

Kodaikanal Observatory

Bulletin No. CXXXVIII

PART I

SUMMARY OF PROMINENCE OBSERVATIONS FOR THE FIRST HALF OF 1952

This bulletin summarises the results of prominence observations made at Kodaikanal supplemented by the data derived from photographs supplied by Mount Wilson and Meudon Observatories for the days on which no, or only incomplete, observations were possible at Kodaikanal.

During this period prominence photographs in the K line were taken at Kodaikanal on 142 days and these were supplemented by 30 prominence spectroheliograms from Mount Wilson and 22 from Meudon Observatories. On the whole the data were available for 175 days which were counted as 168 effective days after giving due weightage to photographs.

The mean daily areas of prominences in square minutes of arc and the mean daily numbers derived from the combined data are given below.—

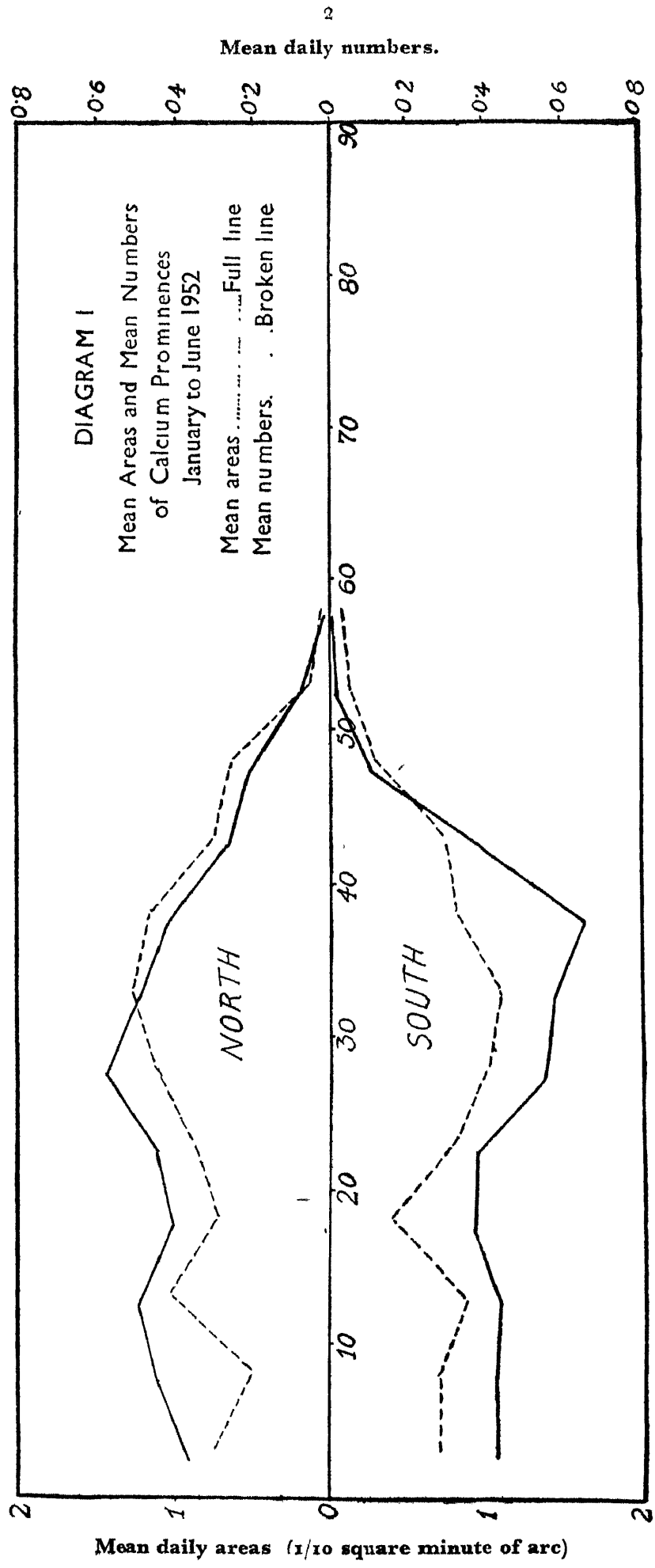
	Combined data	
	Mean daily areas (square minutes)	Mean daily numbers
North	1 06	3 77
South	1 07	2 97
TOTAL	<u>2 13</u>	<u>6 74</u>

These figures show a decrease of 31.7% in area as compared with the activity for the previous half year while the numbers do not show any appreciable change.

For comparison with bulletins prior to 1923 the means based on Kodaikanal data alone are given in the following table, 142 days of observations being counted as 135 effective days.

	Kodaikanal data	
	Mean daily areas (square minutes)	Mean daily numbers
North	1 15	4 15
South	1 20	3 23
TOTAL	<u>2 35</u>	<u>7 38</u>

The distribution in latitude of the prominence areas and numbers in 5° zones is shown in diagram I in which the full line curves represent the areas and the broken line curves the numbers. The curves show peaks of activity of prominence areas in the latitude zones 25°-30° in the north and 35°-40° in the south.



The monthly, quarterly and half-yearly mean areas, numbers, heights and extents of prominences are shown in the following table:—

TABLE I

Months 1952	Number of days (effective)	Areas (square minutes)	Numbers	Daily Means		Mean height "	Mean extent •
				Area (sq min.)	Numbers		
January	26½	50 90	159	1 92	6 00	39 62	2 82
February	26½	68 75	157	2 59	5 93	42 71	4 18
March	29	72 20	195	2 49	6 72	38 90	3 36
April	28½	62 55	224	2 19	7 86	38 29	2 89
May	27¾	52 65	197	1 90	7 10	39 77	3 26
June	29½	50 95	200	1 71	6 72	39 10	2 80
1st quarter	82	191 85	511	2 34	6 23	40 30	3 44
2nd quarter	86	166 15	621	1 93	7 22	39 01	2 98
1st half year	168	358 00	1132	2 13	6 74	39 59	3 19

The east-west distribution of prominence areas and numbers is given below .—

	East	West	Percentage east
Total area	163 05	194 95	45 54
Total number	553	579	48 85

Both the areas and numbers show an eastern defect.

Observations with the Prominence Spectroscope

No Metallic prominences were observed during the half year. Particulars of displacements observed in the chromosphere and prominences in the spectroscopie are given in the following table:—

TABLE II

Date	Time I. S. T. (G.M.T. + 05 h. 30 m) H. M.	Latitude		Limb	Displacement in A			Remarks
		North	South		Red	Violet	Both ways	
March 6	08 45	..	33½	W	1	0 5	..	To red at top and violet in middle.

Reversals and displacements on the disc

During the period the H-alpha line was seen in emission and the D₃ line in absorption on 31 occasions. The H-alpha line was also seen displaced over dark markings on 5 occasions (one towards red and four both ways). These distributions were as follows:—

	North	South	East	West	Total
Bright reversal of H-alpha line on the disc	8	23	17	14	31
Dark reversal of D ₃ line on the disc	8	23	17	14	31
Displacement of H-alpha line on the disc	3	2	4	1	5

Heights of prominences in K, H-alpha, D₃ and H_β lines

12 prominences were observed in K, H-alpha, D₃ and H_β lines. The mean heights in the different lines were found to be as follows

Mean height in K-line	90" 8
Mean height in H-alpha line	87" 6
Mean height in D ₃ line	84" 9
Mean height in H _β line	83" 2

Observations with the Hale Spectroheliograph

Details of Doppler displacements in H-alpha line observed in prominences and absorption markings with the spectroheliograph are given below.—

	North	South	East	West	Total	Displacements		
						To red	To violet	Both ways
Displacements in prominences	6	2	5	3	8	1	..	7
Displacements in absorption markings	9	7	11	5	16	2	2	12

Solar Flares

Table III gives a list of solar flares observed at Kodaikanal during the period under review :—

TABLE III

Date 1952	Time in I S T.			Mean latitude	Mean longitude from central meridian	Intensity	Maximum width of H-alpha line observed	Remarks
	Beginning	Maximum	End					
	H M	H M	H M	°	°		A°	
<i>January</i> 12	11 20	11 51	12 15	10 N	50 E	2	1 9	
26	09 45	..	10 00	10 S	32 E	1	1 6	
<i>February</i>				<i>NIL</i>				
<i>March</i> 14	08 55	.	09 00	12 S	30 E	1	1 0	
15	07 30		07 55	11 S	16 E	1	1 7	
<i>April</i> 21	09 45	..	09 58	5 S	67 E	1	..	
<i>May</i>				<i>NIL</i>				
<i>June</i> 23	08 15	08 26	09 45	17 N	45 E	1	1 3	
28	15 04	7 S	8 W	1	..	

The distribution of mean daily areas in 5° ranges of latitude is shown in diagram II. The peaks of activity are centred around latitude 25°-30° in the northern hemisphere and 35°-40° in the southern hemisphere.

Kodaikanal data	
Mean daily areas (millions of the sun's visible hemisphere)	Mean daily numbers
1227.2	11.20
861.7	7.75
2088.9	18.95
Total	

The figures based on Kodaikanal data alone are also given below for comparison with similar data:—

Compared with the figures for the previous half-year, the areas and the numbers show a decrease of 36.7% and 28.7% respectively.

Combined Data	
Mean daily areas (millions of the sun's visible hemisphere)	Mean daily numbers
1226.9	11.02
932.3	7.94
2159.2	18.96
Total	

H-alpha focculus photographs were taken at Kodaikanal on 155 days and 21 photographs were supplied by Mount Wilson and 19 by Meudon Observatories. On the whole the records were available for 177 days which were counted as 166½ effective days. The mean daily areas in millions of the sun's visible hemisphere (without applying foreshortening correction) and the mean daily numbers as derived from all the records are given below. —

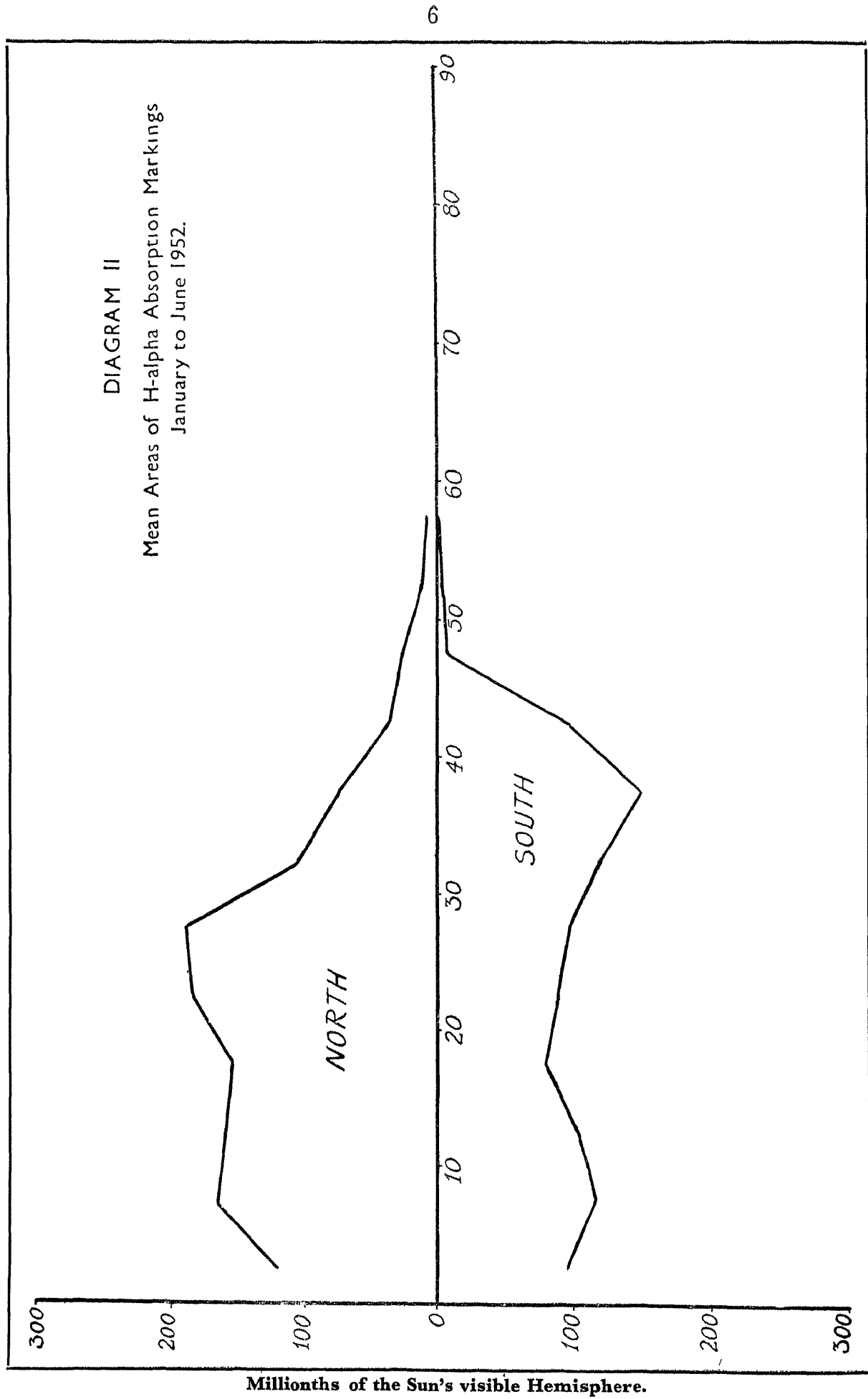
Prominences projected on the disc as H-alpha absorption markings

Nature of phenomenon	Month	Date	Time (IST)	Mean latitude	Mean longitude	Remarks
K-Prominence	January	22	14 31	35 S	90 E	Disappeared by 24th
	February	1	11 24	28 N	90 E	Disappeared next day
	January	12	11 00	12 N	55 E	Ditto.
	February	16	14 13	28 N	Central meridian	Ditto.
	February	19	07 46	7 S	57 E	Ditto.
H-alpha absorption marking	February	19	07 46	7 S	57 E	Ditto.
	May	1	07 36	7 S	57 E	Ditto.

