	991	1014	1027	1036	1050	1039	1042	1022	1018	971	1004	1009	1006	1009	1009	1011	1014
17	1011	1039	1009	999	996	1012	1005	995	996	1007	1011	1031	1036	1058	1043	1027	1010	1000	973	987	1004	1009	1006	1020	1009	1012
18	1009	1005	1013	1017	1005	1011	1010	1011	1004	996	1005	1026	1031	1046	1031	1020	1005	1004	1000	1005	1004	1000	1004	1010	1011	1011
19 c	1011	1013	1012	1015	1002	999	999	994	988	995	1001	1015	1030	1031	1030	1021	1015	1011	1010	1011	1011	1014	1015	1011	1016	1011
20 c	1016	1009	1009	1007	1005	1005	1004	995	993	997	1010	1027	1038	1037	1030	1021	1012	1011	1012	1015	1015	1014	1015	1014	1014	1013
21 c	1014	1011	1016	1000	1004	1001	998	994	997	998	1010	1016	1032	1041	1037	1027	1023	1023	1020	1021	1017	1016	1015	1011	1009	1014
22	1009	1005	1006	1002	1000	1000	998	994	989	994	1004	1013	1022	1026	1030	1031	1031	1031	1029	1027	1026	1019	999	988	975	1011
23	975	979	983	990	987	988	1000	994	997	997	1007	1010	1020	1022	1022	1020	1019	1020	1023	1027	1019	1014	1016	1017	999	1007
24	999	1000	1014	991	995	1009	1000	1005	1012	1013	1013	1016	1020	1032	1031	1028	1016	1014	1017	1017	1015	1016	1009	1003	1004	1012
25	1004	1009	1005	1005	997	994	996	999	995	998	1005	1026	1031	1037	1030	1024	1027	1021	1020	1021	997	1000	1014	1013	1008	1011
26	1008	1000	983	989	997	1004	1003	1001	999	1001	1006	1021	1033	1032	1032	1029	1025	1026	1023	1026	980	995	1000	1009	941	1008
27	941	948	958	1000	993	988	991	990	984	1003	1016	1022	1029	1041	1030	1026	1023	975	977	1009	1009	1009	1005	1009	1011	1000
28	1011	1016	1013	1009	1009	1014	999	997	995	996	1000	1008	1019	1026	1025	1020	1015	1012	1015	1012	1011	1010	1011	1009	999	1010
29 c	1000	995	989	1001	1002	1005	1005	1004	998	991	994	1007	1027	1034	1032	1024	1020	1017	1017	1016	1014	1012	1012	1012	1012	1010
30	1012	1013	1011	1012	1012	1010	1011	1005	996	994	1010	1031	1040	1055	1055	1044	1017	985	1004	1017	990	983	973	927	918	1007
Mean	1000	1002	1002	1003	1003	1004	1001	999	996	998	1007	1021	1032	1040	1036	1030	1020	1013	1009	1011	1005	1004	1002	999	997	1010

c International quiet day.

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

Eskdalemuir. (Z.) **September, 1916.**

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 c	132	137	137	135	136	138	140	139	137	132	123	121	121	127	130	135	137	136	138	138	135	135	128	119	122	133
2	121	122	123	127	129	129	130	126	125	124	121	118	117	116	123	132	144	157	150	140	135	132	114	110	98	127
3	97	79	80	84	100	107	113	124	128	123	123	120	121	127	154	148	147	149	146	154	139	125	121	120	117	122
4	116	115	118	115	117	117	110	100	105	113	115	116	117	124	132	134	132	130	128	128	138	130	52	54	36	113
5	35	13	− 5	26	48	62	84	91	104	114	115	114	114	122	128	136	132	129	127	131	131	128	126	124	122	99
6	122	123	124	124	123	124	126	126	125	122	124	123	121	121	127	134	140	141	139	138	129	128	124	121	110	127
7	110	96	111	118	121	123	125	126	125	121	118	118	120	123	131	141	144	148	152	142	136	129	128	126	126	127
8	127	127	126	126	126	126	127	125	121	122	122	123	123	123	128	133	138	139	136	132	130	132	129	127	125	128
9	126	126	126	126	126	126	127	127	126	122	120	121	117	119	125	129	133	137	136	132	131	130	129	128	127	127
10	128	128	125	119	119	122	124	126	122	121	117	111	111	114	117	119	119	118	117	123	131	130	127	106	78	120
11	78	99	110	114	107	108	112	119	119	116	110	110	113	121	134	144	159	158	174	157	142	133	106	99	87	123
12	88	43	74	94	83	70	85	103	106	111	115	118	121	131	140	145	166	166	162	158	118	108	107	105	93	113
13	94	76	92	110	118	125	127	127	131	130	129	123	119	122	136	146	154	150	142	140	141	139	133	127	126	127
14	126	131	133	134	134	134	135	136	135	134	133	131	129	130	133	141	145	145	144	141	143	139	135	131	131	136
15	131	132	133	133	133	130	131	132	131	129	126	121	119	121	133	149	161	162	170	168	156	145	139	137	135	139
16	135	115	107	116	116	123	121	123	126	126	123	121	127	129	136	143	146	153	167	155	147	145	141	135	128	132
17	128	113	93	90	92	102	111	122	127	128	129	129	131	136	157	179	187	178	185	170	155	145	133	122	128	135
18	128	132	131	127	129	128	130	132	133	132	129	123	129	139	142	143	153	153	149	143	142	138	132	132	132	135
19 c	132	132	131	131	132	134	136	137	139	135	130	124	126	129	131	135	137	138	137	137	136	135	134	134	132	133
20 c	132	131	132	133	133	133	134	134	135	133	131	122	120	123	128	133	133	132	133	133	133	134	133	132	130	131
21 c	130	129	126	127	127	128	130	129	127	126	122	119	114	116	119	126	132	132	131	131	132	132	132	133	132	127
22	132	131	130	129	129	129	129	130	129	126	122	119	118	118	118	119	120	121	123	124	127	132	138	132	122	126
23	122	113	104	115	119	121	123	128	131	132	131	127	124	123	126	128	127	127	129	129	132	128	129	128	124	125
24	124	123	107	113	118	116	119	122	126	126	127	126	126	127	131	133	140	139	135	132	132	132	128	126	129	126
25	129	129	127	119	120	124	125	126	129	127	126	122	119	121	123	126	129	131	129	129	132	128	127	127	128	126
26	128	110	111	120	122	122	122	123	126	125	125	123	119	118	118	122	126	131	130	133	139	136	130	92	65	122
27	65	60	51	58	81	104	112	117	120	119	116	116	119	126	132	136	141	154	154	140	134	126	113	121	122	114
28	121	123	121	122	121	114	113	118	121	124	123	121	118	118	121	127	128	128	126	127	128	128	125	122	119	122
29 c	119	119	119	121	123	124	124	125	126	129	130	124	114	108	113	120	124	125	125	125	126	125	125	126	126	123
30	126	125	125	125	124	124	123	122	121	121	120	116	122	127	131	138	156	170	164	153	143	126	91	62	7	125
Mean	116	111	111	114	117	119	122	124	125	125	123	121	120	123	130	136	141	143	143	139	136	132	124	112	112	125

c International quiet day.

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, 1916.**

Date.	Time, G.M.T.† From	Time, G.M.T.† To	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day. (0–2).	Date.
Sept.	h m	h m	γ	° ′ ″	° ′	d 280+		
8‡	11 1	11 46	16731	17 29 59	69 41·6	7·1	0	1
						7·2	1	2
						7·2	2	3
						7·2	2	4
						7·2	1	5
						7·2	1	6
						7·2	0	7
						7·2	0	8
						7·2	0	9
						7·2	1	10
12‡	11 37	12 24	16744	17 31 10	69 39·2	7·2	2	11
						7·2	2	12
						7·3	1	13
						7·3	0	14
						7·3	0	15
						7·3	1	16
						7·3	1	17
						7·3	1	18
						7·3	0	19
						7·3	0	20
18‡	10 38	11 23	16702	17 30 39	69 39·9	7·3	0	21
						7·3	0	22
						7·3	1	23
						7·3	1	24
						7·3	1	25
						7·3	1	26
						7·3	1	27
						7·3	0	28
						7·3	0	29
25‡	11 0	11 46	16730	17 29 13	69 38·2	7·3	2	30

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

† The times are those of the Declination and Dip observations only. The Horizontal Force values given refer to the mean time of the Declination observations, being derived by a combined use of the actual observations and curve measurements.

‡ The observations of Horizontal Force and Declination, made from 30th August to 20th November inclusive, were made with Magnetometer No. 140, instead of No. 60, which was used on all other occasions.

SEPTEMBER, 1916.

The mean character figure was 0·8, and the mean daily range indicated an activity above the mean of the year. There were, however, no disturbances on a large scale. A large "bay" was noticed centering at $2^d\ 21^h\ 6^m$ on W and at $2^d\ 21^h\ 11^m$ on N, producing a counter clockwise rotation horizontally. The evening of the 4th and morning of the 5th were considerably disturbed. Four large waves on the horizontal traces occurred soon after $4^d\ 21^h$, the range of the largest being 130 γ on N and 123 γ on W. There was a slow decrease in V during the passage of these waves. A fairly large disturbance began with a (doubtful) "sudden commencement" at $10^d\ 13^h\ 59^m$ and lasted until the evening of the 13th. Its first prominent movement was a sharply pointed "bay" on N, centering at $10^d\ 23^h\ 20^m$. From $11^d\ 4^h$ until $11^d\ 11^h$ there was great "internal activity." Other large motions centered at $11^d\ 22^h\ 5^m$ (+N, −W); $12^d\ 4^h\ 8^m$ (−N, +W); $12^d\ 19^h\ 54^m$ (+N, −W). The 17th was a day of moderate disturbance. A conspicuous "bay" is recorded on W, centering at $1^h\ 8^m$. The disturbance on the 30th was preceded by a period of great internal activity. The largest movements occurred about 22^h. Fewer pulsations than usual were recorded during the month.

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

Eskdalemuir. (X.) **October, 1916.**

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	951	954	951	975	999	1009	1000	988	964	953	938	934	938	948	959	968	978	983	1007	1007	1000	987	1002	1011	995	976
2	995	1003	974	960	989	985	984	974	953	964	949	934	948	959	977	982	988	1004	1028	987	985	995	999	994	997	980
3	997	993	991	993	993	995	996	990	987	978	950	936	944	956	958	961	975	1005	994	999	1002	1000	1003	999	995	983
4 c	995	994	994	994	995	997	995	994	990	980	970	965	965	971	970	983	986	991	998	999	1006	1008	1005	1008	999	990
5	999	1000	1003	1000	1004	1004	1005	1003	994	982	974	975	970	978	969	981	978	977	994	1004	999	1021	1013	1004	999	993
6**	999	1008	1003	968	1019	1024	1008	982	947	954	945	915	920	929	947	972	1004	960	958	964	984	969	952	885	939	966
7	939	919	930	900	934	978	988	952	924	944	929	940	937	945	949	973	992	1019	975	1003	1042	968	976	989	987	961
8	986	978	946	973	957	996	990	986	959	953	976	953	936	944	967	1012	979	973	1008	1011	1000	988	997	983	988	977
9	988	989	983	985	973	967	981	994	987	965	946	952	954	960	972	989	982	1013	983	993	1014	988	993	998	994	981
10	994	993	987	989	997	987	989	995	992	978	972	947	946	960	972	973	973	983	989	992	1008	996	994	1002	1009	984
11	1009	991	995	989	997	992	1002	998	983	962	947	945	944	963	978	983	984	989	977	1033	997	973	989	992	991	983
12	991	992	968	999	992	994	997	984	979	965	947	944	952	963	969	974	987	989	982	968	983	985	984	1009	991	979
13	990	964	978	987	972	996	992	988	951	942	920	927	942	948	947	982	982	974	972	971	964	936	941	942	962	962
14	962	964	971	962	967	975	977	982	941	947	933	930	945	954	956	962	971	982	986	987	987	985	986	984	984	967
15	984	983	982	979	995	993	980	991	980	968	947	937	937	957	966	973	981	983	986	988	989	989	988	987	985	977
16 c	985	986	983	990	991	991	992	989	982	971	959	951	951	962	973	982	987	991	995	996	996	996	993	993	990	983
17 c	989	990	991	991	993	996	996	992	989	977	962	952	951	958	970	977	978	986	995	998	998	997	996	997	996	984
18 c	996	996	994	995	996	997	997	995	986	975	962	952	951	959	967	974	981	988	994	998	1001	999	998	996	998	985
19	998	995	996	996	999	1001	1001	1001	996	982	969	970	966	972	985	995	996	1000	1004	1006	1006	1006	1007	1001	996	994
20	995	996	1000	999	999	998	1011	1015	1010	996	969	966	973	980	981	991	999	992	995	1008	1004	1008	998	997	1000	995
21	1000	1002	1005	994	992	999	1006	986	991	983	970	965	964	972	964	964	970	984	984	995	1005	1022	1006	993	993	988
22	992	992	997	994	995	990	995	1004	997	972	949	960	959	956	973	985	992	994	990	988	1003	1004	1019	1014	1003	988
23	1003	984	989	989	996	994	995	993	985	983	973	970	960	975	979	980	979	989	985	983	996	998	1003	1000	994	987
24	993	993	993	987	993	997	999	997	994	983	973	968	970	949	973	981	989	993	997	997	1003	1001	993	1008	993	989
25	993	994	994	996	991	999	1001	998	992	980	966	964	946	968	985	987	988	991	993	993	1000	999	998	998	997	988
26	996	995	994	996	997	998	994	992	988	980	970	965	964	968	978	990	994	997	1001	1002	1002	997	993	1007	992	990
27	992	992	996	994	996	998	999	997	992	982	967	962	963	972	977	982	990	992	995	996	997	1003	1002	995	994	989
28 c	993	993	994	995	997	1001	1004	1003	996	987	976	966	961	966	976	985	990	995	997	996	1001	998	996	996	996	990
29	996	995	994	995	996	999	1001	1004	1004	995	986	979	980	985	991	1000	995	970	986	986	976	1016	999	995	994	993
30	993	990	994	991	990	999	1005	997	990	983	968	964	964	965	971	980	983	985	991	991	1002	1002	999	996	994	987
31	994	993	993	995	995	999	1001	1000	985	985	974	966	965	965	970	975	980	984	981	990	998	997	992	998	1000	987
Mean †	990	987	985	986	989	994	996	993	982	973	960	955	955	963	971	981	984	990	992	996	999	995	995	996	994	984

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

Eskdalemuir. (−Y.) **October, 1916.**

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.
											4000 γ (·04 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	γ
1	918	944	1009	1005	994	987	988	993	990	1000	1009	1031	1032	1035	1044	1041	1022	1016	989	983	986	1005	1004	1026	990	1004
2	990	994	995	1023	1020	1002	1006	1003	1006	1000	1004	1015	1037	1034	1033	1033	1022	963	945	992	1018	1013	1013	1016	1016	1008
3	1016	1006	1010	1010	1006	1007	1006	1005	999	1000	1003	1016	1026	1030	1033	1027	1022	1001	1013	1016	1015	1010	1006	1013	1010	1012
4 c	1010	1017	1012	1005	1006	1006	1004	1000	994	990	995	1007	1017	1028	1025	1025	1021	1018	1017	1011	1004	1007	1012	1011	1010	1010
5	1010	1015	1002	1004	1006	1006	1006	1003	1000	995	997	1015	1027	1042	1039	1042	1045	1038	1032	1022	991	984	966	962	961	1009
6**	961	969	968	1024	1016	1008	1022	1029	1037	1061	1022	1031	1053	1065	1086	1117	1055	1065	1028	999	889	956	937	929	987	1014
7	987	958	911	940	1012	990	1003	1001	1004	1012	1008	1020	1028	1036	1013	1021	1018	961	1012	977	974	957	1007	986	986	993
8	986	972	987	1017	1008	1017	1022	1011	1016	1005	1011	1022	1012	1024	1029	1014	1014	1002	984	983	980	996	1013	1001	1011	1006
9	1011	1009	1006	1005	1008	1017	1020	1013	1012	999	1005	1010	1023	1030	1040	1017	1016	985	1000	996	1002	1010	1008	1000	1008	1010
10	1008	1008	1000	1005	1001	1006	1007	1001	1000	998	1015	1013	1021	1029	1041	1012	1008	1005	1000	992	1007	1006	1001	1005	1008	1008
11	1008	1000	990	1002	1008	1020	1026	1026	1009	1000	1005	1015	1031	1039	1046	1033	1004	998	1016	980	995	1001	1005	1005	997	1011
12	997	1000	1012	1023	1006	1006	1006	1016	1010	991	986	1001	1016	1031	1033	1022	1028	1006	996	1003	1006	1004	1008	983	953	1007
13	953	987	1000	1004	1028	1036	1000	1003	1010	1016	1016	1033	1047	1046	1047	1044	1030	997	992	988	1004	956	905	940	991	1004
14	991	1008	1010	1017	1012	1002	996	992	997	1000	1005	1015	1012	1016	1010	1005	995	1000	995	1001	1003	1005	1003	1001	999	1004
15	999	1005	1006	1024	1018	1032	1040	1021	998	989	985	1005	1022	1025	1022	1014	1004	1000	1001	1005	1005	1005	1006	1010	1011	1010
16 c	1011	1012	1012	1010	1010	1010	1006	999	987	980	981	997	1006	1016	1021	1016	1005	1004	1009	1010	1011	1014	1005	1007	1006	1006
17 c	1006	1010	1015	1011	1009	1007	1007	1006	994	986	990	1001	1017	1028	1032	1026	1012	1006	1008	1008	1008	1008	1008	1009	1010	1009
18 c	1010	1010	1010	1010	1010	1009	1007	1000	990	985	991	1005	1025	1038	1033	1027	1020	1016	1013	1012	1011	1010	1010	1010	1010	1011
19	1010	1010	1009	1010	1011	1011	1010	1006	996	988	987	1006	1022	1032	1036	1033	1023	1020	1018	1016	1014	1013	1013	1010	1007	1013
20	1006	1005	1003	1002	1005	1005	1006	1004	995	991	995	1013	1039	1032	1030	1028	1039	1027	1026	1031	1021	1014	1010	993	989	1013
21	989	992	985	991	1009	1009	1009	1005	992	989	995	1006	1017	1033	1047	1039	1027	1042	1023	1016	1002	976	977	1005	1005	1008
22	1005	1001	1011	1007	1000	1000	1021	999	989	990	994	1014	1036	1037	1031	1030	1018	1015	1013	967	989	989	1006	1005	1019	1007
23	1019	1021	1018	999	990	998	998	1005	1008	995	1000	1012	1014	1024	1031	1024	964	981	1005	1003	1008	999	1006	1004	1005	1005
24	1005	1009	1013	1015	1007	1001	996	998	992	989	1000	1009	1032	1031	1031	1027	1021	1018	1017	1005	957	982	992	996	1006	1006
25	1006	1008	1008	1006	1010	1011	994	1001	991	989	1000	1024	1027	1030	1030	1026	1019	1005	1010	991	1005	1007	1010	1010	1010	1009
26	1010	1009	1009	1010	1011	1009	1005	1003	995	990	994	1005	1014	1019	1023	1023	1019	1016	1015	1013	1011	1009	984	978	981	1007
27	981	1000	1006	1005	1009	1009	1007	1005	996	990	995	1005	1021	1026	1026	1020	1015	1014	1015	1012	1009	1005	1001	1005	1006	1008
28 c	1006	1009	1009	1011	1012	1012	1012	1008	1000	995	999	1010	1021	1029	1029	1026	1020	1017	1015	1008	1004	1007	1005	1004	1004	1011
29	1003	1004	1006	1009	1011	1010	1007	1003	995	991	995	1002	1013	1024	1031	1034	1031	1009	1015	1013	994	977	968	989	1000	1006
30	1000	1003	1005	1015	1024	1020	1013	1011	1003	994	990	999	1011	1025	1030	1022	1025	1015	1014	1016	1002	1002	1002	1004	999	1010
31	999	1014	1008	1012	1004	1006	1007	1006	1004	1002	998	1006	1018	1025	1031	1028	1020	1015	1010	1010	1011	1005	1003	1000	1004	1010
Mean†	998	1001	1003	1007	1009	1009	1008	1005	999	995	998	1011	1023	1030	1032	1026	1018	1007	1007	1003	1002	999	999	1000	1000	1008

c International quiet day.

† Mean of 30 days; 6th omitted.

** Day "proposed for reproduction" by the International Magnetic Commission (double star).

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

Eskdalemuir. (Z.) **October, 1916.**

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	6	−27	−26	26	67	90	103	110	116	120	123	119	129	150	164	162	161	148	142	136	128	126	123	94	97	106
2	97	96	103	100	101	110	115	120	123	120	122	125	126	129	133	134	142	159	154	141	136	131	126	124	121	124
3	121	122	124	125	126	127	126	126	127	126	128	129	132	136	138	137	141	145	137	131	129	128	127	125	123	130
4 c	123	123	120	121	123	124	126	126	128	127	124	123	122	122	123	124	126	126	126	128	129	125	123	122	122	124
5	122	120	120	122	123	123	123	125	127	127	123	118	115	115	121	125	131	137	137	134	140	136	110	110	97	124
6⁂	97	94	84	71	64	81	92	98	103	100	109	119	127	133	146	209	>293	231	251	223	206	145	110	67	−28	133‡
7	−29	−134	−55	−40	−47	62	96	107	118	126	130	141	140	149	179	174	183	204	169	153	129	111	80	90	92	96
8	92	78	66	59	75	94	93	105	114	124	127	132	152	145	146	173	184	164	155	141	137	135	120	104	109	122
9	108	104	111	119	118	105	103	113	116	125	128	128	131	131	134	145	157	163	148	144	130	128	129	128	126	127
10	126	114	121	124	124	124	124	125	126	127	124	129	132	128	132	140	151	145	143	144	131	130	131	126	113	130
11	113	117	119	120	119	113	98	101	111	117	119	119	120	132	148	167	171	166	153	143	126	135	132	129	126	129
12	126	127	122	102	112	119	122	124	125	131	132	124	114	116	126	143	166	182	179	169	149	139	135	123	95	133
13	95	97	114	121	106	90	105	115	119	122	128	126	128	135	145	166	187	191	178	170	131	113	53	32	105	124
14	105	125	130	132	129	131	134	135	135	134	135	139	134	134	137	141	143	140	137	136	136	137	135	132	130	134
15	130	128	128	124	116	114	116	122	131	135	135	129	127	134	137	139	141	139	137	135	134	131	131	131	131	130
16 c	131	131	132	133	133	133	134	137	140	141	138	132	127	126	127	131	137	137	134	133	133	132	131	128	128	133
17 c	128	128	128	128	129	130	130	131	133	133	130	124	123	124	130	135	140	138	135	133	131	130	129	128	127	130
18 c	126	126	126	126	127	127	128	130	135	134	131	125	121	122	128	133	134	132	130	129	128	127	127	127	127	128
19	127	126	127	126	126	126	126	128	131	132	130	122	119	118	121	125	126	124	125	125	124	125	123	125	126	125
20	126	125	124	123	123	123	122	123	123	124	125	123	120	121	121	126	130	130	130	127	133	137	135	133	132	126
21	131	124	119	117	118	118	116	125	129	129	127	122	120	120	125	141	141	141	142	137	134	125	123	122	123	127
22	123	122	120	115	120	120	104	106	116	121	124	122	123	128	129	129	130	129	130	140	133	125	116	106	98	122
23	98	82	81	98	107	112	114	116	116	119	118	118	120	120	122	128	155	154	141	145	137	129	124	122	124	120
24	124	123	121	119	119	120	122	125	128	129	125	119	117	124	127	127	129	126	126	128	137	128	120	105	115	123
25	115	119	120	119	116	112	112	116	121	122	118	116	121	128	129	130	128	129	129	130	126	124	122	122	122	122
26	122	122	122	121	120	119	121	122	122	122	120	118	119	122	122	122	122	121	120	120	120	122	128	123	121	121
27	120	118	114	116	116	116	117	117	119	121	120	118	116	117	120	123	123	121	120	120	119	119	119	118	119	119
28 c	119	119	118	118	117	116	115	116	119	120	119	118	117	116	117	119	121	121	121	121	121	119	119	119	118	119
29	118	118	119	118	119	117	116	116	117	115	110	108	106	105	108	111	115	124	127	124	132	123	103	111	115	116
30	114	116	116	113	105	101	101	105	110	113	114	112	110	112	115	122	123	122	121	120	119	116	115	115	114	114
31	114	110	105	104	105	109	109	111	114	114	113	110	108	110	114	119	121	122	122	121	119	118	119	117	112	114
Mean †	109	103	106	108	110	114	116	119	123	125	125	123	123	126	131	136	142	143	138	135	130	127	120	116	117	123

c International quiet day. † Mean of 30 days; 6th omitted. ‡ Approximate value.
⁂ Day "proposed for reproduction" by the International Magnetic Commission (double star).

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, 1916.**

Date.	Time, G.M.T.† From	Time, G.M.T.† To	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
Oct.	h m	h m	γ	° ′ ″	° ′	d		
						28o+		
3‡	10 53	11 32	16719	17 29 55	69 41·5	7·2	2	1
						7·2	1	2
						7·2	1	3
						7·2	0	4
						7·2	1	5
						7·1	2	6
						7·1	2	7
						7·1	1	8
						7·1	1	9
						7·1	1	10
9‡	11 29	12 24	..	17 28 9	69 40·3	7·1	2	11
						7·1	1	12
						7·1	2	13
						7·1	0	14
						7·1	0	15
						7·1	0	16
						7·1	0	17
						7·0	0	18
						7·0	0	19
						7·0	1	20
18‡	11 8	11 54	16731	17 28 2	69 40·5	7·0	1	21
						7·0	1	22
						7·0	1	23
						7·0	1	24
						6·9	0	25
						6·9	0	26
						6·9	0	27
						6·8	0	28
						6·8	1	29
						6·8	0	30
26‡	10 31	11 8	16721	17 22 57	69 39·7	6·8	0	31

* Mean of the Corrected Readings of the Thermometers in the N, W, and V Magnetograph Boxes.
† The times are those of the Declination and Dip observations only. The Horizontal Force Values given refer to the mean time of the Declination Observations, being derived by a combined use of the actual observations and curve measurements.
‡ The observations of Horizontal Force and Declination, made from 30th August to 20th November inclusive, were made with Magnetometer No. 140, instead of No. 60, which was used on all other occasions.

OCTOBER, 1916.

The mean character figure was 0·8. The principal disturbance of the month began about $15\frac{1}{2}^h$ on the 6th. The ranges of the components were 319 γ, 334 γ, and 528 γ. The changes in V between $6^d\ 15^h$ and $7^d\ 6^h$ showed a very close resemblance in general character to those of 11th January 1916 and (more strikingly) 8th March 1916. A noticeable feature is the "repetition" on the 7th, 8th, and 9th of large movements taking place on the 6th. The magnetograms for this storm are reproduced in this volume. Prominent "bays" on the N trace centered at $9^d\ 16^h\ 47^m$ and $9^d\ 19^h\ 36^m$. Noticeable movements, corresponding to counter-clockwise rotations on the horizontal vector diagram, occurred between 19^h and 20^h on the 11th. Sudden changes, resembling each other so closely as to suggest a "repetition," occurred in N at $22^d\ 21^h\ 49^m$ and $24^d\ 22^h\ 9^m$. In neither case were they accompanied by any noteworthy change in the other components.

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

Eskdalemuir. (X.) **November, 1916.**

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	999	998	992	987	989	984	988	993	992	988	977	968	966	969	973	980	987	983	973	987	996	994	999	994	995	986
2	995	992	991	993	992	990	994	1003	1003	992	979	969	969	974	978	983	980	979	985	994	1008	994	987	991	989	988
3	988	992	994	992	993	1001	1007	1008	1003	983	965	940	932	938	938	967	963	968	973	979	984	992	998	993	978	979
4	978	971	973	977	983	984	971	978	968	962	947	922	927	955	963	968	964	978	980	1003	973	953	933	952	963	965
5	962	968	968	971	970	968	985	977	942	949	927	927	905	951	972	968	962	981	977	1016	977	997	993	990	1002	968
6	1001	967	981	978	977	976	971	970	958	948	950	946	951	943	951	967	982	987	965	966	953	976	971	972	970	966
7	970	975	976	973	965	975	970	974	968	952	923	926	931	965	962	974	972	980	981	985	986	986	990	980	980	969
8	979	988	986	974	980	980	985	985	976	965	956	956	955	954	967	967	973	975	1006	979	981	985	989	980	998	976
9	998	985	984	984	984	991	988	982	965	960	955	953	960	967	972	970	985	980	986	984	984	980	975	1014	982	978
10	981	985	978	990	992	986	973	988	985	975	963	956	958	963	950	959	970	984	984	991	988	985	984	985	986	977
11	985	987	983	983	983	983	995	990	977	958	951	938	945	953	960	971	979	978	982	1002	982	988	988	993	998	977
12	998	990	981	994	988	989	974	973	978	953	944	923	938	958	934	953	984	998	1018	1007	998	986	987	979	1001	976
13	1000	973	962	971	963	979	975	982	981	981	978	977	974	970	978	976	983	983	986	992	987	987	986	986	984	979
14 c	984	983	983	984	984	983	985	983	981	976	970	968	968	977	963	976	982	987	988	986	992	981	987	987	987	981
15	986	979	979	990	980	990	991	989	985	967	961	971	962	952	977	977	980	987	990	988	991	990	987	1003	985	981
16	984	981	981	984	981	984	991	992	990	983	975	972	973	975	979	974	970	985	981	984	1007	992	985	986	987	983
17	987	984	983	980	985	996	993	985	994	994	985	979	974	975	977	984	986	993	995	994	990	992	993	989	996	987
18	995	987	985	988	987	1000	996	994	989	971	970	950	958	972	970	973	980	982	988	989	992	989	992	1003	975	983
19	975	980	984	983	979	983	985	983	984	982	973	967	968	974	972	975	984	983	973	975	999	982	985	986	981	980
20 c	980	982	982	987	992	990	987	986	987	985	973	959	972	977	982	984	987	989	991	978	974	973	987	987	989	982
21 c	989	979	987	979	978	988	989	987	987	985	980	979	977	978	980	983	988	977	987	988	987	989	989	992	1002	985
22	1001	986	981	978	981	985	989	992	975	956	979	971	970	967	969	973	980	983	987	990	990	991	995	992	990	981
23	989	980	980	987	990	983	984	987	990	987	975	968	963	964	967	964	966	970	979	970	966	976	976	985	985	977
24 c	985	979	983	977	976	979	982	982	979	973	971	970	970	975	977	980	984	986	983	985	984	986	985	985	979	980
25	978	983	982	983	988	990	991	991	990	989	983	981	980	974	974	978	964	967	969	970	975	980	1029	989	974	982
26	974	982	981	979	984	988	984	974	984	985	978	976	975	974	970	975	980	984	1003	1004	1009	984	981	999	988	984
27	987	973	981	978	978	1002	1002	995	988	987	979	969	981	988	993	994	993	988	993	1003	979	986	983	989	964	987
28	964	944	960	964	967	968	977	974	973	972	969	968	969	974	968	974	982	983	984	983	983	988	1009	983	974	974
29	973	976	979	967	978	989	989	982	973	976	969	968	954	947	943	946	966	984	978	976	987	990	976	973	978	973
30	977	978	971	963	985	987	985	981	966	958	953	949	938	942	952	957	943	950	949	965	972	965	988	972	981	965
Mean	985	980	980	981	982	986	986	985	980	973	965	959	959	965	967	972	977	981	984	987	986	985	987	987	985	978

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

Eskdalemuir. (−Y.) **November, 1916.**

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.
											4000 γ (·04 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	1004	998	999	1003	1004	1005	1016	1011	1004	998	999	1008	1013	1023	1026	1025	1022	1020	1016	1017	1011	1007	968	1003	997	1008
2	997	1003	1005	1004	1008	1009	1013	1007	1001	996	999	1013	1025	1034	1034	1030	1021	1025	1024	1023	977	1000	988	966	989	1008
3	989	1003	1003	1004	1004	1008	1008	1006	1000	993	1004	1025	1047	1049	1040	1030	1028	1020	1013	1006	1001	981	974	952	966	1007
4	966	962	1008	1016	998	998	1004	999	989	994	1009	1017	1024	1026	1030	1028	1012	1014	1014	953	977	960	932	950	979	995
5	979	998	1004	1009	1014	1020	1015	1007	1004	1009	999	1017	1021	1025	1028	1016	983	998	979	962	993	966	977	1006	1000	1002
6	999	961	976	994	1001	1002	1012	1024	1004	995	1001	1008	1024	1014	1004	1020	952	974	989	987	986	996	977	998	1006	996
7	1006	997	993	1008	1013	1009	1005	1000	988	991	991	1005	1013	1023	1025	994	1005	997	999	997	987	992	986	1003	1014	1001
8	1014	1013	1002	1002	1006	1003	1008	995	993	997	1002	1015	1024	1025	1027	1010	987	998	971	1003	1003	993	976	976	991	1001
9	991	1004	1003	1003	1008	995	997	996	993	998	1004	1013	1021	1024	1023	1013	1013	1006	954	986	988	982	983	974	972	998
10	972	983	982	992	992	996	998	996	993	987	997	1007	1023	1029	1027	1021	1014	1008	994	1003	1003	999	998	998	1002	1001
11	1001	1002	1006	1007	1013	1007	997	996	992	992	999	1010	1016	1019	1021	1013	1011	1007	1006	969	992	996	994	1000	959	1002
12	959	975	987	985	992	1017	1019	1023	1011	1002	998	1000	1009	1035	1050	1020	1014	1013	1024	1048	1018	986	996	1012	978	1008
13	978	1005	980	985	986	986	991	996	997	991	999	1010	1013	1009	1012	1005	1010	1016	1013	1006	1002	1001	998	1002	998	1000
14 c	998	990	997	997	1002	1001	999	998	1001	999	1001	1007	1012	1022	1013	1011	1012	1009	1017	1000	994	1001	1002	999	999	1004
15	999	997	1019	992	996	996	997	997	995	993	1001	1013	1024	1012	1016	1018	1013	1011	1006	1007	1006	1001	990	1004	992	1004
16	992	998	999	1002	1002	1005	999	997	995	994	997	1002	1011	1014	1023	1024	1012	1014	1014	1012	982	988	986	996	1002	1003
17	1001	1000	996	1003	1003	997	1000	998	996	996	1001	1009	1006	1016	1020	1017	1012	1009	1010	1006	1003	1001	997	963	983	1002
18	983	996	995	996	1001	995	997	1000	1010	1001	1011	1007	1009	1014	1015	1012	1009	1001	1006	1001	1005	1001	969	944	987	999
19	987	990	996	1001	994	995	996	996	996	997	1001	1004	1007	1017	1021	1011	1013	1016	1005	995	979	1000	997	996	995	1001
20 c	995	996	996	1001	1000	1001	1001	1001	1001	1000	1005	1005	1011	1016	1012	1011	1010	1011	1011	997	986	996	990	1002	995	1002
21 c	994	990	984	983	995	1000	999	995	995	996	1000	1004	1005	1009	1010	1009	1008	999	996	1004	1000	999	995	989	967	998
22	967	956	984	990	992	995	997	1000	995	1015	1000	1011	1008	1009	1011	1010	1006	1005	1002	1001	1000	1000	997	989	985	998
23	985	984	993	1004	998	989	994	997	997	1000	1005	1014	1018	1030	1037	1029	1026	1004	1005	990	979	993	979	983	969	1001
24 c	969	973	988	998	996	997	997	996	995	992	996	1005	1011	1020	1021	1017	1012	1010	1010	1005	1004	1000	1000	995	996	1001
25	996	997	999	1002	1004	1002	1001	1000	1000	1001	1009	1010	1013	1016	1020	1018	1017	1018	1017	995	1000	971	914	944	968	998
26	967	990	991	999	999	1001	1000	1006	1006	1004	1007	1009	1020	1025	1019	1021	1018	1002	983	983	969	983	988	979	997	999
27	997	1011	995	972	978	983	982	993	999	1004	1009	1007	1016	1020	1021	1020	1015	1015	974	981	1009	1008	999	964	930	997
28	930	978	988	996	991	1000	999	996	999	1000	1002	1004	1010	1010	1006	994	1003	1004	998	994	999	993	987	993	986	996
29	985	993	999	1012	1003	998	1001	1004	1004	1003	1007	1012	1014	1019	1019	1015	995	982	993	988	987	971	972	992	997	999
30	997	994	997	1017	1003	1000	1009	1014	1003	1005	997	1005	1009	1006	1013	1009	985	1006	1003	983	990	974	938	977	980	997
Mean	987	991	995	999	1000	1000	1002	1001	999	998	1002	1009	1016	1020	1021	1016	1008	1007	1002	997	994	991	982	985	986	1001

c International quiet day.

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

Eskdalemuir. (Z.) **November, 1916.**

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 c	112	100	98	100	103	107	106	106	107	109	109	107	107	109	111	115	117	120	124	121	118	117	120	111	103	110
2	103	106	108	109	109	109	107	106	109	110	108	104	103	104	107	112	116	118	116	116	122	117	123	125	114	111
3	113	109	107	107	107	106	106	106	108	111	108	105	106	118	147	161	144	132	131	127	124	121	114	99	79	117
4	79	62	58	64	84	95	101	105	110	111	110	110	117	118	119	127	130	123	122	131	123	127	101	29	85	102
5	85	99	99	107	107	98	99	107	114	114	117	119	135	140	135	138	141	132	132	127	119	117	109	98	60	116
6	59	58	71	83	90	95	99	100	105	110	109	110	113	122	130	131	152	152	140	145	134	84	91	101	92	108
7	92	93	101	103	104	104	103	113	117	114	117	117	120	123	126	137	132	125	121	118	119	119	109	106	101	114
8	101	88	89	96	98	100	101	104	106	107	109	107	108	111	117	126	135	129	125	116	115	114	112	101	92	109
9	91	95	99	100	99	102	102	104	106	107	106	107	108	111	113	115	114	118	128	119	116	116	112	89	90	107
10	89	83	80	79	77	81	87	91	97	103	105	106	103	104	115	122	119	116	116	113	109	109	108	107	106	101
11	106	106	106	105	102	103	103	103	105	106	*108*	110	111	116	121	123	121	119	118	119	113	111	108	103	80	110
12	80	81	86	81	75	68	72	81	90	96	94	103	117	125	138	137	132	122	112	107	150	154	135	121	120	107
13	120	115	117	116	115	110	107	105	106	105	103	104	105	108	110	111	111	107	110	109	109	108	107	106	107	109
14 c	107	107	107	108	107	107	107	105	106	107	108	108	108	108	114	111	111	109	108	112	108	109	106	106	105	108
15	105	105	92	94	102	102	102	103	103	106	104	103	105	111	111	113	113	111	111	111	109	108	110	103	102	106
16	102	103	103	103	104	105	105	105	104	103	98	99	100	102	104	108	111	110	108	110	111	105	106	104	102	105
17	102	102	102	100	99	98	99	99	98	97	95	96	97	98	98	100	103	103	103	104	105	104	103	107	100	100
18	100	97	97	97	96	93	90	90	89	91	92	97	102	102	99	103	106	106	104	103	101	102	106	104	99	99
19	99	97	97	96	95	92	94	97	97	93	93	94	94	95	98	100	99	101	108	115	107	103	101	100	101	99
20 c	101	100	100	97	96	95	95	96	96	97	95	97	96	97	99	98	98	98	97	103	108	107	104	100	96	99
21 c	95	93	88	91	93	92	90	92	94	95	96	97	99	98	98	99	99	102	103	102	102	102	101	99	93	97
22	93	89	89	90	92	93	93	93	96	94	96	94	97	98	99	101	101	99	98	98	97	97	96	96	93	95
23	93	94	93	88	82	86	89	89	89	92	92	92	93	96	99	104	110	116	112	116	116	110	108	98	94	98
24 c	94	92	89	92	94	94	93	93	93	93	93	92	91	91	94	98	98	96	96	96	98	99	99	100	99	95
25	100	99	97	96	94	93	92	91	90	89	87	87	87	89	91	94	99	103	108	117	113	115	108	94	93	97
26	93	90	92	91	90	90	89	90	90	90	90	89	88	90	96	97	97	98	99	95	93	90	90	88	89	92
27	90	61	54	79	86	82	81	81	82	84	91	90	91	90	91	91	92	94	105	99	96	95	95	88	85	87
28	85	57	62	79	84	87	93	92	91	89	90	93	94	94	97	101	99	97	98	98	97	95	88	86	87	89
29	88	91	91	90	88	89	88	88	88	89	91	92	93	99	105	110	118	118	110	110	88	86	88	84	68	95
30	68	74	83	82	82	85	86	86	92	92	93	95	100	117	127	134	144	135	128	124	112	105	98	92	86	102
Mean	95	92	92	94	95	95	96	97	99	100	100	101	103	106	110	114	115	114	113	113	111	108	105	98	94	103

c International quiet day.