TABLE IV

Sudden disappearances of prominences and dark markings
 Details of K-prominences and H-alpha absorption markings whose sudden disappearances were observed between two consecutive observations are given below —

DIAGRAM II
Mean Areas of H-alpha Absorption Markings
January to June 1952.



Millionths of the Sun's visible Hemisphere.

The east-west distribution of the areas and numbers of dark markings is given in the following table:—

	East	West	Percentage east
Total area (millionths of the sun's visible hemisphere)	175756	182295	49.08
Number	1559	1594	49.44

Both areas and numbers show a slight eastern defect.

Thanks are due to the co-operating observatories for the photographs supplied by them.

PART II

SUMMARY OF MAGNETIC OBSERVATIONS FOR THE FIRST HALF OF 1952

Introduction

The history of the Kodaikanal Observatory, a brief description of the absolute instruments and the Watson variometers and the system of observations are given in bulletin No. CXXXII of this Observatory. As mentioned in Bulletin No. CXXXVI a set of La Cour magnetographs became available since 1951. Since the La Cour records are more steady and reliable than the Watson records, the practice of using the La Cour records for routine statistics has been adopted since the beginning of 1952. The data for the first half of 1952 derived from the records of the La Cour instruments are given here. Watson magnetograms were however used to derive the data on a few occasions when there was loss of La Cour records.

Determination of absolute values

- (1) Absolute observations of horizontal force are made once every week (on Wednesdays) with Kew Magnetometer No. 3.
- (2) Absolute observations of declination are made once every week (on Thursdays) with the same instrument.
- (3) Observations of inclination are made with the earth inductor on all days excepting Saturdays, Sundays and other holidays.

Variometer records

(a) *Watson instruments*:—The charts of the three Watson variometers are changed every alternate day, the records for two consecutive days being obtained on the same paper in the usual way. The optical arrangements for the magnetographs are such that with the H and V instruments an increase in the ordinate corresponds to an increase in the value of the elements; for the D magnetograph, however, an increase in the ordinate corresponds to a decrease in the westerly declination.

(b) *La Cour instruments*:—The chart for the La Cour instruments is changed daily with all the three elements recorded on the same paper. The optical arrangements for the H, V and D magnetographs are such that with H and V instruments an increase in the ordinates corresponds to an increase in the value of the elements; for the D magnetograph, however, an increase in the ordinate corresponds to a decrease in the westerly declination.

Determination of scale coefficients

(a) *Watson variometers*—The scale coefficients of the H. F. and V. F. magnetographs are obtained fortnightly from deflection observations performed on the instruments with the deflector magnet at distances of 100 cms. and 120 cms. in the case of the H. F. instrument and at distances of 122.6 cms. and 148.6 cms. in the case of the V. F. instrument. The value of the scale coefficient adopted for any month is the average of the mean observed value for that month and those of the preceding and succeeding months.

The scale coefficient of the declination magnetograph has been determined once for all and is 1.03 per mm.

(b) *La Cour variometers*—The scale coefficients of the H. F. and V. F. magnetographs are obtained once every month by placing a Helmholtz coil over the instruments and noting the deflections when known currents are passed through the coil. The coil constant as given by the manufacturers is 7.49 γ /milliamp.

The scale coefficient of the declination magnetograph has been determined once for all and is 0.9/mm. The adopted scale coefficients of the H. F. and V. F. magnetographs for the first half of 1952 are 80.0 γ /cm. and 110.0 γ /cm. respectively.

Temperature coefficients of the magnetographs

(a) *Watson magnetographs*—The adopted value for the H. F. magnetograph is 32 γ /°F. The temperature coefficient of the V. F. magnetograph was found to be negligible.

(b) *La Cour magnetographs*—Temperature compensation has been incorporated in the design of these instruments.

Base line values

(a) Base line values for H. F. magnetograms are derived by converting the mean ordinates corresponding to absolute observation with Kew Magnetometer No. 3 in terms of gammas and subtracting these converted ordinates from the mean observed horizontal force. The values derived from the Watson instruments are further reduced to a uniform temperature of 65°F to make the series comparable from month to month and year to year.

The adopted base line value for any week is the mean of five values (all reduced to 65°F in the case of the Watson instrument) including the week in question as the third among the five. In the case of the Watson instrument the base line values for the individual days of the week were determined after applying necessary temperature correction. The accuracy of the base line value derived from the above procedure is estimated to be $\pm 10\%$.

(b) The base line values for the V. F. magnetograms are derived by expressing the mean ordinates of the V. F. magnetograms at the times of inclination observations in terms of gammas and subtracting these from the values of vertical force obtained by multiplying the values of H. F. at that time by the tangent of the inclination.

(c) The base line values for 'D' were derived by the usual procedure of converting the ordinates corresponding to absolute observations with Kew Magnetometer No. 3 into angles and adding these to the corresponding observed absolute declination values.

Basic hourly values and associated means

Basic results—Tables 1 to 18 contain hourly values of magnetic declination, horizontal intensity and vertical intensity. The hourly values from the magnetograms represent the average values during one hour, centred at the full hours of U. T.

The columns headed 'maximum' and 'minimum' give the momentary extreme values of the element for each day.

Computed means—At the bottom of each table are given the average hourly values obtained (i) for all days, (ii) for five international quiet days, and (iii) for five international disturbed days.

Principal magnetic storms

Magnetically a day is considered to be (a) a quiet day, (b) a day of slight disturbance, (c) a day of moderate disturbance, (d) a day of moderate storm, and (e) a day of great storm, depending on the ranges and the oscillations in the magnetograms. At Kodaikanal, a day is provisionally being taken as (i) one of great storm if the range in H is above 400 γ , (ii) of moderate storm if the range is between 251 γ and 400 γ , and (iii) of moderate disturbance if the range lies between 150 γ and 250 γ . The range is, however, not the only criterion used in assigning the character of a storm.

Table 19 gives a list of principal magnetic storms recorded during the first half of 1952.

KODAIKANAL }
November 1953. }

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10

TABLE I

Hourly Values of Declination (Westerly), 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

January

2° plus tabular quantities

Date	Hours G. M. T.														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	'	'	'	'	'	'	'		'	'	'	'	'	'	'
1	35 3	36 1	36.7	36 3	36 2	36 0	35 9	36 1	35 9	35 7	35 3	34 5	34 6	34 9	34 9
2	35 8	35 7	35 8	35 8	35 7	35 6	35 8	36 2	36 2	36 0	35 6	35 3	35 2	35.2	35.2
3	35 7	36 0	36 2	35 7	35 4	35 3	35 7	36 0	35 9	35 9	35 6	35 3	35 8	35 1	35 1
4	35 9	35 8	35 8	35 6	34 8	35 0	35 3	36 0	35 5	35 3	35 6	35 1	35 0	35 1	35 0
5†	36 1	36 2	36 0	35 9	35 0	34 8	34 7	34 9	35 1	34 7	34 8	34 7	34 6	34 8	35 3
6	35 8	35 8	35 8	35.7	35 8	35 3	35 5	35 6	35 5	35 1	34 9	34.7	34 4	34 3	34.1
7	35 7	35 8	35 8	35.6	35.1	35 2	35 3	35 6	36 1	36 3	36 1	35 7	35 5	35 1	34 8
8	35 8	35 9	35 9	35 6	34 5	34 5	34 4	34.3	31 6	34 7	34 7	34 6	34 6	34 7	34 9
9	36 1	36 1	36 2	35 9	35 9	36 2	36 3	36 3	36 1	36 3	36 3	36 4	36.2	35 7	35.6
10	35 7	35 8	36 2	36 2	35 9	35 4	35 0	35 3	35 5	35 9	35 8	35 4	35 1	35 2	35.2
11	35 6	35 4	35 5	35.3	35 4	35 5	36 1	35 4	36 1	36 9	36 7	36 4	35 6	35.5	35.4
12	35 9	36 1	36 3	35 7	35 7	35 5	35 6	35 4	35 8	35 1	35 6	35 5	35 6	35 5	35 4
13‡	35 7	35 6	35 6	35.8	35 7	35 8	35 7	35 8	35 4	35 7	35 4	35 5	35.4	35 5	35 3
14†	35 6	35 7	35 5	35.1	35 1	35 1	35 5	35 3	35 0	34.8	34.6	34.6	35.1	35.1	35 3
15	35 6	35 8	36 0	36.1	36.4	36 1	36 3	36 7	36 9	36 4	36 3	35.7	35 4	35 3	35.4
16	35 6	35 8	35 8	35 5	34 6	35 0	35 6	35 4	34 8	34 6	34 6	34.5	34.1	35 4	35 3
17	35 5	35 7	35 8	35 5	34 7	34 7	35 5	36.1	36.2	35 8	35 5	35 4	35 4	35 4	35 4
18†	35 6	35 7	35 6	35 5	35 5	35 4	35 6	36 1	35 8	35 1	35 5	35.5	35 5	35 4	35 5
19†	35 7	35 8	35 8	35 8	35 6	35 5	35 4	35 5	35 6	36 0	35 8	35 5	35 4	35 4	35 5
20†	35 6	35 9	36 1	35 9	35.6	35 5	35 5	35 5	35 2	35 4	35.5	35 5	35 5	35.5	35 5
21†	35 6	35 7	36 0	35 4	35 1	34 9	35 4	36.0	36 5	36.2	35 7	35 5	35.5	35 5	35 4
22	35 9	36 2	36 4	35 9	35 1	35 1	35 6	36 2	36 5	36.1	35 8	35 5	35 4	35 5	35 5
23	35.4	35 5	35 7	35 9	35.9	35 5	35 9	36 2	35 9	35.5	35 5	35.5	35.4	35 3	35.2
24	36 1	35 9	36 0	35 8	35 6	35 9	36 1	36 4	37 0	37 3	36 9	36 1	35 6	35.5	35.5
25	35 8	35.7	35 4	35 2	35 8	36 1	36 3	36 8	37.2	36.8	36.5	36 1	35 4	35.4	35.4
26†	36 1	36 2	36.3	36 1	35 6	35 4	35 9	36 0	36 0	35 6	35 4	35 1	35 3	35.4	35.4
27†	36 3	36 7	36 9	36 6	36 6	36 2	36 0	35 6	35 5	35 4	35.3	35 5	35 6	35 3	35.4
28	35 1	35 3	35.1	35 3	35 2	35 1	35 3	35 4	35.1	35 2	35 3	35 5	35 4	35 4	35.5
29†	35 5	35 5	35 6	35 8	36 0	35 9	36 0	35 8	35 4	35.3	34 7	34 7	34 6	34 6	34 8
30	35 6	35 8	36 1	36 1	35 8	35 6	35 4	35 4	35 5	35.4	35 4	35 4	35 2	35 3	35.4
31	35 7	35 7	35 8	35 8	35 6	35 6	35 6	35.8	36 1	36 0	35 8	35 5	35 3	35.4	35.4
Mean .	35 9	35 8	35 9	35 8	35 5	35 3	35 6	35 8	35 8	35 7	35 6	35 4	35 3	35 2	35.3
Mean† .	35 7	35 9	36 0	35 7	35 5	35 3	35 6	35.8	35 8	35.7	35.6	35.5	35 4	35.4	35 5
Mean‡	35 8	35 9	35 9	35.8	35 7	35 6	35 6	35 5	35.3	35 2	35 0	35 0	35 1	35.1	35.2

* Loss of record (Day omitted for means)

† Five international quiet days

‡ Five international disturbed days.

TABLE I

Hourly Values of Declination (Westerly), 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

January

2° plus tabular quantities

Hours G. M. T.									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Mag	Time	Mag		
									H M		H. M				
'	'	'	'	'	'	'	'	'	'						
35 0	35 1	35 2	35 2	35 3	35 4	35 4	35 5	35 6	35 0	02 00	37.0	11 42	34.2	2.8	1
35 2	35 2	35 2	35 4	35 4	35 4	35 6	35 5	35 6	35 3	07 50	36.7	11 50	34.7	2.0	2
35 0	35 1	36 0	35 3	35 4	35 6	35 7	35.8	35 9	35 6	01 54	36.5	11 10	34.4	2.1	3
35 0	35 0	35 1	35 1	35 3	35 6	35 9	36 1	36 0	35 4	07 10	37.4	14 30	34.4	3.0	4
35 5	35 5	35 7	35 9	36 0	36 1	36 1	36 6	35 7	35.4	22 22	37.1	14 22	33.9	3.2	5†
34 1	34 1	34 2	34 2	34 1	34 1	31 9	35 1	35 3	35 0	06 24	35.9	17 42	34 0	1.9	6
34.5	34 6	31 8	34 9	35 1	35 1	35 3	35 6	35 7	35 4	08 42	37.1	11 22	34 1	3.0	7
35 2	35 5	35 5	35 5	35 6	35 6	35.6	35 7	35.9	35 2	01 50	36.4	06 46	34 2	2.2	8
35 5	35 5	35 5	35 4	35.5	35 5	35 7	35 9	35 6	35 9	08 10	36.9	16 42	35 1	1.8	9
35 3	35 1	35.1	34 8	35 3	35 5	35 4	35 7	35 8	35 5	01 42	36.5	05 12	34 4	2.1	10
35 3	35 4	35.5	35 5	35.6	35.6	35.6	35 9	35 7	35 7	09 02	38.2	14 06	34 9	3.3	11
35 5	35 4	35 4	35 5	35.6	35 5	35.5	35 5	35 9	35 6	02 10	36.5	11 10	34.3	2.2	12
35 5	35 5	35 5	35 4	35 3	35 4	35 5	35.5	35.4	35.5	00 10	36.6	14 10	34 7	1.9	13†
35 1	35 2	35.1	35 3	35 5	35 5	35 5	35 6	35 7	35 2	02 28	36.2	10 52	34 2	2.0	14†
35 0	34.9	34 7	35 0	35 2	34 8	34 9	34 9	35 3	35 6	07 40	37 0	14 48	33 6	3.4	15
35 3	35.4	35 4	35 3	35 3	35.3	35.4	35 3	35 4	35 2	01 42	36.5	09 42	34.3	2.2	16
35.4	35 3	35 4	35 3	35.5	35 5	35 5	35.5	35 5	35 5	07 42	36.8	04 42	34.5	2.3	17
35.5	35 5	35 5	35 5	35.5	35 5	35 6	35 6	35 6	35 6	06 54	36.2	09 20	35 1	1.1	18†
35 4	35 5	35 5	35 5	35 5	35 5	35 5	35.5	35 6	35 6	08 30	36.3	06 10	35 2	1.2	19†
35.5	35 5	35.5	35.5	35 5	35.5	35 5	35 6	35 6	35 6	02 00	36.7	07 54	35 1	1.6	20†
35.5	35.5	35.5	35.5	35.5	35 5	35 5	35 5	35 5	35 7	07 54	37.1	04 54	34.7	2.4	21†
35 5	35 3	35.2	35.1	35 0	34.9	35.1	35 2	35 2	35.5	09 30	37 0	05 30	34 7	2.3	22
35.0	35 2	35 1	35 1	35.0	35 3	35 5	35.7	36 1	35.5	07 00	37.3	17 30	34 3	3.0	23
35 4	35 6	35.2	35 4	35 5	35.5	35.5	35 6	35 9	35 9	07 54	37.7	16 10	34.6	3.1	24
35 4	35 4	35.4	35.4	35.4	35.5	35 5	35 5	36.0	35 7	08 14	37.9	14 22	35 0	2.9	25
35.4	35 4	35 5	35 5	35.5	35.8	36.1	36.2	36.2	35 7	01 44	36.4	12 00	34 6	1.8	26†
35.2	35 5	35 1	35.0	35 0	34.9	34 9	35 1	35 0	35.6	01 40	37 0	14 34	34.4	2.6	27†
35 5	35.5	35 6	35 5	35.4	35 4	35.4	35 4	35 5	35 3	17 00	35.9	08 10	34.8	1.1	28
35.2	34 8	35 1	34 9	35 2	34 8	35 3	35 3	35.4	35 3	06 30	36.2	11 22	34 5	1.7	29†
35 4	35 4	35.4	35 1	35.4	35 4	35.4	35.5	35 6	35 5	02 42	36.7	12 00	34.8	1.9	30
35 4	35 4	35.4	35 4	35 5	35.5	35 5	35.5	35 7	35 6	08 18	36.2	12 30	34.7	1.5	31
35.2	35.3	35 3	35 3	35 4	35.4	35 5	35 6	35 6	35 5					2.2	Mean
35.5	35 5	35.5	35.5	35 5	35.6	35.6	35.7	35.7							Mean†
35 3	35.3	35.3	35 3	35 4	35.3	35.5	35.6	35 4							Mean‡

* Loss of record. (Day omitted for means)

† Five international quiet days

‡ Five international disturbed days.

TABLE 2

Hourly Values of Declination (Westerly), 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

February

2° plus tabular quantities

Date	Hours G. M. T.														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
1	35 7	35.7	35 7	35 8	34 9	35 4	34.9	36 0	35 8	35 4	35 1	34 6	34 7	35.1	35 2
2	35 7	35 7	35 8	35 5	35 4	35 4	35 4	35 4	35 3	35 4	34 9	35 6	34 8	35.1	35 1
3†	35 4	35 4	35 5	35 4	35 3	35 3	35 5	36.0	36 3	36 3	36 0	35 4	35 3	35 4	35 4
4†	35 6	35 5	35 6	35 6	35 5	35.3	35 5	35 9	35 8	35 5	35 3	35 4	35 4	35 4	35 4
5†	35 9	36 0	36 1	36 0	35.9	36.1	36 3	36 2	36 0	35 8	35 6	35 5	35.4	35 4	35 4
6‡	36 2	36 2	36 2	35 9	35.7	35 5	35 5	35 8	35 3	35 5	35 7	36 0	35 8	35 5	35 5
7	35 3	35 1	35 4	35 3	35 2	35 4	35 6	35 6	35 8	36 0	35 8	35 4	35 4	35 4	35.3
8‡	35 1	35.0	35 2	35 0	34 6	34 4	34.5	34 9	35 0	34 7	34 1	34 1	34 2	34 3	31 4
9	35 4	35 6	35 9	35 6	35 5	35 4	36 0	36 0	35.8	35.3	35.4	35 5	35 4	35 4	35 4
10	35 4	35 5	35 9	35 8	35 6	35 7	35 9	36 0	35 1	35.3	34.9	34 8	35 2	34 9	35 0
11	35 4	34 8	36 0	35 6	35 4	35 1	35 0	35 0	35 0	35 0	34 7	34 6	34 6	35.0	35 3
12	35 3	35 4	36 0	35 8	35 3	35 1	35 3	35.0	35 0	34.8	34 8	34 9	34 6	35 1	35 2
13	35 2	35 5	35 8	36 0	35.7	35 5	35 4	35.4	35 5	35.4	35 4	35 3	35 4	35 4	35 4
14	35 1	35.6	35 9	35 6	35 2	35 1	35 3	35.4	35.0	34 5	34.4	34.9	35.3	35 4	35 4
15	35 3	35 4	35 6	35 6	35 5	35.5	35 4	35 3	34 7	34.5	34 5	35 1	35 4	35 3	35.3
16‡	35 4	35 5	35 6	35 5	35 4	35 3	35 0	34 9	34 0	33 5	33 4	33 7	34 5	34 4	33.7
17	35 4	35 3	35 5	35.7	35 6	35 5	35.4	35 4	35 4	35 3	35 2	35.1	35 3	35 6	34 7
18	35 4	35.3	35.4	35 5	35 8	35 8	35 9	35 6	35.3	35 1	34.7	34 4	34.5	34.7	34 5
19	35 0	35 1	35 5	35 1	35 4	35 5	35 5	35 4	35.2	35 0	34.6	34 4	34 4	34 3	34 5
20	34 7	34 7	34 6	34 5	34.5	34 5	34 3	34.2	34 1	33 9	34.1	34.1	34.5	34 5	34.3
21†	35 2	35 2	35 1	34 7	34 8	34 9	35 1	35.1	35.2	35 0	35 0	35 4	35 5	35 5	35.5
22†	35 4	35.2	35 0	35 1	35 2	35 3	35 4	35 5	35.1	34 6	34 1	34 1	34 6	34 6	34 6
23	35 4	35 5	35 5	35 6	35 8	35 9	36.1	35 6	35.1	34 6	34 5	34.6	35.1	35 4	35.4
24†	35.3	35 0	34 5	34 7	35.1	35 0	35.1	31 9	34 6	34.4	33.7	33 7	33 7	33 6	33 8
25	34.5	34.6	35 2	35 7	35 9	36 1	36 0	35 8	35.4	35 0	34.7	34 9	35.4	35 0	35.2
26	35 4	35 3	35 6	36 1	36 4	36 4	36.1	35.5	35.3	34.8	34 6	34 7	35 4	35 4	35 5
27†	35 1	35 4	35 8	36 0	35 8	35 5	35 2	34 5	34.1	33 8	33.8	33 7	34 8	35.1	34 8
28	36 4	36 4	36 8	36 8	35 9	35 7	35 3	35 0	34 8	34.3	34 6	34 5	34.6	34 6	34 3
29	35 5	35 6	35 6	35.3	35 5	35 7	35 5	35 0	34.5	33 9	33.9	33 8	33 7	33 8	34.3
Mean	35 4	35 4	35 6	35 5	35 4	35 4	35 4	35.4	35.2	34 9	34 7	34 8	34 9	35 0	35 0
Mean†	35 5	35 5	35 5	35 4	35 3	35 4	35 6	35.7	35 7	35.4	35.2	35.2	35.2	35.3	35.3
Mean‡	35 4	35.4	35.7	35 4	35.2	35.1	35 1	35 0	34 6	34.4	34.1	34.2	34 6	34 6	34.5

* Loss of record. (Day omitted for means)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 2

Hourly Values of Declination (Westerly), 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