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, 1916.**

Date.	Time, G.M.T.† From	Time, G.M.T.† To	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
Nov.	h m	h m	γ	° ′ ″	° ′	d 280+		
8‡	11 35	12 9	16737	17 28 16	69 39·8	6·7	0	1
						6·7	1	2
						6·6	1	3
						6·6	2	4
						6·5	2	5
						6·5	2	6
						6·4	1	7
						6·4	1	8
						6·4	1	9
						6·4	1	10
14‡	11 45	12 26	16735	17 25 35	69 39·1	6·4	1	11
						6·4	2	12
						6·4	0	13
						6·4	0	14
						6·4	0	15
						6·3	0	16
						6·3	0	17
						6·2	1	18
						6·2	1	19
20‡	11 29	12 11	16734	17 25 38	69 39·1	6·1	0	20
						6·1	0	21
						6·1	0	22
						6·1	1	23
						6·0	0	24
						6·0	1	25
						6·0	1	26
						6·0	1	27
						5·9	1	28
						5·9	1	29
24	12 7	12 39	16732	17 26 30	69 38·6	5·8	1	30

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

† The times are those of the Declination and Dip observations only. The Horizontal Force values given refer to the mean time of the Declination observations, being derived by a combined use of the actual observations and curve measurements.

‡ The observations of Horizontal Force and Declination made from 30th August to 20th November inclusive, were made with Magnetometer No. 140 instead of No. 60, which was used on all other occasions.

NOVEMBER, 1916.

The comparatively high mean character figure 0·8 was due, not to any large disturbance, but rather to frequent and prolonged moderate activity. A number of cases of apparent "repetition" occurred during the month. For example, a sudden increase in W at $1^d\ 0^h\ 14^m$ closely resembles a similar change on October $31^d\ 0^h\ 40^m$. An inverted "bay" on the W trace at $1^d\ 20^h\ 55^m$ was repeated at $2^d\ 20^h\ 16^m$. A "bay" on N at $4^d\ 19^h\ 29^m$ was repeated at $5^d\ 18^h\ 39^m$ and at $6^d\ 16^h\ 25^m$. In addition, the W traces during the following times showed marked resemblance:—4th, 18^h–24^h; 5th, 18^h–24^h; 6th, $15\frac{1}{2}^h$–23^h. A sharp inverted "tooth" at $6^d\ 20^h\ 28^m$ on N, accompanied by a similar change in W, is noteworthy. From 13^h to 21^h on the 12th there was a period of great "internal" activity on N and W, such as is frequently seen during the first part of a storm. A "bay" on the N trace at $15^d\ 23^h\ 3^m$ was repeated at $16^d\ 20^h\ 7^m$, $17^d\ 23^h\ 39^m$, $18^d\ 22^h\ 32^m$, and $19^d\ 19^h\ 40^m$. A "sudden commencement" is noted at $25^d\ 21^h\ 35^m$, and again at $26^d\ 22^h\ 33^m$, but the disturbance following the latter was very moderate, although it was prolonged until the evening of the 30th.

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

Eskdalemuir. (X.) **December, 1916.**

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	981	970	961	956	975	977	979	974	946	932	948	941	942	927	955	950	960	942	962	970	951	966	967	961	950	957
2	949	955	956	945	960	987	975	965	953	950	916	931	943	948	956	966	954	946	974	955	975	962	970	980	966	957
3	966	960	966	976	967	964	975	974	935	936	948	940	951	951	921	961	961	960	972	975	975	1010	992	966	970	963
4	969	977	969	964	976	977	974	974	973	962	952	954	951	955	954	963	970	965	969	980	976	980	987	985	983	969
5	983	983	975	974	967	977	982	982	981	979	967	964	954	969	970	970	974	976	978	978	982	972	975	977	994	975
6 c	993	978	978	978	976	981	985	977	978	964	951	949	952	959	964	969	974	980	982	983	976	988	987	977	979	974
7	979	980	981	981	983	985	991	984	984	980	971	968	964	974	978	980	982	984	982	969	979	958	968	973	975	977
8	974	977	977	980	983	982	996	988	980	969	963	959	961	967	959	961	968	974	971	977	980	979	979	977	977	974
9	977	974	982	981	983	985	983	980	974	967	969	963	960	959	965	971	967	968	973	967	972	977	982	980	978	973
10 c	977	976	981	981	977	987	991	982	976	967	958	957	961	961	967	970	968	969	980	984	982	981	981	977	990	975
11	990	981	980	982	987	986	986	989	986	972	976	973	971	968	967	965	966	976	981	986	986	986	982	978	976	979
12	975	976	974	983	991	998	989	983	980	970	972	985	980	972	971	971	976	970	981	972	970	980	994	971	972	978
13	972	976	966	1004	985	977	975	977	978	976	978	976	976	975	973	972	966	977	978	977	978	984	976	978	980	977
14	979	974	975	978	979	985	978	969	981	986	981	977	978	979	979	979	979	970	969	975	979	988	982	1000	979	979
15	979	979	978	979	978	973	991	977	979	977	979	975	949	933	965	970	954	969	976	976	1002	981	954	970	974	973
16	973	992	975	969	977	974	968	978	974	969	949	934	956	967	958	969	973	973	978	979	976	978	978	983	973	971
17	973	974	969	974	983	969	977	979	974	970	967	965	965	964	968	972	972	964	973	947	963	969	968	974	976	970
18	976	973	973	970	973	975	978	978	978	978	976	973	971	968	964	958	973	973	982	982	982	982	978	991	982	975
19	981	977	977	980	982	981	982	978	974	975	972	973	976	976	976	976	977	982	983	985	982	977	982	978	981	978
20	981	982	982	988	991	982	981	979	975	979	976	974	972	973	973	974	977	981	986	978	978	977	973	975	980	979
21 c	979	971	975	979	981	980	976	981	980	973	974	976	976	979	984	984	984	986	986	986	984	982	982	981	982	980
22 c	982	981	982	983	984	984	986	986	985	982	980	980	982	985	985	982	982	983	986	987	986	985	986	989	981	984
23 c	980	980	983	985	986	986	988	989	990	987	980	979	979	983	982	980	983	985	985	988	987	986	985	985	983	984
24	983	985	985	988	990	994	995	999	1003	997	989	985	985	989	989	987	988	991	990	985	979	979	980	980	981	988
25	980	980	984	985	988	990	993	991	989	988	987	984	988	988	984	982	984	980	972	956	966	953	969	974	969	980
26	969	975	979	982	982	983	984	983	980	979	974	972	975	979	984	983	983	987	988	1018	1015	982	969	969	985	983
27	985	979	973	978	986	995	990	992	986	978	965	972	955	966	971	933	934	939	958	974	979	981	980	974	975	972
28	974	968	968	954	973	986	989	984	973	959	958	967	968	952	968	968	970	975	968	978	977	1017	959	959	973	971
29	973	962	974	970	979	983	981	982	968	977	973	968	965	968	972	976	978	979	978	982	979	975	962	962	976	974
30	975	970	971	972	986	985	977	983	986	977	943	946	943	954	967	971	967	972	959	972	965	1006	971	975	981	971
31	981	987	969	964	978	984	984	983	973	972	968	964	947	948	954	962	967	973	982	977	977	975	1007	972	971	973
Mean†	977	975	974	975	979	982	982	980	975	970	964	963	962	963	967	969	970	971	976	977	979	981	978	976	977	974

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

Eskdalemuir. (−Y.) **December, 1916.**

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.
													4000 γ (·04 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	980	998	989	1010	1002	998	1000	1005	1013	1028	1025	1009	1025	1019	1031	1018	958	979	974	958	948	939	953	957	988	993
2	988	1002	998	1006	992	998	1020	1017	1011	998	997	1013	1014	1015	976	1000	1007	979	951	985	961	993	989	993	1003	996
3	1003	1005	993	982	998	997	1002	1008	1003	1002	1015	1003	1002	1018	997	998	998	985	998	1002	994	994	1003	986	984	999
4	983	985	982	995	991	991	996	1006	1007	998	994	997	998	1002	987	996	971	982	1002	987	994	992	995	994	982	993
5	982	992	991	991	997	1001	1001	999	996	994	992	998	1001	1009	1010	1006	1002	999	995	983	977	986	979	976	979	994
6 c	979	990	991	993	996	997	997	997	996	986	994	1009	1007	1013	1013	1008	1004	1002	1000	998	997	984	979	992	997	997
7	997	1000	1001	1001	998	1007	997	995	992	992	996	1002	1002	1008	1007	1006	1002	998	994	984	974	970	986	996	999	996
8	999	998	1001	1002	999	997	1023	1010	1007	997	998	1005	1007	1014	1013	1010	1004	1002	998	996	993	992	995	996	996	1002
9	995	998	1007	997	996	996	996	995	999	996	1001	1007	1013	1019	1018	1018	1006	982	996	987	982	988	990	991	993	999
10 c	993	994	995	992	1001	992	996	995	995	992	997	1001	1004	1012	1012	1006	988	996	1001	996	995	992	979	986	1001	996
11	1001	996	999	1001	1000	1000	1001	1004	997	991	1000	1006	1010	1018	1016	1017	1013	1006	1000	996	996	993	990	979	970	1001
12	970	979	980	1016	973	975	986	996	995	993	996	1003	1016	1016	1008	1006	1013	1011	1011	1013	1006	984	958	961	964	994
13	964	969	970	961	969	980	993	996	997	1000	1006	1005	1005	1008	1008	1011	1006	1003	1004	1001	987	990	989	991	990	993
14	989	986	989	997	993	991	985	989	996	997	1001	999	1005	1010	1006	1011	1012	1010	999	1000	995	992	993	989	983	997
15	983	981	990	993	994	923	908	995	990	1000	1000	1009	1003	1004	1010	1015	978	997	1006	1005	910	928	967	989	980	982
16	980	974	989	985	998	1002	1002	993	996	1000	998	1004	1006	1005	1007	984	991	999	998	997	994	991	977	974	974	993
17	974	978	990	992	989	991	1006	998	995	994	996	999	1003	1002	1002	1003	1002	988	963	980	972	980	983	990	988	991
18	987	993	984	987	994	993	994	994	994	994	995	999	1001	1003	1004	1001	1004	1005	999	998	996	994	990	956	984	994
19	984	984	992	994	993	994	996	994	997	1001	1000	999	1005	1010	999	999	1002	999	999	999	998	987	973	994	994	996
20	994	988	992	979	977	977	989	993	1006	1004	1002	1005	1004	1004	1001	1001	1000	1000	1001	999	1001	1000	989	993	991	996
21 c	991	985	983	984	988	991	998	998	994	996	999	1001	1005	1004	1002	999	999	999	998	998	994	989	993	995	994	995
22 c	993	990	993	993	993	996	995	993	992	993	997	998	1002	1001	998	997	998	998	998	997	994	993	993	993	990	995
23 c	990	992	993	993	996	998	997	993	992	992	‡	..	..	..	..	..	..	..	..	..	..	..	..	..	‡	..
24	‡	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	‡	..
25	‡	..	..	..	..	..	..	..	..	..	..	‡	1003	1004	1004	1005	1009	1012	1011	996	987	979	981	987	984	..
26	983	996	985	986	992	991	992	991	991	996	1002	1007	1009	1007	1008	1004	1001	999	998	997	996	985	971	983	1002	995
27	1002	984	980	993	993	996	996	996	997	996	1002	1012	1018	1020	1018	1009	1011	1013	1001	996	992	989	987	975	964	998
28	964	960	965	969	978	975	993	999	1000	1008	1012	1012	1012	1001	999	1001	1002	998	994	992	980	976	971	966	978	989
29	978	984	957	969	986	986	994	994	992	1001	1000	997	1000	1005	1003	999	997	997	997	995	989	977	971	965	970	989
30	970	981	992	991	991	996	992	993	997	1000	987	997	1003	1008	1002	997	996	996	991	987	966	936	967	980	983	988
31	982	991	959	983	985	987	991	991	986	990	991	1001	1002	1010	1006	1011	1003	993	970	988	988	962	926	972	983	986
Mean†	985	988	987	991	991	990	994	998	998	998	1000	1003	1007	1009	1006	1005	999	997	994	993	985	981	980	983	986	994

c International quiet day. † Mean of 28 days; 23rd, 24th, and 25th omitted. ‡ Magnet touching side of case.

XLVII.—READINGS OF THE VERTICAL COMPONENT OF TERRESTRIAL MAGNETIC FORCE FOR EACH HOUR OF GREENWICH MEAN TIME.

Eskdalemuir. (Z.) **December, 1916.**

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	87	90	90	78	78	86	91	93	97	96	97	102	107	125	130	130	152	146	150	121	124	103	84	78	73	105
2	74	66	80	71	66	78	79	84	91	96	103	104	106	108	122	124	125	133	138	123	117	91	91	92	74	98
3	74	51	67	78	82	87	91	94	100	103	100	103	106	105	117	114	115	114	111	107	108	101	86	91	95	96
4	96	91	85	82	84	89	91	92	93	96	96	97	99	101	110	111	117	114	108	105	103	102	98	95	93	98
5	94	93	92	93	92	90	92	93	94	94	94	93	96	95	98	100	99	99	99	102	105	102	103	100	90	96
6 c	91	86	86	87	87	89	90	92	95	98	98	95	96	96	98	100	100	98	98	98	99	98	97	95	95	95
7	96	96	96	96	95	94	92	94	95	94	92	92	94	95	97	98	98	98	98	105	104	105	101	98	98	97
8	99	98	97	96	96	93	83	83	86	90	92	93	96	100	106	111	108	107	105	102	98	96	94	93	92	97
9	93	92	86	87	88	88	88	88	89	90	86	86	89	91	94	96	98	108	102	101	101	97	94	92	90	93
10 c	91	91	90	87	84	83	83	84	86	86	88	88	87	87	91	94	99	97	93	91	90	89	90	90	83	89
11	84	83	85	85	85	85	84	82	82	83	84	84	84	89	94	94	94	94	93	91	89	88	88	90	91	87
12	92	89	85	74	71	68	70	75	79	80	82	80	79	81	88	91	92	93	93	98	103	105	98	99	98	86
13	100	97	92	82	78	78	83	86	87	86	88	89	90	89	91	91	94	93	92	92	95	94	94	94	91	90
14	92	92	92	90	88	87	88	88	85	83	81	82	81	84	88	89	91	93	96	98	99	93	90	84	88	89
15	90	91	91	90	88	81	69	78	83	83	86	87	90	97	97	100	110	106	98	97	106	97	95	94	94	92
16	95	93	86	86	86	84	85	88	88	90	94	92	93	95	99	106	103	101	99	98	97	95	95	94	94	93
17	95	93	92	92	91	89	84	87	90	91	92	92	92	94	95	95	96	99	105	105	101	97	97	95	92	94
18	94	91	86	90	91	92	92	92	92	91	91	90	92	94	94	98	96	95	93	94	94	93	94	96	89	93
19	90	90	90	90	89	89	89	89	89	87	87	89	90	91	92	92	92	90	90	90	90	94	95	92	90	90
20	91	90	87	83	80	79	82	83	83	83	85	86	87	87	88	88	89	89	89	91	93	93	97	96	93	88
21 c	95	94	90	89	89	88	88	87	88	90	91	91	92	92	91	90	91	90	90	90	91	92	91	90	90	90
22 c	91	92	90	89	88	87	87	88	88	88	90	92	91	91	90	90	90	90	90	90	90	90	90	89	89	90
23 c	90	90	89	88	87	87	87	86	87	86	88	90	88	88	88	89	90	89	88	88	87	88	88	88	89	88
24	91	90	90	88	87	85	84	84	83	83	84	84	83	82	83	84	86	87	87	90	89	90	90	89	88	86
25	90	89	88	88	87	86	86	86	86	85	85	85	86	85	86	86	88	90	95	104	108	115	109	99	98	92
26	100	96	96	94	94	93	92	91	89	88	88	90	92	91	92	91	91	91	92	91	92	97	105	104	93	93
27	94	93	96	94	92	90	89	88	88	88	91	90	90	93	98	115	130	128	123	111	103	98	97	98	98	99
28	99	96	90	89	82	79	84	86	89	89	87	87	90	98	102	101	101	99	102	101	101	84	77	87	81	91
29	83	79	85	89	87	90	93	92	95	91	93	95	95	93	95	98	98	98	98	97	97	99	104	92	91	93
30	93	93	94	95	94	93	93	94	93	93	99	101	100	97	99	102	103	104	108	110	112	108	98	95	90	99
31	92	80	88	88	91	93	94	93	97	97	96	92	91	93	98	100	103	109	115	111	107	109	105	94	94	97
Mean †	92	89	89	87	86	87	87	88	90	90	91	92	93	95	98	100	103	103	102	100	100	97	95	93	90	94

c International quiet day.

† Mean of 28 days; 23rd, 24th, and 25th omitted.

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

Eskdalemuir. **December, 1916.**

Date.	Time, G.M.T.† From	Time, G.M.T.† To	Horizontal Force.	Declination.	Dip.	Temperature in Magnet House.*	Magnetic Character of day (0–2).	Date.
Dec.	h m	h m	γ	° ′ ″	° ′	d		
						280+		
5	11 27	11 45	..	..	69 39·7	5·8	2	1
						5·8	2	2
						5·8	1	3
						5·8	1	4
						5·7	0	5
						5·7	0	6
7	10 51	11 32	16730	17 24 38	69 38·6	5·7	0	7
						5·6	0	8
						5·6	0	9
						5·5	0	10
						5·5	0	11
						5·5	1	12
12	11 55	12 26	16736	17 25 18	69 37·3	5·4	1	13
						5·4	1	14
						5·4	2	15
						5·3	1	16
						5·3	1	17
						5·2	0	18
20	11 57	12 39	16724	17 23 57	69 38·1	5·2	0	19
						5·1	0	20
						5·0	0	21
						5·0	0	22
						4·9	0	23
						4·9	0	24
23	11 17	12 11	16743	..	..	4·8	1	25
						4·8	0	26
						4·8	1	27
						4·8	1	28
						4·7	0	29
						4·7	1	20
27	12 22	12 53	16746	17 27 15	69 38·3	4·7	1	31

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

† The times are those of the Declination and Dip observations only. The Horizontal Force values given refer to the mean time of the Declination observations, being derived by a combined use of the actual observations and curve measurements.

DECEMBER, 1916.

The average character figure was 0·6. The mean daily range was well below the mean of the year, but, although 16 days had " 0 " assigned to them, there were very few days quite free from disturbance. The quietest period was from the 21st to the 24th. A noticeable group of pulsations of low amplitude, and of period averaging $1\frac{1}{4}^{m}$, occurred from 12^{h} to 19^{h} on the 23rd. There was a similar group on the following day from $14\frac{1}{2}^{h}$ to 21^{h}. These were recorded on the N trace; the W component instrument was out of order on the two days. Periods of considerable " internal " activity were noted between 6^{h} and 12^{h} on the 1st, 2nd, 4th, 13th, and 16th. The month included no other feature of particular interest.

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

(Not corrected for the effect of the North Force on the West Magnetograph, or *vice versa*, or for the effect of the Horizontal Force on the V.F. Balance.)

Eskdalemuir. *Mean Hourly Values, Greenwich Mean Time, for the Months, Year, and Seasons.* 1916.

△X (or △N). XLIX.—NORTH COMPONENT (all days except Jan. 13, 14, 15, Feb. 9, Mar. 8, Apr. 15, 16, 17, Aug. 27 (only), Oct. 6, Dec. 23, 24, 25).

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.	2·6	0·4	1·9	4·0	7·1	x 7·8	6·5	3·8	− 1·2	− 5·6	− 9·4	n̄ 11·1	− 8·6	− 5·8	− 5·1	− 2·8	− 0·6	1·5	0·0	1·2	6·6	1·0	1·5	4·4
F.	4·9	2·9	2·1	4·3	6·1	9·9	x 10·1	8·1	2·8	− 7·1	− 13·7	n̄ 17·1	− 16·1	− 12·1	− 7·3	− 4·1	− 2·9	1·5	1·6	3·9	3·5	5·2	7·2	6·2
M.	8·2	3·6	6·0	6·9	6·3	6·6	1·9	− 1·2	− 6·4	− 17·8	− 25·9	n̄ 28·0	− 23·3	− 12·8	− 2·3	1·7	6·6	12·1	x 12·2	9·9	9·5	11·2	6·1	8·9
A.	10·7	6·6	4·3	7·9	8·4	8·4	3·6	− 6·1	− 17·3	− 31·8	n̄ 38·5	n̄ 38·5	− 30·4	− 17·2	− 5·9	4·0	13·9	20·7	x 21·7	20·2	17·2	14·6	13·4	9·9
M.	6·7	7·6	5·0	3·5	− 0·4	− 0·5	− 3·4	− 13·7	− 26·6	− 34·6	n̄ 37·7	− 34·4	− 25·9	− 16·6	− 0·1	10·6	22·4	x 28·6	27·1	23·2	19·6	17·4	13·5	8·7
J.	5·8	5·1	4·7	6·2	5·7	3·3	− 4·5	− 13·4	− 21·5	− 32·7	n̄ 37·4	− 34·0	− 26·8	− 14·9	1·0	11·8	22·0	24·3	x 26·8	22·1	18·0	12·9	8·8	6·8
J.	4·3	4·7	6·6	3·3	6·1	3·1	− 4·5	− 15·6	− 24·7	n̄ 33·7	− 33·5	− 30·1	− 22·5	− 13·0	− 4·2	5·2	16·6	28·6	x 29·5	26·2	17·5	12·5	9·1	8·8
A.	3·9	1·7	0·6	4·5	6·2	3·5	− 2·1	− 11·3	− 24·3	n̄ 33·0	− 30·5	− 24·9	− 18·5	− 12·1	− 2·6	8·2	17·0	21·3	x 22·8	22·3	16·4	11·8	10·6	8·6
S.	8·6	4·3	7·0	4·3	7·7	5·1	0·0	− 12·4	− 23·7	− 29·7	n̄ 31·3	− 27·2	− 18·1	− 11·4	− 2·4	4·4	8·1	13·8	16·6	17·6	16·1	x 20·4	14·5	8·0
O.	4·9	3·3	3·9	7·0	11·6	13·1	9·9	− 1·0	− 10·0	− 23·6	n̄ 28·9	− 28·8	− 21·2	− 13·3	− 3·3	− 0·1	5·4	7·4	10·7	x 13·8	10·3	10·1	10·8	7·9
N.	2·0	2·1	2·3	3·5	7·4	7·6	7·1	2·1	− 5·2	− 13·0	− 19·4	n̄ 19·5	− 13·4	− 11·2	− 5·9	− 1·6	2·8	5·6	x 8·9	7·6	6·3	8·7	8·7	6·5
D.	1·9	0·4	1·8	5·9	8·1	x 8·8	6·5	1·1	− 3·7	− 9·1	− 10·2	n̄ 11·3	− 10·2	− 6·9	− 4·9	− 3·8	− 2·5	2·5	3·7	5·0	7·6	3·7	2·3	3·3
Y.	5·4	3·6	3·9	5·1	6·7	6·4	2·6	− 5·0	− 13·5	− 22·6	n̄ 26·3	− 25·4	− 19·6	− 12·3	− 3·6	2·8	9·1	14·0	x 15·1	14·4	12·4	10·8	8·9	7·3
W.	2·8	1·5	2·0	4·4	7·2	x 8·5	7·6	3·8	− 1·8	− 8·7	− 13·1	n̄ 14·8	− 12·1	− 9·0	− 5·8	− 3·1	− 0·8	2·8	3·5	4·4	6·0	4·7	4·9	5·1
Eq.	8·1	4·5	5·3	6·5	8·5	8·3	3·9	− 5·2	− 14·3	− 25·7	n̄ 31·1	− 30·6	− 23·3	− 13·6	− 3·5	2·5	8·5	13·5	15·3	x 15·4	13·3	14·1	11·2	8·7
S.	5·2	4·7	4·2	4·4	4·4	2·4	− 3·6	− 13·5	− 24·3	− 33·5	n̄ 34·8	− 30·9	− 23·4	− 14·1	− 1·5	8·9	19·5	25·7	x 26·5	23·4	17·9	13·6	10·5	8·2

−△Y (or △W). L.—WEST COMPONENT (all days except Jan. 13, 14, 15, Feb. 9, Mar. 8, Apr. 15, 16, 17, Aug. 27 (only), Oct. 6, Dec. 23, 24, 25).

	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.	− 8·8	− 5·3	− 3·7	− 4·1	− 3·3	− 0·6	0·6	0·9	0·9	2·1	5·9	9·8	x 14·3	14·1	9·5	8·6	7·2	1·6	− 2·0	− 3·2	− 10·9	n̄ 12·8	− 12·0	− 8·9
F.	− 8·4	− 4·9	− 1·3	− 1·6	− 1·8	− 2·8	− 3·8	− 5·4	n̄ 9·1	− 8·6	− 2·4	7·9	17·0	x 20·0	16·6	12·3	6·3	5·2	3·3	− 8·2	− 7·5	− 8·2	− 7·5	− 6·8
M.	− 15·7	− 14·5	− 12·6	− 8·3	− 5·7	− 6·5	− 10·5	− 11·1	− 13·4	− 8·9	3·8	19·5	30·4	x 33·4	30·7	25·0	13·5	3·6	0·3	− 2·4	− 7·3	− 13·3	n̄ 16·2	− 14·0
A.	− 6·4	− 9·4	− 7·9	− 7·6	− 9·0	− 7·6	− 17·2	n̄ 26·6	− 26·0	− 19·2	− 4·1	14·9	29·6	x 33·7	28·0	21·8	15·5	9·2	4·0	− 0·7	− 1·7	− 3·4	− 4·7	− 5·2
M.	− 2·3	− 8·0	− 12·4	− 10·0	− 16·7	− 20·9	− 27·1	n̄ 30·6	− 23·4	− 10·8	3·9	18·1	26·1	x 26·5	23·8	22·6	18·4	13·9	8·1	7·6	1·8	− 0·8	− 3·0	− 4·7
J.	− 10·1	− 8·3	− 7·6	− 11·5	− 16·1	− 24·3	− 29·9	n̄ 31·9	− 30·3	− 18·9	− 4·2	12·5	25·7	32·8	x 33·8	29·7	25·9	17·7	12·7	6·8	4·5	0·8	− 2·8	− 6·8
J.	− 2·6	− 5·4	− 5·1	− 7·4	− 13·2	− 21·1	− 27·2	n̄ 30·3	− 28·9	− 18·8	− 3·2	11·9	23·2	x 29·1	29·0	23·3	18·6	17·4	11·4	4·3	− 0·2	− 3·2	− 0·7	− 1·0
A.	− 4·3	− 3·5	− 2·5	− 8·5	− 14·9	− 19·9	− 24·3	n̄ 25·7	− 22·6	− 10·1	4·9	19·2	28·7	x 29·2	24·1	15·3	9·1	5·6	5·7	6·2	4·0	− 4·4	− 7·1	− 4·3
S.	− 9·4	− 9·0	− 8·0	− 8·1	− 6·8	− 9·7	− 11·8	n̄ 14·0	− 12·1	− 2·7	10·6	22·4	x 29·9	26·4	20·5	11·1	3·4	0·1	2·5	− 3·5	− 4·3	− 6·8	− 9·4	− 11·4
O.	− 5·5	− 4·4	− 0·1	1·7	1·5	0·6	− 2·5	− 8·4	n̄ 12·9	− 9·4	3·4	15·0	21·9	x 23·6	17·9	9·4	− 1·2	− 1·0	− 5·7	− 6·9	− 9·4	− 10·1	− 9·1	− 8·4
N.	− 9·8	− 5·7	− 1·9	− 1·3	− 0·8	0·6	0·4	− 2·5	− 2·9	0·7	8·3	15·0	19·4	x 20·6	14·9	7·1	6·3	0·8	− 4·0	− 6·4	− 9·4	n̄ 19·1	− 15·7	− 14·7
D.	− 6·1	− 6·9	− 3·2	− 2·7	− 4·1	0·2	3·6	3·4	3·6	5·6	9·3	12·3	x 15·2	11·5	10·4	4·6	2·6	− 0·2	− 1·0	− 9·8	− 13·1	n̄ 14·6	− 11·9	− 8·6
Y.	− 7·4	− 7·1	− 5·5	− 5·8	− 7·6	− 9·3	− 12·5	n̄ 15·2	− 14·8	− 8·2	3·0	14·9	23·4	x 25·1	21·6	15·9	10·5	6·2	2·9	− 1·4	− 4·5	− 8·0	− 8·3	− 7·9
W.	− 8·2	− 5·7	− 2·5	− 2·4	− 2·5	− 0·7	0·2	− 0·9	− 1·9	− 0·1	5·2	11·3	x 16·5	x 16·5	12·9	8·2	5·6	1·8	− 0·9	− 6·9	− 10·2	n 13·7	− 11·8	− 9·7
Eq.	− 9·3	− 9·3	− 7·2	− 5·6	− 5·0	− 5·8	− 10·5	− 15·0	n̄ 16·1	− 10·0	3·4	18·0	27·9	x 29·3	24·3	16·8	7·8	3·0	0·3	− 3·4	− 5·7	− 8·4	− 9·9	− 9·7
S.	− 4·8	− 6·3	− 6·9	− 9·3	− 15·2	− 21·5	− 27·1	n̄ 29·6	− 26·3	− 14·6	0·4	15·4	25·9	x 29·4	27·7	22·7	18·0	13·7	9·4	6·2	2·5	− 1·9	− 3·4	− 4·2

△Z (or △V). LI.—VERTICAL COMPONENT (all days except Jan. 13, 14, 15, Feb. 9, Mar. 8, Apr. 15, 16, 17, Aug. 27, 28, 29, Oct. 6, Dec. 23, 24, 25).

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

x and *n* mark respectively the mean maximum and minimum hourly 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 effect of the North Force on the West Magnetograph and *vice versa*, and also for the effect of the Horizontal Force on the V.F. Balance.)

Eskdalemuir. *Mean Hourly Values, Greenwich Mean Time, for the Months, Year, and Seasons.* **1916.**

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.
	△D	LII.—DECLINATION (measured positive towards the West) (all days except Jan. 13, 14, 15, Feb. 9, Mar. 8, Apr. 15, 16, 17, Aug. 27, Oct. 6, Dec. 23, 24, 25).																						
J.	−1′88	−1′07	−0′84	−1′04	−1′08	−0′60	−0′29	−0′06	0′25	0′75	1′73	2·61	x 3′33	3′13	2′18	1′86	1′45	0′21	−0′39	−0′70	−2′54	n̄ 2′57	−2′44	−2′01
F.	−1·94	−1·15	−0·39	−0·58	−0·72	−1·17	−1·37	−1·56	n̄ 1·96	−1·25	0·37	2·61	4·31	x 4·66	3·71	2·67	1·41	0·92	0·54	−1·85	−1·68	−1·94	−1·92	−1·72
M.	n̄ 3·59	−3·06	−2·85	−2·04	−1·51	−1·67	−2·17	−2·11	−2·22	−0·64	2·34	5·55	x 7·39	7·34	6·16	4·79	2·25	−0·04	−0·70	−1·08	−2·02	−3·30	−3·55	−3·29
A.	−1·90	−2·26	−1·81	−1·98	−2·28	−2·00	−3·60	n̄ 4·84	−4·03	−1·80	1·57	5·30	x 7·67	7·66	5·86	4·03	2·18	0·53	−0·55	−1·39	−1·39	−1·56	−1·74	−1·63
M.	−0·86	−2·03	−2·74	−2·17	−3·25	−4·07	−5·11	n̄ 5·15	−2·96	0·02	3·07	5·66	x 6·70	6·22	4·68	3·77	2·23	0·98	−0·09	0·06	−0·86	−1·22	−1·43	−1·46
J.	−2·34	−1·94	−1·77	−2·64	−3·51	−4·97	n̄ 5·59	−5·43	−4·62	−1·70	1·47	4·54	6·69	x 7·34	6·56	5·10	3·72	1·99	0·84	−0·01	−0·24	−0·63	−1·09	−1·76
J.	−0·78	−1·34	−1·41	−1·64	−2·96	−4·32	n̄ 5·05	−4·98	−4·14	−1·62	1·43	4·18	5·93	x 6·49	5·94	4·26	2·62	1·66	0·42	−0·76	−1·12	−1·40	−0·70	−0·73
A.	−1·07	−0·78	−0·52	−1·94	−3·29	−4·11	n̄ 4·63	−4·34	−2·94	0·05	2·84	5·30	x 6·75	6·46	4·88	2·51	0·74	−0·22	−0·29	−0·15	−0·23	−1·58	−2·04	−1·37
S.	−2·37	−2·03	−1·99	−1·86	−1·80	−2·21	−2·30	−1·97	−0·92	1·29	3·99	6·06	x 6·96	5·97	4·16	1·92	0·17	−0·82	−0·54	−1·77	−1·82	−2·57	n̄ 2·74	−2·72
O.	−1·38	−1·06	−0·26	−0·09	−0·42	−0·69	−1·09	−1·58	−1·92	−0·39	2·43	4·71	x 5·60	5·44	3·72	1·85	−0·57	−0·66	−1·78	−2·20	−2·47	n̄ 2·60	−2·45	−2·14
N.	−2·04	−1·25	−0·52	−0·46	−0·61	−0·34	−0·35	−0·62	−0·25	0·93	2·81	4·13	4·63	x 4·73	3·28	1·49	1·06	−0·19	−1·33	−1·72	−2·23	n̄ 4·28	−3·61	−3·27
D.	−1·30	−1·38	−0·74	−0·90	−1·30	−0·50	0·30	0·60	0·94	1·66	2·44	3·10	x 3·61	2·68	2·34	1·13	0·67	−0·20	−0·43	−2·23	−3·04	n̄ 3·09	−2·47	−1·89
Y.	−1·79	−1·61	−1·32	−1·45	−1·89	−2·22	−2·60	n̄ 2·67	−2·06	−0·22	2·21	4·48	x 5·80	5·67	4·45	2·95	1·49	0·35	−0·36	−1·15	−1·64	−2·23	−2·18	−2·00
W.	−1·79	−1·21	−0·62	−0·75	−0·93	−0·65	−0·43	−0·41	−0·26	0·52	1·83	3·11	x 3·97	3·80	2·88	1·79	1·15	0·19	−0·40	−1·62	−2·37	n̄ 2·97	−2·61	−2·22
Eq.	−2·31	−2·10	−1·73	−1·49	−1·50	−1·64	−2·29	n̄ 2·63	−2·27	−0·38	2·58	5·40	x 6·90	6·58	4·97	3·15	1·01	−0·25	−0·89	−1·61	−1·92	−2·51	−2·62	−2·44
S.	−1·26	−1·52	−1·61	−2·10	−3·25	−4·37	n̄ 5·09	−4·97	−3·67	−0·81	2·20	4·92	6·52	x 6·63	5·51	3·91	2·33	1·10	0·22	−0·22	−0·61	−1·21	−1·31	−1·33
	△I.	LIII.—INCLINATION (all days except Jan. 13, 14, 15, Feb. 9, Mar. 8, Apr. 15, 16, 17, Aug. 27, Oct. 6, Dec. 23, 24, 25). Aug. 28, 29 omitted from V only.																						
J.	−0′08	−0′02	−0′18	−0′33	−0′53	n̄ 0′63	−0′57	−0′37	−0′02	0′28	0′46	x 0′50	0′26	0′15	0′26	0′14	0′01	0′03	0′24	0′18	−0′08	0′26	0′21	−0′16
F.	−0·22	−0·16	−0·18	−0·32	−0·43	n̄ 0·67	−0·66	−0·49	−0·05	0·55	x 0·81	x 0·81	0·59	0·33	0·18	0·13	0·24	−0·03	0·01	0·12	0·09	−0·06	−0·28	−0·30
M.	−0·52	−0·22	−0·53	n̄ 0·64	−0·63	−0·58	−0·10	0·19	0·60	1·24	x 1·44	1·27	0·82	0·22	−0·24	−0·25	−0·19	−0·27	−0·30	−0·19	−0·20	−0·36	−0·15	−0·42
A.	−0·94	−0·62	−0·47	−0·68	−0·61	−0·55	0·10	0·98	1·65	2·38	x 2·42	1·97	1·21	0·46	0·01	−0·39	−0·77	−1·04	n̄ 1·06	−0·92	−0·84	−0·76	−0·77	−0·76
M.	−0·58	−0·62	−0·32	−0·22	0·18	0·33	0·68	1·42	2·04	x 2·22	2·06	1·57	0·96	0·48	−0·34	−0·83	−1·38	n̄ 1·63	−1·45	−1·30	−1·01	−0·94	−0·76	−0·54
J.	−0·32	−0·29	−0·27	−0·28	−0·13	0·23	0·87	1·48	1·93	x 2·33	2·24	1·63	0·98	0·17	−0·72	−1·17	n̄ 1·65	−1·53	−1·59	−1·22	−1·01	−0·74	−0·53	−0·43
J.	−0·46	−0·42	−0·56	−0·25	−0·26	0·13	0·79	1·56	2·07	x 2·38	1·99	1·44	0·77	0·16	−0·24	−0·54	−1·09	n̄ 1·79	−1·69	−1·38	−0·88	−0·62	−0·52	−0·58
A.	−0·42	−0·36	−0·28	−0·38	−0·30	0·06	0·56	1·22	1·96	x 2·22	1·67	1·00	0·50	0·27	−0·08	−0·47	−0·83	−1·00	−1·15	n̄ 1·23	−0·99	−0·65	−0·63	−0·68
S.	−0·77	−0·51	−0·61	−0·36	−0·55	−0·25	0·18	1·05	1·73	x 1·89	1·67	1·16	0·51	0·32	0·02	−0·10	−0·13	−0·43	−0·73	−0·77	−0·75	n̄ 1·17	−0·86	−0·57
O.	−0·61	−0·46	−0·54	−0·75	−0·94	n̄ 0·98	−0·64	0·26	0·97	1·76	x 1·79	1·54	0·98	0·55	0·16	0·26	0·13	−0·13	−0·32	−0·63	−0·45	−0·60	−0·76	−0·59
N.	−0·22	−0·30	−0·34	−0·40	−0·65	n̄ 0·68	−0·60	−0·18	0·32	0·75	x 1·03	0·95	0·56	0·50	0·36	0·28	−0·03	−0·11	−0·23	−0·14	−0·07	−0·10	−0·35	−0·33
D.	−0·13	−0·02	−0·22	−0·52	−0·62	n̄ 0·75	−0·64	−0·24	0·08	0·41	0·41	x 0·46	0·38	0·34	0·28	0·39	0·34	0·07	−0·04	0·04	−0·13	0·09	0·10	−0·10
Y.	−0·44	−0·33	−0·38	−0·43	−0·45	−0·36	0·00	0·57	1·11	x 1·53	1·50	1·19	0·71	0·33	−0·03	−0·21	−0·45	−0·65	n̄ 0·69	−0·62	−0·53	−0·47	−0·44	−0·45
W.	−0·16	−0·13	−0·23	−0·39	−0·56	n̄ 0·68	−0·62	−0·32	0·08	0·50	x 0·68	x 0·68	0·45	0·33	0·27	0·23	0·14	−0·01	−0·01	0·05	−0·05	0·05	−0·08	−0·22
Eq.	−0·71	−0·45	−0·54	−0·61	−0·68	−0·59	−0·12	0·62	1·24	1·82	x 1·83	1·49	0·88	0·39	−0·01	−0·12	−0·24	−0·47	−0·60	−0·63	−0·56	n̄ 0·72	−0·64	−0·59
S.	−0·44	−0·42	−0·36	−0·28	−0·13	0·19	0·73	1·42	2·00	x 2·29	1·99	1·41	0·80	0·27	−0·35	−0·75	−1·24	n̄ 1·49	−1·47	−1·28	−0·97	−0·74	−0·61	−0·56
	△H.	LIV.—HORIZONTAL FORCE (all days except Jan. 13, 14, 15, Feb. 9, Mar. 8, Apr. 15, 16, 17, Aug. 27, Oct. 6, Dec. 23, 24, 25).																						
J.	γ −0·1	γ −1·2	γ 0·7	γ 2·6	γ 5·8	γ x 7·3	γ 6·4	γ 3·9	γ − 0·9	γ − 4·7	γ − 7·2	γ n̄ 7·7	γ − 3·9	γ −1·3	γ − 2·0	γ − 0·1	γ 1·6	γ 1·9	γ − 0·6	γ 0·2	γ 3·0	γ − 2·9	γ − 2·2	γ 1·5
F.	2·2	1·3	1·7	3·7	5·2	x 8·6	8·5	6·1	0·0	− 9·4	−13·8	n̄ 13·9	−10·3	−5·6	− 2·0	− 0·2	− 0·8	3·0	2·5	1·3	1·0	2·5	4·7	3·9
M.	3·1	− 0·9	2·0	4·1	4·3	4·3	− 1·3	− 4·5	−10·1	−19·7	n̄ 23·6	−20·8	−13·1	−2·2	7·0	9·1	10·4	x 12·6	11·7	8·7	6·8	6·7	0·9	4·2
A.	8·3	3·5	1·7	5·3	5·3	5·8	− 1·8	−13·8	−24·3	−36·1	n̄ 38·0	−32·2	−20·1	−6·2	2·8	10·3	17·9	x 22·5	21·9	19·1	15·9	12·9	11·3	7·9
M.	5·7	4·8	1·1	0·4	− 5·4	− 6·7	−11·4	−22·3	−32·4	n̄ 36·3	−34·8	−27·4	−16·9	−7·9	7·0	16·9	26·8	x 31·5	28·3	24·4	19·2	16·4	12·0	6·9
J.	2·5	2·4	2·2	2·4	0·7	− 4·2	−13·2	−22·3	−29·6	n̄ 36·9	n̄ 36·9	−28·7	−17·9	−4·3	11·1	20·1	28·7	28·5	x 29·4	23·1	18·5	12·5	7·5	4·5
J.	3·3	2·8	4·8	0·9	1·8	− 3·3	−12·5	−24·0	−32·2	n̄ 37·7	−32·9	−25·2	−14·5	−3·6	4·7	11·9	21·4	x 32·5	31·5	26·3	16·6	11·0	8·5	8·1
A.	2·4	0·6	− 0·2	1·7	1·4	− 2·6	− 9·3	−18·4	−29·9	n̄ 34·5	−27·6	−18·0	− 9·1	−2·8	4·8	12·4	19·0	22·0	x 23·5	23·1	16·8	9·9	8·0	6·9
S.	5·4	1·4	4·3	1·7	5·3	2·0	− 3·5	−16·0	−26·2	n̄ 29·2	−26·7	−19·2	− 8·4	−2·9	3·8	7·5	8·7	13·2	16·5	15·8	14·1	x 17·4	11·0	4·2
O.	3·0	1·9	3·7	7·2	11·6	x 12·7	8·7	− 3·4	−13·4	−25·3	n̄ 26·5	−23·0	−13·7	−5·6	2·2	2·8	4·8	6·8	8·5	11·1	7·0	6·6	7·5	5·0
N.	−1·0	0·3	1·7	2·9	6·9	x 7·5	6·9	1·3	− 5·8	−12·2	n̄ 16·0	−14·1	− 7·0	−4·5	− 1·2	0·6	4·6	5·5	7·3	5·3	3·2	2·6	3·6	1·8
D.	0·0	−1·7	0·7	4·8	6·5	x 8·4	7·3	2·1	− 2·5	− 7·0	− 6·9	n̄ 7·1	− 5·2	−3·2	− 1·5	− 2·3	− 1·6	2·3	3·2	2·0	3·3	− 0·8	− 1·4	0·5
Y.	2·9	1·3	2·0	3·1	4·1	3·3	− 1·3	− 9·3	−17·3	−24·1	n̄ 24·2	−19·8	−11·7	−4·2	3·1	7·4	11·8	15·2	x 15·3	13·4	10·5	7·9	6·0	4·6
W.	0·2	−0·3	1·2	3·5	6·1	x 7·9	7·3	3·3	− 2·3	− 8·3	n̄ 11·0	−10·7	− 6·6	−3·6	− 1·7	− 0·5	0·9	3·2	3·1	2·2	2·6	0·3	1·2	1·9
Eq.	4·9	1·5	2·9	4·5	6·6	6·2	0·5	− 9·4	−18·5	−27·6	n̄ 28·7	−23·8	−13·8	−4·2	4·0	7·4	10·4	13·8	x 14·7	13·7	11·0	10·9	7·7	5·4
S.	3·5	2·6	2·0	1·4	−0·4	− 4·2	−11·6	−21·7	−31·1	n̄ 36·4	−33·1	−24·8	−14·6	−4·7	6·9	15·3	24·0	x 28·6	28·2	24·2	17·8	12·4	9·0	6·6

x and n̄ mark respectively the mean maximum and minimum hourly values in each month or season.