February

2° plus tabular quantities

Hours G M T									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Mag	Time	Mag		
										H. M	'	H M	'		
35.3	35.4	35.4	35.5	35.1	35.4	35.5	35.5	35.6	35.4	06 00	36.3	12 00	34.4	1.9	1
35.0	35.0	35.0	35.3	35.4	35.4	35.4	35.4	35.1	35.3	01 00	36.2	10 42	34.4	1.8	2
35.4	35.4	35.4	35.4	35.4	35.4	35.6	35.6	35.8	35.6	09 12	36.1	12 28	34.8	1.6	3†
35.4	35.5	35.5	35.5	35.5	35.6	35.6	35.7	35.8	35.5	06 45	36.2	12 22	35.0	1.2	4†
35.4	35.4	35.4	35.1	35.5	35.5	35.8	35.8	36.1	35.7	06 10	36.4	12 11	35.2	1.2	5†
35.5	35.5	35.0	35.2	35.0	35.3	35.1	35.0	35.0	35.5	01 46	36.4	17 20	31.6	1.8	6‡
35.4	35.4	35.3	35.3	35.1	35.1	35.1	35.4	35.1	35.4	09 14	36.1	19 06	31.5	1.9	7
34.1	34.4	34.1	34.4	34.3	34.6	34.3	34.5	31.4	31.5	08 40	36.1	10 46	33.9	2.2	8‡
34.9	34.9	35.1	35.3	35.3	35.2	35.2	35.3	35.1	35.4	06 50	36.4	09 18	34.6	1.8	9
35.2	35.1	35.2	35.0	35.0	34.9	34.9	35.2	35.4	35.3	06 51	36.4	20 42	34.1	2.3	10
35.4	35.3	35.3	35.3	35.0	35.0	35.0	35.1	31.7	35.1	02 00	36.2	11 21	31.4	1.8	11
35.3	35.4	35.4	35.3	35.3	35.1	35.3	35.4	35.5	35.2	00 10	36.2	12 10	34.5	1.7	12
35.4	35.3	35.4	35.2	35.3	35.1	35.1	35.1	35.1	35.1	03 00	36.2	20 22	34.6	1.6	13
35.4	35.1	35.4	35.3	35.1	35.3	35.3	35.4	35.3	35.3	02 30	36.1	09 42	31.2	1.9	14
35.4	35.3	35.2	35.1	35.0	35.0	35.2	35.3	35.2	35.2	02 30	36.0	09 40	34.4	1.6	15
31.2	34.4	34.1	34.1	31.5	34.5	34.7	34.7	35.0	31.6	01 34	36.0	10 10	33.0	3.0	16‡
34.6	34.6	34.6	34.7	34.8	34.8	31.9	35.0	35.3	35.2	02 10	35.9	14 48	34.4	1.5	17
34.6	34.6	34.6	34.7	31.6	34.8	34.9	35.0	35.0	35.0	05 40	36.1	10 54	34.2	1.9	18
34.7	34.8	34.7	34.9	34.8	35.0	35.1	34.9	34.8	34.9	07 11	35.9	12 46	33.8	2.1	19
34.6	34.6	31.6	34.6	34.6	34.7	31.8	35.0	35.1	34.5	23 50	35.2	09 12	33.6	1.6	20
35.5	35.5	35.4	35.4	35.5	35.7	35.5	35.1	35.1	35.3	16 30	35.6	09 48	31.5	.9	21†
34.7	34.8	34.9	34.9	35.0	35.2	35.3	35.4	35.4	35.0	07 22	35.7	10 52	33.8	1.9	22†
35.4	35.4	35.5	35.5	35.5	35.5	35.5	35.6	35.7	35.4	06 06	36.3	10 06	34.3	2.0	23
34.3	34.6	34.6	34.3	34.5	34.5	34.4	34.3	34.3	34.5	00 02	35.5	12 56	33.0	2.5	24‡
35.5	35.5	35.5	35.5	34.4	34.3	35.3	35.4	35.5	35.3	04 42	36.3	19 22	34.1	2.1	25
35.5	35.1	35.0	31.9	34.6	34.6	34.6	34.7	34.9	35.3	05 31	36.8	09 40	34.5	2.3	26
35.4	35.2	35.1	35.3	35.2	35.3	35.5	35.6	35.9	35.1	02 26	37.0	09 36	33.5	3.5	27‡
34.5	34.6	34.6	34.8	34.8	34.9	35.0	35.2	35.4	35.2	01 58	37.0	09 26	33.8	3.2	28
34.4	34.6	34.6	34.6	31.6	34.6	34.8	34.9	35.1	34.7	05 06	35.9	11 58	33.5	2.4	29
35.0	35.1	35.1	35.1	35.0	35.1	35.1	35.2	35.3	35.2					2.0	Mean
35.3	35.3	35.3	35.3	35.4	35.4	35.6	35.7	35.7							Mean†
34.7	34.8	34.7	34.7	34.7	34.8	34.8	34.8	34.9							Mean‡

* Loss of record. (Day omitted for means.)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 3

Hourly Values of Declination (Westerly), 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

March

2° plus tabular quantities

Date	Hours G. M. T.														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
1	35 3	35 5	35 5	35 5	35 5	35 5	35 5	35 4	35 1	34 1	34 1	34 4	34 6	34 6	34 6
2†	35 5	35 5	35 5	35 4	35 4	35 4	35 3	35 3	35 2	35 1	34 6	34 5	35 1	35 3	35 3
3	35 5	35 4	35 4	35 5	35 1	35 2	35 1	35 1	35 4	35 6	35 5	35 1	35 7	35 7	34 7
4‡	34 1	34 1	33 9	34 1	34 6	34 8	34 7	35 1	31 7	34 5	34 1	33 8	33 7	34 1	34 6
5‡	34 6	34 5	35 0	35 3	35 1	35 4	35 7	35 7	35 5	35 7	34 4	33 7	34 5	34 1	34 3
6‡	34 8	34 5	34 5	34 7	35 3	35 3	35 3	35 5	35 7	35 5	35 4	35 0	35 2	35 4	35 5
7‡	34 5	34 4	34 5	34 7	35 0	35 7	35 7	35 4	35 2	35 1	34 7	34 2	34 7	34 9	35 0
8	35 6	35 5	35 6	35 8	35 4	35 2	35 1	35 1	35 1	31 7	34 4	33 8	34 5	34 3	34 5
9	34 8	35 2	34 9	34 8	35 1	35 9	37 2	36 9	36 0	35 5	35 0	34 5	34 5	34 6	34 6
10	35 1	34 9	34 8	34 8	34 7	35 2	35 5	35 4	35 9	35 6	35 4	35 4	35 2	35 3	35 2
11	34 9	34 7	34 6	34 8	35 4	35 9	36 4	35 5	35 9	35 2	34 8	34 6	35 1	34 8	34 7
12	35 1	35 0	34 8	34 9	35 3	35 9	36 3	36 2	35 9	35 5	35 4	35 5	35 5	35 5	35 2
13	35 1	34 9	34 7	34 6	34 6	35 0	35 4	35 4	35 5	35 6	35 4	35 4	35 2	35 0	31 8
14†	34 7	34 6	34 6	34 6	34 7	35 0	35 4	35 7	35 5	35 3	34 6	31 5	34 6	31 7	35 1
15	35 0	34 8	34 6	34 4	34 5	34 8	35 4	34 7	35 5	35 4	35 2	34 8	34 8	35 2	35 1
16	34 8	34 9	34 7	34 8	35 4	35 7	35 9	35 7	35 2	35 0	34 6	34 5	34 6	34 8	35 1
17	35 5	35 4	35 1	34 7	34 6	34 5	34 4	35 0	35 1	35 0	34 6	34 2	34 6	34 3	34 6
18	34 9	34 8	34 6	34 8	35 1	35 5	35 9	36 1	35 9	35 7	35 2	34 8	35 1	35 0	35 2
19†	35 3	35 2	35 1	34 8	34 4	34 6	34 9	34 8	36 1	35 9	35 5	35 4	35 4	35 4	35 3
20†	35 4	35 3	35 0	34 8	34 9	35 4	35 9	36 1	36 1	35 8	35 6	35 3	35 5	35 4	35 3
21	35 4	35 3	35 0	34 7	34 8	35 4	35 9	36 0	35 8	35 1	34 6	34 5	34 7	34 8	35 1
22	35 2	35 3	34 6	34 7	34 6	34 8	35 5	35 7	35 5	34 9	34 9	34 8	35 1	35 1	35 1
23	34 7	34 6	34 5	34 4	34 5	35 1	35 5	36 0	35 7	35 5	35 4	35 2	35 2	35 1	35 4
24	35 1	35 2	35 1	34 7	34 5	34 5	34 6	34 8	35 2	34 8	34 7	34 3	34 5	34 6	34 3
25	34 7	34 6	34 5	34 2	34 4	34 7	35 0	35 3	35 7	35 2	34 6	34 5	34 3	34 5	34 6
26	34 8	34 7	34 5	34 5	35 0	35 3	35 8	36 1	36 0	35 6	35 4	35 3	35 3	35 1	35 3
27	35 2	35 1	34 7	34 5	34 5	31 5	34 9	35 4	35 3	35 0	34 9	34 5	31 4	34 4	34 5
28†	35 3	35 4	35 4	35 4	35 3	35 5	35 8	36 1	36 0	35 8	35 2	34 7	34 6	34 6	34 8
29	35 0	35 2	35 0	34 9	35 2	35 0	35 0	35 5	35 5	35 4	35 1	35 0	35 3	35 5	35 5
30	35 3	35 2	34 8	34 7	34 5	34 7	35 4	36 1	36 2	35 8	35 4	35 4	35 5	35 4	35 1
31‡	34 0	33 7	34 2	34 3	34 6	34 7	35 1	35 4	35 0	34 4	34 0	34 2	34 5	34 5	35 0
Mean	35 0	34 9	34 8	34 8	34 9	35 2	35 5	35 6	35 6	35 3	34 9	34 7	34 9	34 9	34 9
Mean†	35 2	35 2	35 0	35 0	34 9	35 2	35 5	35 6	35 8	35 6	35 1	34 9	35 0	35 1	35 2
Mean‡	34 4	34 2	34 4	34 6	34 9	35 2	35 3	35 4	35 2	35 0	34 5	34 2	34 5	34 6	34 9

* Loss of record. (Day omitted for means)

† Five international quiet days

‡ Five international disturbed days.

TABLE 3

Hourly Values of Declination (Westerly), 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

March

2° plus tabular quantities.

Hours G. M. T.									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Mag.	Time	Mag.		
									H. M.		H. M.				
34.8	34.7	34.9	35.0	34.9	35.0	35.1	35.1	35.4	35.0	02 05	35.7	09 40	33.7	2.0	1
35.3	35.3	35.3	35.3	35.3	35.3	35.3	35.4	35.4	35.3	06 00	35.9	10 26	34.4	1.5	2†
34.1	34.5	34.5	34.6	34.3	34.1	34.3	34.1	34.1	34.9	08 44	35.8	13 22	33.7	2.1	3
34.7	34.7	34.8	34.6	34.5	34.6	34.6	34.4	34.4	34.4	05 07	35.5	12 02	33.4	2.1	4‡
34.1	33.9	33.9	33.9	34.4	31.4	34.3	34.5	35.0	34.7	07 30	36.3	17 00	33.0	3.3	5‡
35.4	35.4	35.1	35.0	35.0	34.7	34.4	34.7	34.6	35.1	08 14	36.2	20 54	34.1	2.1	6‡
35.0	35.1	35.1	35.2	35.0	35.1	35.2	35.2	35.3	35.0	05 50	36.0	11 10	34.1	1.9	7‡
34.6	34.8	34.7	34.9	31.9	31.9	34.8	35.1	35.1	34.9	05 52	35.9	10 54	33.4	2.5	8
34.7	34.6	34.7	34.7	35.0	35.2	35.2	35.1	34.8	35.1	06 35	37.3	11 30	34.0	3.3	9
35.2	34.9	35.4	35.2	34.9	34.9	35.0	34.8	35.0	35.1	08 30	36.2	14 54	34.6	1.6	10
34.7	34.8	34.7	34.8	34.7	34.7	34.6	34.7	35.1	35.0	06 40	36.6	10 54	34.3	2.3	11
35.1	34.9	34.8	34.8	31.8	34.8	34.8	31.8	35.1	35.2	06 52	36.5	19 22	34.6	1.9	12
34.8	34.7	34.7	34.7	34.6	34.6	34.6	34.6	34.6	34.9	08 40	36.0	13 50	34.4	1.6	13
35.1	34.9	35.0	34.8	34.7	34.7	34.8	34.8	35.1	34.9	07 00	36.1	10 42	34.3	1.8	14†
35.2	35.2	34.7	34.6	34.6	34.6	34.8	35.1	35.0	31.9	06 42	36.2	03 22	34.0	2.2	15
35.1	34.6	34.8	35.1	35.1	35.1	35.1	35.2	35.5	35.1	05 54	36.5	10 42	34.3	2.2	16
34.6	34.6	35.1	34.9	34.8	34.8	35.0	35.0	35.1	34.8	08 36	35.6	11 10	33.9	1.7	17
35.1	34.8	35.1	35.2	35.2	35.2	35.3	35.3	35.4	35.2	08 34	36.2	10 46	34.5	1.7	18
34.8	34.7	34.8	34.8	34.9	34.9	34.8	35.0	35.4	35.1	08 30	36.3	09 06	34.1	2.2	19†
35.3	35.3	35.3	35.3	35.3	35.2	35.2	35.2	35.4	35.4	08 18	36.5	10 50	34.7	1.8	20‡
34.6	34.8	34.8	34.8	34.8	34.9	35.0	34.7	34.8	35.0	06 34	36.5	09 50	34.1	2.4	21
35.1	35.1	35.1	35.1	35.1	35.1	34.9	35.2	34.6	35.0	06 58	36.0	11 02	34.5	1.5	22
35.4	35.5	35.4	35.5	35.1	34.8	35.0	35.0	35.3	35.1	07 34	36.4	03 10	34.2	2.2	23
34.5	34.5	34.6	34.6	31.6	34.6	34.8	35.0	35.7	34.7	07 54	35.9	11 24	33.8	2.1	24
31.6	34.5	34.5	34.5	34.6	34.6	34.7	35.0	34.7	34.7	07 50	36.0	11 54	34.0	2.0	25
35.4	35.4	35.1	35.0	35.0	35.3	35.1	35.2	35.2	35.2	07 30	36.2	11 30	34.5	1.7	26
34.6	35.0	34.8	34.7	34.9	35.8	35.0	35.0	35.3	34.9	07 40	35.8	10 54	34.2	1.6	27
35.0	35.0	35.0	34.8	34.7	34.7	31.8	34.9	35.0	35.2	07 06	36.5	11 10	34.5	2.0	28†
35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.3	08 34	35.9	10 50	34.6	1.3	29
34.8	34.6	34.9	35.0	34.6	34.5	34.5	33.9	34.4	35.0	08 26	36.3	21 50	33.6	2.7	30
34.8	34.8	34.4	34.4	31.5	34.5	34.5	34.4	34.1	34.5	07 30	35.9	01 10	33.6	2.3	31‡
34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	35.0	35.0					2.1	Mean
35.2	35.0	35.1	35.0	35.0	35.0	35.0	35.1	35.3							Mean†
34.9	34.8	34.7	34.6	34.7	34.7	34.6	34.6	34.7							Mean‡