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

(Not corrected for the effect of the North Force on the West Magnetograph, or *vice versa*, or for the effect of the Horizontal Force on the V.F. Balance.)

Eskdalemuir. *Mean Hourly Values, Greenwich Mean Time, for the Months, Year, and Seasons.* **1916.**

LV.—NORTH COMPONENT. △X (or △N).

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.†	0·8	1·5	2·2	4·1	6·0	x 6·7	5·7	4·1	− 0·7	− 5·3	− 8·4	n̄ 9·2	− 5·7	− 2·3	− 0·6	− 2·7	− 2·2	− 0·8	− 0·6	0·8	2·8	1·2	1·2	1·3
F.	2·1	0·8	0·8	3·1	5·2	5·6	6·7	5·1	1·6	− 6·8	−12·5	n̄ 14·8	−12·2	− 9·1	− 5·3	− 5·2	− 1·0	4·3	x 6·8	6·2	5·9	5·3	3·8	3·5
M.	7·0	6·2	5·9	7·3	9·2	10·2	10·1	4·3	− 6·2	−16·8	−24·7	n̄ 29·5	−26·8	−18·2	− 9·7	− 1·7	2·8	5·4	6·7	9·9	11·0	14·4	x 14·5	9·1
A.	11·4	9·4	7·8	9·2	9·8	9·0	6·8	1·8	−13·3	−28·1	−35·5	n̄ 36·1	−29·9	−22·5	−12·3	− 2·9	6·8	11·6	15·8	16·4	x 19·0	16·8	15·0	14·4
M.	5·9	4·3	2·5	3·7	0·9	3·2	0·8	− 8·8	−18·0	−26·2	−29·8	n̄ 32·8	−23·0	−14·0	− 4·8	5·2	16·4	22·3	21·3	x 22·7	18·5	13·5	7·9	8·5
J.	9·7	8·4	6·8	7·5	6·3	5·4	0·5	− 7·3	−17·4	−28·6	n̄ 34·7	−33·5	−24·6	−17·3	− 5·1	5·4	14·4	15·7	x 18·8	18·6	16·7	13·9	10·4	10·2
J.	5·0	5·9	8·6	9·6	11·1	6·8	− 4·2	−16·7	−26·0	n̄ 32·4	−28·9	−26·4	−18·2	− 7·9	− 2·2	5·0	14·9	19·6	x 21·2	20·5	11·8	8·2	7·7	7·2
A.	8·1	8·6	6·9	7·0	7·9	6·8	1·5	− 8·0	−20·1	−31·2	n̄ 33·9	−30·7	−18·8	−11·1	− 2·4	2·9	10·0	15·1	x 17·2	16·7	14·8	12·1	10·6	9·9
S.	8·9	5·6	6·1	6·0	7·8	6·7	3·6	− 6·5	−18·6	−28·5	n̄ 30·6	−25·8	−19·1	−10·4	− 4·5	− 0·4	6·2	9·7	15·0	15·1	13·6	x 15·5	13·1	11·6
O.	7·3	6·5	8·1	9·3	11·2	11·4	9·0	2·8	− 7·9	−20·3	−29·1	n̄ 30·7	−23·5	−15·6	− 6·8	− 2·8	2·9	8·3	9·7	x 12·5	11·6	9·4	9·6	7·2
N.	3·0	4·1	1·3	2·2	3·1	4·4	4·2	3·1	− 0·8	− 8·1	n̄ 13·7	−12·0	− 7·5	− 7·8	− 2·4	2·5	1·2	1·1	1·3	3·0	0·9	5·6	5·0	x 6·3
D.	− 1·8	0·8	2·1	1·7	4·5	x 6·0	3·8	2·6	− 4·7	−10·7	n̄ 11·2	− 9·4	− 6·0	− 3·1	− 2·5	− 1·3	1·1	4·2	x 6·0	3·4	4·7	4·5	2·1	3·2
Y.	5·6	5·2	4·9	5·9	6·9	6·8	4·0	− 2·0	−11·0	−20·2	n̄ 24·4	−24·2	−17·9	−11·6	− 4·9	0·3	6·1	9·7	11·6	x 12·2	10·9	10·0	8·4	7·7
W.	1·0	1·8	1·6	2·8	4·7	x 5·7	5·1	3·7	− 1·2	− 7·7	n̄ 11·4	−11·3	− 7·9	− 5·6	− 2·7	− 1·7	− 0·2	2·2	3·4	3·4	3·6	4·2	3·0	3·6
Eq.	8·6	6·9	7·0	8·0	9·5	9·3	7·4	0·6	−11·5	−23·4	−30·0	n̄ 30·5	−24·8	−16·7	− 8·3	− 1·9	4·6	8·7	11·8	13·5	13·8	x 14·0	13·0	10·6
S.	7·2	6·8	6·2	6·9	6·5	5·5	− 0·4	−10·2	−20·4	−29·6	n̄ 31·8	−30·8	−21·1	−12·6	− 3·6	4·6	13·9	18·2	x 19·6	x 19·6	15·4	11·9	9·1	8·9

LVI.—WEST COMPONENT. −△Y (or △W).

	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.†	− 2·7	0·1	1·6	0·0	− 0·4	− 0·9	− 2·1	− 2·9	− 4·3	− 4·0	− 0·8	4·6	x 9·0	8·0	4·7	3·5	2·5	2·1	0·4	−2·2	n̄ 5·4	− 5·3	−3·1	− 2·3
F.	− 3·8	− 2·3	0·4	0·1	− 2·6	− 3·1	− 5·4	− 6·9	n̄ 10·8	− 9·9	− 4·2	5·0	15·3	x 17·0	14·5	9·0	5·7	2·6	0·7	−0·6	− 2·3	− 7·2	−5·1	− 6·0
M.	− 2·7	− 2·8	− 1·8	− 2·3	− 3·2	− 4·2	− 9·3	−15·5	n̄ 19·0	−16·9	− 6·5	7·4	18·8	x 22·1	18·0	12·0	6·5	4·3	3·4	2·9	2·5	− 2·4	−6·6	− 4·7
A.	0·1	− 3·3	− 4·8	− 7·1	− 7·3	−10·8	−20·7	−31·1	n̄ 34·2	−24·5	−11·1	6·4	23·7	x 29·1	23·8	17·9	13·7	9·8	8·7	7·3	5·2	4·1	3·5	1·8
M.	− 2·5	− 2·3	− 8·3	−12·0	−18·4	−24·3	n̄ 29·7	−28·1	−22·6	− 8·8	9·5	24·3	x 32·5	29·6	22·0	16·3	12·5	7·8	5·2	3·4	0·7	− 2·7	−3·2	− 0·8
J.	− 0·5	− 2·1	− 3·1	− 8·2	−16·0	−21·7	−26·3	−30·4	n̄ 30·8	−18·4	− 2·5	13·3	27·2	x 30·2	28·6	21·7	15·9	8·6	6·4	3·4	2·1	1·7	−0·2	1·2
J.	− 1·7	− 1·4	− 1·9	− 7·2	−16·5	−24·2	−30·1	n̄ 31·6	−25·7	−12·0	2·0	17·9	29·8	x 32·7	27·6	17·9	10·8	7·3	2·6	1·7	0·0	0·7	2·1	− 0·8
A.	− 3·0	− 4·3	− 6·6	−10·3	−16·4	−22·9	n̄ 26·8	−26·3	−24·0	−10·5	4·8	18·1	28·0	x 29·3	25·2	16·5	9·8	6·1	5·8	7·7	5·2	− 0·9	−1·6	− 2·7
S.	− 4·3	− 4·0	− 4·8	− 7·1	− 9·7	−12·4	−17·2	n̄ 19·5	−17·5	− 8·6	4·2	19·9	x 24·9	22·2	13·6	6·3	4·1	2·0	3·6	2·3	2·1	2·2	−0·8	− 1·1
O.	2·0	2·0	− 0·2	− 0·2	− 0·7	− 2·3	− 6·9	−16·5	n̄ 22·2	−18·2	− 5·4	7·9	18·5	x 18·7	14·7	6·4	3·0	3·2	0·6	−1·6	0·1	− 1·1	−0·9	− 1·1
N.	n̄ 12·5	−10·2	− 6·6	− 3·5	− 2·1	− 0·4	− 2·6	− 3·5	− 5·7	− 2·4	3·2	7·9	x 15·5	14·0	12·2	10·5	7·5	7·8	2·4	−3·1	−1·5	−11·0	−4·4	−11·1
D.*	− 3·3	− 2·8	− 3·1	0·7	− 0·1	2·1	1·1	− 0·7	− 3·4	1·3	6·5	8·5	x 11·2	9·7	5·7	0·2	1·4	1·6	−0·7	−3·2	−8·9	n̄ 12·7	−7·5	− 3·8
Y.	− 2·9	− 2·8	− 3·3	− 4·8	− 7·8	−10·4	−14·7	−17·7	n̄ 18·4	−11·1	0·0	11·8	21·2	x 21·9	17·5	11·5	7·8	5·3	3·3	1·5	0·0	− 2·9	−2·3	− 2·6
W.	− 5·6	− 3·8	− 1·9	− 0·7	− 1·3	− 0·6	− 2·2	− 3·5	− 6·1	− 3·7	1·2	6·5	x 12·7	12·2	9·3	5·8	4·3	3·5	0·7	−2·3	−4·5	n̄ 9·0	−5·0	− 5·8
Eq.	− 1·2	− 2·0	− 2·9	− 4·2	− 5·3	− 7·4	−13·5	−20·6	n̄ 23·2	−17·1	− 4·7	10·4	21·5	x 23·0	17·5	10·6	6·8	4·8	4·1	2·7	2·5	0·7	−1·2	− 1·3
S.	− 1·9	− 2·5	− 5·0	− 9·4	−16·8	−23·3	−28·2	n̄ 29·1	−25·8	−12·4	3·4	18·4	29·4	x 30·4	25·8	18·1	12·2	7·5	5·0	4·0	2·0	− 0·3	−0·7	− 0·8

LVII.—VERTICAL COMPONENT. △Z (or △V).

	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.†	−0·6	−1·1	−1·4	−1·9	−2·4	n̄ 2·6	−2·4	−1·9	−0·7	1·6	x 1·8	0·1	1·1	1·5	1·5	x 1·8	1·3	1·0	1·5	1·2	0·7	0·5	−0·1	−0·6
F.	0·2	0·3	−0·5	−0·8	−0·9	−1·5	−1·8	−1·7	−1·3	− 1·4	− 2·9	n̄ 3·3	− 2·4	−1·1	1·9	2·6	x 3·5	2·5	1·4	1·3	1·9	2·0	1·3	0·7
M.	−1·1	−0·7	−0·3	−0·4	−0·2	0·0	1·5	2·1	1·9	− 0·6	− 4·4	− 6·4	n̄ 6·7	−4·7	−1·5	1·8	3·8	x 4·2	3·9	3·3	2·9	1·8	0·0	−0·2
A.	−0·7	−1·2	−0·3	0·2	1·6	3·9	x 7·0	6·5	3·7	− 2·6	− 6·5	−12·2	n̄ 12·4	−8·5	−3·8	1·3	3·7	4·0	4·3	4·0	3·0	2·1	1·6	1·3
M.	−2·7	−5·5	−3·3	−0·5	2·1	2·3	2·7	1·7	−1·3	− 6·1	−12·5	n̄ 13·5	− 9·1	−4·5	−0·1	3·5	7·5	9·1	x 9·7	8·3	7·3	5·3	1·5	−1·3
J.	−0·4	−0·2	0·0	0·8	1·2	0·2	1·0	0·2	−1·6	− 5·2	− 5·8	n̄ 8·2	n̄ 8·2	−6·2	−2·6	2·6	6·4	x 7·0	6·0	5·0	3·8	2·8	1·8	0·6
J.	−2·2	−2·6	−2·2	0·2	2·6	3·8	4·0	1·0	−4·6	−10·0	n̄ 13·4	n̄ 13·4	−10·5	−5·7	−0·1	6·5	9·3	x 11·1	10·5	7·3	5·9	2·7	0·7	−1·1
A.	3·4	2·5	3·1	4·2	5·9	x 6·7	6·4	4·0	0·1	− 5·3	−11·0	n̄ 12·9	−11·7	−8·8	−3·8	0·9	5·0	5·0	3·5	2·1	1·4	0·9	−0·1	−1·6
S.	−0·1	−0·6	−0·2	0·6	1·8	3·3	3·3	3·3	1·5	− 2·2	− 7·4	n̄ 10·4	− 8·8	−5·1	0·5	3·3	3·4	x 3·6	x 3·6	3·2	3·1	1·3	−0·3	−0·7
O.	−1·9	−2·5	−2·1	−1·4	−1·2	−0·5	0·9	4·0	4·0	1·5	− 2·5	n̄ 4·9	− 4·8	−1·8	1·7	x 4·9	4·1	2·6	2·2	1·9	0·1	−0·7	−1·6	−2·0
N.	−4·5	n̄ 6·3	−5·0	−3·9	−3·4	−4·1	−3·8	−2·9	−1·8	− 1·7	− 1·6	− 1·5	− 1·0	1·8	2·9	3·4	3·9	4·6	5·9	6·0	x 6·1	5·4	2·7	−1·2
D.	−0·8	−2·3	−3·2	−4·1	n̄ 4·2	−3·9	−3·4	−1·9	−1·0	0·5	0·8	0·5	0·6	1·5	2·6	x 4·1	3·0	2·1	1·8	1·9	2·0	1·9	1·2	0·1
Y.	−0·9	−1·7	−1·3	−0·6	0·2	0·6	1·3	1·2	−0·1	− 2·6	− 5·5	n̄ 7·2	− 6·2	−3·5	−0·1	3·1	4·6	x 4·7	4·5	3·8	3·2	2·2	0·7	−0·5
W.	−1·4	−2·4	−2·5	−2·7	−2·7	n̄ 3·0	−2·8	−2·1	−1·2	− 0·3	− 0·5	− 1·0	− 0·4	0·9	2·2	x 3·0	2·9	2·6	2·7	2·6	2·7	2·4	1·3	−0·2
Eq.	−0·9	−1·3	−0·7	−0·2	0·5	1·7	3·2	x 4·0	2·8	− 1·0	− 5·2	n̄ 8·5	− 8·2	−5·0	−0·8	2·9	3·7	3·6	3·5	3·1	2·2	1·1	−0·1	−0·4
S.	−0·5	−1·5	−0·6	1·2	2·9	3·2	3·5	1·7	−1·9	− 6·7	−10·7	n̄ 12·0	− 9·9	−6·3	−1·7	3·4	7·0	x 8·0	7·4	5·7	4·6	2·9	1·0	−0·9

x and n̄ mark respectively the mean maximum and minimum hourly values in each month or season.

* 4 days only used; 23rd omitted.

† 4 days only used; 15th omitted.

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

(Corrected for the effect of the North Force on the West Magnetograph and *vice versa*, and also for the effect of the Horizontal Force on the V.F. Balance.)

Eskdalemuir. *Mean Hourly Values, Greenwich Mean Time, for the Months, Year, and Seasons.* **1916.**

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

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.
	△D.																							
J.	−0′58	−0′08	0′19	−0′25	−0′45	−0′58	−0′75	−0′82	−0′80	−0′45	0′36	1′47	x 2′11	1′70	0′96	0′85	0′62	0′45	0′20	−0′48	n̄ 1′24	−1′10	−0′68	−0′53
F.	−0′88	−0′51	0′02	−0′17	−0′83	−0′95	−1′47	−1′66	n̄ 2′21	−1′52	−0′05	1′88	3′74	x 3′89	3′16	2′08	1′17	0′25	−0′28	−0′50	−0′81	−1′73	−1′23	−1′38
M.	−0′95	−0′93	−0′70	−0′90	−1′20	−1′45	−2′45	−3′29	n̄ 3′34	−2′29	0′25	3′26	5′35	x 5′45	4′12	2′46	1′10	0′52	0′25	−0′05	−0′18	−1′37	−2′18	−1′49
A.	−0′68	−1′23	−1′42	−1′95	−2′04	−2′67	−4′47	n̄ 6′21	−5′89	−3′07	0′00	3′47	6′49	x 7′08	5′42	3′69	2′26	1′21	0′74	0′42	−0′15	−0′22	−0′24	−0′53
M.	−0′84	−0′71	−1′79	−2′57	−3′66	−4′95	n̄ 5′87	−4′98	−3′32	−0′12	3′70	6′78	x 7′77	6′67	4′60	2′88	1′44	0′17	−0′29	−0′74	−1′00	−1′37	−1′11	−0′68
J.	−0′69	−0′93	−1′03	−2′06	−3′53	−4′58	−5′19	n̄ 5′50	−4′97	−1′86	1′65	4′66	6′85	x 6′98	5′91	3′93	2′23	0′73	0′10	−0′49	−0′61	−0′53	−0′67	−0′40
J.	−0′65	−0′64	−0′90	−2′00	−3′92	−5′16	n̄ 5′64	−5′16	−3′43	−0′36	2′16	5′12	x 6′95	6′89	5′55	3′20	1′20	0′23	−0′79	−0′92	−0′72	−0′36	−0′07	−0′61
A.	−1′09	−1′38	−1′72	−2′45	−3′70	−4′91	n̄ 5′35	−4′67	−3′47	−0′14	3′02	5′43	x 6′64	6′42	5′08	3′05	1′30	0′27	0′08	0′48	0′11	−0′92	−0′96	−1′14
S.	−1′40	−1′13	−1′32	−1′76	−2′38	−2′84	n̄ 3′60	−3′42	−2′30	0′06	2′69	5′49	x 6′04	4′99	2′93	1′26	0′42	−0′20	−0′22	−0′47	−0′43	−0′52	−0′97	−0′92
O.	−0′06	−0′01	−0′53	−0′60	−0′83	−1′15	−1′90	−3′40	n̄ 3′87	−2′32	0′73	3′42	x 5′06	4′62	3′30	1′42	0′41	0′12	−0′47	−1′07	−0′69	−0′79	−0′76	−0′65
N.	n̄ 2′63	−2′26	−1′37	−0′83	−0′60	−0′35	−0′77	−0′89	−1′07	0′02	1′47	2′28	x 3′50	3′22	2′54	1′90	1′40	1′46	0′39	−0′80	−0′35	−2′51	−1′17	−2′57
D.	−0′53	−0′59	−0′73	0′03	−0′29	0′05	−0′02	−0′29	−0′39	0′91	1′96	2′24	x 2′57	2′09	1′27	0′11	0′21	0′06	−0′49	−0′82	−2′04	n̄ 2′77	−1′59	−0′93
Y.	−0′91	−0′86	−0′94	−1′29	−1′95	−2′46	−3′12	n̄ 3′36	−2′92	−0′93	1′50	3′79	x 5′26	5′00	3′74	2′23	1′15	0′44	−0′07	−0′45	−0′68	−1′18	−0′97	−0′99
W.	−1′16	−0′86	−0′47	−0′31	−0′54	−0′46	−0′75	−0′91	−1′12	−0′26	0′94	1′97	x 2′98	2′72	1′98	1′24	0′85	0′55	−0′07	−0′65	−1′11	n̄ 2′03	−1′17	−1′35
Eq.	−0′77	−0′82	−1′00	−1′30	−1′61	−2′03	−3′10	n̄ 4′08	−3′85	−1′90	0′92	3′91	x 5′73	5′54	3′94	2′21	1′05	0′41	0′08	−0′30	−0′36	−0′73	−1′04	−0′90
S.	−0′82	−0′91	−1′36	−2′27	−3′70	−4′90	n̄ 5′51	−5′08	−3′80	−0′62	2′63	5′50	x 7′05	6′74	5′28	3′26	1′54	0′35	−0′23	−0′41	−0′55	−0′79	−0′70	−0′70

LIX.—INCLINATION.

	△I.																							
J.	−0′01	−0′12	−0′20	−0′31	−0′44	n̄ 0′48	−0′38	−0′25	0′12	0′46	x 0′59	0′50	0′21	0′03	−0′02	0′14	0′12	0′03	0′07	0′02	−0′05	0′04	−0′01	−0′05
F.	−0′05	0′00	−0′07	−0′22	−0′30	−0′33	−0′36	−0′23	0′08	0′60	x 0′81	0′77	0′41	0′21	0′09	0′22	0′03	−0′27	n̄ 0′41	−0′36	−0′28	−0′15	−0′11	−0′08
M.	−0′42	−0′36	−0′35	−0′43	−0′53	−0′57	−0′42	0′09	0′83	1′40	x 1′60	1′58	1′17	0′60	0′22	−0′09	−0′21	−0′33	−0′40	−0′61	−0′68	n̄ 0′83	−0′79	−0′49
A.	−0′75	−0′56	−0′41	−0′44	−0′44	−0′26	0′16	0′68	1′63	2′23	x 2′33	1′88	1′12	0′64	0′21	−0′15	−0′62	−0′84	−1′08	−1′09	n̄ 1′24	−1′10	−0′99	−0′92
M.	−0′40	−0′37	−0′07	−0′01	0′37	0′34	0′61	1′17	1′57	x 1′70	1′40	1′27	0′59	0′19	−0′14	−0′57	−1′11	n̄ 1′36	−1′23	−1′32	−1′02	−0′68	−0′41	−0′56
J.	−0′62	−0′50	−0′37	−0′29	−0′05	0′10	0′53	1′08	1′70	2′07	x 2′13	1′67	0′82	0′35	−0′32	−0′72	−1′08	−1′00	n̄ 1′18	−1′14	−1′02	−0′86	−0′62	−0′67
J.	−0′34	−0′41	−0′56	−0′47	−0′31	0′15	0′97	1′73	x 2′07	2′06	1′48	1′00	0′30	−0′29	−0′41	−0′52	−0′94	−1′12	−1′15	n̄ 1′17	−0′61	−0′47	−0′52	−0′47
A.	−0′38	−0′40	−0′23	−0′14	−0′03	0′19	0′60	1′14	1′77	x 2′08	1′80	1′28	0′35	−0′10	−0′45	−0′50	−0′71	−0′96	−1′13	n̄ 1′17	−1′02	−0′73	−0′65	−0′62
S.	−0′48	−0′29	−0′30	−0′23	−0′26	−0′10	0′20	0′89	1′58	x 1′94	1′69	0′99	0′51	0′09	0′03	−0′02	−0′39	−0′57	−0′94	−0′93	−0′84	n̄ 1′01	−0′83	−0′74
O.	−0′55	−0′52	−0′57	−0′63	−0′73	−0′70	−0′42	0′25	1′05	1′70	x 1′91	1′68	1′01	0′58	0′18	0′17	−0′14	−0′53	−0′58	−0′72	n̄ 0′74	−0′59	−0′64	−0′49
N.	−0′05	−0′21	−0′08	−0′17	−0′24	n̄ 0′37	−0′32	−0′20	0′12	0′53	x 0′77	0′57	0′15	0′27	−0′02	−0′29	−0′13	−0′11	0′01	0′02	0′13	0′00	−0′17	−0′21
D.	0′16	−0′05	−0′16	−0′22	−0′39	n̄ 0′53	−0′35	−0′20	0′34	x 0′68	0′61	0′44	0′18	0′04	0′11	0′18	−0′02	−0′25	−0′33	−0′10	−0′07	0′02	0′05	−0′13
Y.	−0′32	−0′32	−0′28	−0′30	−0′28	−0′21	0′07	0′51	1′07	x 1′45	1′43	1′14	0′57	0′22	−0′04	−0′18	−0′43	−0′61	−0′69	n̄ 0′71	−0′62	−0′53	−0′47	−0′45
W.	0′01	−0′10	−0′13	−0′23	−0′34	n̄ 0′43	−0′35	−0′22	0′17	0′56	x 0′70	0′57	0′24	0′14	0′04	0′06	0′00	−0′15	−0′16	−0′10	−0′07	−0′02	−0′06	−0′12
Eq.	−0′55	−0′43	−0′41	−0′43	−0′49	−0′40	−0′12	0′48	1′27	1′82	x 1′88	1′53	0′95	0′48	0′16	−0′02	−0′34	−0′57	−0′75	−0′84	−0′87	n̄ 0′88	−0′81	−0′66
S.	−0′43	−0′42	−0′31	−0′23	−0′01	0′19	0′68	1′28	1′78	x 1′98	1′70	1′30	0′52	0′04	−0′33	−0′58	−0′96	−1′11	−1′17	n̄ 1′20	−0′91	−0′69	−0′55	−0′58

LX.—HORIZONTAL FORCE.

	△H.																							
J.	γ − 0·1	γ 1·4	γ 2·5	γ 3·9	γ 5·6	x 6·2	γ 4·8	γ 3·0	γ − 2·0	γ − 6·2	n̄ 8·2	γ − 7·4	γ − 2·8	γ 0·2	γ 0·9	γ − 1·5	γ − 1·4	γ − 0·1	γ − 0·4	γ 0·1	γ 1·0	γ − 0·4	γ 0·2	γ 0·6
F.	0·9	0·0	0·9	3·0	4·1	4·4	4·7	2·8	− 1·7	− 9·4	n̄ 13·2	− 12·7	− 7·0	− 3·6	− 0·7	− 2·3	0·8	4·9	x 6·7	5·8	4·9	2·9	2·1	1·5
M.	5·8	5·1	5·1	6·3	7·8	8·5	6·8	− 0·5	− 11·7	− 21·1	− 25·6	n̄ 25·9	− 19·9	− 10·7	− 3·9	2·0	4·6	6·5	7·4	10·3	11·2	x 13·0	11·8	7·3
A.	10·9	7·9	5·9	6·6	7·1	5·3	0·2	− 7·7	− 22·9	− 34·1	n̄ 37·2	− 32·5	− 21·3	− 12·7	− 4·5	2·7	10·6	14·0	17·7	17·8	x 19·6	17·2	15·3	14·2
M.	4·9	3·4	− 0·1	− 0·1	− 4·7	− 4·2	− 8·1	− 16·8	− 23·9	n̄ 27·6	− 25·6	− 24·0	− 12·2	− 4·5	2·0	9·8	19·3	x 23·7	21·9	22·7	17·9	12·1	6·6	7·9
J.	9·1	7·4	5·6	4·7	1·2	− 1·4	− 7·5	− 16·1	− 25·9	− 32·8	n̄ 33·9	− 27·9	− 15·3	− 7·5	3·7	11·6	18·5	17·6	x 19·8	18·8	16·5	13·8	9·9	10·1
J.	4·3	5·2	7·6	7·0	5·6	− 0·8	− 13·0	− 25·4	− 32·5	n̄ 34·5	− 27·0	− 19·9	− 8·4	2·3	6·1	10·2	17·5	20·9	x 21·0	20·1	11·2	8·1	8·0	6·6
A.	6·9	6·9	4·6	3·6	2·6	− 0·4	− 6·6	− 15·5	− 26·4	n̄ 32·9	− 30·9	− 23·8	− 9·5	− 1·8	5·3	7·7	12·5	16·2	18·1	x 18·2	15·7	11·2	9·6	8·6
S.	7·2	4·2	4·4	3·6	4·5	2·7	− 1·7	− 12·0	− 23·0	n̄ 29·7	− 27·9	− 18·7	− 10·8	− 3·3	− 0·2	1·6	7·1	9·8	15·4	15·1	13·6	x 15·5	12·2	10·7
O.	7·5	6·8	7·7	8·9	10·4	10·2	6·5	− 2·2	− 14·2	− 24·8	n̄ 29·4	− 26·9	− 16·8	− 9·3	− 2·1	− 0·7	3·6	8·9	9·4	x 11·5	11·0	8·6	8·9	6·6
N.	− 0·9	0·8	− 0·7	1·1	2·3	4·0	3·3	1·9	− 2·5	− 8·5	n̄ 12·1	− 9·1	− 2·5	− 3·3	1·4	x 5·5	3·4	3·3	2·0	1·9	0·4	2·0	3·5	2·7
D.	− 2·7	− 0·1	1·1	1·8	4·2	x 6·4	4·0	2·2	− 5·5	n̄ 9·8	− 8·7	− 6·4	− 2·4	0·0	− 0·7	− 1·2	1·4	4·5	5·5	2·3	1·8	0·5	− 0·3	2·0
Y.	4·5	4·1	3·7	4·2	4·2	3·4	− 0·6	− 7·2	− 16·0	− 22·6	n̄ 23·3	− 19·6	− 10·8	− 4·5	0·6	3·8	8·2	10·8	x 12·0	x 12·0	10·4	8·7	7·3	6·6
W.	− 0·7	0·5	1·0	2·4	4·1	x 5·2	4·2	2·5	− 2·9	− 8·5	n̄ 10·5	− 8·9	− 3·7	− 1·7	0·2	0·1	1·1	3·2	3·4	2·5	2·0	1·2	1·4	1·7
Eq.	7·9	6·0	5·8	6·3	7·4	6·7	3·0	− 5·6	− 18·0	− 27·5	n̄ 30·0	− 26·0	− 17·2	− 9·0	− 2·7	1·4	6·5	9·8	12·5	13·7	x 13·9	13·6	12·1	9·7
S.	6·3	5·7	4·4	3·8	1·2	− 1·7	− 8·8	− 18·5	− 27·2	n̄ 32·0	− 29·3	− 23·9	− 11·4	− 2·9	4·3	9·8	17·0	19·6	x 20·2	19·9	15·3	11·3	8·5	8·3

x and n̄ mark respectively the mean maximum and minimum hourly values in each month or season.

LXA.–LXC.—SELECTED DISTURBED DAYS.—DIURNAL INEQUALITIES OF THE GEOGRAPHICAL COMPONENTS OF MAGNETIC FORCE.

Eskdalemuir. *Mean Hourly Values, Greenwich Mean Time, for the Months, Year, and Seasons.* **1916.**

LXA.—NORTH COMPONENT.

△X (or △N).

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.	1·8	− 6·1	− 5·0	2·2	7·5	8·7	3·6	− 2·2	− 4·5	− 2·4	− 4·5	− 5·0	− 5·8	$\overline{n}$ 7·1	− 6·2	2·0	4·9	3·6	− 3·8	− 2·2	x 24·5	− 4·2	− 6·7	6·9
F.	4·6	0·5	3·0	7·6	9·9	x 15·2	13·9	12·7	3·8	− 6·1	− 12·0	− 17·6	$\overline{n}$ 18·7	− 14·8	− 7·9	− 1·9	− 7·6	− 4·5	− 10·0	2·8	0·1	5·2	7·3	14·5
M.	13·5	3·9	9·5	8·4	9·2	11·4	− 4·9	− 4·9	− 8·5	− 22·0	$\overline{n}$ 31·6	− 22·6	− 11·3	− 4·3	5·1	− 7·2	16·2	x 20·6	9·3	1·7	2·3	11·6	− 6·2	0·6
A.	16·5	− 9·1	− 15·9	− 7·0	− 11·4	− 13·0	− 12·0	− 21·4	− 28·8	− 40·4	$\overline{n}$ 42·2	− 38·4	− 20·8	− 5·0	11·9	20·9	35·7	x 45·9	44·3	38·1	28·9	18·5	11·5	− 6·9
M.	5·5	14·4	− 9·8	− 13·1	− 26·2	− 14·8	− 13·9	− 21·1	− 38·6	− 40·1	$\overline{n}$ 40·5	− 34·2	− 21·9	− 13·7	22·8	23·7	41·2	x 51·6	45·5	27·4	22·2	18·9	15·4	− 0·6
J.	− 0·2	− 0·1	− 5·8	− 2·3	6·1	6·8	− 3·1	− 14·0	− 22·3	− 34·2	$\overline{n}$ 38·1	− 33·4	− 30·7	− 10·8	18·3	20·7	33·0	x 36·5	36·0	21·1	13·8	9·1	− 2·6	− 3·9
J.	− 3·5	9·5	8·0	3·2	4·6	2·3	− 6·3	− 17·5	− 24·9	$\overline{n}$ 47·6	− 43·2	− 35·2	− 21·8	− 10·5	− 3·3	6·5	27·5	38·5	x 41·4	30·0	13·0	6·4	11·1	11·7
A.	− 43·7	$\overline{n}$ 46·1	− 35·1	− 25·1	− 30·1	− 5·7	7·2	− 4·6	− 22·0	− 25·8	− 19·8	− 9·2	− 1·9	3·1	11·9	22·3	30·5	39·5	44·2	x 46·4	28·8	7·8	11·2	16·2
S.	9·9	0·5	0·7	− 2·5	14·5	− 0·7	− 4·3	− 18·3	$\overline{n}$ 38·9	− 34·7	− 30·7	− 27·6	− 22·0	− 14·2	3·4	13·8	11·8	26·2	23·0	x 32·8	16·4	29·8	10·3	0·7
O.	− 3·4	− 6·5	− 7·5	8·0	x 32·4	27·3	10·9	− 19·4	− 19·2	− 26·9	$\overline{n}$ 34·7	− 34·0	− 25·8	− 14·9	12·7	18·2	13·0	15·1	22·3	29·0	0·6	4·5	− 7·1	5·0
N.	− 0·9	2·4	5·4	5·2	10·0	7·0	5·2	− 6·4	− 13·1	− 23·3	$\overline{n}$ 35·1	− 31·9	− 13·1	− 9·3	− 1·6	5·6	15·2	15·6	x 28·2	5·5	9·3	3·3	6·5	10·3
D.	2·0	0·4	0·6	7·2	13·4	16·4	11·0	− 5·4	− 10·4	− 13·6	− 12·7	− 16·3	$\overline{n}$ 19·1	− 10·3	− 7·7	− 10·9	− 12·1	5·3	7·1	13·7	x 17·5	10·4	8·2	5·2
Y.	0·2	− 3·0	− 4·3	− 0·7	3·3	5·1	0·6	− 10·2	− 18·9	− 26·4	$\overline{n}$ 28·7	− 25·5	− 17·7	− 9·3	5·0	9·5	17·4	x 24·5	24·0	20·5	14·8	10·1	4·9	5·0
W.	1·9	− 0·7	1·0	5·5	10·2	11·9	8·4	− 0·3	− 6·0	− 11·4	− 16·1	$\overline{n}$ 17·7	− 14·2	− 10·4	− 5·9	− 1·3	0·1	5·0	5·4	4·9	x 12·9	3·7	3·8	9·2
Eq.	9·1	− 2·8	− 3·3	1·7	11·2	6·3	− 2·6	− 16·0	− 23·8	− 31·0	$\overline{n}$ 34·8	− 30·6	− 20·0	− 9·6	8·3	11·4	19·2	x 27·0	24·7	25·4	12·1	16·1	2·1	− 0·1
S.	− 10·5	− 5·6	− 10·7	− 9·3	− 11·4	− 2·9	− 4·0	− 14·3	− 27·0	$\overline{n}$ 36·9	− 35·4	− 28·0	− 19·1	− 7·9	12·5	18·3	33·0	41·5	x 41·8	31·2	19·5	10·5	8·8	5·9

LXB.—WEST COMPONENT.

−△Y (or △W).

	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.	− 17·6	− 18·7	− 5·2	− 4·6	− 3·9	3·6	12·2	14·3	12·0	13·2	11·9	16·4	x 20·0	19·3	18·8	19·2	18·7	7·0	− 11·6	− 0·3	− 35·8	$\overline{n}$ 38·8	− 31·1	− 19·0
F.	− 14·4	− 8·0	− 0·5	− 1·4	0·1	− 0·3	− 0·2	− 1·7	− 5·0	− 3·6	3·7	14·4	24·1	x 25·3	17·4	15·3	7·2	2·0	− 2·3	$\overline{n}$ 33·2	− 23·4	− 2·7	− 6·2	− 6·5
M.	− 28·8	$\overline{n}$ 40·4	− 19·3	− 2·9	− 0·5	− 3·5	− 12·8	− 13·8	− 12·6	− 4·8	9·9	28·9	x 49·5	44·1	45·9	36·2	9·6	− 6·2	− 12·9	2·1	− 19·1	− 6·5	− 20·6	− 21·6
A.	− 25·6	$\overline{n}$ 35·3	− 27·0	− 15·0	− 18·1	− 4·2	− 9·5	− 25·6	− 18·3	− 10·2	7·3	25·4	38·1	x 44·1	41·0	34·5	32·0	22·9	10·2	− 12·9	− 14·2	− 11·1	− 13·8	− 14·7
M.	− 12·1	− 34·1	− 24·8	− 7·2	− 16·6	− 15·2	− 21·2	$\overline{n}$ 35·6	− 27·9	− 11·7	0·1	17·3	24·3	30·0	31·0	x 37·6	35·4	30·0	11·8	12·1	1·5	− 4·1	− 8·7	− 12·1
J.	− 32·5	− 19·8	− 12·3	− 12·9	− 18·2	− 27·7	− 36·7	$\overline{n}$ 36·8	− 32·7	− 23·6	− 7·3	12·9	30·2	43·3	x 48·1	43·6	45·9	37·0	24·4	12·9	9·2	$\overline{n}$ 10·1	− 15·3	− 21·6
J.	− 4·1	− 16·1	− 13·7	− 3·1	1·9	− 9·3	− 16·8	− 25·2	$\overline{n}$ 31·8	− 25·2	− 0·6	12·8	21·4	28·7	x 30·3	19·1	28·9	26·3	19·9	− 1·6	− 7·4	− 21·2	− 10·2	− 3·0
A.	$\overline{n}$ 31·9	− 21·7	− 25·4	− 22·4	− 6·4	− 15·2	− 14·4	− 12·5	− 10·9	− 2·3	11·2	24·8	33·2	x 34·4	28·5	23·7	14·3	8·5	15·6	8·8	5·4	− 17·2	− 17·5	− 10·5
S.	− 20·7	− 10·2	2·2	5·7	5·6	4·6	6·7	− 0·4	− 2·3	5·5	19·4	30·1	x 39·4	30·4	26·3	9·4	− 8·5	− 2·4	− 0·6	− 25·7	− 24·2	− 31·5	$\overline{n}$ 34·7	− 24·0
O.	− 23·5	− 15·8	5·8	18·1	12·8	10·8	9·9	12·6	18·6	11·7	24·6	30·2	35·7	37·0	x 39·2	18·3	− 2·7	− 11·2	− 27·5	$\overline{n}$ 48·3	− 42·2	− 44·3	− 42·5	− 27·2
N.	− 19·0	− 6·3	− 5·1	− 3·6	3·9	6·3	9·2	1·4	0·9	3·3	10·0	19·1	24·3	x 27·0	21·2	− 4·3	3·4	− 3·4	− 13·1	− 2·7	− 16·0	$\overline{n}$ 23·0	− 13·1	− 20·4
D.	− 3·1	− 6·8	0·4	− 0·3	− 13·4	− 10·3	9·0	7·9	10·2	13·5	15·2	18·7	x 21·8	13·4	15·3	− 2·0	− 1·5	− 5·8	− 2·3	$\overline{n}$ 30·2	− 22·3	− 10·8	− 10·3	− 6·2
Y.	$\overline{n}$ 19·4	$\overline{n}$ 19·4	− 10·4	− 4·2	− 4·4	− 5·0	− 5·4	− 9·6	− 8·3	− 2·9	8·8	20·9	30·2	x 31·4	30·2	20·9	15·2	8·7	1·0	− 9·9	− 15·7	− 18·4	− 18·7	− 15·6
W.	− 13·5	− 9·9	− 2·6	− 2·5	− 3·4	− 0·2	7·5	5·5	4·5	6·6	10·2	17·2	x 22·5	21·2	18·2	7·0	6·9	0·0	− 7·4	− 16·6	$\overline{n}$ 24·4	− 18·8	− 15·2	− 13·0
Eq.	− 24·6	− 25·4	− 9·6	1·5	− 0·1	1·9	− 1·4	− 6·8	− 3·6	0·5	15·3	28·7	x 40·7	38·9	38·1	24·6	7·6	0·8	− 7·7	− 21·2	− 24·9	− 23·4	$\overline{n}$ 27·9	− 21·9
S.	− 20·1	− 22·9	− 19·1	− 11·4	− 9·8	− 16·8	− 22·3	$\overline{n}$ 27·5	− 25·8	− 15·7	0·9	16·9	27·3	34·1	x 34·5	31·0	31·1	25·5	17·9	8·0	2·2	− 13·1	− 13·0	− 11·8

LXC.—VERTICAL COMPONENT.

△Z (or △V).

	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.	− 12·8	− 11·1	− 13·6	$\overline{n}$ 19·5	− 14·4	− 13·3	− 11·8	− 9·1	− 5·7	− 2·6	− 1·7	− 0·4	1·9	6·4	10·1	8·4	7·9	14·4	x 25·7	25·4	11·7	4·2	8·2	− 8·3
F.	− 6·3	− 6·4	− 4·8	− 5·0	− 4·5	− 4·7	− 5·1	− 5·2	− 4·4	− 7·6	− 9·7	$\overline{n}$ 10·1	− 8·3	− 5·2	0·0	5·0	12·9	15·3	19·1	x 21·8	12·0	5·2	− 0·1	− 3·9
M.	− 40·7	− 38·7	− 42·1	− 45·9	$\overline{n}$ 47·3	− 41·9	− 32·1	− 20·3	− 14·9	− 12·5	− 10·7	− 6·1	− 0·1	18·9	47·7	> 71·1	x 73·5	65·3	45·1	13·9	26·3	15·9	− 14·5	− 9·3
A.	− 59·7	$\overline{n}$ 61·1	− 57·5	− 49·1	− 41·1	− 33·3	− 26·0	− 2·8	3·0	5·0	4·0	8·2	13·4	26·1	34·5	40·3	55·3	x 57·7	44·3	43·0	23·8	9·8	− 0·4	− 37·6
M.	− 31·7	$\overline{n}$ 37·2	− 33·5	− 31·4	− 31·5	− 21·0	− 16·3	− 10·6	− 7·7	− 7·4	− 8·7	− 6·9	− 1·0	6·7	21·8	35·3	41·8	x 47·3	42·2	27·3	22·8	11·1	2·5	− 14·0
J.	− 13·7	− 11·1	− 12·9	$\overline{n}$ 19·7	− 15·3	− 7·0	− 1·8	0·6	− 1·6	− 7·2	− 11·0	− 14·0	− 6·0	0·0	9·4	18·2	21·2	26·0	x 28·1	24·7	16·1	2·5	− 11·7	− 13·9
J.	$\overline{n}$ 31·0	− 25·1	− 16·1	− 10·1	− 12·8	− 14·6	− 12·5	− 9·9	− 8·1	− 5·4	− 6·0	− 6·9	− 3·7	1·3	13·0	27·4	24·9	27·9	x 32·0	28·0	3·2	− 0·1	5·1	− 0·4
A.	− 56·9	− 69·6	$\overline{n}$ 76·7	− 71·6	− 62·1	− 23·8	0·3	11·4	16·7	18·8	18·5	18·8	24·9	33·2	38·3	40·8	47·1	x 50·2	44·9	35·6	9·5	− 5·4	− 18·3	− 24·2
S.	$\overline{n}$ 43·9	− 37·8	− 31·2	− 24·4	− 20·0	− 14·9	− 9·3	− 5·5	− 3·1	− 1·8	− 1·4	2·4	10·4	22·1	25·5	34·7	x 41·1	39·0	35·8	24·6	14·2	− 11·1	− 14·5	− 30·9
O.	$\overline{n}$ 83·9	− 69·9	− 60·0	− 55·4	− 25·9	− 12·5	− 4·2	1·8	5·3	9·3	12·4	19·2	25·5	38·1	58·0	x 81·8	66·9	57·3	42·0	22·6	1·5	− 28·3	− 49·0	− 52·4
N.	$\overline{n}$ 27·5	− 26·5	− 17·7	− 12·5	− 13·7	− 11·3	− 7·3	− 2·3	0·1	0·9	2·7	10·5	14·4	17·6	19·4	x 23·6	18·4	15·6	14·8	17·0	7·6	− 2·0	− 21·2	− 20·7
D.	$\overline{n}$ 18·7	− 12·2	− 14·9	− 16·1	− 13·0	− 13·7	− 10·2	− 6·0	− 4·7	− 2·6	− 0·9	1·6	7·2	14·3	18·0	x 27·7	26·5	25·0	12·7	12·4	− 1·4	− 8·9	− 9·0	− 13·0
Y.	$\overline{n}$ 35·6	− 33·9	− 31·8	− 30·1	− 25·1	− 17·7	− 11·4	− 4·8	− 2·1	− 1·1	− 1·1	1·4	6·5	15·0	24·6	> 34·5	36·5	x 36·7	32·2	24·7	12·3	− 0·6	− 10·3	− 19·1
W.	$\overline{n}$ 16·3	− 14·0	− 12·8	− 13·3	− 11·4	− 10·8	− 8·6	− 5·7	− 3·7	− 3·0	− 2·4	0·4	3·8	8·3	11·9	16·2	16·4	17·6	18·1	x 19·1	7·5	− 0·4	− 5·5	− 11·4
Eq.	$\overline{n}$ 57·1	− 51·9	− 47·7	− 43·7	− 33·6	− 25·7	− 17·9	− 6·7	− 2·4	0·0	1·1	5·9	12·3	26·3	41·4	> 57·0	x 59·2	54·8	41·8	26·0	16·4	− 3·4	− 19·6	− 32·6
S.	− 33·3	$\overline{n}$ 35·8	− 34·8	− 33·2	− 30·4	− 16·6	− 7·6	− 2·1	− 0·2	− 0·3	− 1·8	− 2·3	3·5	10·3	20·6	30·4	33·7	x 37·8	36·8	28·9	12·9	2·0	− 5·6	− 13·1

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

LXD.–LXF.—SELECTED DISTURBED DAYS.—DIURNAL INEQUALITIES OF THE GEOGRAPHICAL COMPONENTS OF MAGNETIC FORCE.

(Corrected for the effect of the North Force on the West Magnetograph and *vice versa*, and also for the effect of the Horizontal Force on the V.F. Balance.)

Eskdalemuir. *Mean Hourly Values, Greenwich Mean Time, for the Months, Year, and Seasons.* **1916.**

△D. LXD.—DECLINATION.

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.	−3′56	−3′30	−0′71	−1′04	−1′23	0′17	2′17	2′94	2′62	2′74	2′60	3′52	x 4′28	4′21	4′06	3′64	3′36	1′15	−2′04	0′08	n̄ 8′54	−7′34	−5′69	−4′15
F.	−3′10	−1′60	−0′28	−0′74	−0′59	−1′00	−0′90	−1′11	−1′21	−0′33	1′47	3′90	x 5′87	x 5′87	3′90	3′12	1′88	0′67	0′17	n̄ 6′68	−4′60	−0′85	−1′67	−2′16
M.	−6′47	n̄ 8′16	−4′37	−1′09	−0′67	−1′39	−2′21	−2′40	−1′95	0′42	3′89	7′05	x 10′40	8′90	8′69	7′54	0′88	−2′49	−3′10	0′31	−3′88	−1′98	−3′66	−4′27
A.	−6′04	n̄ 6′36	−4′31	−2′51	−2′85	−0′02	−1′12	−3′70	−1′82	0′49	4′03	7′35	8′75	x 8′95	7′31	5′47	4′07	1′66	−0′73	−4′88	−4′56	−3′32	−3′41	−2′45
M.	−2′71	n̄ 7′56	−4′26	−0′61	−1′64	−2′07	−3′31	−5′68	−3′10	0′17	2′51	5′49	6′10	x 6′72	4′68	5′91	4′41	2′71	−0′48	0′69	−1′07	−1′96	−2′66	−2′33
J.	−6′36	−3′87	−2′05	−2′39	−3′94	−5′85	n̄ 7′00	−6′35	−5′04	−2′53	0′91	4′58	7′80	x 9′15	8′31	7′28	6′97	5′01	2′57	1′23	0′95	−2′54	−2′84	−3′99
J.	−0′59	−3′74	−3′18	−0′81	0′09	−1′96	−2′90	−3′87	n̄ 4′70	−2′02	2′53	4′67	5′53	x 6′27	6′14	3′34	3′97	2′79	1′36	−2′15	−2′25	−4′55	−2′68	−1′31
A.	−3′57	−1′42	−2′82	−2′85	0′60	−2′63	−3′26	−2′17	−0′79	1′13	3′42	5′42	x 6′63	6′55	4′86	3′28	0′93	−0′76	0′35	−1′13	−0′71	−3′85	n̄ 4′12	−3′05
S.	−4′67	−2′03	0′39	1′27	0′21	0′94	1′57	1′04	1′93	3′21	5′68	7′59	x 9′07	6′83	4′94	0′99	−2′39	−2′08	−1′53	−7′05	−5′75	n̄ 8′00	−7′43	−4′74
O.	−4′40	−2′70	1′60	3′06	0′52	0′45	1′27	3′66	4′83	3′94	6′95	8′00	x 8′58	8′16	6′90	2′47	−1′33	−3′13	−6′76	n̄ 11′25	−8′31	−8′96	−7′89	−5′63
N.	−3′66	−1′38	−1′33	−1′03	0′14	0′80	1′48	0′66	0′98	2′08	4′11	5′70	5′56	x 5′86	4′26	−1′18	−0′26	−1′63	−4′30	−0′87	−3′71	n̄ 4′71	−2′97	−4′63
D.	−0′73	−1′35	0′04	−0′50	−3′45	−3′03	1′09	1′88	2′64	3′48	3′76	4′67	x 5′44	3′26	3′47	0′28	0′45	−1′46	−0′89	n̄ 6′76	−5′44	−2′76	−2′52	−1′54
Y.	−3′82	−3′62	−1′77	−0′77	−1′07	−1′30	−1′09	−1′26	−0′47	1′07	3′49	5′66	x 7′00	6′73	5′63	3′51	1′91	0′20	−1′28	−3′21	−3′99	n̄ 4′24	−3′96	−3′35
W.	−2′76	−1′91	−0′57	−0′83	−1′28	−0′77	0′96	1′09	1′26	1′99	2′99	4′45	x 5′29	4′80	3′92	1′47	1′36	−0′32	−1′77	−3′56	n̄ 5′57	−3′92	−3′21	−3′12
Eq.	−5′40	−4′81	−1′67	0′18	−0′70	−0′01	−0′12	−0′35	0′75	2′02	5′14	7′50	x 9′20	8′21	6′96	4′12	0′31	−1′51	−3′03	n̄ 5′72	−5′63	−5′57	−5′60	−4′27
S.	−3′31	−4′15	−3′08	−1′67	−1′22	−3′13	−4′12	n̄ 4′52	−3′41	−0′81	2′34	5′04	6′52	x 7′17	6′00	4′95	4′07	2′44	0′95	−0′34	−0′77	−3′23	−3′08	−2′67

△I. LXE.—INCLINATION.

J.	−0′08	0′49	0′08	−0′54	−0′76	n̄ 0′96	−0′77	−0′38	−0′09	−0′17	0′01	−0′02	0′02	0′22	0′27	−0′31	−0′49	−0′01	1′12	0′78	−0′55	1′15	x 1′26	−0′27
F.	−0′16	−0′03	−0′30	−0′58	−0′74	n̄ 1′08	−1′01	−0′91	−0′25	0′27	0′45	0′58	0′50	0′31	0′15	−0′07	0′66	0′63	x 1′17	1′03	0′71	−0′15	−0′34	−0′89
M.	−1′29	−0′39	−1′27	−1′62	n̄ 1′76	−1′70	−0′23	0′08	0′43	1′19	x 1′55	0′71	−0′28	−0′14	−0′06	1′50	0′60	0′44	0′79	0′20	0′89	−0′21	0′45	0′17
A.	n̄ 2′03	−0′23	0′13	−0′47	0′07	0′08	0′31	1′81	2′28	x 2′91	2′65	2′14	0′89	0′08	−0′73	−1′03	−1′55	−1′96	−1′94	−1′10	−0′97	−0′72	−0′47	−0′20
M.	−0′90	−1′17	0′30	0′20	1′23	0′73	0′91	1′81	x 2′84	2′62	2′37	1′67	0′89	0′44	−1′54	−1′39	−2′31	n̄ 2′73	−2′10	−1′31	−0′88	−0′85	−0′75	−0′07
J.	0′33	0′13	0′30	−0′08	−0′40	−0′05	0′90	1′65	2′05	x 2′48	2′32	1′54	1′21	−0′18	−1′91	−1′75	n̄ 2′51	−2′43	−2′10	−0′99	−0′67	−0′32	0′18	0′33
J.	−0′46	−0′90	−0′64	−0′39	−0′65	−0′32	0′43	1′38	2′03	x 3′43	2′62	1′83	0′87	0′12	−0′08	−0′12	−1′72	n̄ 2′30	−2′25	−1′19	−0′60	0′02	−0′38	−0′70
A.	2′02	1′66	0′85	0′28	0′51	0′08	−0′16	0′83	2′05	x 2′17	1′50	0′56	0′07	−0′06	−0′39	−0′89	−1′07	1′45	−2′02	n̄ 2′26	−1′71	−0′28	−0′81	−1′43
S.	−1′31	−0′77	−0′87	−0′56	n̄ 1′54	−0′42	−0′09	1′04	x 2′46	2′07	1′55	1′22	0′88	0′85	−0′11	−0′21	0′43	−0′66	−0′57	−0′97	−0′21	−1′55	−0′32	−0′33
O.	−1′40	−1′01	−1′13	−2′25	n̄ 2′97	−2′27	−1′00	1′03	0′99	1′72	2′04	x 2′05	1′57	1′16	−0′16	0′51	0′89	0′69	0′17	−0′33	0′85	−0′10	0′09	−1′07
N.	−0′24	−0′69	−0′68	−0′57	−1′06	−0′86	−0′70	0′32	0′82	1′45	x 2′12	1′92	0′71	0′49	0′16	0′32	−0′58	−0′54	n̄ 1′17	0′12	−0′08	0′20	−0′68	−0′77
D.	−0′54	−0′19	−0′42	−0′86	−0′91	n̄ 1′18	−1′14	0′04	0′34	0′54	0′49	0′71	0′96	0′75	0′64	1′43	x 1′46	0′40	−0′09	0′04	−0′70	−0′67	−0′54	−0′53
Y.	−0′51	−0′26	−0′30	−0′62	−0′75	−0′66	−0′21	0′73	1′33	x 1′72	1′64	1′23	0′69	0′34	−0′31	−0′17	−0′52	n̄ 0′83	−0′75	−0′50	−0′33	−0′29	−0′19	−0′48
W.	−0′26	−0′11	−0′33	−0′64	−0′87	n̄ 1′02	−0′91	−0′23	0′21	0′52	0′77	x 0′80	0′55	0′44	0′31	0′34	0′26	0′12	0′26	0′49	−0′16	0′13	−0′08	−0′62
Eq.	−1′51	−0′60	−0′79	−1′23	n̄ 1′55	−1′08	−0′25	0′99	1′54	x 1′97	1′95	1′53	0′77	0′49	−0′27	0′19	0′09	−0′37	−0′39	−0′55	0′14	−0′65	−0′06	−0′36
S.	0′25	−0′07	0′20	0′00	0′17	0′11	0′52	1′42	2′24	x 2′68	2′20	1′40	0′76	0′08	−0′98	−1′04	−1′90	n̄ 2′23	−2′12	−1′44	−0′97	−0′36	−0′44	−0′47

△H. LXF.—HORIZONTAL FORCE.

	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.	− 3·6	−11·5	− 6·3	0·7	6·0	9·4	7·1	2·2	− 0·7	1·7	− 0·7	0·2	0·5	− 1·0	− 0·3	7·7	10·3	5·5	− 7·1	− 2·2	x 12·6	−15·7	n̄ 15·8	0·9
F.	0·1	− 1·9	2·7	6·8	9·5	x 14·4	13·2	11·6	2·1	− 6·9	−10·3	n̄ 12·5	−10·6	− 6·5	− 2·3	2·8	− 5·1	− 3·7	−10·2	− 7·3	− 6·9	4·2	5·1	11·9
M.	4·2	− 8·4	3·3	7·1	8·6	9·8	− 8·5	− 8·8	−11·9	−22·4	n̄ 27·2	−12·9	4·1	9·2	x 18·7	4·0	18·3	17·8	5·0	2·3	− 3·6	9·1	−12·1	− 5·9
A.	8·0	−19·3	−23·3	−11·2	−16·3	−13·7	−14·3	−28·1	−33·0	n̄ 41·6	−38·1	−29·0	− 8·4	8·5	23·7	30·3	43·7	x 50·7	45·3	32·5	23·3	14·3	6·8	−11·0
M.	1·6	3·5	−16·8	−14·7	−30·0	−18·7	−19·6	−30·8	n̄ 45·2	−41·8	−38·6	−27·4	−13·6	− 4·1	31·1	33·9	49·9	x 58·2	47·0	29·8	21·6	16·8	12·1	− 4·2
J.	− 9·9	− 6·0	− 9·2	− 6·1	0·4	− 1·8	−14·0	−24·4	−31·1	n̄ 39·7	−38·5	−28·0	−20·2	2·7	31·9	32·8	45·3	x 45·9	41·7	24·0	15·9	5·7	− 7·1	−10·2
J.	− 4·6	4·2	3·5	2·1	5·0	− 0·6	−11·1	−24·3	−33·3	n̄ 53·0	−41·2	−29·7	−14·4	− 1·4	5·9	11·9	34·9	44·6	x 45·5	28·1	10·2	− 0·3	7·5	10·3
A.	n̄ 51·3	−50·5	−41·1	−30·7	−30·6	−10·0	2·6	− 8·1	−24·3	−25·3	−15·5	− 1·3	8·2	13·3	19·9	28·4	33·4	40·2	x 46·9	46·9	29·1	2·3	5·4	12·3
S.	3·3	− 2·6	1·3	− 0·7	15·5	0·7	− 2·1	−17·6	n̄ 37·8	−31·5	−23·5	−17·3	− 9·2	− 4·5	11·1	16·0	8·7	x 24·3	21·8	23·6	8·4	19·0	− 0·6	− 6·6
O.	−10·3	−10·9	− 5·4	13·0	x 34·7	29·3	13·4	−14·7	−12·8	−22·2	n̄ 25·7	−23·4	−13·9	− 3·2	23·8	22·8	11·6	11·1	13·1	13·2	−12·1	− 9·0	−19·5	− 3·4
N.	− 6·5	0·4	3·6	3·9	10·7	8·6	7·7	− 5·7	−12·2	−21·2	n̄ 30·5	−24·7	− 5·2	− 0·8	4·8	4·1	15·5	13·9	x 23·0	4·4	4·1	− 3·7	2·3	3·7
D.	1·0	− 1·7	0·7	6·8	8·8	12·6	x 13·2	− 2·8	− 6·9	− 8·9	− 7·6	−10·0	−11·7	− 5·8	− 2·8	−11·0	n̄ 12·0	3·3	6·1	4·0	10·0	6·7	4·7	3·1
Y.	− 5·7	− 8·7	− 7·3	− 1·9	1·8	3·3	− 1·0	−12·6	−20·6	n̄ 26·1	−24·8	−18·0	− 7·9	0·5	13·8	15·3	21·2	x 26·0	23·1	16·6	9·4	4·1	− 0·9	0·1
W.	− 2·3	− 3·7	0·2	4·6	8·7	x 11·2	10·3	1·3	− 4·4	− 8·8	n̄ 12·3	−11·7	− 6·8	− 3·5	− 0·1	0·9	2·2	4·8	2·9	− 0·3	4·9	− 2·1	− 0·9	4·9
Eq.	1·4	−10·3	− 6·0	2·1	10·6	6·5	− 2·9	−17·3	−23·9	n̄ 29·4	−28·6	−20·6	− 6·8	2·5	19·3	18·3	20·6	x 25·9	21·3	17·9	4·0	8·4	− 6·3	− 6·7
S.	−16·1	−12·2	−15·9	−12·3	−13·8	− 7·8	−10·5	−21·9	−33·5	n̄ 39·9	−33·5	−21·6	−10·0	2·6	22·2	26·8	40·9	x 47·3	45·2	32·2	19·2	6·1	4·5	2·0

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

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

Kew Observatory, Richmond. *Mean Hourly Values, Greenwich Mean Time, for the Months, Year, and Seasons.* 1916.

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

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.
	△D.																							
J.	−0′.45	−0′.46	−0′.26	−0′.49	−0′.53	−0′.40	−0′.90	−0′.92	−0′.79	−0′.23	0′.82	2′.10	x 2′.36	1′.45	0′.45	0′.68	0′.82	0′.42	−0′.07	−0′.35	n̄ 1′.00	−0′.86	−0′.73	−0′.55
F.	−0′.67	−0′.32	−0′.30	−0′.19	−0′.49	−0′.84	−1′.48	−1′.83	n̄ 2′.37	−1′.72	0′.34	2′.17	x 3′.70	x 3′.70	2′.79	1′.63	0′.96	0′.20	−0′.35	−0′.55	−0′.86	−1′.28	−1′.19	−1′.15
M.	−0′.73	−0′.79	−0′.57	−0′.65	−0′.77	−1′.39	−2′.82	n̄ 3′.84	−3′.50	−2′.24	0′.74	3′.68	x 5′.38	5′.18	3′.98	2′.26	0′.96	0′.25	−0′.07	−0′.25	−0′.67	−1′.43	−1′.65	−1′.11
A.	−0′.62	−0′.99	−1′.61	−1′.42	−1′.66	−2′.40	−4′.69	n̄ 6′.29	−5′.84	−3′.02	0′.61	4′.19	6′.67	x 7′.16	5′.34	3′.43	1′.89	0′.74	0′.28	0′.00	−0′.13	−0′.31	−0′.58	−0′.66
M.	−0′.36	−0′.72	−1′.37	−2′.05	−2′.98	−4′.52	n̄ 5′.63	−4′.86	−3′.04	−0′.49	3′.59	6′.90	x 7′.45	6′.45	4′.48	2′.54	0′.69	−0′.22	−0′.86	−0′.99	−0′.99	−1′.18	−1′.10	−0′.63
J.	−0′.69	−0′.71	−0′.75	−1′.19	−2′.83	−4′.39	−5′.18	n̄ 5′.24	−4′.56	−2′.04	1′.86	4′.92	6′.64	x 6′.84	5′.50	3′.52	1′.76	0′.29	−0′.45	−0′.73	−0′.81	−0′.69	−0′.59	−0′.49
J.	−0′.63	−0′.78	−0′.82	−1′.59	−3′.46	−4′.89	n̄ 5′.56	−4′.75	−2′.65	0′.08	3′.17	5′.48	x 6′.81	6′.50	4′.83	2′.39	0′.52	−0′.51	−1′.10	−1′.09	−0′.74	−0′.38	−0′.25	−0′.46
A.	−1′.10	−1′.51	−1′.55	−1′.85	−3′.28	−4′.86	n̄ 5′.24	−4′.59	−3′.07	0′.05	3′.40	5′.80	x 6′.80	6′.33	4′.59	2′.47	0′.60	−0′.10	−0′.10	0′.11	−0′.23	−0′.85	−0′.88	−0′.90
S.	−1′.04	−0′.88	−1′.09	−1′.28	−1′.94	−3′.07	−3′.96	n̄ 4′.10	−2′.45	−0′.02	3′.22	5′.67	x 6′.02	4′.70	2′.51	1′.08	0′.06	−0′.25	−0′.18	−0′.38	−0′.35	−0′.60	−0′.76	−0′.81
O.	−0′.07	−0′.08	−0′.50	−0′.51	−0′.51	−0′.98	−2′.24	n̄ 3′.82	−3′.81	−2′.35	1′.08	3′.78	x 4′.76	4′.31	2′.87	1′.18	0′.40	0′.02	−0′.53	−0′.81	−0′.54	−0′.56	−0′.63	−0′.49
N.	−1′.51	−1′.34	−0′.90	−0′.47	−0′.18	−0′.21	−0′.96	−1′.63	−1′.49	−0′.32	1′.49	2′.66	x 3′.19	2′.98	2′.15	1′.53	1′.16	0′.51	0′.02	−0′.73	−1′.08	−1′.36	−1′.51	n̄ 1′.88
D.	−0′.28	−0′.23	−0′.23	0′.00	0′.11	−0′.14	−0′.79	−0′.86	−0′.86	0′.51	x 2′.54	2′.31	2′.22	1′.47	0′.62	0′.30	0′.17	−0′.14	−0′.63	−1′.18	n̄ 1′.63	−1′.59	−1′.00	−0′.59
Y.	−0′.68	−0′.73	−0′.83	−0′.97	−1′.54	−2′.34	−3′.29	n̄ 3′.56	−2′.87	−0′.98	1′.90	4′.14	x 5′.17	4′.76	3′.34	1′.92	0′.83	0′.10	−0′.34	−0′.58	−0′.75	−0′.92	−0′.91	−0′.81
W.	−0′.73	−0′.59	−0′.42	−0′.29	−0′.27	−0′.40	−1′.03	−1′.31	n̄ 1′.38	−0′.44	1′.30	2′.31	x 2′.87	2′.40	1′.50	1′.03	0′.78	0′.25	−0′.26	−0′.70	−1′.14	−1′.27	−1′.11	−1′.04
Eq.	−0′.62	−0′.69	−0′.94	−0′.97	−1′.22	−1′.96	−3′.43	n̄ 4′.51	−3′.90	−1′.91	1′.41	4′.33	x 5′.71	5′.34	3′.67	1′.99	0′.83	0′.19	−0′.13	−0′.36	−0′.42	−0′.73	−0′.91	−0′.77
S.	−0′.70	−0′.93	−1′.12	−1′.67	−3′.14	−4′.67	n̄ 5′.40	−4′.86	−3′.33	−0′.60	3′.00	5′.77	x 6′.92	6′.53	4′.85	2′.73	0′.89	−0′.14	−0′.63	−0′.68	−0′.69	−0′.78	−0′.71	−0′.62

LXII.—HORIZONTAL FORCE.

	△H.																							
	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	−0.4	0.8	2.4	4.4	x 6.9	5.7	2.7	− 4.6	− 8.1	n̄ 10.5	− 8.9	− 2.1	1.3	2.8	−0.8	0.6	1.4	− 0.5	0.7	2.9	0.1	1.5	1.3
F.	−0.4	−2.0	−1.5	0.0	2.4	5.1	4.8	3.6	− 2.4	− 8.8	n̄ 11.0	−10.0	− 5.1	−1.3	−0.8	−1.3	1.3	4.8	5.9	x 6.0	4.9	2.9	1.6	1.0
M.	2.7	−0.4	0.6	2.4	4.8	7.1	6.1	0.2	− 9.8	−19.7	−21.1	n̄ 22.3	−15.6	− 7.1	−2.6	1.3	3.7	6.1	8.4	11.5	12.3	x 13.4	12.0	5.6
A.	7.3	3.4	0.8	2.3	3.6	3.3	− 0.2	− 7.1	−17.8	−28.6	n̄ 32.2	−25.7	−16.4	− 8.6	−1.3	2.5	10.8	13.8	15.9	16.7	x 17.9	17.0	13.0	10.2
M.	6.2	1.6	−1.0	−1.3	− 3.4	− 3.6	− 9.0	−18.3	−22.3	n̄ 23.7	−15.2	−13.1	− 7.6	− 1.0	2.9	6.5	13.7	16.5	x 16.9	15.9	13.3	10.3	7.8	7.4
J.	7.2	5.7	5.5	4.6	6.7	2.0	− 4.3	−13.1	−21.0	−25.9	n̄ 27.6	−21.7	−12.7	− 5.9	0.9	7.2	11.5	13.0	x 14.5	13.5	12.3	10.1	9.2	8.5
J.	4.3	4.1	5.9	6.1	6.6	1.0	−10.4	−21.3	−28.4	n̄ 29.0	−20.0	13.3	− 5.7	3.5	6.2	6.5	10.8	14.7	x 15.1	13.5	10.4	8.1	6.1	5.5
A.	5.5	4.3	3.1	2.0	2.1	−0.6	− 7.7	−16.9	−25.7	n̄ 28.4	−21.4	−15.1	− 6.2	1.2	4.8	7.2	10.6	13.2	13.8	x 15.1	14.3	10.3	8.1	6.4
S.	5.2	2.2	1.5	0.8	2.2	3.4	− 0.4	−11.4	−22.1	n̄ 26.1	−19.8	−10.5	− 3.5	0.5	1.0	1.6	4.5	8.4	x 11.8	x 11.8	11.0	10.8	9.1	8.0
O.	5.4	5.4	4.9	6.8	8.6	9.7	8.5	− 0.2	−13.4	−25.6	n̄ 26.6	−23.4	−13.4	− 6.7	− 2.7	− 1.7	2.4	7.5	10.0	x 11.2	10.5	9.0	7.7	6.0
N.	1.3	0.0	− 2.2	0.2	0.6	2.9	4.5	x 4.8	− 0.3	− 6.4	n̄ 10.7	− 8.4	− 4.6	− 1.9	−0.1	1.9	2.4	2.7	3.0	1.7	0.8	2.1	2.7	2.4
D.	− 1.2	− 0.3	0.3	1.8	2.5	4.5	x 5.3	2.5	− 2.0	n̄ 9.8	− 9.0	− 5.7	− 0.9	0.3	− 1.1	− 1.9	− 0.6	2.4	4.7	2.9	1.6	1.2	0.8	1.6
Y.	3.6	2.0	1.6	2.3	3.4	3.5	0.2	− 6.2	−14.1	n̄ 20.0	−18.8	−14.8	− 7.8	− 2.1	0.8	2.4	6.0	8.7	x 10.0	x 10.0	9.4	7.9	6.6	5.3
W.	0.0	−0.7	−0.6	1.1	2.5	4.9	x 5.1	3.4	− 2.3	− 8.3	n̄ 10.3	− 8.2	− 3.2	−0.4	0.2	−0.5	0.9	2.8	3.3	2.8	2.6	1.6	1.6	1.6
Eq.	5.2	2.7	2.0	3.1	4.8	5.9	3.5	− 4.6	−15.8	n̄ 25.0	−24.9	−20.5	−12.2	− 5.5	− 1.4	0.9	5.3	9.0	11.5	12.8	x 12.9	12.5	10.4	7.4
S.	5.8	3.9	3.4	2.8	3.0	−0.3	− 7.9	−17.4	−24.3	n̄ 26.7	−21.1	−15.8	− 8.0	−0.6	3.7	6.8	11.7	14.3	x 15.1	14.5	12.6	9.7	7.8	7.0

x and n̄ mark respectively the mean maximum and minimum hourly values in each month or season.

LXIII.—RANGE OF THE MEAN DIURNAL INEQUALITIES FOR THE MONTHS, YEAR, AND SEASONS OF 1916, AT ESKDALEMUIR AND RICHMOND (KEW OBSERVATORY).

Note.—The ranges are those shown in Tables XLIX. to LXII., in the preparation of which non-cyclic change has been eliminated (see Table LXVIIA.)

Months and Seasons.	ESKDALEMUIR.																RICHMOND.	
	"All" Days.			Quiet Days.			Disturbed Days.			"All" Days.			Quiet Days.			Disturbed Days.			Quiet Days.	
	X.	−Y.	Z.	X.	−Y.	Z.	X.	−Y.	Z.	D.	I.	H.	D.	I.	H.	D.	I.	H.	D.	H.
	γ	γ	γ	γ	γ	γ	γ	γ	γ	′	′	γ	′	′	γ	′	′	γ	′	γ
J.	19.0	27.0	13.9	15.9	14.4	4.4	31.6	58.8	45.2	5′.90	1′.13	15.0	3′.35	1′.07	14.4	12′.82	2′.22	28.4	3′.36	17.4
F.	27.2	29.1	13.1	21.6	27.8	6.7	33.9	58.6	31.9	6′.62	1′.48	22.5	6′.10	1′.22	19.9	12′.55	2′.25	26.9	6′.07	17.0
M.	40.2	49.6	39.0	44.0	41.1	10.8	52.2	89.9	120.8	10′.98	2′.08	36.2	8′.79	2′.43	38.9	18′.56	3′.31	45.9	9′.22	35.7
A.	60.2	60.3	34.3	55.0	63.3	19.5	88.1	79.3	118.7	12′.51	3′.49	60.5	13′.29	3′.58	56.8	15′.31	4′.94	92.3	13′.45	50.1
M.	66.3	57.1	31.0	55.5	62.2	23.2	92.1	73.1	84.5	11′.85	3′.85	67.7	13′.65	3′.06	51.3	14′.28	5′.57	103.4	13′.08	40.6
J.	64.2	65.7	26.9	53.5	61.0	15.2	74.6	84.9	47.9	12′.92	3′.97	66.3	12′.49	3′.31	53.7	16′.15	4′.99	85.6	12′.08	42.1
J.	63.1	59.4	26.8	53.6	64.3	24.6	89.0	62.1	63.1	11′.55	4′.16	70.2	12′.59	3′.23	55.5	10′.97	5′.93	98.5	12′.37	44.1
A.	55.8	54.8	31.7	51.1	56.1	19.7	92.5	66.3	126.9	11′.38	3′.45	58.0	11′.98	3′.25	51.2	10′.75	4′.43	98.2	12′.04	43.5
S.	51.7	43.8	34.7	46.1	44.4	14.0	71.7	74.2	85.0	9′.70	3′.06	46.6	9′.64	2′.95	45.2	17′.07	4′.01	62.1	10′.12	37.9
O.	42.7	36.5	34.1	43.2	40.9	9.8	67.1	87.5	165.8	8′.19	2′.77	39.2	8′.93	2′.65	40.9	19′.83	5′.02	60.4	8′.58	37.8
N.	28.3	39.7	24.4	20.0	28.0	12.5	63.3	49.9	51.1	9′.00	1′.70	23.5	6′.13	1′.15	17.6	10′.57	3′.29	53.5	5′.07	15.5
D.	20.1	29.8	17.1	17.2	23.9	8.3	36.7	52.0	46.3	6′.70	1′.21	15.6	5′.34	1′.20	16.2	12′.20	2′.64	25.2	4′.17	15.1
Y.	41.5	40.2	24.5	36.6	40.2	11.9	53.2	50.8	72.3	8′.47	2′.23	39.5	8′.61	2′.17	35.3	11′.24	2′.55	52.1	8′.73	30.0
W.	23.3	30.2	14.3	17.1	21.8	6.0	30.6	46.9	35.4	6′.94	1′.36	18.9	5′.01	1′.12	15.8	10′.86	1′.82	23.5	4′.25	15.4
Eq.	46.5	45.4	33.4	44.5	46.3	12.4	61.8	68.6	116.3	9′.53	2′.55	43.4	9′.82	2′.77	43.9	14′.92	3′.52	55.3	10′.22	37.9
S.	61.3	59.0	27.5	51.5	59.5	20.1	72.7	62.0	73.6	11′.72	3′.77	65.0	12′.56	3′.17	52.2	11′.69	4′.91	87.2	12′.32	41.8

LXIV.—HARMONIC COMPONENTS OF THE DIURNAL INEQUALITY.

Values of a_n, b_n in the series $\Sigma\,(a_n \cos 15nt° + b_n \sin 15nt°)$, t being reckoned in hours from midnight G.M.T.

Eskdalemuir. (Longitude of Eskdalemuir Observatory, 3° 12′ W.)