* Loss of record. (Day omitted for means.)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 4

Hourly Values of Declination (Westerly), 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

April

2° plus tabular quantities

Date	Hours G M T.														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
1	34 6	34 6	34 5	34 6	35 3	35 6	35 9	36 5	35 8	35 5	35 1	34 9	35 1	35 1	35 0
2†	34 4	34 7	34 3	34 4	34 5	34 8	34 3	34 3	31 6	34 3	34 4	35 2	35 7	35 4	35 5
3†	34 7	34 8	34 5	34 5	34 5	34 7	35 3	35 4	35 3	35 0	34 5	34 8	35 0	35 0	34 9
4	33 4	34 1	33 7	34 2	34 6	35 0	35 4	35 6	35 8	35 5	35 1	34 5	34 6	34 6	34 7
5	31 6	34 5	34 4	34 7	34 5	34 6	35 2	34 5	34 3	31 1	34 9	31 5	34 5	34 9	35 0
6	34 3	34 3	34 4	34 5	34 3	35 0	35 4	35 3	35 3	34 5	31 2	34 4	34 5	34 5	34 7
7	34 4	34 2	33 8	34 0	34 5	34 9	35 3	35 4	35 5	35 3	31 8	34 6	31 5	31 5	34 5
8	34 0	34 3	34 0	34 2	34 4	34 4	35 0	35 4	35 4	35 8	35 5	35 1	34 7	34 8	34 9
9	34 0	33 7	33 8	34 4	34 6	35 1	35 8	36 1	36 0	35 8	35 4	35 0	34 7	34 7	34 7
10	34 0	33 6	33 6	33 8	34 4	35 0	35 6	35 5	35 8	35 4	35 3	34 8	34 9	35 3	35 2
11	34 5	34 4	34 3	34 5	34 7	34 8	35 1	35 3	35 2	31 9	35 4	34 4	31 5	34 5	34 9
12†	34 5	34 4	34 4	34 6	34 5	35 0	35 3	35 3	35 2	34 7	34 5	34 4	34 4	34 8	35 3
13	35 0	34 8	34 7	34 9	35 2	35 2	35 5	36 0	36 2	36 0	35 8	35 4	35 1	35 0	35 3
14	35 3	35 0	34 7	34 8	34 5	34 5	35 1	35 4	35 3	35 0	34 4	34 3	34 5	35 0	35 3
15	35 2	34 8	34 6	35 0	35 2	35 4	35 5	35 7	35 4	34 4	34 5	34 4	34 4	34 5	34 7
16	34 9	34 9	34 8	34 9	35 1	35 2	35 4	35 6	35 4	35 4	35 3	35 4	35 2	35 1	35 0
17	34 8	34 7	34 6	34 9	35 1	35 3	35 6	36 0	36 1	36 1	35 7	35 4	35 0	34 6	34 6
18	35 0	34 8	34 6	34 6	34 9	35 0	35 6	36 1	35 8	35 3	35 1	35 2	35 6	35 7	35 7
19	35 0	34 8	34 6	34 7	34 7	35 3	35 8	36 2	35 7	35 3	34 8	34 6	34 5	34 8	34 9
20†	35 1	34 6	34 3	34 5	35 0	35 2	35 9	36 2	36 0	35 5	35 1	35 2	35 3	35 4	35 4
21†	34 9	34 5	34 2	34 4	35 3	35 5	35 8	36 3	36 0	35 6	35 0	34 8	36 0	35 7	34 5
22	34 0	33 9	33 8	34 1	34 7	35 1	35 4	35 5	35 1	35 4	35 0	34 8	34 9	34 9	34 9
23	34 6	34 5	34 4	34 0	34 6	35 3	35 7	35 9	35 7	35 9	35 0	34 9	34 8	34 9	34 9
24	34 7	34 4	34 3	34 6	34 8	34 9	35 8	36 0	36 1	35 8	35 6	35 5	35 0	35 0	35 1
25†	34 7	34 7	34 7	34 9	35 8	36 4	36 8	37 1	36 8	36 4	36 0	35 8	35 4	35 4	35 7
26†	35 5	35 3	35 1	35 6	35 7	36 3	36 8	36 6	36 2	35 7	35 4	35 2	35 0	35 0	35 5
27†	34 7	34 3	34 3	34 5	34 9	35 0	35 6	36 0	35 8	35 5	35 3	35 1	34 9	35 0	35 2
28	35 1	35 0	34 8	34 4	34 8	36 1	36 6	36 1	35 5	35 3	35 0	34 8	34 9	35 0	35 0
29†	34 6	34 3	33 7	34 2	34 8	35 4	36 5	36 8	36 0	35 7	35 7	35 6	35 5	35 7	35 7
30†	34 2	34 0	33 9	34 2	34 5	34 9	35 8	36 6	36 3	35 8	35 7	35 2	35 0	35 1	35 4
Mean . . .	34 6	34 5	34 3	34 5	34 8	35 2	35 6	35 8	35 7	35 4	35 1	34 9	34 9	35 0	35 1
Mean† . . .	34 9	34 6	34 6	34 8	35 2	35 6	35 3	36 2	36 0	35 6	35 3	35 1	35 0	35 1	35 4
Mean‡ . . .	34 6	34 4	34 1	34 3	34 7	35 1	35 5	35 9	35 6	35 3	35 1	35 1	35 4	35 4	35 2

* Loss of record (Day omitted for means.)

† Five international quiet days.

‡ Five international disturbed days

17
TABLE 4

Hourly Values of Declination (Westerly), 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

April

2° plus tabular quantities

Hours G M T									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Mag	Time	Mag		
										H M	'	H M.	'		
35 0	35 0	35.1	35 1	35 0	35 0	35 0	35 2	34 7	35 1	06 50	37 0	01 34	34 3	2 7	1
35 6	35 4	35 2	34 7	34 7	34 7	34 6	34 6	34 4	34.8	06 36	36 2	10 12	34 1	2 1	2†
34 9	35 0	31 6	34 5	34 5	34 6	34 3	34.2	33 7	34.7	06 32	36 3	23 52	32 9	3 4	3†
34 8	34.6	34 8	34 5	34 5	34 4	34 4	34 1	34 5	34 6	06 50	36 1	00 06	33 1	3 0	4
34.8	34 6	34 7	34 6	34 5	34 5	34 4	34 6	34 5	34 6	07 06	35 3	08 02	34.0	1.8	5
34.8	34 9	31 7	34 5	34 6	34 9	34 5	31 5	34 5	34.6	19 50	36 1	00 08	33.8	2 3	6
34 5	34 5	34 5	34 5	34 4	34 5	34 6	34 6	34 5	34 6	08 40	35 8	01 42	33.6	2 2	7
34 9	34 7	34 7	34 7	34 6	34 5	34 5	31 4	34 4	34 7	09 06	36 0	00 02	33 6	2 4	8
34 7	34 7	34 6	34.6	34 5	31 5	34 5	31 6	34 5	34 8	07 22	36 4	00 42	33 5	2 9	9
35 2	35.1	35 0	34 9	34 9	34 8	34 7	34 7	34 6	34 8	07 50	36 2	01 06	33 4	2 8	10
35.1	34 9	34 9	35 0	35.0	34 9	34 8	34 7	34.6	34 8	06 34	35 9	12 54	34 2	1 7	11
35 4	35 4	35 3	35 3	35 2	35 1	31 9	34 9	35 0	34 9	06 50	35 7	10 10	34.2	1 5	12†
35.4	35 4	35 4	35 4	35 3	35.2	35 0	31 9	35.0	35 3	08 10	36 3	12 50	34 5	1 8	13
35.3	35.0	34 7	35 1	35 0	35 0	35 2	35 1	35.3	34 9	08 26	36.6	11 30	33 7	2.9	14
35.0	35 1	35.1	35 3	35 2	35 3	35 1	35 3	34 8	35 0	07 02	36 2	09 50	34 1	2.1	15
35.1	35 1	34 0	34 9	34 9	34 8	34 7	34 7	34 7	35 1	06 54	36 1	13 06	34 5	1.6	16
34.6	34 5	34 5	35 5	34.5	34 5	34.5	34 6	34 9	35 0	07 56	36 5	11 42	34.3	2 2	17
35.7	35.7	35.3	35.2	35 1	35 2	35 0	31 9	35 1	35 3	07 02	36 4	02 24	34 3	2 1	18
35 0	35 2	35.2	35 0	34 8	34 7	34 7	34 7	35 0	35 0	07 00	36 5	02 18	34 3	2 2	19
35.4	35.4	35.3	35.3	35.2	35 0	35 0	35 0	35 1	35 2	06 40	36 4	02 50	34.1	2 3	20†
34.3	34 4	34 6	34 3	34.2	33 7	33 9	31 1	34 3	34 8	07 20	36.4	14 00	33 4	3.0	21†
35.0	35 1	34.9	34 9	34.9	34 8	34.7	34.7	34.8	34 8	07 02	35.8	02 42	33 3	2.5	22
35.0	35 0	34 8	34 9	34.8	35.0	34 8	34 8	34 8	35 0	07 40	36 1	02 34	33 8	2.3	23
35.0	34 9	34 8	34.8	34 9	34 9	35 0	35.1	34 8	35 1	07 30	36.7	02 42	34.1	2 6	24
35.6	35 5	35 5	35.4	35 4	35 4	35 2	35 1	35 4	35 7	06 54	37 3	00 30	34.0	3.3	25†
35 6	35 1	35.0	34 8	34.7	34 8	34 8	34 8	34 8	35 4	06 46	37.0	19 02	34 5	2.5	26†
35.3	35 3	35 3	35 2	35 1	35 0	34 9	34 9	35 1	35 1	07 10	36.4	01 30	34 1	2.3	27†
35.0	35.0	34 9	34 9	34.8	34 7	34 3	34 1	34 9	35 0	06 58	37 0	23 00	33 6	3 4	28
35.7	35 5	34 9	34 8	34 6	35 1	34 8	34 6	34 5	35 2	07 26	37 2	01 50	31.9	5 3	29†
35.3	35 4	35.3	35 1	34 9	35 0	34 7	34 5	34 1	35 0	06 58	37 0	01 30	33 3	3 7	30†
35.1	35 0	35 0	34 9	34.8	34 8	34 7	34 7	34 7	35 0					2.6	Mean
35.5	35 3	35.3	35 2	35 1	35 1	35 0	34 9	35 1							Mean†
35.2	35 1	34 9	34 7	34 6	34 6	34.5	34 4	34 2							Mean‡