Month and Season.	North Component.								West Component.								Vertical Component.							
	a_1.	b_1.	a_2.	b_2.	a_3.	b_3.	a_4.	b_4.	a_1.	b_1.	a_2.	b_2.	a_3.	b_3.	a_4.	b_4.	a_1.	b_1.	a_2.	b_2.	a_3.	b_3.	a_4.	b_4.
	All Days.																							
	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.	5·1	2·3	− 4·0	− 1·0	1·3	− 1·4	0·1	0·3	− 9·8	− 1·8	− 0·4	3·9	− 0·3	− 0·1	0·6	1·4	− 0·4	− 6·2	− 1·2	− 1·0	− 0·2	0·0	− 0·5	− 0·1
F.	8·1	3·2	− 5·2	− 2·2	3·5	− 1·8	− 0·2	− 1·3	− 7·1	− 5·3	− 0·4	7·7	− 0·6	− 2·9	0·7	1·5	1·6	− 5·2	− 2·5	− 1·2	0·2	0·4	− 0·8	− 0·5
M.	13·8	− 2·7	− 9·0	0·0	3·4	− 0·4	− 1·0	0·3	− 15·3	− 11·6	0·8	10·3	− 1·9	− 5·5	0·4	1·4	− 2·5	− 14·7	− 5·6	− 3·1	1·4	1·8	− 0·3	0·2
A.	20·7	− 7·1	− 13·7	0·3	3·6	− 1·5	0·4	1·3	− 7·5	− 15·8	2·8	12·5	− 2·7	− 6·4	2·4	1·3	− 3·1	− 11·4	− 7·0	− 4·8	2·0	0·2	− 1·0	− 0·5
M.	20·3	− 13·9	− 13·0	2·1	2·6	− 0·3	0·6	0·7	− 6·9	− 19·6	4·9	9·3	− 3·8	− 1·5	1·8	− 0·2	1·7	− 11·3	− 7·1	− 2·6	1·7	0·0	0·0	− 0·5
J.	18·6	− 12·0	− 14·1	2·7	2·1	0·3	0·0	0·2	− 6·4	− 23·9	2·7	12·6	− 3·1	− 3·3	0·0	0·4	2·5	− 7·2	− 7·0	− 2·7	0·6	1·0	− 0·8	0·3
J.	18·7	− 12·2	− 12·9	1·7	− 0·5	− 0·4	1·9	1·7	− 4·3	− 20·0	3·7	12·6	− 2·8	− 2·2	1·6	0·5	1·7	− 9·6	− 6·6	− 3·3	1·3	0·2	0·0	− 0·4
A.	16·3	− 11·0	− 11·4	1·7	0·6	− 2·3	2·2	0·9	− 7·1	− 15·6	6·8	9·9	− 5·6	− 2·1	− 0·2	2·1	− 2·6	− 11·1	− 7·3	− 1·9	2·0	0·7	− 0·6	0·2
S.	18·0	− 7·9	− 8·7	1·7	0·8	− 4·1	0·6	0·5	− 11·9	− 8·8	5·1	6·9	− 4·6	− 3·6	1·1	1·4	− 4·7	− 11·4	− 7·4	− 2·2	1·1	− 0·2	− 1·0	− 0·8
O.	14·7	− 1·4	− 10·4	− 0·2	3·1	− 3·8	0·2	1·1	− 8·4	− 2·8	2·1	9·3	− 2·9	− 4·9	1·2	1·9	− 8·2	− 8·7	− 5·5	− 0·4	1·8	1·0	− 0·9	− 0·8
N.	9·9	− 0·4	− 6·7	− 1·6	2·3	− 2·0	0·0	0·6	− 12·2	− 1·5	− 0·1	6·7	− 2·5	− 1·3	0·5	1·9	− 4·3	− 9·6	− 3·1	− 0·5	− 0·2	− 1·0	− 1·4	− 0·4
D.	6·4	1·5	− 4·8	− 1·2	0·0	− 2·1	0·3	0·5	− 10·8	0·5	0·7	3·3	− 0·1	0·4	1·2	1·5	− 1·7	− 7·9	− 1·3	− 0·1	0·7	0·2	− 0·4	− 0·1
Y.	14·2	− 5·1	− 9·5	0·3	1·9	− 1·6	0·5	0·7	− 9·0	− 10·6	2·4	8·7	− 2·6	− 2·8	0·9	1·2	− 1·6	− 9·5	− 5·1	− 2·0	1·0	0·4	− 0·6	− 0·3
W.	7·4	1·7	− 5·2	− 1·5	1·8	− 1·8	0·1	0·0	− 10·0	− 2·0	− 0·1	5·4	− 0·9	− 1·0	0·8	1·6	− 1·2	− 7·2	− 2·0	− 0·7	0·1	− 0·1	− 0·8	− 0·3
Eq.	16·8	− 4·8	− 10·5	− 0·5	2·7	− 2·5	0·1	0·8	− 10·8	− 9·8	2·7	9·8	− 3·0	− 5·1	1·3	1·5	− 4·6	− 11·6	− 6·4	− 2·6	1·6	0·7	− 0·8	− 0·6
S.	18·5	− 12·3	− 12·9	2·1	1·2	− 0·7	1·2	1·2	− 6·2	− 19·8	4·5	11·1	− 3·9	− 2·3	0·8	0·5	0·8	− 9·8	− 7·0	− 2·6	1·4	0·5	− 0·4	− 0·4
	Quiet Days.																							
Y.	14·1	− 2·9	− 8·2	0·4	2·0	− 1·7	0·0	1·0	− 4·5	− 10·7	3·8	8·1	− 3·0	− 3·0	1·0	1·4	2·0	− 1·8	− 3·3	− 1·0	1·3	0·1	− 0·5	0·0
W.	5·3	0·8	− 4·0	− 0·8	1·6	− 1·4	− 0·2	0·8	− 5·4	− 3·0	− 0·2	4·4	− 1·3	− 1·5	1·0	1·2	0·0	− 2·9	− 0·1	− 0·5	0·3	0·0	− 0·4	− 0·5
Eq.	17·5	− 1·5	− 9·6	− 1·1	3·1	− 2·4	− 0·3	1·0	− 2·3	− 11·2	3·2	9·0	− 3·5	− 5·1	1·6	2·0	1·9	− 0·5	− 3·7	− 1·6	1·9	0·7	− 0·9	− 0·2
S.	17·6	− 8·0	− 11·2	+ 2·1	1·3	− 1·5	0·6	1·2	− 5·8	− 18·0	8·3	11·2	− 4·2	− 3·0	0·5	1·4	4·2	− 2·0	− 6·0	− 1·0	1·6	0·0	− 0·2	− 0·1
	Disturbed Days.																							
Y.	12·3	− 11·7	− 12·4	0·7	1·9	− 2·2	1·6	1·1	− 18·2	− 8·9	− 1·7	10·2	− 1·9	− 3·5	1·9	0·2	− 13·7	− 26·6	− 10·1	− 5·0	1·7	0·5	− 0·6	− 0·7
W.	9·1	0·7	− 6·8	− 1·4	1·4	− 2·7	0·9	0·0	− 16·3	1·3	0·6	6·5	0·9	− 0·9	1·3	1·3	− 5·3	− 14·2	− 5·0	− 1·7	− 1·1	0·4	− 1·2	0·6
Eq.	14·9	− 12·9	− 14·3	3·1	1·2	0·5	1·3	0·9	− 25·2	− 4·4	0·4	13·2	− 2·6	− 6·2	1·3	− 0·4	− 24·1	− 39·0	− 6·9	− 4·8	3·2	0·2	− 1·2	− 3·2
S.	12·8	− 23·0	− 16·1	0·3	3·0	− 0·9	2·6	2·5	− 13·1	− 23·7	− 2·6	10·2	− 3·9	− 3·4	3·1	− 0·4	− 11·7	− 26·7	− 10·0	− 8·4	3·1	0·9	0·8	0·4

LXIVA.—HARMONIC COMPONENTS OF THE DIURNAL INEQUALITY.

Values of c_n, α_n in the series $\Sigma c_n \sin (15nt° + \alpha_n)$, t being Mean Local Time reckoned in hours from midnight.

Eskdalemuir. (Longitude of Eskdalemuir Observatory, 3° 12′ W.)

Month and Season.	North Component.								West Component.								Vertical Component.							
	c_1.	α_1.	c_2.	α_2.	c_3.	α_3.	c_4.	α_4.	c_1.	α_1.	c_2.	α_2.	c_3.	α_3.	c_4.	α_4.	c_1.	α_1.	c_2.	α_2.	c_3.	α_3.	c_4.	α_4.
	All Days.																							
	γ	°	γ	°	γ	°	γ	°	γ	°	γ	°	γ	°	γ	°	γ	°	γ	°	γ	°	γ	°
J.	5·6	68·8	4·1	262·7	1·9	147·3	0·4	35·5	9·9	262·7	3·9	0·5	0·4	255·5	1·5	35·3	6·3	187·2	1·6	237·0	0·2	283·8	0·5	275·1
F.	8·7	71·4	5·6	253·7	3·9	127·4	1·3	202·0	8·9	236·4	7·7	3·1	2·9	198·3	1·7	37·7	5·4	165·8	2·8	251·7	0·4	33·7	1·0	251·2
M.	14·0	104·3	9·0	276·4	3·5	106·9	1·0	297·3	19·2	236·1	10·3	10·7	5·8	206·0	1·5	29·4	14·9	192·8	6·4	247·4	2·2	46·9	0·4	318·4
A.	21·9	112·2	13·7	277·6	3·9	122·6	1·3	29·3	17·5	208·5	12·8	19·1	7·0	208·8	2·7	74·8	11·8	198·2	8·5	241·8	2·0	95·3	1·1	257·3
M.	24·6	127·6	13·2	285·4	2·6	105·6	0·9	51·9	20·8	202·7	10·5	34·0	4·1	254·3	1·9	110·3	11·4	174·7	7·6	256·2	1·7	100·8	0·5	194·7
J.	22·1	126·1	14·4	287·2	2·1	92·1	0·2	11·8	24·8	198·2	12·9	18·6	4·5	229·8	0·4	197·9	7·7	163·9	7·5	255·3	1·1	43·0	0·9	304·8
J.	22·4	126·4	13·1	284·1	0·6	239·5	2·5	61·2	20·4	195·4	13·2	22·5	3·6	238·9	1·7	85·5	9·8	173·1	7·4	249·9	1·3	89·7	0·4	194·7
A.	19·6	127·2	11·5	284·9	2·4	174·0	2·4	81·8	17·2	207·5	12·0	40·9	6·0	255·5	2·1	6·7	11·4	196·4	7·6	261·7	2·1	81·3	0·6	299·2
S.	19·7	116·9	8·8	287·5	4·1	177·8	0·8	61·5	14·8	236·8	8·6	43·1	5·9	238·0	1·8	50·2	12·3	205·7	7·7	260·2	1·1	111·5	1·3	246·3
O.	14·7	98·7	10·7	264·4	4·9	150·5	1·1	22·8	8·8	254·9	9·5	19·1	5·7	217·0	2·2	44·9	12·0	226·3	5·5	272·0	2·1	71·0	1·2	239·0
N.	9·9	95·7	6·9	263·2	3·0	140·1	0·6	9·3	12·3	266·0	7·0	5·7	2·8	249·3	2·0	28·4	10·5	207·3	3·1	267·6	1·0	359·7	1·4	267·6
D.	6·6	80·0	4·9	262·6	2·1	189·3	0·6	46·6	10·9	276·1	3·4	18·6	0·4	355·3	1·9	50·6	8·0	195·2	1·4	271·1	0·7	83·8	0·4	273·0
Y.	15·1	112·9	9·5	278·1	2·5	140·4	0·9	45·9	13·9	223·4	9·1	22·0	3·8	232·2	1·5	51·4	9·7	193·0	5·5	255·1	1·1	81·3	0·7	260·2
W.	7·6	80·3	5·4	260·4	2·5	144·7	0·1	57·9	10·2	261·9	5·4	5·4	1·3	231·7	1·8	39·5	7·3	192·7	2·1	257·2	0·1	144·7	0·9	262·3
Eq.	17·5	126·9	10·5	273·8	3·7	143·6	0·8	24·7	14·6	231·1	10·2	21·0	5·9	220·3	2·0	53·9	12·5	204·9	6·9	254·4	1·7	76·2	1·0	246·1
S.	22·2	93·6	13·1	286·3	1·4	126·3	1·7	53·0	20·7	199·4	12·0	26·1	4·5	245·5	0·9	66·0	9·8	177·3	7·5	253·6	1·5	76·3	0·6	233·0
	Quiet Days.																							
Y.	14·4	104·8	8·3	279·3	2·6	141·0	1·1	14·2	11·6	205·9	8·9	31·4	4·3	234·1	1·7	49·7	2·6	135·8	3·3	258·3	1·3	95·4	0·5	277·7
W.	5·3	84·2	4·1	264·5	2·1	141·8	0·9	357·0	6·2	243·7	4·5	3·7	2·0	230·4	1·6	52·1	2·9	183·7	0·5	198·7	0·2	108·5	0·6	229·8
Eq.	17·6	98·1	9·7	269·9	3·9	137·1	1·0	357·2	11·5	194·8	9·5	26·3	6·1	223·9	1·7	51·2	1·8	106·8	3·9	252·5	2·0	79·7	0·9	267·5
S.	19·3	117·6	11·4	286·8	1·9	148·2	1·4	37·9	18·9	201·1	13·9	42·9	5·2	244·3	1·5	33·4	4·5	118·9	6·0	266·7	1·6	98·0	0·2	260·4
	Disturbed Days.																							
Y.	17·0	136·9	12·4	279·5	2·9	148·6	2·0	67·8	20·3	247·1	10·3	356·9	4·0	217·4	1·9	97·6	30·0	210·4	11·2	250·2	1·8	82·5	1·0	234·5
W.	9·1	88·6	6·9	264·7	3·1	162·0	0·9	100·8	16·4	277·7	6·5	11·8	1·3	144·2	1·9	57·5	15·1	203·8	5·3	257·7	1·2	299·7	1·3	239·3
Eq.	19·7	134·1	14·7	288·6	1·3	79·0	1·6	69·0	25·6	263·4	13·2	8·1	6·8	212·2	1·4	120·2	45·9	214·8	8·4	241·8	3·3	95·3	3·4	213·0
S.	26·3	154·1	16·1	277·6	3·1	117·0	3·6	59·0	27·0	212·1	10·5	352·0	5·2	238·0	3·1	110·1	29·1	206·8	13·0	236·3	3·2	82·7	0·9	75·1

NOTE.—To obtain the phase angles for midnight, Local Apparent Time, the corrections ε, 2ε, 3ε, 4ε must be added to α_1, α_2, α_3, α_4 respectively. The mean values of ε for the several months are :— −2°·5, −3°·6, −2°·1, +0°·1, +1°·0, −0°·1, −1°·5, −1°·0, +1°·4, +3°·6, +3°·8, +1°·0.

LXVII.—MEAN MONTHLY AND ANNUAL VALUES OF TERRESTRIAL MAGNETIC ELEMENTS AT THE METEOROLOGICAL OFFICE OBSERVATORIES, 1916.

1916.	KEW (RICHMOND) (quiet days D and H, absolute observations I, see p. 65).				ESKDALEMUIR (all days except those noted in monthly tables).				VALENCIA (CAHIRCIVEEN) (in general 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	17820	4850	43445	47207	15993	5046	45134	48149	16814	6116	44534	47993
February	17819	4844	43384	47150	15990	5040	45124	48138	16811	6087	44501	47958
March	17815	4835	43419	47171	15984	5033	45147	48158	16790	6082	44478	47930
April	17816	4835	43394	47158	15992	5033	45144	48156	16791	6077	44458	47910
May	17816	4828	43369	47133	15994	5029	45121	48135	16795	6081	44467	47920
June	17821	4831	43414	47177	15991	5024	45099	48113	16800	6074	44367	47829
July	17816	4821	43398	47159	15986	5016	45099	48111	16807	6059	44444	47900
August	17816	4816	43400	47161	15988	5011	45115	48126	16810	6075	44511	47966
September	17812	4811	43388	47148	15985	5010	45125	48134	16800	6082	44460	47916
October	17810	4806	43385	47144	15984	5008	45123	48132	16798	6065	44481	47932
November	17814	4801	43392	47151	15978	5001	45103	48110	16802	6070	44493	47946
December	17817	4799	43347	47111	15974	4994	45094	48099	16822	6065	44484	47944
Year 1916	17816	4823	43395	47156	15986	5020	45119	48130	16803	6078	44473	47929
Year 1915	17808	4874	43376	47141	16001	5075	45173	48191	16785	6130	44519*	47972*
Year 1910	17781	5117	43546	47313	15976	5311	45343	48368	16732	6337	44771	48215
Year 1905	17743	5272	43742	47496	..	..	..	..	16640	6447	44893	48313

1916.	Declination (West).	Inclination (North).	Horizontal Force.	Declination (West).	Inclination (North).	Horizontal Force.	Declination (West).	Inclination (North).	Horizontal Force.
	° ′	° ′	γ	° ′	° ′	γ	° ′	° ′	γ
January	15 13·5	66 58·2	18468	17 30·7	69 37·0	16770	19 59·4	68 6·7	17892
February	15 12·4	66 56·6	18466	17 29·7	69 37·1	16765	19 54·3	68 6·7	17879
March	15 11·0	66 57·8	18459	17 28·6	69 38·2	16757	19 54·7	68 7·5	17858
April	15 11·0	66 57·3	18460	17 28·2	69 37·6	16765	19 53·7	68 7·0	17857
May	15 9·7	66 56·7	18458	17 27·3	69 37·0	16766	19 54·2	68 6·9	17862
June	15 10·0	66 57·6	18464	17 26·5	69 37·0	16762	19 52·6	68 4·1	17864
July	15 8·5	66 57·6	18457	17 25·1	69 37·2	16755	19 49·4	68 6·0	17866
August	15 7·6	66 57·8	18455	17 24·2	69 37·5	16755	19 52·2	68 7·3	17874
September	15 6·9	66 57·8	18450	17 24·1	69 38·0	16752	19 54·1	68 6·4	17867
October	15 6·1	66 57·9	18447	17 23·8	69 38·1	16750	19 51·1	68 7·4	17860
November	15 5·0	66 57·9	18450	17 22·8	69 38·1	16743	19 51·7	68 7·4	17865
December	15 4·5	66 56·5	18452	17 21·7	69 38·3	16736	19 49·6	68 6·0	17882
Year 1916	15 8·8	66 57·5	18457	17 26·1	69 37·6	16756	19 53·1	68 6·6	17869
Year 1915	15 18·4	66 56·6	18463	17 35·9	69 36·9	16786	20 3·8	68 7·9*	17869
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

* Mean of 11 months.

LXVIIA.—NON-CYCLIC CHANGE (24^h—0^h) FOR THE MONTHS OF 1916, AT TWO OBSERVATORIES.

Month.	Eskdalemuir. "All Days."			Eskdalemuir. Quiet Days.			Eskdalemuir. Disturbed Days.			Kew. Quiet Days.	
	X.	−Y.	Z.	X.	−Y.	Z.	X.	−Y.	Z.	D.	H.
	γ	γ	γ	γ	γ	γ	γ	γ	γ	′	γ
J.	−0·1	−0·8	−0·6	1·5	0·6	0·3	−9·6	−3·2	−2·2	−0·10	1·4
F.	−0·1	−0·3	−0·9	3·4	2·2	−1·6	−7·8	3·0	0·8	−0·12	3·0
M.	0·3	−0·9	−2·4	3·6	3·4	−4·0	−5·6	−4·2	−4·8	0·50	6·0
A.	0·3	1·2	1·4	0·0	1·6	1·8	−5·0	−2·6	0·4	0·10	0·5
M.	−0·2	−0·2	0·4	0·2	1·0	0·0	−11·2	−5·2	−2·6	0·14	1·0
J.	1·0	−0·9	−0·5	3·4	1·0	0·0	2·2	−12·6	0·2	−0·02	1·9

Month.	Eskdalemuir. "All Days."			Eskdalemuir. Quiet Days.			Eskdalemuir. Disturbed Days.			Kew. Quiet Days.	
	X.	−Y.	Z.	X.	−Y.	Z.	X.	−Y.	Z.	D.	H.
	γ	γ	γ	γ	γ	γ	γ	γ	γ	′	γ
J.	−1·1	0·7	1·1	3·2	2·2	0·2	−13·8	5·2	5·8	0·20	4·6
A.	−1·5	−1·4	−3·9	7·4	−2·4	3·4	−18·8	−5·4	−2·4	−1·04	4·8
S.	−1·3	−3·1	−4·2	2·0	1·2	−0·6	−15·6	11·4	−23·4	0·16	3·5
O.	3·9	2·1	7·9	4·2	−0·6	−1·0	1·2	32·0	22·8	−0·58	3·6
N.	0·0	−0·6	−0·8	3·0	−1·2	−2·6	−5·2	−1·4	9·8	−0·20	2·3
D.	0·5	−0·6	−1·3	0·8	6·5	−2·4	−5·0	7·4	3·0	0·76	3·3

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

Place.	Latitude.	Longitude.	1916. Declination.	1916. Inclination.	1916. Horizontal Force.	1916. Vertical Force.	1915. Declination.	1915. Inclination.	1915. Horizontal Force.	1915. Vertical Force.	1914. Declination.	1914. Inclination.	1914. Horizontal Force.	1914. Vertical Force.
	N.			N.	γ	γ		N.	γ	γ		N.	γ	γ
Sitka (Alaska)	° ′ 57 3	° ′ 135 20 W.	° ′ 30 23·9 E.	° ′ 74 25·6	15585	55923	° ′ 30 23·2 E.	° ′ 74 26·5	15593	56008	° ′ 30 22·9 E.	° ′ 74 26·6	15605	56055
Rude Skov	55 51	12 27 E.	8 34·6 W.	68 52·7	17229	44599	8 44·3 W.	68 50·6	17257	44591	8 53·6 W.	68 48·2	17293	44592
*Kasan (New Site)	55 50	48 51 E.	..	..	..	..	..	..	..	..	8 21·3 E.	69 22·1	17891	47517
Eskdalemuir	55 19	3 12 W.	..	..	..	..	17 35·9 W.	69 36·9	16786	45172	17 45·3 W.	69 36·1	16804	45188
Stonyhurst	53 51	2 28 W.	16 25·6 W.	68 41·9	17342	44477	16 37·3 W.	68 41·4	17342	44457	16 46·8 W.	68 39·6	17352	44416
†Potsdam	52 23	13 4 E.	..	..	..	..	..	..	..	..	8 26·6 W.	66 22·9	18760	42900
†Seddin	52 17	13 1 E.	..	..	..	..	..	..	..	..	8 27·9 W.	66 19·9	18798	42885
De Bilt (Utrecht)	52 5	5 11 E.	12 2·7 W.	66 48·8	18461	43100	12 12·5 W.	66 48·0	18481	43117	12 22·6 W.	66 46·5	18512	43140
Valencia (Ireland)	51 56	10 15 W.	..	..	..	..	20 3·8 W.	68 7·9‡	17869	44519	20 12·3 W.	68 7·8	17895	44585
Kew (Richmond)	51 28	0 19 W.	15 8·8 W.	66 57·5	18457	43395	15 18·4 W.	66 56·6	18463	43376	15 27·8 W.	66 55·8	18488	43406
Greenwich	51 28	0 0	14 46·9 W.	66 52·7	18494	43313	14 56·5 W.	66 51·8	18508	43315	15 6·3 W.	66 51·2	18518	43317
Val Joyeux (near Paris)	48 49	2 1 E.	13 30·7 W.	64 40·3	19700	41623	13 40·5 W.	64 38·1	19715	41587	13 49·8 W.	64 37·7	19733	41609
Agincourt (Toronto)	43 47	79 16 W.	6 33·4 W.	74 43·5	15987	58538	6 28·5 W.	74 42·8	16028	58644	6 23·9 W.	74 41·5	16086	58765
Tortosa	40 49	0 30 E.	12 34·7 W.	57 46·2	23306	36967	12 46·0 W.	57 47·1	23277	36941	12 51·6 W.	57 47·5	23295	36981
Coimbra	40 12	8 25 W.	15 50·1 W.	58 32·2	23046	37662	15 57·5 W.	58 34·7	23053	37734	16 4·7 W.	58 36·4	23057	37782
Cheltenham, Maryland	38 44	76 50 W.	..	..	..	..	6 4·0 W.	70 47·0	19412	55692	5 59·8 W.	70 44·0	19510	55815
Tucson (Arizona)	32 15	110 50 W.	13 44·4 E.	59 26·1	27063	45824	13 42·5 E.	59 24·7	27119	45879	13 39·9 E.	59 23·1	27188	45946
Dehra Dún	30 19	78 3 E.	2 11·0 E.	44 37·9	33050	32627	2 15·5 E.	44 30·6	33083	32522	2 18·8 E.	44 22·9	33134	32427
Barrackpore	22 46	88 22 E.	..	..	..	..	..	..	..	..	0 32·2 E.	30 58·9	37403	22459
Hong Kong	22 18	114 10 E.	0 13·8 W.	30 51·8	37155	22205	0 11·7 W.	30 52·2	37167	22217	0 8·5 W.	30 53·5	37192	22251
Honolulu (Hawaii)	21 19	158 4 W.	9 43·9 E.	39 28·5	28966	23856	9 41·6 E.	39 29·1	29005	23897	9 39·6 E.	39 30·4	29045	23949
Toungoo	18 56	96 27 E.	0 8·4 W.	23 8·5	39018	16676	0 3·1 W.	23 7·2	39005	16653	0 2·6 E.	23 6·1	38965	16621
Alibag (Bombay)	18 39	72 52 E.	..	..	..	..	0 40·7 E.	24 21·0	36870	16688	0 44·2 E.	24 12·6	36882	16583
Vieques (Porto Rico)	18 9	65 26 W.	..	..	..	..	3 10·2 W.	50 45·5	28271	34612	3 0·4 W.	50 33·9	28401	34533
Kodai-Kanal	10 14	77 28 E.	1 27·9 W.	4 22·4	37633	02878	1 22·3 W.	4 17·0	37614	02817	1 17·1 W.	4 11·2	37604	02753
	S.			S.				S.				S.		
Batavia	6 11	106 49 E.	..	..	..	..	..	..	..	..	0 46·2 E.	31 28·8	36685	22464
Tananarivo	18 55	47 32 E.	..	..	..	..	..	..	..	..	8 25·2 W.	53 37·9	22484	30532
Mauritius	20 6	57 33 E.	9 47·6 W.	52 54·6	23201	30688	9 41·1 W.	53 0·2	23226	30833	9 34·7 W.	53 7·6	23256	31004
Pilar (Argentine)	31 40	63 53 W.	8 22·9 E.	25 40·9	25506	12265	..	..	..	..	8 40·4 E.	25 41·5	25597	12315
Melbourne	37 50	144 58 E.	8 6·5 E.	67 48·7	23001	56395	..	..	..	..	..	..	..	..
Christchurch, N.Z.	43 32	172 37 E.	16 49·8 E.	..	22355	..	16 47·0 E.	..	22387	..	16 44·8 E.	67 59·8	22413	55465

ADDITIONAL VALUES FOR EARLIER YEARS.

Place.			1913.				1912.				1911.			
	N.			N.	γ	γ		N.	γ	γ		N.	γ	
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.	60 28·2	18895	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	..	..	..	..	..	..	..	..	..	..
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
Karsani (near Tiflis)	..	..	3 9·1 E.	56 51·1	25217	38612	3 3·1 E.	56 46·0	25255	38545	..	..	..	..
Capodimonte (Naples)	40 52	14 15 E.	..	..	..	..	..	..	..	..	..	56 11·7	..	..
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 3·4 W.	48 53·7	29996	34379	5 0·6 W.	49 5·0	30025	34640
Lu-kia-pang	31 19	121 2 E.	..	..	..	..	..	..	..	..	3 3·5 W.	45 33·9	33244	33906
Helwân	29 52	31 21 E.	2 17·0 W.	40 47·6	30031	25916	2 25·4 W.	40 43·7	30063	25884	..	..	..	..
Antipolo	14 39	121 10 E.	..	..	..	..	0 40·0 E.	16 15·1	38101	11107	0 41·3 E.	16 18·5	38072	11140
	S.			S.				S.				S.		
Batavia	6 11	106 49 E.	0 46·4 E.	31 24·4	36690	22401	0 47·3 E.	31 19·4	36683	22324	0 47·7 E.	31 16·4	36664	22269
Laurie Island (South Orkneys)	45	42 32 W.	..	..	..	..	4 46·5 E.	54 26·0	25343	35442	4 49·3 E.	54 26·7	25388	35520

* Values for 1914 are from first four and last four months of the year only.
† The most recent values for these stations are extracted from a table in *Terrestrial Magnetism*, vol. xx., 1915, p. 131.
‡ 11 months; May missing.

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

Kew (Richmond). *Mean Hourly Values, Greenwich Mean Time, for the Months, Year, and Seasons.* 1916.

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.	−93	− 83	−103	−110	$\overline{n}$ 144	−115	−41	146	x 151	138	51	− 8	− 49	− 37	− 23	− 1	36	69	104	98	52	34	− 6	−70	+ 41	..	553
F.	−66	−114	−170	$\overline{n}$ 206	−181	−162	−85	− 33	45	90	48	17	− 25	− 58	− 73	10	79	140	194	x 206	159	98	68	20	..	..	539
M.	−23	− 61	−105	−134	−127	− 51	54	195	x 210	107	− 8	−82	$\overline{n}$ 145	−142	−115	−47	−60	66	107	107	153	113	30	−43	− 25	..	634
A.	−47	− 83	$\overline{n}$ 100	$\overline{n}$ 100	− 86	− 40	−13	80	60	− 9	−13	−18	− 27	− 13	− 15	−18	10	37	90	x 109	108	74	35	−21	+ 18	..	396
M.	− 6	− 30	− 27	− 11	− 4	11	49	x 72	28	− 14	−35	−52	$\overline{n}$ 57	− 50	− 39	−51	−25	16	15	51	62	64	20	9	− 16	..	219
J.	−23	$\overline{n}$ 46	− 38	− 25	− 14	4	15	19	7	2	− 2	− 1	− 5	− 9	− 3	3	9	26	x 31	x 31	27	14	− 2	−20	+ 13	..	219
J.	− 5	− 22	− 30	− 6	− 5	24	x 62	53	10	− 14	−18	−32	− 35	$\overline{n}$ 40	− 25	−36	−30	− 17	24	51	54	17	12	9	+ 22	..	187
A.	−32	− 58	$\overline{n}$ 62	− 58	− 49	− 5	61	x 67	47	36	36	30	− 9	− 20	− 16	− 9	−17	34	28	22	− 6	8	− 7	−20	+ 10	..	189
S.	−63	$\overline{n}$ 88	$\overline{n}$ 82	− 69	− 46	− 28	18	64	48	31	5	−19	− 18	− 20	16	30	48	x 95	32	32	57	14	−18	−38	+ 21	..	288
O.	−72	$\overline{n}$ 74	− 55	− 58	− 48	− 29	8	36	30	2	−17	−46	− 45	− 30	− 21	−14	43	92	x 110	100	91	58	− 5	−54	− 21	..	257
N.	−38	$\overline{n}$ 66	− 60	− 58	− 58	− 40	−31	14	19	35	−17	−25	− 32	− 32	15	30	46	30	42	60	x 77	70	24	− 7	...	..	418
D.	−35	− 30	− 23	− 65	− 70	$\overline{n}$ 102	−69	46	94	x 103	68	52	15	− 23	− 52	9	−19	43	22	44	34	32	−12	−57	+125	..	527
Y.	−42	− 63	− 71	$\overline{n}$ 75	− 69	− 44	2	63	62	43	8	−15	− 36	− 40	− 29	− 8	10	52	67	x 76	72	50	12	−24	..	..	367
W.	−58	− 74	− 89	−110	$\overline{n}$ 113	−105	−56	43	77	92	37	9	− 23	− 38	− 33	12	36	70	91	x 102	80	59	18	−29	..	..	509
Eq.	−51	− 76	− 86	$\overline{n}$ 90	− 77	− 37	17	94	87	33	− 8	−41	− 59	− 51	− 34	−12	10	72	85	87	x 102	65	10	−39	..	..	394
S.	−16	$\overline{n}$ 39	$\overline{n}$ 39	− 25	− 18	9	47	x 53	23	3	− 5	−14	− 27	− 30	− 21	−23	−16	15	25	39	34	26	6	− 5	..	..	198

B.—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. 1916.

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,	−82	−94	− 62	− 96	$\overline{n}$ 110	− 56	− 82	− 41	−42	15	23	35	42	42	36	−13	5	85	140	x 183	106	42	5	−86	− 30	3	260
F.	−72	−23	− 62	− 86	$\overline{n}$ 92	− 78	− 79	− 37	17	x 157	47	11	− 35	− 11	− 52	−29	18	75	66	48	49	139	67	−32	+ 26	3	281
M.	56	41	x 111	99	8	− 29	− 74	− 84	−74	9	−32	−55	− 78	− 95	$\overline{n}$ 122	18	−29	39	107	82	76	12	23	− 5	+357	3	385
A.	29	34	52	63	36	x 79	70	51	− 6	− 23	−60	−72	− 63	− 66	− 76	$\overline{n}$ 84	− 54	− 39	− 31	36	23	46	47	7	+ 51	8	239
M.	46	10	− 12	− 11	23	− 37	− 39	− 11	−33	− 28	−30	$\overline{n}$ 61	− 60	− 47	− 36	− 8	−17	0	37	x 90	71	84	39	36	− 78	7	188
J.	−12	− 8	13	37	41	6	2	− 7	− 5	− 2	−14	−32	$\overline{n}$ 49	− 36	− 38	−29	−14	−11	− 10	26	46	x 68	33	−12	+ 3	6	158
J.	52	51	44	12	5	41	6	− 19	−57	− 32	−22	−46	− 57	− 69	$\overline{n}$ 85	−76	−73	−44	− 20	23	84	x 119	99	65	+ 72	10	220
A.	6	42	29	32	35	30	12	− 2	−28	− 16	−28	−52	− 58	− 54	$\overline{n}$ 65	−58	−43	−29	18	23	28	66	x 83	38	− 61	10	229
S.	28	− 4	− 25	15	2	8	− 4	1	−13	− 33	−50	−56	$\overline{n}$ 67	− 59	− 52	−48	−29	4	31	55	x 109	83	56	40	+ 2	17	232
O.	−21	− 27	$\overline{n}$ 50	12	44	40	26	53	x 60	12	−33	−32	− 42	$\overline{n}$ 50	$\overline{n}$ 50	−36	11	38	44	15	− 1	− 13	− 9	1	+ 23	7	214
N.	− 3	− 6	− 33	$\overline{n}$ 49	− 30	− 38	− 28	− 43	− 25	− 33	−39	−46	− 37	− 23	2	29	46	38	44	67	x 90	87	21	8	+ 14	6	227
D.	68	17	− 50	−125	−157	$\overline{n}$ 170	−165	−140	−79	− 10	15	85	32	71	53	25	−57	− 5	132	x 183	67	130	83	1	+ 18	4	339
Y.	8	2	− 4	− 9	− 18	− 19	− 31	− 24	−24	− 2	−18	−26	− 39	− 32	$\overline{n}$ 40	−25	−20	13	48	71	62	x 72	46	5	..	..	256
W.	−21	−26	− 52	− 90	$\overline{n}$ 98	− 87	− 90	− 67	−33	32	12	22	1	21	11	4	2	47	96	x 121	78	101	45	− 27	..	..	277
Eq.	23	12	23	48	22	25	5	5	− 9	− 8	−44	− 54	− 62	− 68	$\overline{n}$ 76	−37	−25	11	38	47	x 52	32	29	11	..	..	268
S.	23	23	19	18	26	10	− 5	− 9	−31	− 19	−24	− 48	$\overline{n}$ 56	− 52	$\overline{n}$ 56	−43	−36	−21	6	41	57	x 84	63	32	..	..	199

C.—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. 1916.

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.	− 2	− 18	− 88	$\overline{n}$ 135	− 87	− 96	57	− 36	− 26	− 33	− 45	− 34	7	23	9	69	63	23	90	118	x 131	122	67	− 58	− 78	3	119
F.	$\overline{n}$ 328	−250	−195	−219	−217	−227	186	− 90	−118	−108	−117	− 43	84	241	326	272	183	273	372	x 416	180	92	− 49	−296	−415	2	277
M.	− 38	− 20	− 12	$\overline{n}$ 96	− 33	5	5	17	− 2	5	− 19	− 24	− 46	− 51	− 48	− 29	− 14	24	94	80	x 109	74	28	− 7	+ 72	4	164
A.	42	4	− 35	− 7	15	6	−169	$\overline{n}$ 185	− 81	− 29	− 38	− 85	− 63	− 64	− 13	39	60	44	65	72	108	106	x 143	59	+211	1	198
M.	43	37	− 4	14	30	67	18	− 22	− 6	− 17	3	− 21	− 51	$\overline{n}$ 79	− 25	− 55	− 72	− 49	− 10	40	x 75	36	5	36	+165	6	150
J.	22	68	x 92	79	42	22	9	20	− 28	− 18	− 57	− 43	− 46	− 25	$\overline{n}$ 61	3	− 2	− 18	− 15	− 2	− 2	− 6	− 12	− 25	+119	5	137
J.	x 236	127	70	83	61	−129	− 85	25	42	− 39	−135	$\overline{n}$ 154	−110	− 69	− 80	7	16	17	− 5	55	5	14	30	20	− 27	2	130
A.	6	− 16	− 1	$\overline{n}$ 44	19	18	x 40	9	− 15	20	− 9	− 15	− 28	− 35	− 32	− 25	− 19	− 1	31	2	34	x 40	2	27	− 57	6	163
S.	− 51	54	33	− 2	60	70	5	− 17	− 7	− 57	− 59	− 41	− 36	$\overline{n}$ 89	− 56	− 61	− 40	10	56	46	x 115	66	− 12	14	+ 48	2	148
O.	82	62	27	− 29	− 53	−112	−124	− 34	− 47	−106	−106	$\overline{n}$ 177	−131	− 84	− 7	39	94	x 136	120	112	122	64	118	32	12	2	197
N.	− 23	2	− 65	−161	−120	−129	−131	−149	$\overline{n}$ 170	− 77	− 14	− 10	62	94	x 161	156	120	95	114	83	69	40	19	28	−255	5	236
D.	46	74	56	32	− 72	− 54	− 58	− 66	− 71	− 34	− 5	− 8	3	32	32	69	x 127	98	85	8	− 48	$\overline{n}$ 102	$\overline{n}$ 102	46	+193	6	209
Y.	2	10	− 11	− 40	− 30	− 47	$\overline{n}$ 62	− 45	− 45	− 41	− 50	− 54	− 29	− 8	18	42	44	55	84	x 85	75	45	19	− 19	..	..	177
W.	− 74	− 46	− 70	−118	−123	$\overline{n}$ 125	−107	− 85	− 96	− 63	− 44	− 24	38	96	130	141	124	122	x 164	153	81	36	− 18	− 93	..	..	210
Eq.	9	24	2	− 34	− 3	− 8	− 72	− 56	− 35	− 46	− 55	$\overline{n}$ 82	− 69	− 72	− 31	− 3	25	53	84	78	x 114	78	70	25	..	..	177
S.	x 77	54	39	33	38	− 5	− 5	8	− 2	− 14	− 50	− 58	$\overline{n}$ 59	− 52	− 50	− 18	− 19	− 13	0	23	29	21	6	15	..	..	145

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

NOTES ON THE METEOROLOGICAL SUMMARIES.

The year 1916 was dull and wet on the whole, but the departures of the mean values of the meteorological elements from normal was not striking.

The outstanding event of the year for the Observatories was the gale at the end of March. A gust of 32 m./s. recorded at Kew Observatory, Richmond, on March 28th was the highest recorded since the erection of a tube-anemograph in 1895. Much damage was done in the neighbourhood.

In these Meteorological Tables the normal diurnal variation for the month of each element is shown, together with the departure of the 1916 values from the normal. The 1916 values themselves can be read off by re-adding these differences. The values so found are averages for the months ; the individual readings from which the averages are derived are available for reference at the Meteorological Office. For the years 1874 to 1886 and 1900 to 1913 such hourly readings were published *in extenso*. For the years 1869 to 1880 and 1887 to 1899 five-day means were printed.

For the observatories at Richmond, Cahirciveen, and Aberdeen the normals for Barometric Pressure, Air-Temperature, and Rainfall refer to the forty-five years, 1871–1915; those for Wind Speed and Sunshine to the thirty-five years, 1881–1915; and those for Relative Humidity to the years 1886–1915. In the case of Eskdalemuir, the normals are all for the five years, 1911–1915. For Falmouth only Rainfall and Sunshine are now tabulated. The normal diurnal variation of the other elements at Falmouth for periods ending in 1910 is given in previous volumes.

The tabulated values of pressure, temperature, and relative humidity refer to the exact hour by Greenwich time. The values of mean wind speed and of rainfall refer to the 60 minutes centered at an exact hour G.M.T. The duration of sunshine is given as a decimal fraction of the 60 minutes centered at an exact hour by Local Apparent Time. The difference between Local and Greenwich Time can be ascertained from the table on page 7.

In the tables for pressure, temperature, and relative humidity, values at 0 h and 24 h are both given. The small difference between these is due to the fact that the readings at the midnights with which a month opens and closes are in general different. In estimating the mean of all the readings for the month these first and last readings are given half-weight.

Particulars of the methods of tabulation and of the instruments are published in the Introduction to Part IV., Section 1, of the *Year Book for* 1913 and in the *Annual Reports of the Meteorological Office for the Years* 1867 *and* 1869. The

barographs and the thermographs with dry and wet bulbs are photographic; the speed of the wind is recorded by cup-anemometers, except at Eskdalemuir, where a tube-anemometer is used for the hourly tabulations; the raingauges in use are of Beckley's pattern; the duration of bright sunshine is measured by the Campbell-Stokes sunshine-recorder.

The values in the tables have been expressed throughout in units based upon the C.G.S. system; 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 were given with the notes for 1913. They will be found in the *Computer's Handbook.*

(*a*) The barometer readings are obtained from the hourly tabulations of photographic records from similar apparatus at all the observatories. Due allowance is made for the variation of gravity with latitude. The pressures refer to station-level. Tables for "reduction" of pressure to sea-level are printed in the Introduction to Part IV., Section 1, of the *Year Book for* 1913.

The barographs at Richmond* and Aberdeen have remained unchanged throughout the whole period. The site of Valencia Observatory was changed from Valencia Island to Cahirciveen, County Kerry, 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 pressure averages for the period 1871–1915, and the values given correspond with the present positions.

(*b*) *Temperature of the Air.*—Temperature is expressed in degrees absolute on the Kelvin Scale. The value of a degree is the same as on 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 practice of indicating "degrees absolute" by "*a*" instead of by °A has been adopted recently. Thus the temperature of the freezing-point of water is written 273*a*. Conversion from the centigrade to the absolute scale is a simple addition or subtraction. Tables for converting from Fahrenheit to the absolute scale are given in the *Computer's Handbook.*

The temperatures shown for all four observatories have been derived from the tabulation of photographic records from similar mercurial thermometers.

* Owing to structural alterations at Kew Observatory, the working standard barometer used for the control of the barograph readings was moved on May 26th, 1913, to an adjacent building, where it remained until December 16th, 1913. It may be noted that the ultimate standard barometers have not been moved since they were set up in 1855 and 1860 respectively.

At Eskdalemuir the thermometer screen is a large hut with louvred walls. At the other observatories the screen is on the north wall of the observatory building. At Kew Observatory, Richmond, the height of the thermometers above ground is 3·0 m., and the bottom of the screen is open. At Aberdeen the observatory is in the Tower of the University, and the screen is at a considerable height, 12·5 m. above ground. At Valencia Observatory, Cahirciveen, the height of the thermometers is 1·2 m.; in computing the normal values for the station no allowance has been made for the change in site in 1892.

It should be noted that the diurnal range of temperature, as determined by thermometers exposed in a north wall screen, is appreciably less than the range in a Stevenson screen in the open.

Before 1915 the tabulated values were taken directly from the curves, and were not corrected for the difference between the curve readings and the observations of the control-thermometers. The differences were always small, and it is not supposed that appreciable errors in the normal values have been introduced on this account. From 1915 methods have been adopted which eliminate this source of error.

The range of the mean diurnal variation of temperature during the year 1916 was less than the normal at all the Observatories, the days being comparatively cool and the nights warm, but the departures from normal are all small, the greatest ($-0{\cdot}5a$) occurring in the mean temperature at 14 h. at Eskdalemuir.

(*c*) Relative Humidity 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.

The means for Richmond, Eskdalemuir, and Cahirciveen 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.

Mention should be made here of a difficulty inherent in the psychrometric method of determining the relative humidity of the air. The depression of the wet-bulb reading depends, not only on the amount of vapour present in the air, but also on the strength of the wind blowing past the thermometers. The tables in use for computing the humidity take no account of the wind, and the results are, therefore, open to criticism. There is, however, reason to believe that they are rather nearer to the truth than alternative figures computed by other psychrometric formulæ would be.

(*d*) *Wind.*—The speed of the wind is obtained from the records of similar Robinson anemographs at Richmond, Cahirciveen, Falmouth, and Aberdeen, but at Eskdalemuir the records are made by a Dines Pressure-tube instrument.

The records from instruments of the two types, exposed at the same place, give approximately the same values for the mean speed.

More serious than any imperfections in the anemometers themselves is the difficulty in determining the relation between the wind which crosses the Observa-

tory at a particular height and the general flow of air in the neighbourhood. In the extreme case of the anemometer at Falmouth, the recorded speed is probably only half of what would be measured at the same height above ground in open country. The anemometer at Cahirciveen is on a tower at the NE corner of the main building, so that the exposure is less free for winds between SE and SW than for other directions.

The normal daily variation of wind-speed at moderate heights shows * a maximum in the middle of the day and a minimum at night. The ratio of the daily range to the mean speed is greatest at inland stations. The following values of this ratio are derived from the normals for the whole year :—

Cahirciveen . . .	·28	Aberdeen . : .	·34
Eskdalemuir . . .	·47	Richmond . . .	·57

(*e*) *Rainfall.*—The tables give the mean values of the hourly measurements for each month, *e.g.* the value entered to noon is the mean of the amounts which fall between the hours of 11 h 30 m, and 12 h 30 m during the month.

For the purpose of this table the rainfall day is to be regarded as beginning at 0 h 30 m.

There is reason to believe that the figures given for the rainfall at Cahirciveen in 1915 and 1916 are too high by nearly 5 per cent.†

The fluctuations in the hourly values for rainfall are remarkable. For example, at Richmond in 1916 the mean fall for the hour centred at 22 h was

* *Cf.* G. I. Taylor, "Phenomena connected with Turbulence in the Lower Atmosphere," *Proc. Roy. Soc.*, A., 1917, vol. xciv., p. 137.

† The Beckley gauge at Cahirciveen stands on ground sloping generally downwards towards the WNW, at an inclination of about 1 in 20. The collecting funnel has a somewhat blunt edge, and the area taken from the centre of this edge is 102·3 square inches. Direct experiments made in 1916 and 1917 have shown that the records of this gauge exceed by 7·5 per cent. the true depth of rain caught by the funnel. This is also verified by a consideration of the dimensions of the funnel, float chamber, and float. As far as can be traced, the records of the instrument have always been subject to this systematic error from the date of its inception, but for reasons set out below it seems probable that the published rainfall figures for the years previous to 1915 closely represent the actual rain falling on the ground around the gauge.

The instrument is placed in an open field and in close proximity to two standard 8-inch gauges, the whole being inclosed by a light iron fence ; two Stevenson thermometer screens are placed in the same enclosure. The general exposure of the instrument may be classed as good.

The yearly totals for the three gauges for a period of five years are given below :—

Year.	Beckley.	8-in. (No. 1).	8-in. (No. 2).	Mean of Nos. 1 and 2.
1912	1443 mm.	1410 mm.	1454 mm.	1432 mm.
1913	1602 ,,	1585 ,,	1618 ,,	1602 ,,
1914	1755 ,,	1714 ,,	1728 ,,	1721 ,,
1915	1593 ,,	1515 ,,	1525 ,,	1520 ,,
1916	1429 ,,	1367 ,,	1368 ,,	1368 ,,

Consideration of these figures shows that in spite of the systematic error referred to above the total rain recorded by the Beckley gauge previous to 1915 does not greatly exceed the mean of that recorded by the two 8-inch gauges. This has not been fully explained, but is probably due to slight differences in the exposure of the Beckley gauge, and to its different size and shape. It may be inferred that the published hourly falls previous to 1915 fairly represent the rainfall in the enclosure as it would be recorded by a standard 8-inch gauge. In the case of the years 1915 and 1916 the difference becomes appreciable, and the same thing is noticeable in 1917, but it seems certain that in the case of the 1915 and 1916 figures the hourly falls are $4\frac{3}{4}$ and $4\frac{1}{3}$ per cent. too high, where the standard measurement is taken to be a standard 8-inch gauge.

0·14 mm., or 0·8 mm. above normal, whereas for 13 h it was 0·06 mm., or 0·2 mm. below. On reference to the individual months, it is found that the fall during the hour centred at 13 h exceeded that of the previous hour in only two months, April and May, a result which is the more curious as there is normally more rain in the afternoon than in the morning. Such irregularities are to be expected, however, in rainfall records, as a very heavy fall of say 30 mm. in a single hour of one day raises the annual mean for that hour by 0·1 mm., *i.e.* practically doubles it.

(*f*) *Sunshine.*—The duration of bright sunshine is obtained by the Campbell-Stokes sunshine-recorder and is therefore measured by the burning or scorching of a blue card by the focussed sunlight. 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.

Accuracy of Means.—The computation of mean hourly values for the tables has been carried to one decimal place beyond the last figure given by the individual readings. On account of unknown zero errors of the thermometers and barometers, and various defects of the anemometers, rain gauges, and sunshine recorders, this refinement, regarded as determining the values for particular hours, is not justified, but the inclusion of the additional figures facilitates the study of diurnal variation.

Possible Systematic Errors.—The mean values as shown in the tables are known to be subject to certain small systematic errors incidental to the methods of recording and tabulating the various elements. The allowances which should be made to eliminate such errors as far as possible are under investigation, no such allowances have been made in the present volume.

One source of error was brought to light owing to the publication by Mr M. M'Callum Fairgrieve of a paper * entitled "A possible Two-hourly Period in the Diurnal Variation of the Barometer." The time-marks on the photographic barograms occur at intervals of two hours, alternate readings being taken at a time mark and halfway between two time-marks. Owing to the difficulty in making the readings in the two categories quite consistent, a small systematic error equivalent to an apparent oscillation of pressure with a period of two hours affects the results. Similar small effects of the method of tabulation can be traced in the tables of temperature and humidity.

The errors are comparable with ·005 mb. for pressure and ·02 a for temperature.

It may be mentioned here that from January 1st, 1918, time-marks on the instruments in question have been made half-an-hour before each even hour instead of at the hour, so that the systematic error cannot recur.

Harmonic Analysis.—The systematic analysis of the records of pressure and temperature of the seven observatories of the Meteorological Office by means of the beautiful harmonic analyser invented by W. Thomson (Lord Kelvin) was a notable enterprise of the period 1871–1882. The results for each month of these years are published in *Harmonic Analysis of Hourly Observations of Air Temperature and Pressure at British Observatories: Official Publication, No.* 93. This volume contains also the harmonic components for the average diurnal variation in

* *Journal of the Scottish Meteorological Society*, 1913, p. 158.

the several months for the same period.* Corresponding data for longer periods have not been published by the Office. The annual mean diurnal variation of pressure at the Observatories has been analysed, however, for these *Notes* for the last few years. The results up to 1916 are set out below :—

Observatory and Period.	Amplitude in Millibars.				Phase, Greenwich Mean Time.								Phase, Local Mean Time.			
					24-Hour Term.		12-Hour Term.		8-Hour Term.		6-Hour Term.					
	P_1	P_2	P_3	P_4	A_1	Max.	A_2	Max.	A_3	Max.	A_4	Max.	A_1	A_2	A_3	A_4
					°	h m	°	h m	°	h m	°	h m	°	°	°	°
Aberdeen, 1916 .	·163	·189	·045	·026	123·0	21 48	135·9	10 30	12·6	1 43	301·4	2 29	125·1	140·1	18·9	309·8
,, Normal . 1871–1915	·116	·249	·028	·009	157·8	19 29	143·6	10 13	349·5	2 14	335·7	1 55	159·9	147·8	355·8	344·1
Eskdalemuir, 1916 .	·134	·251	·016	·026	91·3	23 54	147·9	10 3	334·1	2 35	315·8	2 14	94·5	154·3	343·7	328·6
,, [Normal] 1911–1915	·083	·257	·023	·016	75·1	1 0	141·9	10 16	15·0	1 40	330·6	1 59	78·3	148·3	24·6	343·4
Richmond (Kew Obs.) 1916 .	·186	·345	·036	·017	83·5	0 26	150·6	9 59	351·0	2 12	339·4	1 51	83·8	151·2	352·0	85·1
,, Normal 1871–1915	·138	·351	·030	·008	28·1	4 7	149·5	10 1	1·6	1 58	274·7	2 55	28·4	150·1	2·6	29·7
Cahirciveen (Val. Obs.) 1916 .	·245	·297	·025	·016	186·1	17 36	129·3	10 41	324·8	2 47	352·3	1 38	196·4	149·9	355·7	33·5
,, Normal . 1871–1915	·151	·307	·034	·004	177·8	18 9	130·9	10 38	331·9	2 37	42·3	0 48	188·1	151·5	2·8	83·5

The notation is explained by two alternative formulæ for the inequality in question.

$$P_1 \sin (15t+A_1)^\circ + P_2 \sin (30t+A_2)^\circ + P_3 \sin (45t+A_3)^\circ + \ldots$$

and $$P_1 \cos 15(t-T_1)^\circ + P_2 \cos 30(t-T_2)^\circ + P_3 \cos 45(t-T_3)^\circ + \ldots$$

Here t is the time elapsed in hours since midnight and T_1, T_2, T_3 are the times of maxima of the three harmonic terms. The times of the corresponding minima differ from those of the maxima by twelve, six, and four hours respectively. While it has been convenient to record all the times to minutes this degree of accuracy can hardly be claimed.

It is of importance to note that whilst the 12-hour term is known to be fairly consistent throughout the year, the other terms are subject to very large changes from month to month.

It may also be mentioned that the "normal" values of the *P's* refer to the normal diurnal variation. The average values of the *P's* for individual years would naturally be greater.

Additional Information.

For a general account of the weather of the year, reference should be made to the Annual Summary of the *Monthly Weather Report.* Daily readings at Richmond, Cahirciveen, and Eskdalemuir are published in the *Geophysical Journal,*

* The results have been discussed recently by Dr. C. Chree, *Q. J. R. Met. Soc.*, xliv., 1918, p. 99.

corresponding data for Aberdeen in *Daily Readings at Meteorological Stations of the First and Second Orders.* A summary of the monthly values at each of the four observatories is to be found in the Annual Supplement to the last-named publication.

Climatic diagrams based on the average hourly values up to 1910 are given for Aberdeen, Cahirciveen, Falmouth, and Richmond in *The Weather Map.*

Graphs of diurnal variation of temperature at the same observatories for the period 1871 to 1895 are given in *Temperature Tables for the British Islands.* The corresponding pressure-graphs are reproduced in a paper by R. H. Curtis.*

* *Q. J. R. Met. Soc.*, xxvi., 1900, p. 1.

TERRESTRIAL MAGNETISM :—I. NOTES ON THE MANAGEMENT OF THE INSTRUMENTS AT KEW OBSERVATORY, RICHMOND, AND ON THE CORRESPONDING TABLES, 1916.

By C. CHREE, Sc.D., LL.D., F.R.S., Superintendent.

Scale value determinations of the horizontal force and vertical force magnetographs were made on January 10. The values obtained for the sensitiveness were then—

In H, 1 mm.$=6{\cdot}1\gamma$; in V, 1 mm.$=11{\cdot}1\gamma$.

The sensitiveness of the H magnetograph was checked from time to time by observing the time of swing of the magnet. This remained sensibly constant throughout the first nine months of the year. Later there was a slight change, indicating a reduction of sensitiveness to 1 mm.$=6{\cdot}2\gamma$, which was subsequently confirmed by direct observation. In February the sensitiveness of the V magnetograph was reduced to 1 mm.$=18{\cdot}3\gamma$, as more suitable for the conditions now prevailing, as regards artificial disturbance, and during the rest of the year the instrument was maintained in this insensitive state.

The scale value of the declination magnetograph continued to be as in previous years,

1 mm.$=0'{\cdot}87$.

The base values of the curves were determined by absolute observations, taken usually once a week, with the Jones unifilar magnetometer, using collimator magnet K.C.I., and declination magnet K.O. 90, and the Barrow dip circle No. 33, with $3\frac{1}{2}$-inch needles. In the absolute observations of horizontal force use was made, as in recent years, of three deflection distances—22·5, 30, and 40 cms.—and values were calculated for the "distribution constants" P and Q from all the observations of the year combined. The values thus obtained of late years have been as follows:—

Year.	P.	Q.	Mean Value at 22·5, 30, and 40 cms. of $\log_{10}(1+Pr^{-2}+Qr^{-4})$
1910	+0·882	—1354	$\bar{1}{\cdot}99939$
1911	+0·832	—1377	$\bar{1}{\cdot}99934$
1912	+0·749	—1286	$\bar{1}{\cdot}99937$
1913	+1·504	—1528	$\bar{1}{\cdot}99959$
1914	+1·226	—1343	$\bar{1}{\cdot}99958$
1915	+0·778	—1245	$\bar{1}{\cdot}99942$
1916	+2·962	—2044	$\bar{1}{\cdot}99996$

The collimator magnet was dropped after the observation on May 18. This produced no certain change in the magnetic moment, but visibly bent the stirrup.

This was put right by Mr Dover. After this it was observed that an alteration had occurred in the division where the horizontal line in the telescope cuts the vertical scale on the magnet, which necessitated a redetermination of the position of the magnetic axis, and a consequent alteration of the position of the magnet in the stirrup. This introduced an undesirably large difference between the readings obtained with the magnet on the two arms of the deflection bar, showing that the centre of the magnet departed too largely from the index mark on the carriage, the error varying when the magnet was turned end for end. As the simplest way of curing the defect, two new marks were put on the carriage by Mr Dover, and that one is used which comes nearest to the north pole of the magnet. Any mistake in the mark used could hardly escape detection on superficial comparison of the readings obtained on the two arms. Check observations made after the straightening of the stirrup showed no sensible change in the moment of inertia.

The large apparent difference between the values of P and Q for 1915 and 1916 is an unsatisfactory feature. It did not seem to be due to the accident to the magnet, being clearly apparent in the earlier observations of the year. The observations of horizontal force taken during 1916 were originally reduced as usual, making use of the values of P and Q for the previous year. The substitution of the values of P and Q actually found for 1916 entailed a correction of $+11\gamma$, which was duly applied to all the data published in the *Geophysical Journal.*

At the end of January, after some preliminary trials, electric traction was introduced by the London and South-Western Railway into the local service of trains on the line through Richmond and Twickenham. The increase thus produced in the artificial disturbance of the magnetic field was serious, not merely in the vertical but also in the horizontal components. The increased uncertainty in the values of the daily extremes of horizontal force and declination previously published in the *Geophysical Journal* was such that their publication was discontinued. With a view to ascertaining the influence on the diurnal inequalities, a comparison was arranged by the kind assistance of the Astronomer Royal between corresponding Greenwich and Kew curves, and data were compared for a series of months before and after the electrification of the London and South-Western Railway line. The comparison was made by Dr S. Chapman of the Royal Observatory and the Superintendent, who reported as follows, after an elaborate examination: "The diurnal inequalities at present obtained from the declination and horizontal force curves at Kew Observatory are but slightly, if at all, affected by artificial electric currents, and there is as yet no cause for their discontinuance on that ground."

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. Full details will be found in the *Geophysical Journal.* The accompanying table shows the number of days in each month to which the characters "0," "1," and "2" were assigned. It also gives for each month the mean of the "character figures," treated as if ordinary arithmetical quantities. As there is a wide range in the disturbance to which any one figure is attached, these monthly means should be regarded as giving only a general indication of the disturbance prevailing.

1916.	Number of Days having Magnetic "Character."			Mean of "Character" Numbers.
	"0."	"1."	"2."	
January	14	11	6	0·74
February	13	14	2	0·62
March	10	11	10	1·00
April	15	10	5	0·67
May	11	17	3	0·74
June	11	17	2	0·70
July	14	15	2	0·61
August	11	15	5	0·81
September	9	15	6	0·90
October	13	12	6	0·77
November	6	17	7	1·03
December	12	16	3	0·71
Year (totals and means)	139	170	57	0·78

The mean "character" figure for the year is slightly larger than that for 1915, which was largely in excess of that for 1914. The pre-eminence of November is an unusual feature. It was due to the persistence of disturbance and the absence of quiet days, rather than to the presence of highly disturbed days. In the latter respect March stood distinctly first. Another exceptional feature was the relatively quiet condition of February, which is usually rather a disturbed month. None of the disturbances recorded were exceptionally large, but those of January 11, March 9, April 25, May 21–22, August 22 and 26–27, and October 6–7 displayed considerable energy.

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 1916, *as issued by the International Commission of Terrestrial Magnetism.*

January	2,	8,	15,	17,	19	July	7,	15,	27,	28, 29
February	1,	6,	16,	21,	25	August	1,	15,	16,	17, 25
March	1,	13,	15,	23,	27	September	1,	19,	20,	21, 29
April	4,	5,	10,	13,	24	October	4,	16,	17,	18, 28
May	13,	14,	15,	18,	27	November	1,	14,	20,	21, 24
June	2,	3,	10,	15,	16	December	6,	10,	21,	22, 23

A temperature correction has been applied as usual to the horizontal force curves, viz. 3·1γ per 1a. In consequence of the continual small oscillations now invariably present, all the curves were smoothed. 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 LV. and LVI. 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 defined as in previous years; x and n represent the maximum and minimum hourly values. Table LXIII. gives, under

the heading "range," the algebraic difference of the extreme hourly values, and in Table LXVIIA., under the heading "24–0," the mean algebraic excess of the element at 24 h over the value at 0 h is stated. The units employed throughout are 1′ in declination and 1γ (or 1×10^{-5} C.G.S.) in horizontal force. In the case of declination the minus sign means that the magnet points to the east of its mean position for the day. The declination ranges, with the exception of January, and the horizontal force ranges, with the exception of November, are larger than for the corresponding months of 1915. In the case of the mean diurnal inequality for the year, the ranges in both elements exceed those for 1915 by about 20 per cent., suggesting a large increase in solar activity. The inequalities, it may be added, as anticipated by Dr Chapman and the Superintendent, appear to be of quite the normal type, and the same is true of the non-cyclic changes.

No vertical force inequalities have been prepared since 1902. The curves during 1916 were even less suitable for such a purpose than in previous years. They are used in connection with the verification of dip needles or for the study of the larger features of magnetic storms.

The dip observations are taken in the afternoon at an hour when the departure from the mean value for the day is small, and allowance is made for this departure by reference to the inequality data for the years 1890 to 1900. Values have been obtained for the vertical force by combining these corrected values of dip with the corresponding horizontal force data derived from the curves. The mean monthly values thus obtained appear in Table LXVII., along with mean monthly values of declination and horizontal force, derived from the curves of the international quiet days. The table also contains mean monthly values for the total force, and the north and west components, deduced from the values obtained for the other elements. Mean annual values are given also for earlier years, to bring out the nature of the secular change. Westerly declination continues to fall at approximately the same rapid rate—9½′ per annum—as of late years. Horizontal force continues to fall, as during the last two or three years. The increase of dip commented on last year—marking a reversal of the tendency existing up to that time since dip was first observed in England—is now quite decided. There is an apparent rise in vertical force, but whether this is an accidental feature or also marks a reversal of the previous tendency, it would be premature to say. The north component of force appeared nearly stationary throughout the year, but the fall in the west component, like that of declination, was so rapid that it could almost be traced from month to month.

Table LXVIII. gives a list of values of the magnetic elements at the observatories whose publications are received at Kew, including the latest year available up to 1916. Owing to the war, the sources of recent information have been more restricted than usual.

TERRESTRIAL MAGNETISM:—II. NOTES ON THE MANAGEMENT OF THE INSTRUMENTS AT ESKDALEMUIR OBSERVATORY, AND ON THE CORRESPONDING TABLES, 1916.

By A. CRICHTON MITCHELL, D.Sc., F.R.S.E., Superintendent.

The magnetographs at Eskdalemuir are arranged so as to record the three geographical components of terrestrial magnetic force, viz. the north component N (or +X), the westerly component W (or —Y), and the vertically downward component V (or +Z). The north and west instruments are of the Adie bifilar type; the vertical instrument is that lent by Professor Watson.

During the year no change was made in the suspensions or mounting of the instruments or in the position of any control magnet. The only matter calling for notice is the fact that on several occasions a discontinuity occurred in the base line value of the vertical instrument in consequence of disturbance during a scale test.

The constants of the instruments were as follows:—

	North.	West.	Vertical.
Time scale: 1 hour=	15·6 mm.	15·6 mm.	15·6 mm.
Time marks	Every two hours; end of mark at exact hour.		
Error of time mark	Not more than ±1 min.		
Period of vibration	13·9 secs.	11 secs.	7·4 secs.
*Logarithmic decrement	·345	·572	..
Apparent N force due to unit W force	⊁·0005	..	..
Apparent W force due to unit N force	..	negligible.	..
Apparent vertical force due to unit horizontal force in azimuth of magnet	..	..	+·006
Change in azimuth for 1 mm. on paper	·00032 radian.	·00033 radian.	·0003 radian.
Twist of bifilar suspension	35°	90°±5°	..
Ratio of the length of the bifilar suspension to the mean breadth	51	66	..
Temperature coefficient per 1°.	−9γ	−2γ	+26γ
Direction to which marked pole points	West.	North.	..
Azimuth of magnet	269° 58′	0° 1½′	346°

The scale values were determined twice monthly according to the manner described in the 1913 *Notes*. From over-lapping means, the following values were obtained and employed in reducing the hourly readings of the curves:—

Month.	North Component. γ per mm.	West Component. γ per mm.	Vertical Component. γ per mm.
January	4·98	5·36	3·89
February	4·98	5·36	3·89
March	4·99	5·34	3·87
April	5·01	5·34	3·92
May	5·01	5·34	4·03
June	4·99	5·34	4·15
July	4·99	5·33	4·18
August	4·98	5·33	4·27
September	4·98	5·34	4·36
October	4·98	5·33	4·33
November	4·96	5·31	4·28
December	4·94	5·31	4·31

* Log. dec. $=\log_e a_n - \log_e a_{n+1}$, where a_n, a_{n+1} are the amplitudes of two consecutive swings on the same side of the zero position.

The method of observing the effect of unit west force on the north magnetograph was the same as that adopted in previous years. The effect is now, however, negligible, and it will not be taken into consideration in reducing the hourly readings of 1917 and future years.

The absolute observations were taken weekly in the eastern magnetic hut, Pier No. 5 being used. The magnetometer employed was Elliot No. 60, from 1st January to 28th August; Magnetometer No. 140 from 29th August to 23rd November; and Elliot No. 60 again for the remainder of the year. The last-mentioned instrument was under repair during the interval mentioned. Dip observations were made with the Schülze inductor, No. 103, on Pier No. 6 in the same hut.

In the reduction of the absolute observations of H, the values of $\log\left(1+\frac{P}{25^2}+\frac{Q}{25^4}\right)$ given in the subjoined table were employed. As in previous years, the value entered opposite a given month was obtained from the values for that month, the three months preceding, and the three months succeeding it.

Month.	$\log\left(1+\frac{P}{25^2}+\frac{Q}{25^4}\right)$.	Month.	$\log\left(1+\frac{P}{25^2}+\frac{Q}{25^4}\right)$.
January	·00562	July	·00522
February	·00549	August	·00522
March	·00545	September	·00520
April	·00537	October	·00520
May	·00539	November	·00520
June	·00522	December	·00511

The base values employed during the year are represented graphically in Plate I., which also shows the actual points given by observation. For the north and west instruments, the scatter of the points is comparatively small; for the vertical instrument it is larger. In addition, discontinuities in the base line for the vertical instrument are caused by the changing of the calcium chloride employed to keep the air dry in the box enclosing the vertical instrument; also, as has been mentioned already, small discontinuities have occurred during scale tests.

The hourly readings are taken from the magnetograms by means of a ruled glass scale, the reading for a particular hour being that ordinate which is estimated to be the mean reading for an hour centering at the hour in question.

The noncyclic correction has been eliminated in the usual manner from the diurnal inequalities.

The inequalities of H, D, and I have been computed from those of N, W, and V by means of the formulæ—

$$\delta D=\frac{180\times 60}{\pi}(\delta W\cos D-\delta N\sin D)/H,$$

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

$$\delta I=\frac{180\times 60}{\pi}\cos I(\delta V\cos I-\delta H\sin I)/H,$$

where δD, δI are given in minutes of arc. These inequalities have been further corrected, where necessary, for the effect of the north component on the west magnetograph, and *vice versa*, and for the effect of the horizontal force on the vertical magnetograph.

The constants in the harmonic series expressing the diurnal inequalities have been calculated by means of the formulæ published in the *Greenwich Magnetical and Meteorological Observations* 1908. They have been corrected in the same manner as the inequalities for H, D, and I, referred to above.

The days selected under the international scheme as "quiet" days, "disturbed" days, and "double-starred" days (for publication of the curves), are given in the first column for each month of the tables of hourly values.

The curves obtained on "double-starred" days are reproduced in Plates II., III., and IV.

TERRESTRIAL MAGNETISM :—III. NOTES ON THE MAGNETIC OBSERVATIONS MADE AT THE VALENCIA OBSERVATORY, CAHIRCIVEEN, 1916. By L. H. G. DINES, Superintendent.

Absolute observations of declination, horizontal force (H), and inclination were taken in general twice a month with the Dover Unifilar No. 139 and the Dover Dip Circle No. 118 at approximately the same hours of the day on each occasion.

The mean times (G.M.T.) of observation were 10 h 22 m for the declination, 11 h 34 m for the horizontal force, and 14 h 32 m for the inclination.

The observations of declination and horizontal force during January, February, March, and part of April were taken with collimator magnet No. 140 A, which was lent from Kew, as stated in the notes for the tables for 1915. For the remainder of the year the regular magnet No. 139 A was used. Corrections were applied to all values of H obtained with No. 140 A to reduce them to the standard of No. 139 A, as also stated in the notes for 1915.

As in former years, the deflections of the mirror magnet were taken at two distances of the collimator magnet, and a single distribution constant P calculated from them. In the case of No. 140 A, this constant was determined from the whole number of observations taken with it during the five months in which it was in use at Valencia ; in the case of No. 139 A, all the available observations from April to the end of the year were utilised for the purpose.

Particulars of the individual observations will be found in the monthly numbers of the *Geophysical Journal*, the figures for which were based on the values of the distribution constant determined as above.

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.

ATMOSPHERIC ELECTRICITY: I. NOTES ON THE MANAGEMENT OF THE INSTRUMENTS AND ON THE CORRESPONDING TABLES, 1916. By C. CHREE, Sc.D., LL.D., F.R.S.

The instruments in use throughout the year at Kew Observatory have been the Kelvin water-dropping electrograph, the Benndorff radium collector electrograph, a Kelvin portable electrometer, a Wilson universal electrometer, and two specimens of the Ebert aspiration apparatus. The Wilson and Ebert forms of apparatus serve to measure the air-earth current, and the positive and negative changes from the more mobile ions in the atmosphere. The corresponding results are dealt with in the *Geophysical Journal*, as they refer only to a particular hour of the day.

The Kelvin portable electrometer assists in the conversion of the electrogram readings into true potential gradient in the open. The apparatus used in connection with the portable electrometer consists essentially of a long horizontal insulated rod, carrying a lighted fuse at the end, the rod being connected by wire with the terminal of the portable electrometer. Readings are taken of the portable electrometer, with the lighted fuse at 1 metre and at 2 metres above the ground, the grass on which is kept short. Earth readings are also taken. The site is in the Observatory garden, as far removed as circumstances permit from the disturbing effect which tall objects exert on the electrical field in their neighbourhood. The readings of the portable electrometer, the scale value of which is redetermined from time to time, give the values of the potential at heights of 1 metre and 2 metres, in what is at least approximately the free atmosphere. Measurements of the electrograms at corresponding times give the corresponding ordinates in millimetres. The scale value of the electrograph is determined usually once a month, the same portable electrometer being used. Thus one can, if one chooses, convert the curve measurements taken in millimetres into volts.

Let us suppose that on a given occasion the mean readings of the portable electrometer in the garden are V′ at 1 metre and V″ at 2 metres height. The readings are taken in the order 1 metre, 2 metres, 2 metres, 1 metre, so that the mean values V′ and V″ refer to the same mean time. Let the corresponding curve ordinate be n millimetres, and let the equivalent of 1 mm. be v volts. Then n millimetres or nv volts of the electrograph answer to V′ volts' rise above the ground potential in the first metre, and V″—V′ volts' rise in the second metre in the open. Theoretically a difference should always exist between V′ and V″—V′, depending on the electrical charges carried by ions or by moisture within 2 metres of the ground. But in dry weather—and the comparisons are made only in dry weather—any such difference is small, and much less than the probable error of observation.

Also there is no generally accepted definition of a standard potential gradient. There is no agreement as to whether it is to be measured from the exact surface of the ground—a term difficult to define either practically or theoretically in the case of a grass surface—to a point at a given height, whether 10, 1, 0·1, or 0·01 metre, or whether it is to be measured between two points in air, the lowest well clear of the grass surface. Accordingly the practice adopted at Kew Observatory has been to accept the mean of V′ and of V″—V′ as representing the potential gradient in the open. This is mathematically equivalent to accepting V″/2 as the measure of potential gradient, but the values of V′ and V″—V′ are separately considered in each individual case, and any conspicuous difference between the two may lead to the rejection of the observation.

The factor f accepted for converting 1 mm. of ordinate into the measure of potential gradient in the open is the ratio of the mean value of $\frac{1}{2}[V'+(V''-V')]$ to the mean value of n, whilst the factor required for deriving the potential gradient in the open from the voltage indicated by the electrograph is f/v, where the adopted value of v is derived from the scale-value determinations made during the month.

The equivalent of 1 mm. of ordinate ought of course to vary, unless the scale-value of the electrograph remains absolutely constant. Thus variation from month to month in the factor f is to be expected.

The site of the absolute observations in the garden and that of the water-dropper are some 60 metres apart. Thus under disturbed conditions, when there are low clouds and moisture driven by wind, appreciable variation may well exist in the ratio f/v. But in fine weather conditions one would naturally expect a nearly constant value in this ratio, provided no change occurred in the position of the discharging tube of the water-dropper, and the working of that instrument were always perfect. The assumption, however, of a constant ratio cannot be safely made, at least at Kew Observatory. The discharging tube is long, and a slight shift in the position of the jet is always a possible contingency. In winter it occasionally freezes and has to be thawed, and possibly repaired. But apart from the position of the jet, the factor has a decided tendency to be higher in winter than in summer. This might be due to some cause depressing the readings taken in the garden in summer, or to some cause depressing the electrograph readings in winter. The growth of vegetation in the garden in summer may possibly exert a slight depression on the absolute readings, but it cannot be large, otherwise it would show itself in a marked seasonal variation between V′ and V″—V′. Snow on the ground in winter is presumably equivalent to a reduction in height of the water-jet nozzle, and so would naturally tend to lower the electrograph reading. But at Kew snow falls but seldom to any depth. The chief cause of the phenomenon is probably the deterioration caused by damp weather in the insulation of the electrograph.

A daily measurement is usually made of the insulation. The water jet being cut off, the needle of the electrometer has a charge given it by an electrophorus, and the time required to fall from one given voltage to another is noted. The observation, though rather rough, serves a useful purpose in showing when the insulation requires attention, and in assisting in the choice of the days employed for the deduction of the diurnal variation. In dealing with meteorological elements

the employment of all days for this purpose is so usual that any other practice is apt to appear unnatural. But even in meteorology exceptions have to be recognised. For instance, days of very light winds do not afford trustworthy results for the duration of winds of given directions, when an ordinary anemograph is used. When potential gradient is the element, the case in favour of the use of a restricted number of days is very much stronger. In the first place, there are in some months many days when there are numerous excursions of the trace beyond the limits of registration, while many movements are so rapid that they are not clearly recorded, and exact measurements of the trace are impossible. Again, when rain is falling, or when the insulation of the electrograph is exceptionally poor, the interpretation of the trace presents difficulties, as too much uncertainty attaches to the factor that would have to be applied to convert the readings into potential gradient in the open. To have to decide month by month what variable number of days should be measured would entail a lot of time if considered decisions were given, and it is probable it would lead to somewhat arbitrary results, depending on the personality of the judge. Thus the practice followed for many years has been to select 10 days monthly. It is a case rather of exclusion than selection. Only those days which are assigned character "0," *i.e.* which show no negative value of potential gradient throughout the 24 hours, are considered eligible. Loss of trace or inferior insulation leads to the elimination of other days. If there is still a surplus, a choice is made which aims at representing the beginning and end of the month fairly alike, so as to bring the mean of the selected days near the middle of the month. If a sequence of 2 or 3 days can be got, it is *ceteris paribus* preferred to individual isolated days, as it reduces the uncertainties arising from the non-cyclic element. In some months it is difficult to get as many as 10 days otherwise suitable which are free from negative potential.

Table A, page 64,† gives the diurnal inequalities derived from the selected quiet days at Kew Observatory. As usual in this volume, x and n are attached to the highest and lowest of the hourly values. In February and November there was a considerable shortage of natural quiet days, and special expedients had to be adopted to secure the full number. In February, 6 of the finally selected "days" commence at 14 h, the remaining 4 commencing at 17 h. In November, 4 of the selected days commence at 0 h and 6 at 12 h. In either case non-cyclic corrections were applied to each of the two groups of days separately, and no figure is given in Table A, as it would have been without physical meaning. The August inequality is based on 9 days only, all commencing as usual at 0 h.

Tables B and C give the corresponding inequalities for Eskdalemuir,* the former table for 0a days—*i.e.* days at once quiet and free from negative potential;

* The arrangements for continuous registration of atmospheric potential gradient at Eskdalemuir were on the same lines as detailed for previous years. An insulated water jet, projecting 30 cm. from the main northern wall of the observatory building, near its northeastern corner, is connected to a Dolazalek electrometer, the deflections of which are recorded photographically. The readings of the curves thus obtained are reduced by means of a factor which is determined from observations of potential gradient "in the open" and of the scale value of the instrument. Frequent tests of the insulation are made.

The reduction factors for the four quarters of the year were 5·49, 5·55, 5·70, and 5·38. The scale value of the electrometer had a mean value of 13·48 volts per mm. during the first five months of the year and 14·0 during the remainder of the year.

† For convenience of comparison with previous years, the roman numbers for the tables are retained.

the latter for 1a and 2a days combined—*i.e.* days showing a shorter or longer duration of negative potential, but free from any very large oscillations. The number of days employed in the several months in these two tables is specified, being highly variable.

The non-cyclic changes in Table A are comparatively small except for December; the value is, however, very large for March in Table B and for several months in Table C, especially February. The possible drawbacks attending large non-cyclic changes have been already indicated.

The mean value for the year in Table A is exceptionally high. This arises from the high values experienced in December, January, and February, and especially in March; the values for the summer months are, on the whole, rather low. The changes from month to month in the hours to which the letters x and n are attached may lead to an exaggerated idea of the uncertainties inherent in the figures, unless it is remembered that the normal diurnal inequality at Richmond shows a well-marked double oscillation, the difference between the forenoon and afternoon maxima being comparatively small throughout the year, and the morning and afternoon minima differing little in the equinoctial and summer months. The January and December afternoon maxima in Table A, instead of being as usual higher than the morning maxima, are less. The deficiency is especially large in December, not improbably an indirect effect of the large non-cyclic correction applied in that month.

The annual variation in the mean value of the potential gradient in Table B is remarkably small. The March and December values are decidedly above, and those for May and June decidedly below the mean; but the differences between the other months are comparatively small, and the equinoctial mean is but little short of that for winter.

The monthly mean values in Table C show a larger annual variation, and but for the exceptionally low value in January the excess of the winter mean would have been greater than it is. It will be seen that the monthly mean in every month but November is larger in Table B than in Table C.

The irregularities in the hourly progression of the figures and in the times of the maxima and minima in Tables B and C are greater than in Table A, but they are less than might have been expected considering the small number of days available in most of the months, and the large size of some of the non-cyclic corrections. The most abnormal feature in Table B—the occurrence of the maximum in March at 3 h—presents itself in a month when the non-cyclic correction was abnormally large.

The seasonal diurnal variations in Table B are surprisingly smooth, considering the small number of days available, in winter only 16 in all. The type, however, of the diurnal variation is somewhat indefinite. The maximum in the late evening is distinctly shown in each season, and in winter and equinox there is at least a suggestion of a double oscillation, but the afternoon minimum is poorly shown in winter and the forenoon minimum in equinox. In the diurnal inequalities for summer and the whole year, the hourly values from 7 h to 17 h all fall short of the mean for the day, and the secondary maximum in the forenoon is very slightly indicated.

There are several abnormal features in Table C. In February and July, months for each of which only 2 days were available, the ranges are abnormally large, being 744 volts for February and 390 volts for July, the absolute mean values for the months being respectively only 277 and 130 volts. Again 1 h shows the minimum value in February, but the maximum value in July. The next month, August, gives a range of only 84 volts, though the mean value for the month is larger than for July. The hour of maximum in November, and the hours of maximum and minimum in December, especially the latter, seem also abnormal. The fact is that data from 1a and 2a days must be allowed to accumulate for a number of years before we can reasonably expect to get fairly representative results for individual months of the year. The seasonal data in Table C are much less irregular. Still the occurrence of the maximum in summer at 1 h is a distinctly abnormal feature, due to the preponderating influence of July. In the other seasons, and in the year, the hours of occurrence of the principal maximum and minimum are fairly similar in Tables B and C, and there is a fair resemblance between the types of the diurnal inequalities in the two tables, especially in winter. A somewhat curious feature is that, except in summer, the ranges of the diurnal inequalities in Table C exceed the corresponding ranges in Table B, in spite of the smaller mean absolute values for the 1a and 2a days.

ATMOSPHERIC ELECTRICITY :—II. A COMPARISON OF THE YEARS 1914, 1915, 1916, AT KEW (RICHMOND) AND ESKDALEMUIR OBSERVATORIES.

By C. CHREE, Sc.D., LL.D., F.R.S.