* Loss of record. (Day omitted for means.)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 5

Hourly Values of Declination (Westerly), 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

May

2° plus tabular quantities

Date	Hours G M T.														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1†	34.6	34.4	33.9	34.3	34.9	35.0	35.4	35.9	35.3	34.7	34.6	34.6	34.6	34.9	35.1
2†	33.9	33.8	33.8	34.0	34.5	34.8	35.2	35.7	35.6	35.4	35.3	34.9	34.7	35.0	35.0
3‡	33.9	33.9	33.9	34.2	34.9	35.0	35.7	36.1	35.7	35.3	35.1	34.9	35.2	35.2	35.3
4	33.4	33.9	33.8	34.0	34.7	35.4	36.0	35.9	35.7	35.4	35.2	34.8	35.2	35.2	35.2
5	33.4	33.1	33.9	34.4	35.0	35.7	36.0	36.2	35.7	35.4	34.8	34.5	34.7	34.7	35.2
6	34.9	34.6	34.4	34.7	35.0	35.7	36.1	36.0	35.7	34.9	34.5	34.4	34.4	34.9	35.2
7‡	34.6	34.5	34.4	34.9	35.3	35.6	35.9	36.1	35.6	35.2	34.7	35.0	35.3	35.0	35.0
8	34.3	33.9	33.8	34.0	34.9	35.6	35.9	36.0	35.8	35.4	35.3	35.3	35.3	35.3	35.3
9†	34.3	34.1	34.0	34.3	34.9	35.5	35.9	36.0	35.8	35.6	35.2	35.1	35.0	35.0	34.9
10†	34.4	34.2	33.9	34.0	34.7	35.2	35.6	36.0	35.8	35.6	35.2	34.8	34.8	35.1	35.2
11	35.0	34.8	34.3	34.3	34.7	35.1	35.6	36.3	36.5	35.9	35.3	35.2	35.2	35.2	35.4
12	34.9	34.7	34.4	34.3	34.3	35.0	35.5	35.8	35.6	35.6	35.6	35.3	35.2	35.2	35.3
13	35.0	34.7	34.4	34.3	34.3	34.8	35.4	35.8	36.0	35.6	35.5	35.3	35.1	34.7	34.9
14	35.0	34.8	34.8	34.5	34.6	35.6	36.0	36.3	36.2	35.8	35.5	35.2	34.6	34.7	34.9
15†	34.8	34.3	34.1	34.2	34.8	35.4	36.0	36.3	36.2	36.0	35.6	35.2	35.1	35.0	35.0
16†	34.8	34.4	34.3	34.8	35.2	35.9	36.1	36.1	36.0	35.9	35.8	35.4	35.2	35.2	35.1
17	34.9	34.5	34.3	34.5	34.8	35.5	35.9	36.1	36.0	36.0	35.8	35.3	35.2	35.2	35.2
18	34.9	34.7	34.4	34.4	34.7	35.4	35.9	36.1	35.9	36.0	35.8	35.3	35.2	35.2	35.2
19	34.9	34.3	34.2	34.2	34.2	34.7	35.0	35.1	34.9	34.4	34.2	34.2	34.3	34.4	34.9
20	34.7	34.4	34.2	34.3	34.7	35.4	36.0	36.4	36.3	35.7	35.2	34.8	34.7	35.0	34.9
21	34.7	34.2	34.2	34.4	35.2	35.9	36.1	36.2	35.7	35.2	34.8	34.8	35.1	35.1	35.2
22†	34.9	34.3	34.3	34.9	35.6	36.3	36.7	37.0	36.6	36.1	35.6	35.2	35.2	35.6	35.8
23	35.1	34.8	34.7	34.8	35.2	34.9	35.2	35.2	34.9	35.5	35.2	35.1	35.2	35.3	35.4
24	35.0	34.8	34.4	34.4	34.8	36.0	36.6	37.1	37.4	37.0	36.7	36.2	35.6	35.4	35.7
25	35.2	34.7	34.3	34.3	34.7	35.2	35.8	36.7	36.6	36.4	36.2	36.1	36.0	35.3	35.3
26	34.9	34.7	34.4	34.3	34.9	35.6	36.1	36.7	36.9	37.0	36.5	36.1	35.7	36.0	36.0
27‡	34.2	33.4	33.0	33.3	34.7	34.8	36.2	36.8	36.5	36.0	35.4	35.3	35.2	35.2	35.2
28	34.3	34.3	34.3	34.5	34.9	36.0	36.3	36.9	36.7	36.5	36.1	35.8	35.2	35.4	35.6
29	34.3	34.2	34.0	33.6	33.8	35.0	35.8	36.3	36.7	36.5	36.2	35.9	35.6	35.2	34.4
30	34.6	34.3	34.0	33.7	34.2	34.8	35.7	36.2	36.2	36.2	35.5	35.3	35.2	35.2	35.2
31	34.5	33.8	33.7	33.8	34.6	34.9	35.8	36.0	35.8	35.4	35.2	35.1	35.2	35.2	35.2
Mean	34.6	34.3	34.1	34.3	34.8	35.3	35.9	36.2	36.0	35.7	35.4	35.2	35.1	35.1	35.2
Mean†	34.6	34.3	34.1	34.4	35.0	35.7	36.1	36.4	36.1	35.8	35.5	35.1	35.1	35.2	35.2
Mean‡	34.4	34.0	33.8	34.1	34.9	35.0	35.7	36.1	35.7	35.3	35.0	34.9	35.0	35.1	35.1

* Loss of record. (Day omitted for means.)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 5

Hourly Values of Declination (Westerly), 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

May

2° plus tabular quantities

Hours G M T									Mean	Maximum		Minimum		Range	Date	
15	16	17	18	19	20	21	22	23		Time	Mag	Time	Mag			
									H. M.		H. M.					
35 3	35 1	35 0	34 8	34 7	34 6	31 5	34 4	34 2	34 8	07 24	36 1	01 50	33 7	2 4	1†	
35 1	34 9	34 9	34 7	34 8	31 5	34 5	34 5	34 3	34 7	07 54	36 2	01 50	33 5	2 7	2‡	
35 1	34 9	34 7	34 6	34 5	34 4	34 3	34 2	33 2	34 8	07 02	36 9	22 58	32 9	4 0	3‡	
35 2	35 3	35 3	35 1	35 0	34 7	34 4	34 1	33 6	34 9	06 18	36 7	00 26	33 3	3 4	4	
35 3	35 2	35 2	35 2	35 0	34 9	34 8	34 7	34 7	34 9	06 58	36 4	01 10	32 6	3 8	5	
35 2	35 2	35 1	35 0	34 9	35 1	35 0	35 0	34 5	35 0	07 14	36 4	01 34	34 2	2 2	6	
34 7	35 2	35 0	34 7	34 5	34 1	33 8	33 6	34 8	34 9	06 54	37 2	22 10	33 4	3 8	7‡	
35 3	35 3	35 2	35 1	34 7	34 5	34 3	34 7	34 5	34 9	05 58	36 3	02 12	33 5	2 8	8	
35 0	35 0	34 9	34 7	34 6	34 5	31 4	34 3	34 5	31 9	06 54	36 2	01 34	33 8	2 4	9†	
35 2	35 2	35 1	35 1	35 1	35 0	34 9	34 9	35 2	35 0	07 26	36 2	02 14	33 6	2 6	10†	
35 6	35 6	35 5	35 3	35 2	35 1	35 1	35 2	35 1	35 3	07 38	36 8	01 34	34 2	2 6	11	
35 2	35 2	35 2	35 2	35 2	35 2	35 3	35 3	35 1	35 1	07 38	35 9	02 10	34 1	1 8	12	
34 9	34 9	34 9	34 9	35 0	35 1	35 2	35 2	35 1	35 0	08 10	36 1	03 50	34 0	2 1	13	
35 1	35 1	35 0	34 9	34 8	34 8	34 8	34 8	35 0	35 2	07 18	36 5	02 28	34 3	2 2	14	
35 0	35 1	35 0	35 1	35 1	35 1	35 1	35 2	35 2	35 2	07 22	36 5	02 10	33 6	2 9	15†	
35 1	35 1	35 1	35 1	35 0	34 9	34 8	34 8	35 1	35 3	06 38	36 8	01 50	34 1	2 7	16†	
35 3	35 0	35 2	35 2	35 3	35 1	35 3	35 2	35 1	35 3	07 36	36 4	01 26	34 1	2 3	17	
35 3	35 0	35 2	35 2	34 9	34 8	34 9	35 0	35 1	35 2	06 32	36 3	01 38	34 2	2 1	18	
35 1	34 7	34 8	34 9	35 1	35 1	35 1	35 2	34 8	34 7	21 10	35 4	10 38	33 6	1 8	19	
35 0	35 1	35 1	35 1	35 1	35 1	35 1	35 1	35 0	35 1	07 28	36 6	02 22	33 9	2 7	20	
35 2	35 2	35 2	35 2	35 1	35 1	35 1	35 2	35 1	35 1	07 02	36 4	01 10	34 1	2 3	21	
35 8	35 8	35 8	35 9	35 7	35 6	35 5	35 3	35 3	35 6	07 10	37 2	01 26	34 2	3 0	22†	
35 3	35 2	35 1	35 1	35 1	35 0	34 9	34 8	35 0	35 1	07 18	36 4	01 42	34 4	2 0	23	
36 1	36 0	35 9	35 8	35 6	35 3	35 3	35 3	35 3	35 7	07 42	37 5	01 58	34 2	3 3	24	
35 5	35 4	35 3	35 2	35 2	35 1	35 1	35 0	34 9	35 4	07 46	37 1	02 22	34 1	3 0	25	
36 1	35 8	35 5	35 6	35 2	34 9	34 4	34 5	34 3	35 5	08 46	37 2	02 22	34 2	3 0	26	
35 3	35 4	35 3	35 2	35 1	34 9	34 7	34 6	34 7	35 0	06 58	37 0	02 22	32 5	4 5	27†	
35 4	35 4	35 2	35 1	34 9	34 7	34 8	34 4	34 3	35 3	07 02	37 2	23 02	34 1	3 1	28	
34 4	35 4	35 2	35 2	35 2	35 2	35 2	35 2	35 1	34 8	35 1	08 02	37 4	03 00	33 0	4 4	29
35 2	35 2	35 3	35 2	35 1	35 1	35 1	35 0	34 7	35 1	07 50	36 9	02 22	32 5	4 4	30	
35 2	35 2	35 2	35 2	35 1	34 8	34 6	34 5	34 2	34 9	07 30	36 1	02 28	33 4	2 7	31	
35 2	35 2	35 2	35 1	35 0	34 9	34 9	34 8	34 7	35 1					2 9	Mean	
35 2	35 2	35 1	35 2	35 1	35 0	34 9	34 9	35 1							Mean†	
35 1	35 1	35 0	34 8	34 7	34 5	34 4	34 3	34 2							Mean‡	

* Loss of record (Day omitted for means)

| Five international quiet days.

‡ Five international disturbed days.

TABLE 6

Hourly Values of Declination (Westerly), 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

June

2° plus tabular quantities

Date	Hours G. M. T.														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14

1	34 3	34 0	33 8	33 9	34 1	34 6	36 0	36 0	35 8	35 3	35 2	35 2	35 2	35 2	35 2
2	34 2	33 8	33 5	33 8	34 4	34 7	35 8	36 7	36 5	36 1	36 0	35 9	35 6	35 3	35 3
3	34 3	34 0	33 8	34 2	33 6	33 7	34 3	33 8	35 8	35 9	35 8	35 5	35 2	35 1	35 2
4	34 3	34 6	34 7	35 2	36 3	36 8	36 6	36 2	35 9	36 3	35 4	35 4	35 4	35 6	35 6
5	34 6	34 1	33 8	33 8	34 3	34 9	34 6	36 2	36 2	36 2	36 1	36 0	35 9	35 8	35 9
6†	34 8	34 4	34 3	34 5	35 1	35 8	36 6	36 9	36 8	36 5	36 4	36 0	35 8	34 6	35 6
7†	34 7	34 4	34 3	34 8	35 2	35 6	36 6	36 8	36 7	36 3	36 0	35 8	35 6	35 8	36 0
8	34 8	34 2	33 7	33 8	34 8	35 9	36 4	36 9	36 7	36 5	35 5	34 8	34 7	35 2	35 6
9‡	35 0	34 8	34 3	34 4	34 7	35 3	35 9	36 4	36 4	36 2	36 1	36 0	36 0	35 9	35 6
10	34 5	34 1	33 8	34 0	34 3	35 1	36 1	36 8	36 8	36 4	36 0	35 6	35 2	35 2	35 6
11	35 1	34 8	34 4	34 8	35 1	35 2	36 0	36 3	36 5	36 6	36 2	35 7	35 6	35 3	35 5
12	34 8	34 3	34 3	34 5	35 2	36 0	36 1	36 4	36 1	36 1	35 6	35 4	35 3	35 2	35 2
13†	35 1	34 9	34 6	34 9	35 1	35 8	36 3	36 6	36 8	36 7	36 4	35 9	35 3	35 3	35 2
14‡	35 0	34 7	34 2	34 3	35 2	36 0	36 5	36 9	36 8	36 6	36 0	35 6	35 4	35 3	35 9
15	35 6	35 2	34 8	34 7	34 3	34 8	35 4	35 4	35 7	35 8	35 5	35 3	35 2	35 2	35 2
16	34 8	34 4	34 3	34 7	35 2	35 5	36 1	36 4	36 8	36 8	36 5	36 3	35 6	36 0	35 9
17	35 0	34 7	34 3	34 6	34 8	35 5	36 0	36 1	36 2	36 0	35 8	35 6	36 0	35 6	35 4
18	35 0	34 8	34 3	34 8	35 6	36 1	36 5	36 3	36 9	36 7	36 2	35 9	36 0	35 6	35 5
19	35 1	34 8	34 3	34 3	34 5	34 7	34 8	35 4	35 6	35 7	35 6	35 6	35 3	35 4	35 7
20†	34 9	34 5	34 3	34 4	35 0	35 5	36 1	36 2	35 9	35 6	35 2	35 2	35 3	35 3	35 6
21†	34 5	34 7	34 2	34 5	34 8	34 9	35 2	35 8	36 3	36 2	36 1	36 0	35 9	35 8	35 8
22	34 6	34 3	33 3	34 8	35 5	36 2	36 7	37 2	36 9	36 1	36 1	36 0	36 1	35 9	35 8
23‡	34 1	34 6	33 5	33 8	34 7	35 2	36 0	36 5	36 6	36 0	36 0	35 6	35 3	35 2	35 6
24‡	34 6	34 8	34 2	33 8	34 9	35 4	36 0	36 7	36 7	36 2	35 6	35 3	35 0	34 7	34 4
25	35 2	34 9	34 7	34 8	34 8	35 6	36 1	36 4	36 4	36 2	35 9	35 9	35 8	35 3	35 1
26	34 8	34 4	34 2	34 5	34 7	35 2	35 6	36 1	35 9	36 3	36 1	35 6	35 2	35 2	35 2
27	34 8	34 3	34 1	34 3	35 1	35 6	36 2	36 9	36 7	36 4	36 1	35 6	35 2	35 3	35 6
28	34 4	34 3	34 2	34 5	35 6	36 1	36 6	37 0	37 1	36 6	36 0	35 7	35 2	35 3	35 5
29	34 9	34 0	33 5	33 6	34 3	35 4	36 0	36 2	36 3	36 1	35 6	35 5	35 6	35 8	35 9
30‡	34 3	34 3	33 5	33 3	32 8	33 3	33 8	34 2	34 6	34 4	34 3	34 3	34 4	34 9	35 2
Mean	34 7	34 5	34 1	34 3	34 8	35 3	35 9	36 3	36 3	36 2	35 8	35 6	35 4	35 4	35 5
Mean†	34 8	34 6	34 3	34 6	35 0	35 5	36 2	36 5	36 5	36 3	36 0	35 8	35 6	35 4	35 6
Mean‡	34 6	34 6	33 7	33 9	34 5	35 0	35 6	36 2	36 2	35 9	35 6	35 4	35 2	35 2	35 3

* Loss of record (Day omitted for means.)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 6

Hourly Values of Declination (Westerly), 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

June

2° plus tabular quantities

Hours G. M. T									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Mag.	Time	Mag.		
									H	M	H. M.				
35 2	35 2	35 2	35 1	35 1	35 0	34 9	34 9	34 6	35 0	07 42	36 6	02 26	33 5	3 1	1
35 3	35 2	35 2	35 2	35 0	34 8	34 8	34 8	34 4	35 1	07 26	36 9	07 14	34 0	2 9	2
35 2	35 1	35 1	35 0	34 7	34 6	34 6	34 5	34 3	34 7	08 02	36 0	01 32	33 5	2 5	3
35 6	35 6	35 5	35 3	35 3	35 2	35 2	35 2	34 7	35 5	05 38	36 9	02 22	34 0	2 9	4
35 9	35 6	35 6	35 5	35 3	35 3	35 2	35 1	35 1	35 3	07 10	36 3	01 10	33 6	2 7	5
35 6	35 6	35 4	35 3	35 2	35 2	35 2	35 1	35 1	35 5	07 22	37 1	01 50	34 1	3 0	6†
36 1	36 1	36 0	35 8	35 3	35 2	35 2	35 2	35 1	35 6	06 54	37 1	01 46	34 2	2 9	7†
36 0	36 1	36 1	35 6	35 6	35 4	35 3	35 1	35 1	35 1	07 10	37 1	02 32	33 4	3 7	8
35 3	35 5	35 6	35 6	35 5	35 2	35 2	35 1	31 8	35 4	06 52	36 8	02 26	34 2	2 6	9‡
35 6	35 6	35 6	35 6	35 5	35 4	35 4	35 2	35 2	35 4	07 22	37 1	02 26	33 7	3 4	10
35 4	35 3	35 3	35 3	35 2	35 2	34 9	34 9	34 7	35 4	08 10	36 9	01 54	34 2	2 7	11
35 3	35 5	35 4	35 3	35 2	35 2	35 0	35 0	35 2	35 3	07 46	36 8	00 42	34 1	2 7	12
35 2	35 4	35 3	35 2	35 2	35 2	35 2	35 2	35 2	35 5	07 42	37 0	02 02	34 4	2 6	13†
36 1	36 0	35 8	35 9	35 6	35 6	35 6	35 9	35 9	35 7	07 34	37 0	03 02	33 6	3 4	14‡
35 2	35 2	35 2	35 2	35 2	35 2	35 2	34 8	35 0	35 2	08 26	36 1	02 22	34 6	1 5	15
35 3	35 6	35 5	35 4	35 3	35 3	35 2	35 2	35 2	35 6	08 06	37 1	01 14	34 2	2 9	16
35 5	35 5	35 6	35 6	35 5	35 3	35 3	35 3	35 2	35 4	08 14	37 3	02 20	34 1	3 2	17
35 8	35 6	35 5	35 4	35 4	35 3	35 2	35 2	35 2	35 6	03 34	37 1	01 31	34 2	3 9	18
35 7	35 6	35 4	35 3	35 2	35 2	35 2	35 2	35 2	35 2	09 02	36 0	02 10	34 2	1 8	19
35 6	35 6	35 4	35 2	35 2	35 2	35 0	34 9	34 9	35 2	07 34	36 4	01 36	34 2	2 2	20†
35 8	35 8	35 8	35 7	35 5	35 3	35 2	35 1	35 0	35 4	07 58	36 5	02 20	34 1	2 4	21†
35 8	35 7	35 6	35 6	35 3	34 8	34 7	34 4	34 3	35 5	07 18	37 3	01 52	33 1	3 2	22
35 6	35 6	35 8	35 5	35 4	35 3	35 2	35 2	34 5	35 3	07 08	37 2	01 56	33 4	3 8	23‡
34 3	34 6	34 8	35 1	35 2	35 2	35 1	35 0	35 1	35 1	07 32	37 0	01 52	33 1	3 9	24‡
35 1	35 6	35 6	35 5	35 3	35 2	35 2	35 2	34 9	35 4	07 34	36 8	01 34	34 5	2 3	25
35 2	35 2	35 2	35 2	35 1	35 0	35 0	34 9	34 9	35 2	08 02	36 8	03 10	33 4	3 4	26
35 6	35 5	35 2	35 2	35 1	35 1	35 2	34 8	34 9	35 4	07 24	37 1	02 22	33 9	3 2	27
35 6	35 6	35 6	35 3	35 2	35 2	35 2	35 2	35 2	35 5	07 46	37 4	01 46	34 1	3 3	28
35 9	35 8	35 8	35 7	35 5	35 4	35 6	35 7	35 3	35 3	07 02	36 5	02 12	33 3	3 2	29
35 2	35 0	34 9	35 1	34 6	34 6	34 5	34 4	34 6	34 4	13 52	35 4	03 26	32 3	3 1	30‡
35 5	35 5	35 5	35 4	35 3	35 2	35 1	35 0	34 9	35 3					2 9	Mean
35 7	35 2	35 6	35 4	35 3	35 2	35 2	35 1	35 1							Mean†
35 3	35 3	35 4	35 4	35 3	35 2	35 1	35 1	35 0							Mean‡

* Loss of record (Day omitted for means)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 7

Hourly Values of Horizontal Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

January

39,000Y plus tabular quantities

Date	Hours G M T														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1	309	314	328	345	370	384	388	384	361	339	328	314	321	322	322
2	321	322	330	346	350	381	395	402	391	376	353	346	310	338	336
3	338	345	352	374	391	407	416	408	384	363	353	347	342	343	330
4	338	328	326	330	354	391	422	417	391	362	345	335	337	330	322
5†	356	348	352	354	306	328	343	322	321	273	271	274	281	288	282
6	321	319	321	336	347	340	346	338	340	346	338	337	325	323	324
7	322	326	324	329	345	368	374	379	380	377	365	356	348	301	291
8	330	328	346	360	365	389	394	394	394	392	369	353	338	326	329
9	335	336	350	362	383	417	404	426	441	405	378	361	349	345	345
10	336	345	359	355	353	360	341	374	345	365	363	354	331	323	317
11	318	333	331	353	353	353	371	376	378	377	347	347	353	331	309
12	326	352	364	369	383	404	405	384	362	351	351	338	337	325	330
13‡	340	347	350	362	370	377	385	385	352	338	315	304	307	315	298
14‡	335	335	336	339	354	381	400	373	355	343	330	322	323	328	333
15	324	322	337	346	364	379	385	378	395	351	346	340	337	337	331
16	312	319	328	335	336	351	369	378	361	349	337	330	329	337	331
17	338	337	330	330	346	367	390	418	432	413	379	353	344	345	346
18†	343	346	354	370	386	404	408	410	399	387	377	369	359	353	352
19†	351	347	346	358	383	403	410	424	426	410	386	370	362	359	355
20†	354	359	362	368	380	392	403	407	399	391	384	377	373	371	355
21†	352	352	353	355	362	373	405	433	440	424	402	394	376	369	362
22	352	351	347	355	370	385	401	418	416	397	383	370	372	362	362
23	349	345	340	353	378	402	433	436	405	391	367	355	355	351	336
24	343	340	344	349	358	376	390	386	392	386	378	364	360	346	337
25	347	347	348	371	394	418	432	424	410	394	375	367	351	333	319
26†	357	361	370	377	389	402	398	384	383	368	375	378	375	377	383
27†	394	399	407	416	431	440	458	457	446	418	362	365	340	298	265
28	330	336	347	360	356	378	396	386	373	346	345	344	310	337	333
29‡	339	340	355	377	401	414	423	417	385	354	328	316	316	312	316
30	316	319	337	336	361	367	370	362	350	345	332	327	330	333	332
31	343	346	359	380	410	436	456	462	456	434	402	378	368	354	336
Mean . . .	338	340	346	356	369	386	397	398	389	373	357	348	342	336	330
Mean†	351	353	357	366	380	395	405	412	409	396	385	378	369	366	361
Mean‡	353	354	360	370	372	380	402	391	372	345	321	316	311	308	299

* Loss of record (Day omitted for means)

† Five international quiet days

‡ Five international disturbed days.