Kew Observatory faces due south, and the side walls of the main building run due north and south. The original site of the water-dropper, when erected in 1861 by Lord Kelvin, was by the west wall. Considerable alterations were made in 1896, but the discharge tube remained of the same length and at the same height, and projected as before from the west wall of the main building. The site was changed near the end of May 1915. The discharge tube now projects from the east wall of a much lower building, situated about 17 metres to the west of the Observatory. In the original site the discharge took place at about 1·27 metre from the west wall of the main building, and 3·35 metres above the ground. It now takes place at about 1·38 metre from the east wall of the low building, and 1·73 metre above the ground. The lower building has projecting eaves, and the space variation of the electric field near the jet is more irregular than in the case of the old site. Partly by design, the factor required to translate the readings of the electrograph into potential gradient in the open is much the same for the new and old sites.

The ground immediately adjacent to both buildings is nearly level, but it is about a metre higher alongside the Observatory than alongside the lower building. Also there is a great difference between the two sites as regards the direct incidence of sunlight in the forenoon and afternoon. It was thus conceivable that the type of the diurnal variation might present a change.

As the change of site occurred near the middle of 1915, the seasonal diurnal inequalities for that year included data from both sites, while the corresponding results for 1914 and 1916 depended, the former on the old, the latter on the new site exclusively. The seasonal inequalities for the three years are juxtaposed in Table D, page 87, and the mean results from the three years combined are included for comparison with corresponding results from the earlier periods, 1905 to 1912 and 1898 to 1912, these two periods having been separately dealt with in a recent paper.* Supposing any decided change of type arising from the change of site, we should expect to find a marked difference between the results for 1914 and 1916, with 1915 occupying an intermediate position. We should also, in that event, expect a greater divergence between the mean results for 1914 to 1916 and those for 1905 to 1912 than between the latter and those for the entire period 1898 to 1912.

For further elucidation of the subject the corresponding Eskdalemuir results for 0a days from the years 1914, 1915, and 1916 are given in Table E, which also contains mean results from the three years combined from 1a and 2a days.

The mean value for the year in Table D shows a progressive rise, but the excess for 1916 over 1914 is less than the excess for 1915 over 1914 in Table E. Also this

* *Roy. Soc. Phil. Trans.*, A., vol. ccxv. p. 133.

excess in Table D arises almost entirely from the equinoctial months. In winter, while the 1916 mean is slightly in excess of that for 1914, both means are substantially in excess of that for 1915. In summer, again, the 1916 mean is markedly the least of the three. The considerable excess in the mean value for each of the three years above that for the earlier periods may possess significance in a different connection. But no inference should be based on the accordance of the mean values for the two earlier periods, as it represents an assumption made when dealing with the reduction of the curve measurements made prior to 1905.

The difference between the ranges in summer in 1914 and 1916 in Table D is larger than any corresponding difference in Table E, and the 1915 value is intermediate. Judging, however, by the older results, the difference arises more from the value for 1914 being exceptionally high, than from the value for 1916 being exceptionally low. Also the equinoctial ranges for 1914 and 1916 show a very substantial difference in the opposite direction, while the winter ranges for the three years show a closer agreement than those for any season in Table E. Thus there seems nothing in the ranges that may not reasonably be ascribed to accident.

It will be observed that the range from the years 1914 to 1916 combined is in all cases in excess of that from the period 1905 to 1912, but the ratio borne by the range to the corresponding mean absolute value is much the same in each case for the two epochs. If we take the ratio borne by the range to the mean value in the case of the three seasons and the year, we find the value at Kew varying from 0·41 for the year in 1916 to 0·72 for summer in 1914; but the corresponding figures for Eskdalemuir from Table E show a somewhat larger variation, viz. from 0·41 for the year in 1914 to 0·79 for winter in 1916.

We see in Table D differences in the hours of the principal and secondary maxima and minima in 1914 and 1916, but there is no decided tendency for 1915 to occupy an intermediate position, or for 1914 to show a closer accordance than 1916 with the inequalities from the earlier years. The fluctuations in the hours of the principal maximum and minimum in Table D seem no greater than in Table E, with the exception of the summer maximum in 1916. This arises, however, from the forenoon maximum having in that year exceeded the evening maximum, and, as we may see from the results of the earlier years, the excess in the evening maximum is on the average small in summer at Kew Observatory. In no case is there as large a difference between the 1914 and 1916 inequalities in Table D as obtains in the case of winter in Table E.

The differences between the two sets of Eskdalemuir inequalities for 1914 to 1916 in Table E are least in winter, but it would require a considerably longer series of years to justify the drawing of final general conclusions. Though the absolute mean values from the 0a days are invariably the greater, the range from the 1a and 2a days is considerably the larger except in summer.

It is somewhat curious that in the case of the mean diurnal inequality for the year it is the Eskdalemuir 1a and 2a days that exhibit the closest resemblance to the results for Kew Observatory, the principal maximum and minimum occurring at the same hours.

To investigate further the nature of the difference between the several inequalities in Tables D and E, the Fourier coefficients for the two principal terms

TABLE D.—DIURNAL INEQUALITIES OF POTENTIAL GRADIENT IN THE OPEN IN VOLTS PER METRE AT KEW OBSERVATORY (G.M.T.)

Season.	Period.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Range.	Mean Value.
		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.
Year.	1914	−41	− 67	$\bar{n}$ 84	− 79	− 68	− 51	0	42	50	30	7	− 6	−34	−39	−27	−15	10	45	75	x 85	78	59	32	− 3	169	345
	1915	−36	− 63	− 75	− 79	$\bar{n}$ 84	− 63	−25	28	56	41	15	−18	−27	−28	−17	−10	19	73	x 89	81	74	51	19	−21	173	354
	1916	−42	− 63	− 71	$\bar{n}$ 75	− 69	− 44	2	63	62	43	8	−15	−36	−40	−29	− 8	10	52	67	x 76	72	50	12	−24	151	367
	1914–1916	−40	− 64	− 77	$\bar{n}$ 78	− 74	− 53	− 8	44	56	38	10	−13	−32	−36	−24	−11	13	57	77	x 81	75	53	21	−16	159	355
	1905–1912	−39	− 59	− 71	$\bar{n}$ 75	− 63	− 39	− 1	37	53	44	16	− 6	−17	−22	−14	− 5	14	35	55	x 63	58	40	14	−17	138	304
	1898–1912	−31	− 49	− 61	$\bar{n}$ 65	− 54	− 31	4	37	50	40	9	−12	−25	−31	−24	−13	7	30	51	x 59	57	43	18	−11	124	304
Winter.	1914	−63	−104	$\bar{n}$ 122	−112	−103	− 93	−22	17	40	39	35	32	−13	−28	− 3	10	45	66	x 86	76	75	74	54	13	208	503
	1915	−53	− 87	−101	− 98	$\bar{n}$ 108	− 95	−39	21	65	55	49	5	−21	−26	−29	− 1	33	93	x 103	97	88	63	15	−29	211	464
	1916	−58	− 74	− 89	−110	$\bar{n}$ 113	−105	−56	43	77	92	37	9	−23	−38	−33	12	36	70	91	x 102	80	59	18	−29	215	509
	1914–1916	−58	− 88	−104	−107	$\bar{n}$ 108	− 98	−39	27	61	62	40	15	−19	−31	−22	7	38	76	x 93	92	81	65	29	−15	201	456
	1905–1912	−56	− 74	− 90	$\bar{n}$ 98	− 89	− 69	−28	23	56	61	39	15	0	− 4	9	25	44	58	x 64	62	51	31	3	−32	162	388
	1898–1912	−48	− 67	− 82	$\bar{n}$ 90	− 82	− 63	−25	20	50	59	34	13	− 3	− 9	2	18	39	53	x 61	57	49	32	7	−25	151	400
Equinox.	1914	−39	− 47	$\bar{n}$ 70	− 68	− 52	− 35	9	82	74	35	− 6	−32	−50	−40	−34	−16	9	63	76	x 83	53	28	4	−28	153	301
	1915	−16	− 51	− 65	− 72	$\bar{n}$ 87	− 60	−23	36	58	29	−24	−49	−39	−38	−20	−29	7	75	x 112	89	90	49	34	− 4	199	347
	1916	−51	− 76	− 86	$\bar{n}$ 90	− 77	− 37	17	94	87	33	− 8	−41	−59	−51	−34	−12	10	72	85	87	x 102	65	10	−39	192	394
	1914–1916	−35	− 58	− 74	$\bar{n}$ 77	− 72	− 44	1	71	73	32	−13	−41	−49	−43	−29	−19	9	70	x 91	86	82	47	16	−24	168	347
	1905–1912	−40	− 60	− 73	$\bar{n}$ 78	− 64	− 37	3	39	51	39	4	−17	−27	−26	−17	− 9	17	42	67	x 74	62	44	17	−13	151	300
	1898–1912	−30	− 48	− 59	$\bar{n}$ 62	− 51	− 24	14	45	52	33	− 4	−27	−39	−41	−33	−21	4	34	63	x 71	63	47	20	− 9	133	293
Summer.	1914	−21	− 50	$\bar{n}$ 60	− 58	− 50	− 24	13	27	37	16	− 8	−17	−38	−48	−44	−39	−25	5	62	97	x 106	76	38	5	166	232
	1915	−41	− 51	− 58	$\bar{n}$ 66	− 57	− 33	−12	26	45	39	19	−10	−23	−18	− 3	0	18	50	51	x 56	45	43	9	−29	122	251
	1916	−16	$\bar{n}$ 39	$\bar{n}$ 39	− 25	− 18	9	47	x 53	23	3	− 5	−14	−27	−30	−21	−23	−16	15	25	39	34	26	6	− 5	92	198
	1914–1916	−26	− 47	$\bar{n}$ 52	− 50	− 42	− 16	16	35	35	19	2	−14	−29	−32	−23	−21	− 8	23	46	x 64	62	48	18	−10	116	227
	1905–1912	−22	− 41	$\bar{n}$ 51	− 50	− 36	− 12	22	49	52	33	3	−16	−25	−35	−34	−32	−19	5	33	53	x 60	46	21	− 5	110	225
	1898–1912	−15	− 32	− 41	$\bar{n}$ 42	− 29	− 6	24	46	47	28	− 2	−21	−33	$\bar{n}$ 42	$\bar{n}$ 42	−36	−23	1	29	50	x 60	50	27	2	102	219

TABLE E.—DIURNAL INEQUALITIES OF POTENTIAL GRADIENT IN THE OPEN IN VOLTS PER METRE AT ESKDALEMUIR (G.M.T.)

Season.	Period.	Characters.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	Noon.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	Midt.	Range.	Mean Value.
			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.
Year.	1914	o_a	2	−14	− 21	−27	−27	−21	−11	− 8	−16	−21	−25	−24	$\bar{n}$ 30	−27	−17	1	3	14	36	51	x 66	53	44	19	96	237
	1915	o_a	− 3	− 9	− 25	−18	−15	−10	− 2	−12	−30	−30	−38	−40	$\bar{n}$ 42	−34	−34	−17	8	28	49	72	x 78	66	40	15	120	266
	1916	o_a	8	2	− 4	− 9	−18	−19	−31	−24	−24	− 2	−18	−26	−39	−32	$\bar{n}$ 40	−25	−20	13	48	71	62	x 72	46	5	112	256
	1914–1916	o_a	2	− 7	− 17	−18	−20	−17	−15	−15	−23	−18	−27	−30	$\bar{n}$ 37	−31	−30	−14	− 3	18	44	65	x 69	64	43	13	106	253
	1914–1916	I_a and 2_a	−13	−15	− 30	$\bar{n}$ 40	−34	−32	−24	−21	−23	−28	−36	−31	−23	−19	− 7	9	24	39	76	x 86	83	52	15	− 8	126	182
Winter.	1914	o^a	−59	−72	− 83	$\bar{n}$ 86	−80	−75	−41	−14	−15	− 2	16	31	13	9	44	x 84	75	67	68	50	57	23	9	−30	170	306
	1915	o_a	−70	−93	$\bar{n}$ 104	−59	−48	−50	−38	−24	−37	− 7	− 3	5	− 1	11	− 2	37	69	87	89	x 123	97	49	11	−44	227	368
	1916	o_a	−21	−26	− 52	−90	$\bar{n}$ 98	−87	−90	−67	−33	32	12	22	1	21	11	4	2	47	96	x 121	78	101	45	−27	219	277
	1914–1916	o_a	−50	−64	$\bar{n}$ 80	−78	−75	−71	−56	−35	−28	8	8	19	4	14	17	42	49	67	84	x 98	81	58	22	−34	178	317
	1914–1916	I_a and 2_a	−70	−64	− 63	−79	$\bar{n}$ 87	−84	−69	−49	−42	−35	−36	− 7	21	22	31	61	77	87	133	x 143	119	57	−23	−40	230	209
Equinox.	1914	o_a	13	− 9	− 19	−19	−27	−14	7	22	12	−10	−41	−47	$\bar{n}$ 51	−37	−42	−29	−15	9	29	48	63	x 72	51	33	123	225
	1915	o_a	41	27	7	1	−11	6	22	11	−28	−54	−74	$\bar{n}$ 78	−77	−68	−60	−54	−25	4	47	64	89	x 92	60	56	170	254
	1916	o_a	23	12	23	48	22	25	5	5	− 9	− 8	−44	−54	−62	−68	$\bar{n}$ 76	−37	−25	11	38	47	x 52	32	29	11	128	268
	1914–1916	o_a	26	10	4	10	− 5	6	11	13	− 8	−24	−53	−60	$\bar{n}$ 63	−58	−59	−40	−22	8	38	53	x 68	65	47	33	131	249
	1914–1916	I_a and 2_a	−10	−15	− 35	−44	−33	−21	−27	−25	−27	−31	−43	$\bar{n}$ 54	−52	−42	−11	− 8	17	41	86	96	x 98	70	56	10	152	189
Summer.	1914	o_a	51	38	39	25	26	25	0	−33	−45	−52	−50	$\bar{n}$ 54	−52	$\bar{n}$ 54	−44	$\bar{n}$ 54	−51	−33	12	55	69	64	x 71	55	125	181
	1915	o_a	20	38	22	4	15	15	11	−22	−27	−28	−36	$\bar{n}$ 47	$\bar{n}$ 47	$\bar{n}$ 47	−40	−35	−19	− 8	11	28	46	x 59	48	32	106	178
	1916	o_a	23	23	19	18	26	10	− 5	− 9	−31	−19	−24	−48	$\bar{n}$ 56	−52	$\bar{n}$ 56	−43	−36	−21	6	41	57	x 84	63	32	140	199
	1914–1916	o_a	31	33	27	16	22	17	2	−21	−34	−33	−37	−50	$\bar{n}$ 52	−51	−47	−44	−35	−21	10	41	57	x 69	61	40	121	186
	1914–1916	I_a and 2_a	x 42	33	9	8	18	12	24	14	0	−18	−30	−34	−37	−40	$\bar{n}$ 42	−29	−24	−13	8	21	31	28	11	9	84	148

TABLE F.—POTENTIAL GRADIENT, DIURNAL INEQUALITY: AMPLITUDES AND PHASE ANGLES (L.M.T.) OF 24 AND 12-HOUR TERMS.

Place and Period.		Year.				Winter.				Equinox.				Summer.			
		c_1.	a_1.	c_2.	a_2.	c_1.	a_1.	c_2.	a_2.	c_1.	a_1.	c_2.	a_2.	c_1.	a_1.	c_2.	a_2.
		v/m.	°	v/m.	°	v/m.	°	v/m.	°	v/m.	°	v/m.	°	v/m.	°	v/m.	°
Kew Observatory.	1914	36·1	181·7	60·5	185·8	..	..	..	..	..	..	..	..	..	..	..	..
	1915	44·6	187·7	55·8	187·7	..	..	..	..	..	..	..	..	..	..	..	..
	1916	30·6	192·6	60·2	191·7	..	..	..	..	..	..	..	..	..	..	..	..
	1914–1916	37·0	187·1	58·8	188·4	61·2	195·9	67·2	179·0	33·3	178·3	65·6	197·5	18·2	171·9	45·6	190·3
	1905–1912	31·3	201·3	49·3	185·9	56·1	211·5	47·0	181·6	32·5	191·5	52·8	190·6	8·0	167·6	48·5	184·8
	1898–1912	23·2	190·4	48·3	186·6	49·6	209·3	44·8	180·6	21·6	172·1	53·8	193·0	9·5	112·8	47·0	184·9
Eskdalemuir, 1914–1916.	o_a days	37·9	130·2	24·3	195·2	70·4	189·7	32·9	191·1	51·8	117·5	29·1	206·3	51·9	98·6	13·9	182·8
	I_a and 2_a days	46·6	156·3	25·8	216·2	92·4	184·2	31·5	225·5	56·2	142·7	34·6	209·4	31·5	70·7	12·4	211·9

were calculated and are given in Table F. We know, at least in the case of Kew Observatory, that the 8-hour and 6-hour terms are much smaller than the 24- and 12-hour terms; and also that they possess a large annual variation. Thus little significance would have attached to values derived for them from a single year, or even from three years combined. It will be seen that the difference in amplitude at Kew Observatory between 1914 and 1916 is small, and that 1915 gives the largest value for c_1 and the smallest for c_2. Also, while 1915 occupies an intermediate position as regards phase-angle, 1916 makes a nearer approach than 1914 to the phase-angle of the earlier period of years. The differences between corresponding values of α_1 and α_2, especially α_2, at Kew Observatory are not large, and the sign of the differences between the older and newer results is different at different seasons.

At Eskdalemuir the nature of the day seems to have more influence on the 24- than on the 12-hour term; the difference in fact between the amplitudes of the 12-hour term for the two sets of days is remarkably small. In each case α_2 is least for the 0a days, and the 0a value is that which differs least from the corresponding Kew angle. In all cases the 12-hour phase-angle shows a much smaller annual variation than the 24-hour phase-angle.

The largest difference between Kew and Eskdalemuir is the much greater relative importance of the 12-hour term at Kew. This is especially true of summer, c_1 being then conspicuously low at Kew, while c_2 is conspicuously low at Eskdalemuir. A comparison of Kew and Eskdalemuir results for an earlier period of years, by Capt. Gordon Dobson, will be found in the *Geophysical Memoirs* of the Meteorological Office, No. 7, 1914.

The two principal conclusions from the present investigation are:—

(i) If the change of site of the Kew electrograph in 1915 exerted any influence on the diurnal inequality, that influence was certainly small.

(ii) A very substantial difference in type exists between the diurnal inequalities at Kew and Eskdalemuir, the principal feature in which is the minor importance of the 12-hour term at Eskdalemuir.

REVIEW OF RESULTS OF MAGNETIC OBSERVATIONS MADE AT ESKDALEMUIR DURING 1916.

1. The following account summarises the principal results of the magnetic observations made at Eskdalemuir during the year 1916.

The Review for 1915 gave details as to the methods of observation and reduction, and these need not be repeated. No change in either was made during 1916, and nothing happened to the instruments during that year which need be taken into account in considering the results now given.

2. *Mean Annual Values.*—Table I. gives the mean annual values for H, D, I, N, W, V, and T for each year from 1909 to 1916.

TABLE I.—*Mean Annual Values of the Magnetic Elements at Eskdalemuir*, 1909–16.

Year.	H.	D.	I.	N.	W.	V.	T.
	γ	° ′	° ′	γ	γ	γ	γ
1909 .	16835	18 30·1	69 38·9	..	..	45385	..
1910 .	16836	18 23·3	69 37·8	15976	5311	45343	48368
1911 .	16846	18 12·4	69 37·1	16003	5264	45344	48372
1912 .	16846	18 3·9	69 37·2	16015	5224	45345	48373
1913 .	16822	17 54·9	69 37·3	16006	5174	45282	48306
1914 .	16804	17 45·3	69 36·1	16003	5124	45188	48211
1915 .	16786	17 35·9	69 36·9	16001	5075	45172	48191
1916 .	16756	17 26·1	69 37·6	15987	5020	45119	48130

The principal features in 1916 were continued falls in all the components of magnetic force, a further rise in the inclination from its minimum in 1914, and a veer of the needle towards the north.

The maximum and minimum values of N, W, and V, as actually recorded during each year, and published in the Annual Supplements to the *Geophysical Journal*, are collected in Table II. subjoined, the vertical results being omitted for 1912 and 1913, during which years the records were unreliable.

TABLE II.—*Extreme Annual Values of Geographical Magnetic Components.*

Unit=1γ.

Year.	North Component.			West Component.			Vertical Component.		
	Max.	Min.	Range.	Max.	Min.	Range.	Max.	Min.	Range.
1911 .	16196	15821	375	5401	5023	378	45555	45141	414
1912 .	16202	15913	289	5306	5036	270	..	..	..
1913 .	16080	15913	167	5280	5066	214	..	..	..
1914 .	16154	15798	356	5259	4979	280	45527	44977	550
1915 .	16426	15575	851	5388	4681	707	45486	44986	500
1916 .	16275	15660	615	5184	4764	420	45397	44733	664

The values of the annual range are in some cases under-estimated, owing to the limits of photographic representation having been exceeded.

3. *Magnetic Character Figures.* — As explained in the Review for 1915, a magnetic "character" figure (0, 1, or 2) is assigned to each day in accordance with the international scheme. The average figure for the year, as shown in Table III., was 0·74, but there are several reasons for believing this to be an under-estimate. The average De Bilt figures for 1915 and 1916 were 0·63 and 0·71 respectively, whereas the corresponding Eskdalemuir figures were 0·86 and 0·74 respectively. Further, the average figure assigned for 1916 is lower than would be expected from the mean absolute daily range. This result may be ascribed chiefly to a change in the personal factor which bulks so largely in assigning magnetic character. The matter will not considerably improve until some method of greater precision is adopted for the purpose.

TABLE III.—*Magnetic Character Figures* 1916 *and* 1911–16.

Month. 1916.	Number of Days to which was assigned—			Mean Character Figure.
	0.	1.	2.	
January	9	15	6	0·9
February	11	16	2	0·7
March	9	15	7	0·9
April	12	11	7	0·8
May	10	16	5	0·8
June	11	18	1	0·7
July	18	11	2	0·5
August	14	13	4	0·7
September	12	13	5	0·8
October	13	13	5	0·7
November	10	16	4	0·8
December	16	12	3	0·6
Year	145	169	51	0·74
1911	115	189	59	0·85
1912	131	205	26	0·69
1913	200	113	47	0·58
1914	158	156	51	0·71
1915	121	173	70	0·86
1916	145	169	51	0·74

In connection with this subject, reference may be made to Bidlingmaier's proposal (*Veroffentlichungen des Kaiserlichen Observatoriums in Wilhelmshaven: Ergebnisse der magnetischen Beobachtungen im Jahr* 1911) to employ, as a magnetic character figure, a number derived by arithmetic process from the readings of the magnetograms. Dr. Chree has discussed (*Terr. Magn.*, xxii., 1917) this proposal in a most exhaustive manner, and has made the further suggestion that the square of the absolute daily range might be used as an index of magnetic activity.

It may be mentioned that the Bidlingmaier method was applied to 400 hours' readings of the west component curves obtained at Eskdalemuir during 1916. The curves were read at 5 minute intervals, and the values of $\frac{1}{12}\Sigma\eta^2$ and R^2 obtained; η being the difference of an ordinate from the mean of the hour, and R the range

during the hour. The values of R varied from zero to 59·5 mm. on the paper, *i.e.* from zero to 318γ. But on representing $\frac{1}{12}\Sigma\eta^2$ graphically as a function of R, the " scatter " of the points was found to be such as to render it exceedingly doubtful whether reliable results could be obtained, even granting the soundness of the principle underlying the method. The mean value of the ratio $\frac{1}{12}\Sigma\eta^2/R^2$ was ·092, with a probable error of $\pm$·008. Dr. Chree found a value ·094 from an examination of 1700 hours' curves from twenty-four stations.

On the other hand, there is more to be said in support of Dr. Chree's suggestion. Recently, an attempt has been made at Eskdalemuir to use $R_n^2 + R_w^2 + R_v^2$ (being the sums of the squares of the absolute daily ranges of the three geographical components) as a measure of magnetic character. There is no doubt as to its validity as a means of marking off quiet days and highly disturbed days. Should the method succeed when pushed to greater detail, it will be dealt with in later reports.

4. *Diurnal Inequalities.*—It has been the practice in reducing the Eskdalemuir observations to obtain diurnal inequalities of the geographical components (N, W, V) in two sets, viz. for international " quiet " days and for " all " days. In last year's Review, an addition to this was made by the introduction of inequalities obtained from five selected days of large disturbance in each month. This has been continued for 1916, and the data connected therewith will be found in Tables LXA.–LXF. In what here follows, therefore, diurnal inequalities will be referred to under the heads of " quiet," " all," and " disturbed " days. The arrangement is not altogether satisfactory, for if the object be the study of terrestrial magnetic conditions under (what may be termed) (1) normal, and (2) abnormal circumstances, it is difficult to see what " all " day inequality results can yield. It would be much better if, as has been suggested before now, the days in each month were grouped into (1) the five quietest days, (2) the five most disturbed days, and (3) all the remaining days. The minimum programme of an observatory in the way of tabulation and reduction should be the first and second of these groups.

Quiet Day Inequalities.—The values of these inequalities are given in Tables LV.–LX. of the present volume. Taking those for the geographical components, the following differences may be noted when a comparison is made with the previous year. The north component inequality for the year 1916 was greater than that of 1915 in the ratio of 1·17 : 1. The evening maximum was slightly later in 1916. For the different seasons there was little change in the form of the inequality, but it is noticed that in winter the midday minimum was earlier, and the evening maximum slightly later, in 1916. For the equinoctial months the morning minimum and the evening maximum were earlier in 1916 than in 1915. The range for this season was 25 per cent. greater in 1916 than in 1915, whereas the winter range increased by 20 per cent. and the summer by 10 per cent. In the summer months the morning maximum was more feebly marked in 1916.

The west inequality for the year 1916 differed from that of 1915 chiefly in having an increased range, being about one-fifth larger. The seasonal inequalities for equinox and summer were of like character. The winter inequality for 1916 showed a range nearly half as great again as that for 1915, but this is due to the

fact that on one of the selected days in November 1916 a bay on the curve, about 22 h, gave a drop in value of about 30γ, and this led to the larger range for the season. The values of the summer inequality for a few hours before midnight were lower than usual during 1916.

The yearly value of the vertical inequality for 1916 was closely similar and equal to that of 1915 for the interval 10 h to 15 h ; in the earlier part of the day it was lower, in the later part higher. The range was about one-ninth higher in 1916. For the 1916 seasons the winter inequality differed most from that of 1915, as the values were generally lower in the earlier, and higher in the remaining, part of the day. The range was about 50 per cent. greater in 1916. The inequality for the 1916 equinoctial months showed a much more clearly marked morning maximum. The summer inequalities for the two years did not differ markedly either in type or in range, and showed a very close equality from 8 h to 16 h.

Disturbed Day Inequalities.—The days selected at De Bilt Observatory as being the five most disturbed days in each month were as follows :—

January	10,	11,	12,	20,	23	July	1,	8,	9,	17,	23
February	8,	12,	17,	18,	27	August	6,	22,	23,	26,	27
March	8,	9,	10,	29,	30	September	3,	4,	12,	27,	30
April	25,	26,	27,	28,	29	October	1,	6,	7,	8,	13
May	21,	22,	23,	30,	31	November	4,	5,	6,	12,	27
June	8,	18,	19,	22,	23	December	1,	2,	3,	15,	27

It will be observed that in the above list there are 10 cases in which two successive days have been selected, 6 of three successive days, and 1 case in which five days in succession have been included. That the list is a fair representation of the five most disturbed days in each month is doubtless true. But the fact that these cases of two, three, or five days in succession are included raises important questions as to the type and amplitude of inequalities resulting from them, and the unfortunate circumstance is that these questions are not as yet so definitely formulated that they can be directly attacked. Still, it is well that the reduction of disturbed day records should be given a thorough trial, more especially as the resulting inequalities, as will be shown below for 1915 and 1916, appear to resemble each other closely in type.

Taken as a whole, the days selected showed a greater extent of disturbance than those in 1915. A measure of disturbance is difficult to frame; but if the sum of the squares of the absolute daily range be taken, it is found that the mean value of this quantity in 1915 was 60,228, whereas in 1916 it was 94,008, the unit being $(1\gamma)^2$.

The details with respect to the disturbed day inequalities are given in Tables LXA., LXB., and LXC. First, as regards the whole year, 1916 resembles 1915 in the chief features. Minor differences relate principally to the night or early morning hours. The closest similarity between the two years is found in the vertical component inequality. In this case the main difference lies in the time at which the night minimum occurred. In 1916 it was about two hours earlier than in 1915. The double oscillation shown on the north component during the early morning hours was considerably intensified and spread out in time in 1916. For the separate seasons of the year, the 1916 inequalities bear a general resemblance to those of 1915, the noticeable points of difference all relating to the night hours.

Attention may also be drawn to the rise in the north component for winter 1916 at 21 h. It was exactly similar to the corresponding part of the 1915 inequality. The great prominence of the vertical component inequality during the equinoctial months is again manifest in 1916.

The ranges of the disturbed day inequalities for each month and season are given in Table LXIII. It will be observed that the inequality range is greatest at equinox on the west and vertical components, but on the north component it is greatest in summer. In these respects the results from disturbed days differ markedly from those on quiet days, where inequality ranges at the equinoxes are intermediate in value between those for summer and winter. A similar result was obtained in 1915.

"*All*" *Day Inequalities.*—These do not call for special remark, beyond reference to the increased inequality ranges during 1916.

5. *Diurnal Inequalities expressed by Harmonic Series.*—Additional information relating to the nature of diurnal inequalities is forthcoming when these are represented by harmonic series.

The Fourier analysis of the Eskdalemuir data for the years 1911 to 1914 has been confined to the results for "all" days, and was limited to the terms involving the diurnal and semidiurnal waves. For 1915 the analysis of disturbed day inequalities to four terms was added; and in 1916 "all" days and disturbed days were given to four terms. Quiet days have not hitherto been dealt with in this manner. The information is thus incomplete, but it is hoped that the gaps will be filled in the next Review.

Meanwhile, the results of 1916 and previous years for "all" days, to two terms, are collected in Table IV. The results there given are those published in previous issues of the *Year Book*, with the addition of values for the seasons.

TABLE IV.—*Harmonic Coefficients.* (*All Days.*) 1911–1916.
Referred to Local Mean Time.

	North.						West.						Vertical.			
	1911.	1912.	1913.	1914.	1915.	1916.	1911.	1912.	1913.	1914.	1915.	1916.	1911.	1914.	1915.	1916.
	c_1.						c_1.						c_1.			
Y.	11·4	9·6	9·7	10·1	12·9	15·1	9·8	9·9	9·7	10·5	13·2	13·9	7·0	4·6	7·6	9·7
W.	5·1	2·2	4·0	3·4	5·2	7·6	8·5	7·2	5·6	7·0	10·1	10·2	7·1	3·7	6·9	7·3
E.	13·6	12·0	11·9	11·7	15·6	17·5	9·7	9·6	9·9	10·4	14·1	14·5	7·6	5·3	10·0	12·4
S.	16·5	15·7	14·2	16·4	18·8	22·2	16·0	15·4	15·4	16·5	19·8	20·7	6·5	4·9	6·6	9·8
	c_2.						c_2.						c_2.			
Y.	6·6	5·6	5·9	6·2	8·1	9·5	7·1	6·2	7·4	6·6	8·0	9·1	4·2	3·4	4·6	5·5
W.	4·1	2·7	3·6	3·0	3·9	5·4	4·5	2·8	4·2	3·4	3·8	5·4	2·8	1·2	1·6	2·2
E.	7·6	6·7	6·6	6·7	8·7	10·5	8·2	7·5	8·5	7·6	9·6	10·1	4·0	3·6	5·5	6·9
S.	8·6	7·5	7·7	9·1	11·7	13·0	8·7	8·5	9·7	9·3	10·6	12·0	5·9	5·6	6·6	7·5
	a_1.						a_1.						a_1.			
Y.	109·4	106·3	104·3	104·9	107·6	112·9	230·4	223·5	221·2	218·6	225·9	223·4	184·2	158·6	180·1	193·0
W.	83·0	62·0	71·3	64·9	81·1	80·6	280·0	261·3	259·2	257·6	267·6	261·7	195·2	167·1	192·4	192·6
E.	103·6	99·4	100·1	98·3	101·4	109·1	235·8	225·2	227·9	222·9	232·5	231·1	191·1	161·2	187·6	205·0
S.	122·3	117·3	112·3	117·7	119·9	126·8	202·8	205·7	204·0	200·1	201·1	200·5	163·4	149·6	155·1	178·4
	a_2.						a_2.						a_2.			
Y.	275·6	283·6	278·7	277·0	278·7	278·1	27·7	36·8	34·8	28·3	27·2	22·0	261·6	264·8	259·1	255·1
W.	255·0	264·1	260·8	255·0	265·6	260·2	28·6	35·5	16·8	7·3	25·4	5·9	270·2	282·6	270·8	257·3
E.	274·3	283·1	280·1	276·4	281·5	278·9	19·6	32·7	34·0	31·9	21·3	21·9	260·7	266·8	258·7	254·0
S.	285·9	291·2	285·8	284·3	280·9	285·5	34·9	40·8	43·1	33·0	33·0	28·6	258·6	261·5	256·6	255·8

The amplitudes in the foregoing table may be considered first. The yearly values for the horizontal components show a low value for both diurnal and semi-diurnal waves in 1912, but the diurnal wave on the west component in 1913 is very slightly lower than in 1912. For both waves the increase in amplitude between 1912 and 1916 is a little more than 50 per cent. on the north component and a little less on the west. For the vertical component the data for 1912, 1913 are not obtainable, but there are decidedly low values for 1914, compared with 1916, the diurnal wave amplitude in 1916 being more than double, and the semidiurnal wave nearly 60 per cent. greater than, the 1914 values. The seasonal values for the amplitudes show similar results. As may be expected, the increase in amplitude between quiet and disturbed years is more marked for the winter months.

With regard to the phase angles, the variations from year to year of the yearly values are slight and the number of years included is too small for certainty in any conclusion. But the tendency is clearly towards a retardation of phase in the diurnal wave, and an acceleration in the semidiurnal wave, during quieter years. The former is prominent in the case of the vertical component. The seasonal values for the phase angles indicate, but do not conclusively prove, a similar variation. Exceptions are to be noted in the values of a_2 for N (all seasons) and for W in winter.

A fuller treatment of quiet and disturbed days separately, over a longer series of years, is required in order to reach, for the Eskdalemuir data, definite conclusions on this matter.

Another result brought out by the figures in Table IV. is given in the subjoined table, which gives the mean values, for the years recorded, of the phase angles for each season.

Season.	North.		West.		Vertical.	
	a_1.	a_2.	a_1.	a_2.	a_1.	a_2.
	°	°	°	°	°	°
Winter . .	70·6	253·7	261·4	11·9	183·6	263·8
Equinox . .	98·8	272·7	226·0	20·5	183·0	253·7
Summer . .	116·2	279·2	199·2	29·2	158·4	251·7

It follows that the diurnal wave is earliest in summer on the north component, and in winter on the west and (probably) the vertical component. The semi-diurnal wave is earliest in summer on the north and west components, but in winter on the vertical component. The equinoctial months, as far as regards acceleration or retardation of phase, occupy an intermediate position between summer and winter.

The phase angle 158°·4 for the diurnal wave on the vertical component in summer may appear peculiar, but a reference to Table IV. proves it to have shown a low value (as compared with winter and summer values) on each year for which there are records.

A summary of the results of the harmonic analysis of disturbed day inequalities in 1915 and 1916 is given in Table V.

TABLE V.—*Harmonic Coefficients. (Disturbed Days.)* 1915, 1916.
Referred to Local Mean Time.

Component.	Season.	c_1.		a_1.		c_2.		a_2.		c_3.		a_3.		c_4.		a_4.	
		1915.	1916.	1915.	1916.	1915.	1916.	1915.	1916.	1915.	1916.	1915.	1916.	1915.	1916.	1915.	1916.
		γ	γ	°	°	γ	γ	°	°	γ	γ	°	°	γ	γ	°	°
North	Winter	10·1	9·1	83·8	88·6	4·9	6·9	277·8	264·7	2·8	3·1	181·2	162·0	1·2	0·9	273·5	100·8
	Equinox	17·2	19·7	109·7	134·1	11·5	14·7	296·2	288·6	4·3	1·3	123·5	79·0	1·3	1·6	227·1	69·0
	Summer	22·3	26·3	130·6	154·1	13·7	16·1	283·2	277·6	0·8	3·1	89·8	117·0	1·6	3·6	58·7	59·0
	Year	15·7	17·0	140·0	136·9	10·1	12·4	292·0	279·5	2·2	2·9	139·8	148·6	0·3	2·0	270·8	67·8
West	Winter	19·4	16·4	282·5	277·7	7·0	6·5	24·6	11·8	2·7	1·3	147·5	144·2	1·5	1·9	6·0	57·5
	Equinox	21·1	25·6	264·5	263·4	11·6	13·2	6·0	8·1	5·2	6·7	186·1	212·2	2·3	1·4	26·3	120·2
	Summer	23·2	27·0	216·9	212·1	3·1	10·5	67·6	352·0	3·6	5·2	245·3	238·0	0·6	3·1	62·3	110·1
	Year	18·8	20·3	253·1	247·1	9·6	10·3	18·4	356·9	3·1	4·0	194·9	217·4	1·4	1·9	23·6	97·6
Vertical	Winter	23·2	15·1	200·2	203·8	5·7	5·3	255·8	257·7	2·3	1·2	300·0	299·7	2·2	1·3	357·6	309·3
	Equinox	33·0	45·9	203·2	214·8	11·0	8·4	260·6	241·8	3·4	3·3	52·7	95·3	1·5	3·4	180·2	213·0
	Summer	18·2	29·1	193·7	206·8	9·3	13·0	241·0	236·3	2·2	3·2	75·1	82·7	0·7	0·9	77·4	75·1
	Year	24·7	30·0	200·0	210·4	8·6	11·2	252·4	250·2	1·6	1·8	37·5	82·5	0·4	1·0	33·1	234·5

It will be observed that in all cases the 1916 amplitudes are greater than those of 1915. Also that, in 1916 relatively to 1915, the 24-hour wave is accelerated on the north and vertical components and retarded on the west component, and that the 12-hour wave is retarded on all three. For the 8-hour and 6-hour waves the results are inconclusive. With regard to the seasonal values of the amplitudes in the two principal terms the two years agree generally in the relative position of the values. In the case of the shorter waves, little can be said with certainty from results of two years.

6. *Inequality Curves and Vector Diagrams.*—In Plate V. will be found curves showing the diurnal inequalities for N, W, and V on quiet and disturbed days during 1916. Plate VI. exhibits these inequalities in the form of vector diagrams. The curves and diagrams illustrate some of the points to which reference has already been made. The portion of the NV diagram between 12 h and 18 h is, for 1916, further removed from rectilinearity than in 1915, and its inclination is $35\frac{1}{2}°$ as compared with 41° in 1915. Hence, in 1916, this portion of the vector diagram lay in a direction very close to that of a perpendicular to the earth's axis. In 1915 it was within 7° of that perpendicular. It may be added that the corresponding portions of the NV quiet day diagram showed nearly the same inclination in both years.

7. *Absolute Daily Range.*—The maximum and minimum values reached daily by each component are tabulated in the *Geophysical Journal*, and in last year's Review a table of mean absolute daily range for each month since January 1911 was given. Owing to certain misprints in the published values, it has been found necessary to prepare a corrected table, and this is given below. Table VI. gives the mean absolute daily range during the years 1911–16, with the mean values for each year and for the seasons of each year. Table VII. gives the same data expressed as percentages of the mean of the year.

TABLE VI.—*Means of Absolute Daily Ranges*, 1911–16. *Unit*, 1γ.

Month or Season.	North Component.							West Component.							Vertical Component.						
	1911.	1912.	1913.	1914.	1915.	1916.	Mean.	1911.	1912.	1913.	1914.	1915.	1916.	Mean.	1911.	1912.	1913.	1914.	1915.	1916.	Mean.
January	78·1	33·2	39·9	29·4	44·3	58·9	47·3	74·8	33·8	42·0	33·1	44·7	63·9	48·7	38·8	10·4	..	11·9	20·2	27·3	21·7
February	98·4	32·0	44·6	32·4	54·5	57·8	53·3	89·1	42·6	43·9	41·9	61·3	63·4	57·0	50·9	12·9	..	17·0	29·9	25·2	27·2
March	93·6	43·6	50·0	53·8	78·3	107·2	71·1	81·0	52·4	59·3	62·1	77·5	117·5	75·0	49·9	20·8	..	24·2	44·6	84·5	44·8
April	98·8	61·2	62·1	70·2	82·2	114·6	81·5	83·3	56·2	64·7	66·7	83·0	96·0	75·0	49·0	24·5	..	43·5	46·4	70·0	46·7
May	87·1	67·0	56·9	61·7	74·8	112·2	76·6	72·0	53·6	56·9	55·9	72·5	87·9	66·5	45·8	25·4	..	27·8	38·0	51·9	37·8
June	68·3	62·0	61·3	68·2	114·1	101·7	79·3	66·5	57·4	61·7	68·5	105·4	95·7	75·9	36·7	22·9	..	35·6	39·6	40·6	35·1
July.	83·1	55·7	58·2	77·1	81·0	101·0	76·0	69·9	59·6	56·6	70·8	77·8	89·1	70·6	36·6	..	..	30·0	40·1	55·0	40·4
August	72·8	68·4	56·0	83·5	82·4	119·2	80·4	62·8	65·3	57·5	70·7	84·8	96·1	72·9	36·;	31·0	19·1	32·9	44·8	71·5	39·3
September	70·5	71·5	57·7	73·7	84·2	106·4	77·3	61·0	59·8	56·1	68·8	85·3	91·9	70·5	26·3	25·0	19·2	33·5	44·0	60·5	34·8
October	62·6	54·4	57·2	69·0	96·3	107·7	76·5	63·1	49·9	64·3	61·3	104·2	100·7	73·9	30·8	21·0	20·7	30·6	73·2	72·8	41·5
November	46·8	43·2	36·0	56·0	98·2	94·9	62·5	47·5	41·4	35·3	54·8	94·3	97·3	61·8	19·8	..	12·7	24·4	59·5	45·9	32·5
December	38·3	33·7	27·6	40·2	53·8	68·8	43·7	42·9	42·1	32·8	43·2	60·4	72·6	49·0	21·9	..	13·4	14·2	27·2	29·7	21·3
Year	74·8	52·2	50·7	59·7	78·7	96·3	68·7	67·7	51·2	52·5	58·3	79·1	89·7	66·4	36·8	..	..	27·2	42·2	53·2	39·9
Winter	64·7	35·5	36·6	39·6	62·8	70·4	51·6	63·1	39·9	38·5	43·3	65·2	74·5	54·1	32·4	..	..	16·9	33·9	32·1	28·8
Equinox	81·6	56·6	56·7	66·6	85·2	109·0	76·0	72·3	54·6	61·1	64·7	87·4	101·8	73·7	39·1	..	..	32·9	52·0	72·1	49·0
Summer	77·9	64·1	58·1	72·6	87·8	108·6	78·2	67·8	59·0	58·1	66·5	84·5	92·1	71·3	38·9	..	..	31·5	40·6	54·6	41·4

Note.—The mean for a month, a season, or for the year is obtained by taking the sum of the daily differences between the largest and smallest readings on the magnetograms for the period in question and dividing by the number of days in the period for which such readings are complete. In those cases in which the trace has passed the edge of the photographic paper, the reading of the edge has been taken. The means in the 8th, 15th, and 22nd columns are the means of the values given for the different years in the same row.

TABLE VII.—*Means of Absolute Daily Ranges*, 1911–16.
Expressed as percentages of Mean Annual Value.

Month or Season.	North Component.							West Component.							Vertical Component.						
	1911.	1912.	1913.	1914.	1915.	1916.	Mean.	1911.	1912.	1913.	1914.	1915.	1916.	Mean.	1911.	1912.	1913.	1914.	1915.	1916.	Mean.
January	104	64	79	49	56	61	69	110	66	80	57	57	71	73	105	..	..	44	48	51	54
February	132	61	88	54	69	60	78	132	83	84	72	78	71	86	138	..	..	63	71	47	68
March	125	84	99	90	99	111	104	120	102	113	107	98	131	113	136	..	..	89	106	159	112
April	132	117	123	118	104	119	119	123	110	123	114	105	107	113	133	..	..	160	110	132	117
May	116	128	112	103	95	117	111	106	105	108	96	92	98	100	124	..	..	102	90	98	95
June	91	119	121	114	145	106	115	98	112	118	118	133	107	114	100	..	..	131	94	76	88
July.	111	107	115	129	103	105	111	103	116	108	121	98	99	106	99	..	..	110	95	103	101
August	97	131	111	140	105	124	117	93	128	110	121	107	107	110	100	..	..	121	106	134	98
September	94	137	114	123	107	110	113	90	117	107	118	108	102	106	72	..	..	123	104	114	87
October	84	104	113	116	122	112	111	93	97	122	105	132	112	111	84	..	..	113	173	137	104
November	63	83	71	94	125	99	91	70	81	67	94	119	109	93	54	..	..	90	141	86	81
December	51	65	55	67	68	71	64	63	82	63	74	76	81	74	60	..	..	52	64	56	53
Winter	86	68	72	66	80	73	75	93	78	73	74	82	83	81	88	..	..	62	80	60	72
Equinox	109	109	112	112	108	113	111	107	107	116	111	110	113	111	106	..	..	121	123	136	123
Summer	104	123	115	122	112	113	114	100	115	111	114	107	103	107	106	..	..	116	96	103	104

It will be observed that the absolute daily range has in all components been larger in 1916 than in 1915 for every month except June and November on the north component; June and October on the west; and February, October, and November on the vertical.

It may be remarked that when the mean values in Table VII. for the west component during winter, equinox, and summer are compared with the corresponding data for declination at Kew (1890 to 1900), the percentages are very similar.

For the north component, compared with the horizontal force, the similarity is not so exact. But one feature is common to both results, viz. that whereas the range during equinoctial months is larger than in summer on the west component and the declination, it is smaller on the north component and horizontal force.

8. *Inequality Ranges : All Days.*—These are given for 1916 in Table LXIII. of the *Year Book*. The values for the individual months of the year are, for the north component, all greater than those for the corresponding months in the previous year. For the west component they are less in August and markedly so in October. (The magnetic character figures for October 1915 and October 1916 were 1·3 and 0·8 respectively.) For the vertical component the values in 1916 are less than those of 1915 in February, October, and November.

For the year and seasons, the inequality ranges for all components are larger in 1916 than in 1915. The vertical component inequality during winter 1916 was, however, very little more than the corresponding value for 1915.

9. *Frequency of occurrence of Specified Ranges.*—Dividing up absolute range into steps containing 10γ, and tabulating ranges falling within each step in accordance with their frequency of occurrence, we obtain the results given in Table VIII.

TABLE VIII.—*Frequency Distribution of Absolute Daily Range*, 1911–16.

Range. Interval—10γ.	1911.			1912.		1913.		1914.			1915.			1916.			Total. 1911–16.			Total. 1911, 14, 15, 16.			Frequency expressed as percentage.		
	N.	W.	V.	N.	W.	N.	W.	N.	W.	V.	N.	W.	V.	N.	W.	V.	N.	W.	V.	N.	W.	V.	N.	W.	V.
0–9	..	..	40	..	..	2	..	..	2	38	..	..	18	..	..	16	2	2	112				0·1	0·1	7·8
10–19	12	13	81	30	21	24	14	19	15	119	12	9	72	4	2	59	101	74	331				4·6	3·4	22·9
20–29	22	25	87	40	34	35	42	38	31	113	20	23	79	12	5	81	167	160	360				7·7	7·4	25·0
30–39	32	29	50	54	60	56	48	28	32	48	29	19	49	17	12	57	216	200	204				9·9	9·3	14·1
40–49	48	54	30	70	76	64	61	61	69	15	28	34	43	18	33	34	289	327	122				13·3	15·2	8·5
50–59	53	63	15	65	76	70	71	72	79	8	46	44	24	33	35	26	339	368	73				15·6	17·1	5·1
60–69	44	51	13	42	44	43	56	47	49	6	65	57	19	37	44	11	278	301	49				12·8	14·0	3·4
70–79	32	28	8	16	15	38	27	30	33	5	31	49	9	42	56	10	182	208	32				8·4	9·6	2·2
80–89	21	29	8	12	12	12	10	24	17	3	29	35	9	43	34	15	141	137	35				6·5	6·3	2·4
90–99	14	14	10	13	7	8	9	10	8	3	18	21	6	22	33	9	85	92	28				3·9	4·3	1·9
100–109	17	16	2	8	3	7	5	8	7	1	28	16	5	30	25	7	98	72	15				4·6	3·3	1·0
110–119	19	12	4	4	5	2	3	8	8	..	7	7	3	12	13	3	52	48	10				2·4	2·2	0·7
120–129	9	4	1	1	1	4	1	5	2	1	10	6	3	20	14	2	49	28	7				2·3	1·3	0·5
130–139	10	8	3	1	1	1	3	2	..	..	7	4	2	24	7	7	45	23	12				2·1	1·1	0·8
140–149	5	5	1	1	2	..	..	3	3	..	6	10	3	8	13	1	23	33	5				1·0	1·5	0·3
150–159	3	2	1	..	..	..	1	1	3	1	7	3	..	6	5	2	17	14	4				0·8	0·6	0·3
160–169	5	..	..	..	2	..	..	1	..	..	4	5	3	6	4	2	16	11	5				0·7	0·5	0·3
170–179	2	2	2	..	1	..	..	2	2	..	1	3	2	4	5	4	9	13	8				0·4	0·6	0·6
180–189	5	1	1	2	..	..	1	..	1	..	6	3	1	4	4	3	17	10	5				0·8	0·5	0·3
190–199	3	2	3	1	..	..	..	..	..	..	2	4	..	3	3	3	9	9	6				0·4	0·4	0·4
200 and over	7	5	1	2	1	..	..	3	2	3	7	8	7	18	12	9	37	28	20				1·7	1·3	1·4
Days omitted	2	2	4	4	5	6	13	3	2	1	2	5	8	3	7	5	20	34	18				..	..	..
Days included	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2172	2158	1443				..	..	..

The interest in a table of this kind lies in the possibility of discovering any peculiarity in the frequency distribution, either in the average result or in the comparison of one year or set of years with another. For this purpose, the number of years over which the data extend is insufficient as a secure basis for general conclusions. It may, however, be pointed out that the third row from the bottom of the above table shows that the larger disturbances are fewer in magnetically

quieter years. This may appear to be a truism; but the point is that, generally speaking, a year is magnetically quiet not only on account of the smaller number of disturbances but also because of the smaller range of those that do occur. It will also be noticed that the steps with maximum frequency correspond with larger daily ranges in the more disturbed years, *e.g.* for the north component the most "modish" daily range in 1911 was about 55γ, and in the following years about 45γ, 55γ, 55γ, 65γ, respectively, rising to 85γ in 1916. These results resemble those obtained for Kew Observatory by Dr Chree. As for the occurrence of secondary maxima of frequency, there appears to be a decided tendency towards a frequency above normal in the case of ranges between 100γ and 109γ on the north component and between 80γ and 89γ on the vertical.

TABLE IX.—*Principal Magnetic Storms recorded at Eskdalemuir*, 1916.

Where the beginning of a storm has been marked by a "sudden commencement," the serial number is indicated by an asterisk (*) and the time of commencement is given to the nearest minute. Storms for which the magnetograms are reproduced in the accompanying plates are indicated by the dagger (†). To the tabulated values of maximum and minimum the following have to be added:—

N, 15,000γ; W, 4000γ; V, 45,000γ.

No.	From.	To.	North Component.					West Component.					Vertical Component.				
			Max.	Time.	Min.	Time.	Range.	Max.	Time.	Min.	Time.	Range.	Max.	Time.	Min.	Time.	Range.
	d h m	d h	γ	d h m	γ	d h m	γ	γ	d h m	γ	d h m	γ	γ	d h m	γ	d h m	γ
1	Jan. 10 15 0	12 24	1132	11 20 33	882	11 22 16	250	1100	10 17 37	864	11 21 26	236	228	11 20 37	97	12 3 13	131
2*†	Mar. 8 0 40	10 24	1161	9 17 3	865	10 14 30	296	1141	10 14 20	764	9 18 47	377	>386	9 18 42	− 55	9 5 11	>441
3	Mar. 16 19 30	17 24	1046	17 0 24	847	17 6 27	199	1130	17 4 54	939	17 3 11	191	188	17 20 1	51	17 5 10	137
4	Mar. 24 12 0	26 1	1076	24 19 43	898	25 21 56	178	1167	24 {15 37 / 15 41}	896	25 22 12	271	251	24 18 18	59	25 21 53	192
5	Apr. 25 4 0	29 24	1195	25 17 20	<762	26 0 3	>433	1184	25 17 16	880	29 1 3	304	397	25 17 17	− 80	29 2 46	477
6*	May 5 14 1	6 24	1068	5 16 47	904	6 10 38	164	1109	5 14 5	1013	6 9 32	96	177	5 17 25	114	6 7 4	63
7*	May 20 23 0	25 24	1117	{21 18 0 / 24 17 17}	897	22 11 45	220	1076	25 14 20	862	22 1 43	214	211	21 18 36	6	22 2 22	205
8*	May 28 16 8	31 24	1155	30 14 36	916	31 5 6	239	1110	30 14 34	964	31 7 37	146	166	31 16 39	36	31 4 32	130
9	June 22 12 0	23 8	1102	22 18 8	921	23 3 33	181	1103	22 17 2	879	23 1 3	224	135	22 19 27	7	23 4 14	128
10*	June 29 20 25	30 23	1095	29 20 31	945	30 11 32	150	1078	29 20 28	989	30 8 0	89	129	30 18 27	79	29 23 28	50
11*	June 30 23 21	2 2	1070	30 23 24	833	1 10 7	237	1088	1 0 50	929	1 0 22	159	147	1 18 46	− 90	1 1 7	237
12	July 8 16 0	9 20	1098	8 18 29	920	9 0 8	178	1099	8 18 15	960	9 9 42	139	172	9 15 36	− 50	8 21 31	222
13	Aug. 5 23 0	8 20	1066	8 17 47	911	7 9 38	155	1060	6 12 53	957	6 20 37	103	168	6 18 1	53	7 2 40	115
14*	Aug. 22 18 28	24 2	1275	22 20 15	829	22 20 33	446	1092	22 20 27	878	22 20 7	214	181	23 17 22	− 10	22 21 12	191
15*†	Aug. 26 19 42	27 24	1096	26 19 48	<660	27 0 0	436	1073	27 4 38	772	27 2 4	301	155	27 10 3	<-267	27 0 0	>422
16	Sept. 2 21 0	5 24	1114	2 21 21	897	3 13 30	217	1084	3 13 19	906	3 1 14	178	160	3 19 15	− 15	5 1 45	175
17	Sept. 10 23 0	13 8	1139	10 23 20	908	12 4 8	231	1059	11 13 0	935	12 19 48	124	178	11 17 53	33	12 1 6	145
18	Sept. 26 19 0	27 24	1079	27 17 36	896	27 8 53	183	1060	27 12 58	899	27 0 27	161	164	27 17 18	46	27 2 22	118
19	Sept. 30 12 0	2 22	1086	30 21 16	885	30 12 32	201	1081	1 13 35	862	30 23 43	219	175	1 14 10	− 60	1 1 58	235
20†	Oct. 6 12 0	13 24	1142	7 16 33	764	7 0 30	378	1142	6 14 52	807	6 20 2	335	>319	6 15 50	−190	7 0 31	>509
21	Nov. 4 16 0	10 8	1091	5 18 38	869	4 22 34	222	1041	5 23 17	874	5 18 30	167	167	6 16 18	4	4 22 52	163
22	Nov. 12 10 0	13 6	1087	12 19 6	881	12 13 50	206	1092	12 19 7	963	12 23 55	129	175	12 20 26	98	12 19 8	77
23	Nov. 25 10 0	3 24	1079	25 22 6	883	3 13 58	196	1053	27 1 0	854	25 22 0	199	166	1 17 43	36	27 1 14	130

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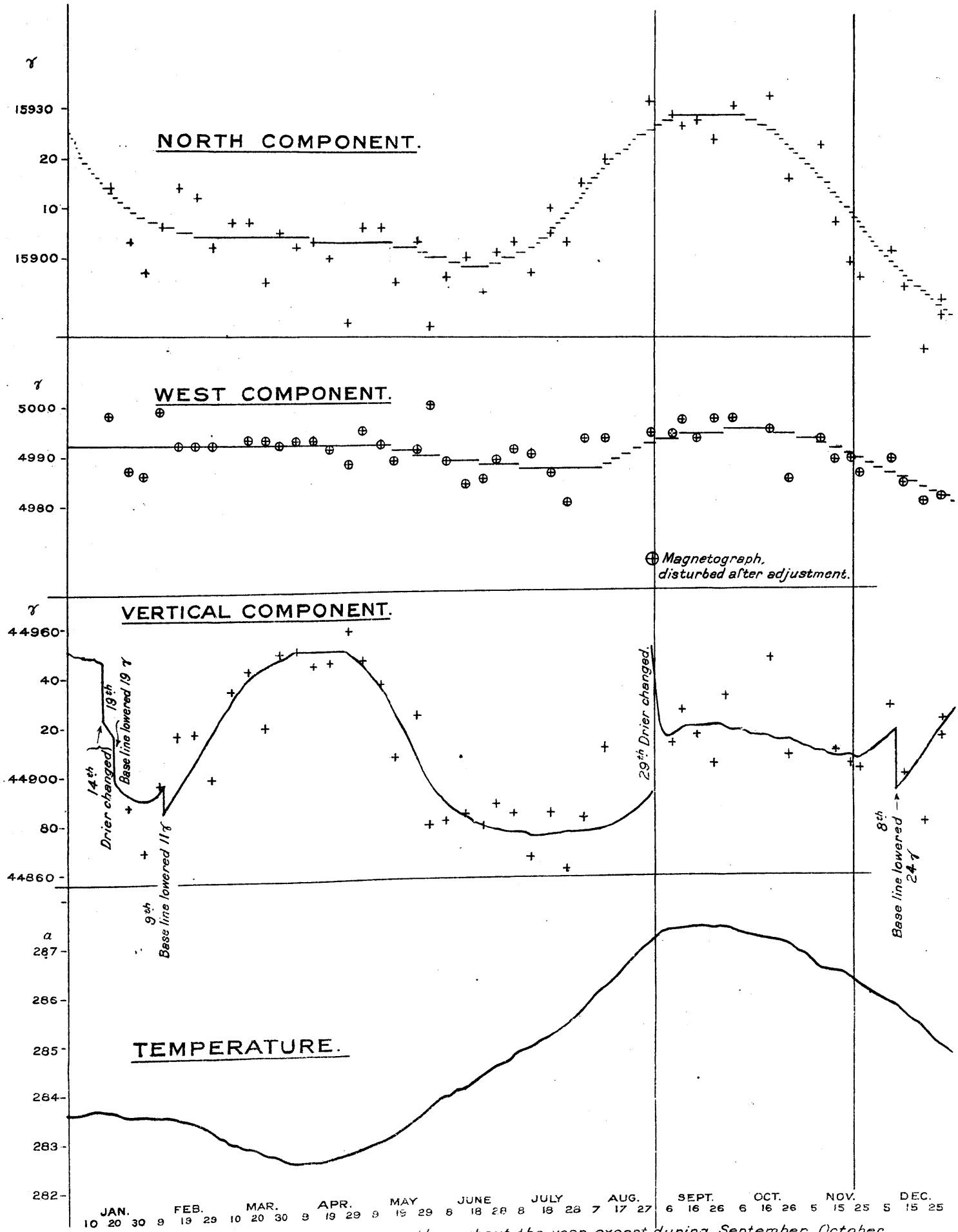
ESKDALEMUIR MAGNETOGRAPHS, BASE VALUES, 1916.



Note: Magnetometer No 60 was in use throughout the year, except during September, October, and part of November, during which time No 140 was used. Two vertical lines include this period.

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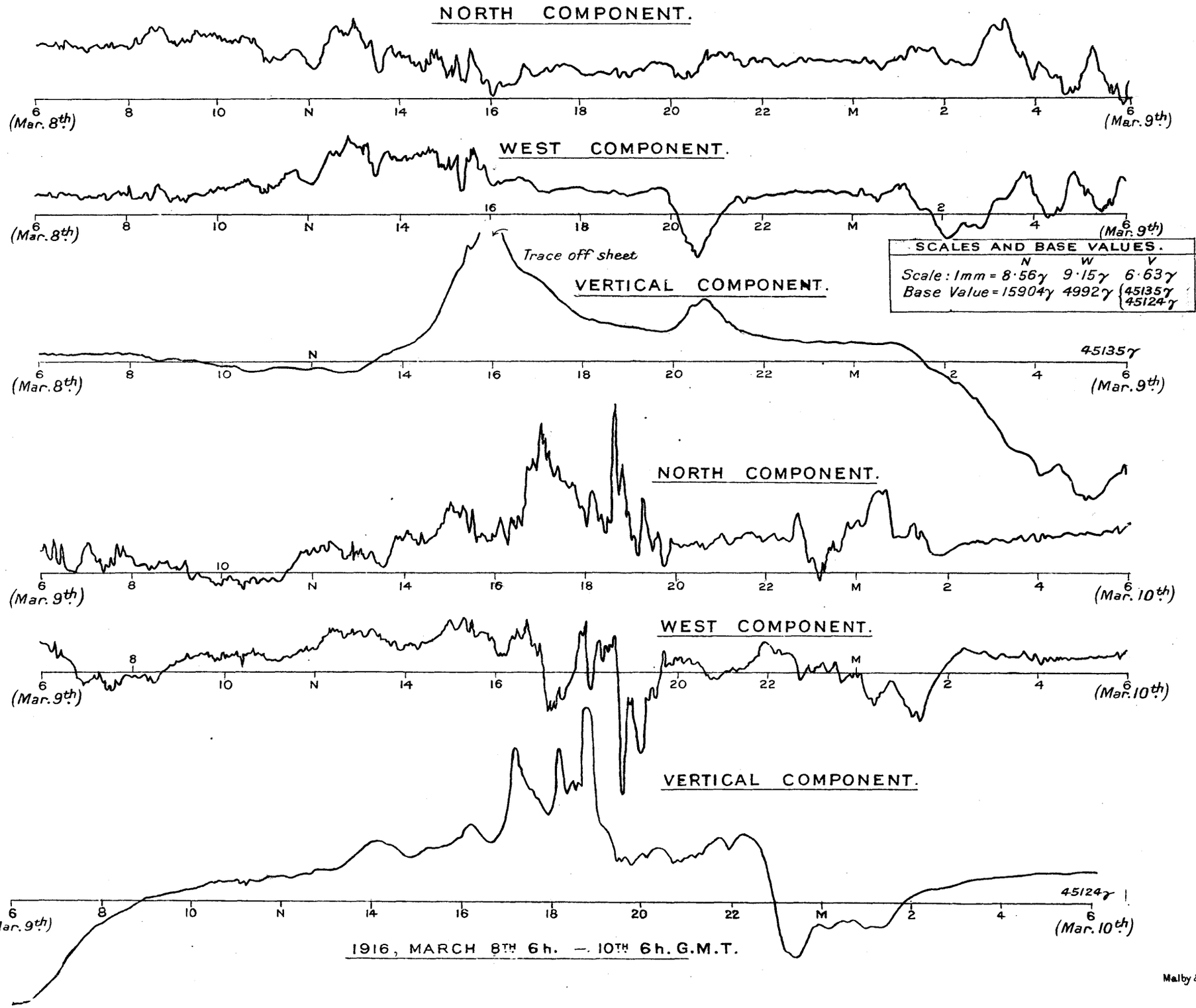
DISTURBED DAY MAGNETOGRAMS.

ESKDALEMUIR OBSERVATORY.



1916, MARCH 8TH 6h. — 10TH 6h. G.M.T.

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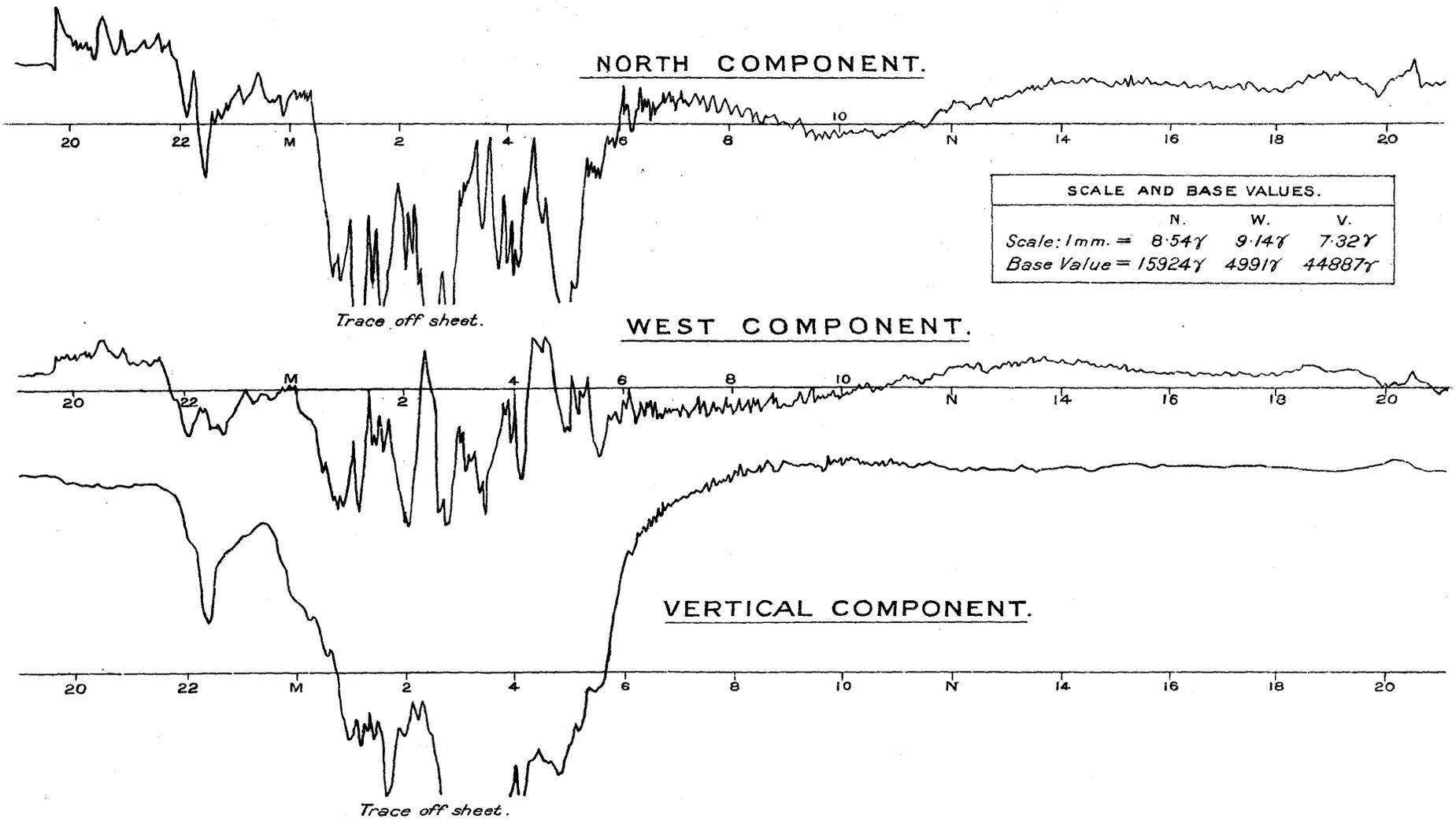
DISTURBED DAY MAGNETOGRAMS.
ESKDALEMUIR OBSERVATORY.



SCALE AND BASE VALUES.			
	N.	W.	V.
Scale: 1 mm. =	*8·54γ*	*9·14γ*	*7·32γ*
Base Value =	*15924γ*	*49917γ*	*44887γ*

1916, AUGUST 26TH 19 h. – 27TH 21 h. G.M.T.

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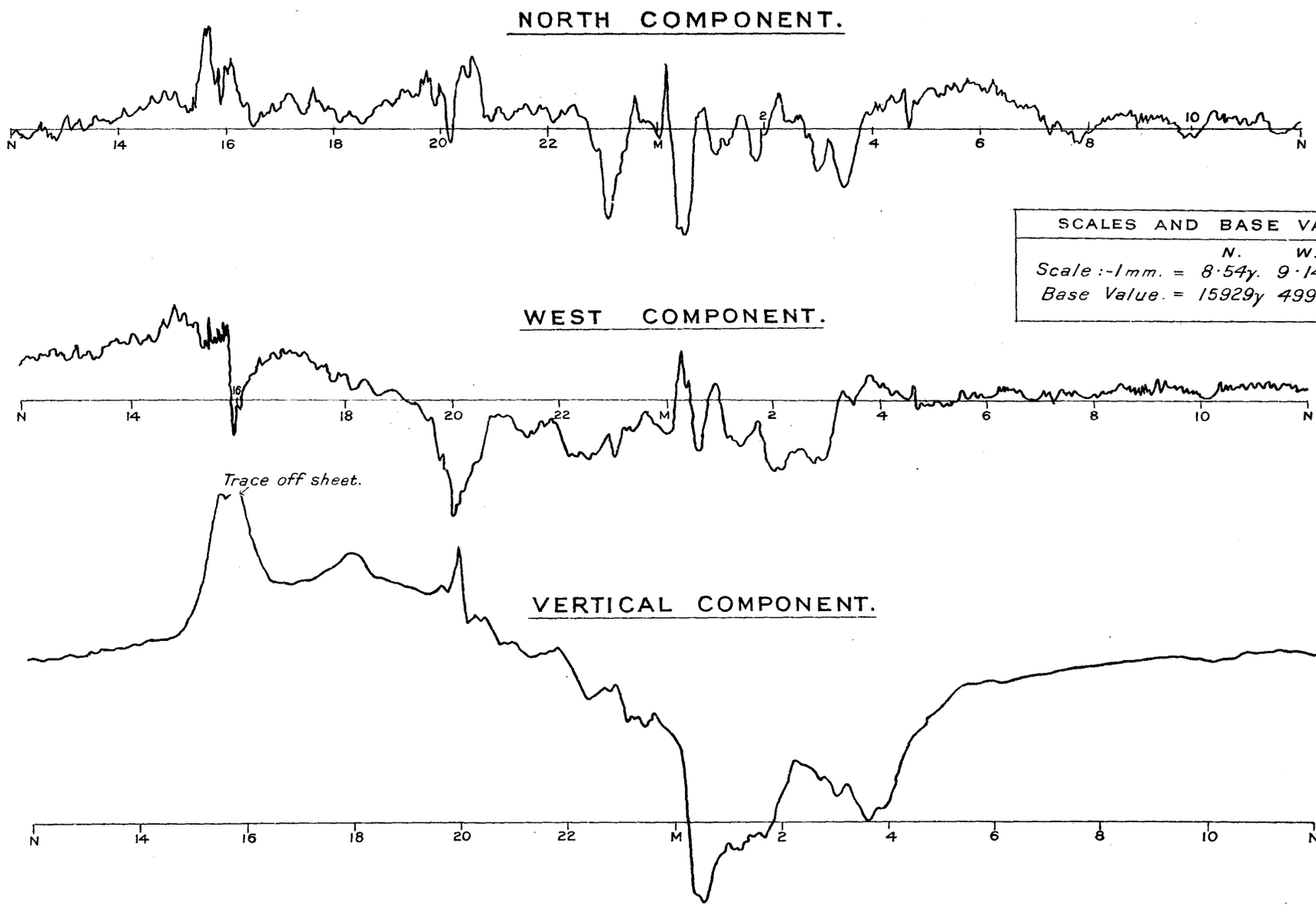
DISTURBED DAY MAGNETOGRAMS.
ESKDALEMUIR OBSERVATORY.



SCALES AND BASE VALUES.			
	N.	W.	V.
Scale :-1 mm. =	8·54γ.	9·14γ.	7·43γ.
Base Value. =	15929γ	4995γ.	44907γ.

1916 OCTOBER 6TH NOON — 7TH NOON. G.M.T.

8245-16306.

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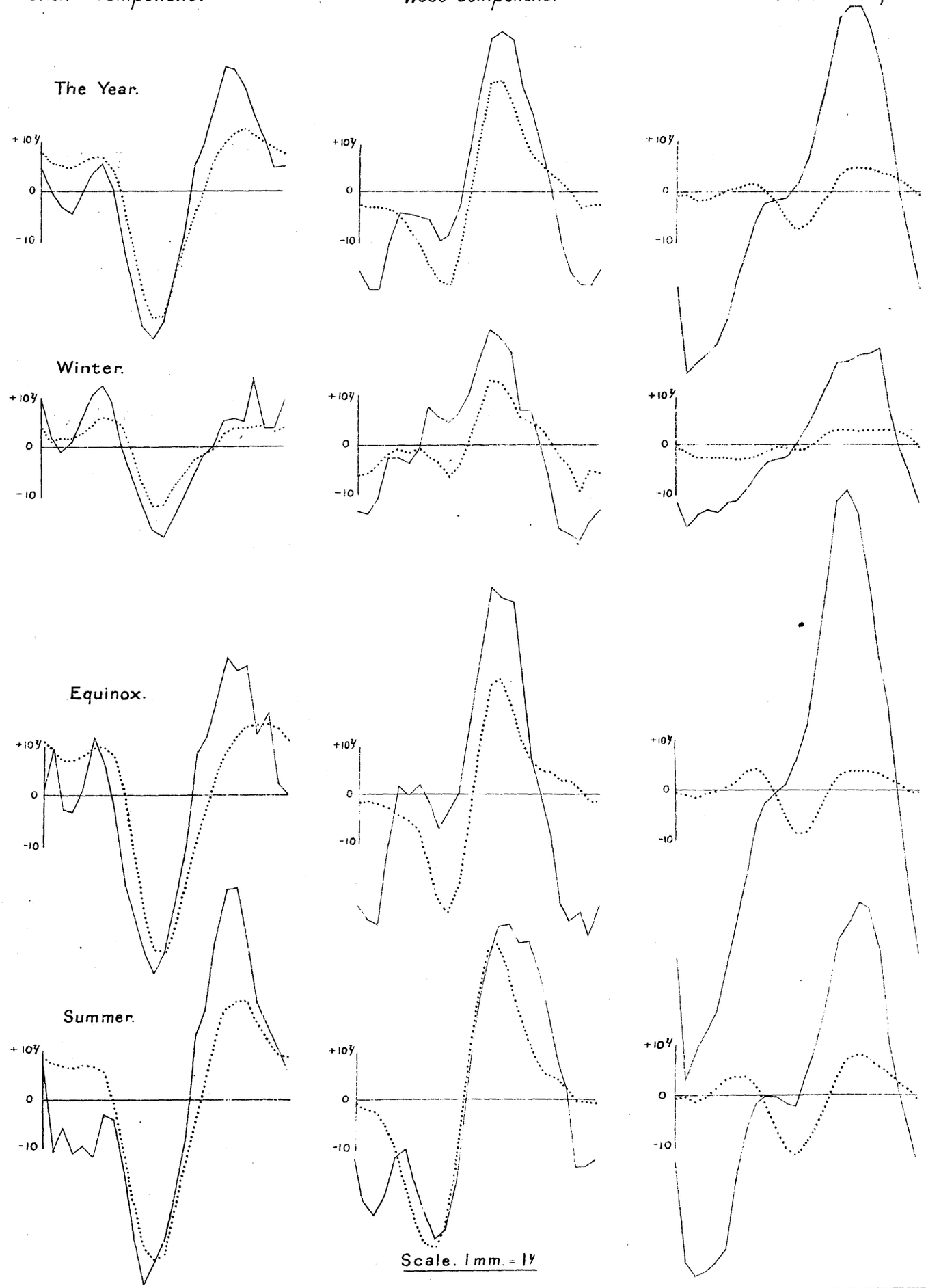
DIURNAL VARIATION IN THE COMPONENTS OF MAGNETIC FORCE ON QUIET AND DISTURBED DAYS. ESKDALEMUIR, 1916. (THE YEAR AND THE SEASONS)

QUIET DAYS. *Dotted lines .....* DISTURBED DAYS. *Continuous lines* ———

North Component. *West Component.* *Vertical Component.*



3108-23744/554/834. 400. 11. 19.

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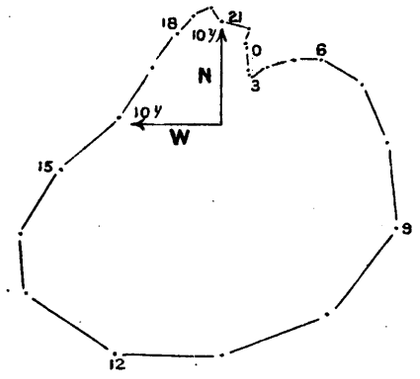
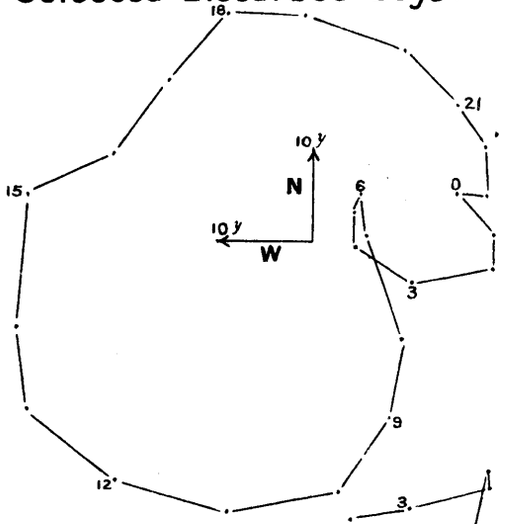
VECTOR DIAGRAMS ILLUSTRATING DIURNAL VARIATION IN MAGNETIC FORCE ON QUIET DAYS AND DISTURBED DAYS. ESKDALEMUIR 1916.

"International" Quiet Days.

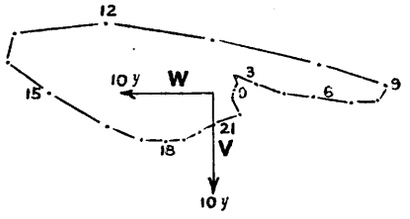
Selected Disturbed Days.

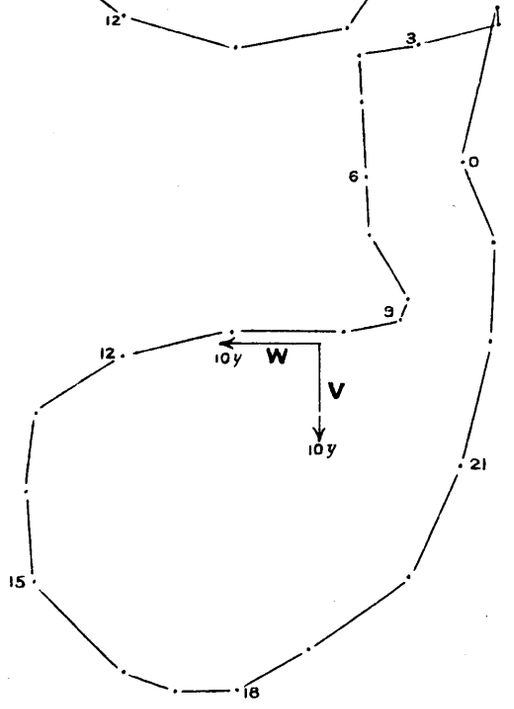
Horizontal Components



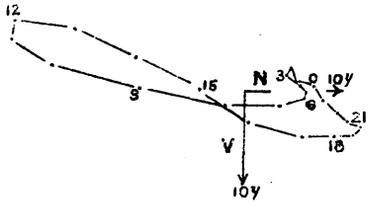


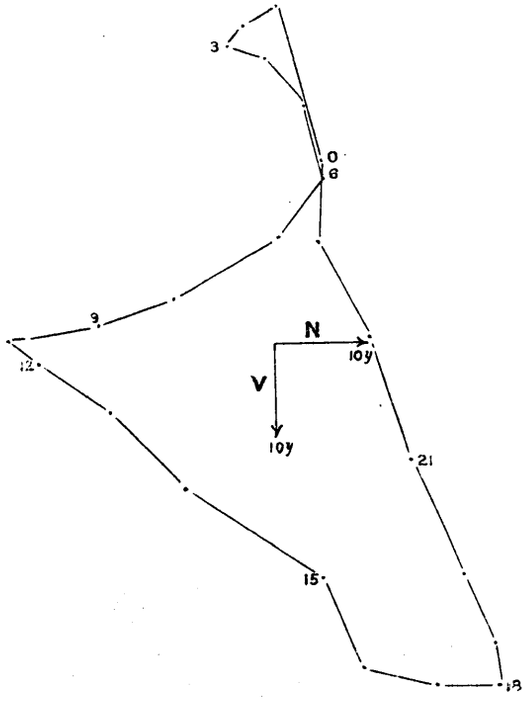
Prime Vertical Components





Meridian Components





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