TABLE 7

Hourly Values of Horizontal Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

January

39,000 \bar{r} plus tabular quantities

Hours G M T.									Mean	Maximum		Minimum		Range	Date		
15	16	17	18	19	20	21	22	23		Time	Mag	Time	Mag				
\bar{r}	\bar{r}	\bar{r}	\bar{r}	\bar{r}	\bar{r}	\bar{r}	\bar{r}	\bar{r}	\bar{r}	H	M	\bar{r}	H	M	\bar{r}	\bar{r}	
328	330	322	327	328	330	327	321	321	336	06	20	401	00	42	308	93	1
340	328	330	332	336	330	332	330	337	347	06	50	408	00	02	320	88	2
332	336	337	346	351	348	332	333	341	356	05	46	417	20	56	324	93	3
321	312	307	321	332	335	359	358	351	347	06	10	434	17	06	306	128	4
284	288	311	310	305	306	318	329	322	311	03	10	379	09	38	270	109	5†
314	306	301	313	297	307	314	320	321	325	03	52	360	16	04	286	74	6
289	306	327	314	305	313	322	332	330	334	07	30	386	15	10	282	104	7
321	316	326	322	321	323	329	330	330	347	07	08	403	18	30	320	83	8
335	330	327	313	329	330	332	336	329	358	07	38	453	18	22	312	141	9
315	313	323	307	307	316	322	327	323	336	04	48	403	18	06	300	103	10
322	309	322	316	316	320	323	331	325	338	07	02	387	13	24	306	81	11
306	306	332	323	329	319	326	322	338	345	05	26	424	15	14	298	126	12
307	293	309	311	307	334	334	322	329	333	05	04	395	14	10	290	105	13†
328	314	311	321	322	322	337	333	326	338	05	56	418	17	40	306	112	14‡
298	274	287	305	301	298	304	311	312	332	05	20	398	16	30	265	133	15
333	326	334	337	333	336	337	335	329	338	06	08	386	00	04	311	75	16
345	341	340	343	346	341	345	338	340	356	07	08	438	01	22	329	109	17
352	351	347	347	353	353	354	353	351	366	06	34	418	00	30	342	76	18†
359	355	349	344	353	361	351	353	353	370	07	42	433	17	38	343	90	19†
358	354	351	346	356	356	352	355	355	369	07	08	413	17	54	345	68	20†
353	347	351	350	346	352	353	348	348	371	07	50	442	19	44	345	97	21†
359	360	360	357	357	352	351	340	337	367	07	30	424	22	58	336	88	22
314	322	320	320	310	312	314	324	338	353	06	52	452	19	06	308	144	23
324	328	328	338	339	344	345	346	351	354	07	06	399	16	32	321	78	24
329	340	346	349	344	346	355	354	354	361	05	42	441	14	10	313	128	25
383	377	374	377	377	377	386	385	389	379	05	18	410	00	02	356	54	26†
218	271	264	270	293	298	309	312	322	352	07	35	481	15	06	213	271	27†
338	324	334	344	333	335	336	311	340	347	05	58	404	10	37	321	83	28
328	306	291	284	282	273	305	297	307	336	06	24	433	13	38	261	172	29†
333	331	329	329	340	338	338	344	344	339	06	32	378	00	20	314	64	30†
330	336	331	348	349	346	346	343	344	375	07	18	476	14	44	322	154	31
326	324	327	328	329	331	335	336	337	349							107	Mean
361	357	354	353	357	360	360	359	359									Mean†
293	294	297	279	302	307	321	319	321									Mean‡

* Loss of record. (Day omitted for means.)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 8

Hourly Values of Horizontal Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

February

39,000 γ plus tabular quantities

Date	Hours G. M. T.														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	352	356	360	384	412	437	451	436	413	380	357	313	299	348	345
2	353	358	366	369	389	397	405	407	404	399	389	377	375	369	358
3†	367	366	363	365	374	396	417	423	421	406	395	389	385	375	380
4†	382	381	384	393	407	429	444	443	433	420	419	409	393	369	387
5†	389	384	382	394	413	429	449	453	443	430	429	423	409	400	398
6‡	415	416	422	421	423	444	426	426	436	441	421	407	359	401	365
7	344	349	355	368	381	381	387	355	340	340	332	338	366	351	354
8‡	357	354	357	363	365	363	370	359	359	337	356	359	367	367	357
9	342	358	381	373	375	374	366	358	353	357	354	363	366	366	357
10	365	367	382	396	404	407	393	385	351	353	355	375	373	366	358
11	368	352	362	381	401	418	414	376	350	327	325	322	342	318	353
12	366	375	389	400	429	421	400	381	372	373	378	361	343	313	350
13	366	402	385	407	416	436	426	407	375	353	349	357	365	356	353
14	368	371	383	403	430	439	442	430	404	378	367	382	382	376	374
15	374	376	383	409	437	451	437	406	383	366	366	384	401	391	384
16‡	385	394	409	432	448	480	456	438	377	301	263	272	314	312	293
17	365	360	376	393	404	418	430	426	414	394	380	381	378	386	379
18	383	377	389	409	422	440	460	459	449	434	416	398	384	384	384
19	374	376	382	384	408	432	437	454	430	416	406	399	381	368	376
20	381	382	396	417	445	438	429	422	412	409	404	398	386	378	384
21†	397	398	400	416	430	439	432	416	411	403	413	420	420	406	406
22†	408	414	420	428	446	452	460	458	438	417	408	412	416	410	406
23	399	402	414	426	448	468	462	443	415	406	407	416	415	414	413
24‡	385	399	373	321	295	318	359	376	381	369	321	305	285	294	288
25	346	351	366	385	406	413	401	378	345	342	351	368	373	342	354
26	372	376	406	438	455	474	464	415	378	352	345	366	386	392	378
27‡	377	376	394	426	472	446	405	391	307	303	320	341	402	366	361
28	368	366	397	425	426	447	*	403	398	359	366	365	368	366	342
29	382	384	392	416	438	465	449	438	419	410	398	390	377	360	371
Mean	374	377	385	397	413	425	424	413	393	379	372	372	373	370	367
Mean†	389	389	390	399	411	429	440	439	429	415	413	411	405	396	395
Mean‡	384	368	391	393	401	410	403	398	372	350	336	357	345	348	333

* Loss of record (Day omitted for means)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 8

Hourly Values of Horizontal Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

February

39,0002 plus tabular quantities

Hours G M T										Maximum		Minimum		Range	Date		
15	16	17	18	19	20	21	22	23	Mean	Time	Mag.	Time	Mag.				
r	r	r	r	r	r	r	r	r	r	H	M	r	H	M.	r	r	
318	331	346	335	313	318	318	319	350	363	06	02	463	11	40	277	186	1
356	353	350	357	361	363	368	369	367	373	07	34	415	16	52	349	66	2
378	375	376	371	377	377	381	381	384	381	06	36	425	02	18	360	65	3
387	388	383	382	376	381	382	385	388	399	06	46	449	18	30	313	76	4
399	399	399	397	397	100	402	101	405	409	06	18	155	01	48	381	74	5
359	311	285	327	332	311	326	313	319	387	05	20	463	17	16	271	192	6
313	316	313	313	357	353	311	358	356	353	06	20	407	10	36	325	82	7
349	379	313	315	366	377	361	351	351	358	19	20	389	08	18	324	65	8
365	353	315	359	375	367	361	359	364	362	02	41	387	16	30	335	52	9
351	333	335	311	369	350	316	346	356	365	04	56	419	16	06	327	92	10
353	358	360	351	360	372	371	363	363	362	05	04	432	09	11	320	112	11
314	361	361	350	362	371	362	365	363	372	04	04	410	13	04	331	109	12
356	353	353	353	357	359	373	381	371	375	05	18	419	14	31	313	106	13
365	360	356	361	371	369	368	370	369	384	04	51	417	17	42	341	106	14
383	383	384	381	381	384	383	386	386	392	01	54	454	09	28	358	96	15
320	331	326	331	312	342	278	317	358	356	01	58	495	10	10	252	243	16
381	382	382	376	375	370	376	381	384	387	06	10	432	19	12	358	74	17
381	386	383	381	386	389	374	375	380	401	06	16	466	21	14	368	98	18
383	383	382	382	361	360	380	390	382	393	07	12	464	19	58	356	108	19
382	381	383	385	381	383	382	386	391	397	01	30	452	19	48	376	76	20
399	398	387	389	390	392	100	104	406	407	04	34	441	17	36	384	57	21
405	105	398	394	391	398	100	102	100	116	06	20	461	19	51	388	76	22
412	413	411	110	109	406	407	406	434	119	04	46	469	23	58	376	93	23
294	328	315	295	331	332	333	339	341	333	00	42	409	11	32	268	141	24
362	368	369	370	369	367	367	370	373	368	04	20	414	12	58	329	85	25
375	368	362	368	317	362	376	375	375	388	05	31	504	09	34	338	166	26
360	355	368	361	366	369	376	371	368	375	01	02	509	08	20	294	215	27
311	354	357	352	372	372	370	376	381	*	06	18	462	15	34	334	128	28
360	369	375	371	374	375	378	378	385	394	05	08	480	13	22	351	129	29
365	366	363	364	368	370	368	373	375	381						109		Mean
394	393	389	387	386	390	393	395	397									Mean†
336	337	327	333	317	352	335	351	354									Mean‡

* Loss of record. (Day omitted for means.)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 9

Hourly Values of Horizontal Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

March

39,000 γ plus tabular quantities

Date	Hours G. M. T.														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1	384	381	386	407	427	454	463	454	444	414	396	395	392	386	383
2†	395	398	404	424	432	450	451	438	416	406	398	406	407	408	408
3	407	410	421	432	446	462	464	464	464	453	445	450	439	378	411
4‡	383	365	367	373	399	385	360	344	299	314	316	302	315	335	348
5‡	356	355	368	385	396	394	366	356	376	360	328	352	361	355	342
6‡	367	340	336	337	318	323	320	342	370	366	361	344	349	342	342
7‡	360	360	383	398	413	427	413	383	375	376	349	351	347	358	335
8	366	364	360	383	405	413	400	397	376	368	355	342	328	334	330
9	358	363	357	377	402	429	448	430	391	351	333	330	344	366	351
10	366	367	377	413	439	463	464	439	425	400	393	386	373	366	373
11	366	360	375	397	434	454	448	419	390	368	360	365	381	376	379
12	373	370	379	409	437	472	465	448	422	393	384	387	381	365	355
13	375	376	394	420	461	484	484	449	419	398	386	385	392	388	375
14†	386	384	391	423	449	469	485	472	447	423	393	382	384	385	383
15	390	386	393	420	457	483	489	465	445	413	400	396	392	392	391
16	384	396	414	443	481	499	485	467	417	390	397	394	378	382	386
17	392	400	407	424	450	465	459	448	432	416	401	384	381	365	368
18	398	390	407	424	439	470	465	453	438	410	414	406	406	404	401
19†	392	392	397	418	444	474	484	478	462	438	414	408	413	412	407
20†	403	407	415	439	464	496	520	522	490	451	419	401	405	410	410
21	407	413	431	457	519	572	562	500	434	376	334	349	365	356	382
22	395	383	383	409	434	440	434	416	386	382	384	383	385	382	377
23	351	345	368	401	425	445	446	417	391	373	359	351	359	354	359
24	408	408	431	433	432	433	410	410	410	408	393	364	376	383	381
25	390	395	408	428	454	470	470	451	425	384	383	368	374	383	382
26	384	382	386	407	434	458	478	472	451	431	410	401	398	391	385
27	394	394	400	437	451	467	471	465	443	431	411	392	384	382	376
28†	400	401	413	451	468	488	492	491	480	462	448	432	424	421	418
29	416	416	422	451	479	503	514	510	485	457	430	407	400	409	413
30	410	408	392	401	430	468	501	510	503	481	454	440	437	438	420
31‡	375	342	346	342	392	394	420	432	416	368	347	339	354	367	369
Mean	385	382	391	412	436	455	456	443	423	402	387	380	382	380	379
Mean†	395	396	404	431	451	475	486	480	459	436	414	426	427	427	425
Mean‡	368	352	360	367	384	385	376	371	367	357	341	338	345	351	347

* Loss of record. (Day omitted for means)

† Five international quiet days

‡ Five international disturbed days.

TABLE 9

Hourly Values of Horizontal Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

March

39,000 γ plus tabular quantities

Hours G. M. T.									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Mag	Time	Mag		
γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	H. M.	γ	H. M.	γ	γ	
395	382	384	384	386	386	387	389	392	402	05 58	469	06 24	380	89	1
408	406	400	401	403	405	404	406	407	412	06 22	456	00 02	394	62	2†
359	372	364	385	355	337	383	361	378	410	07 34	480	19 08	327	153	3
334	322	349	342	314	380	368	360	360	349	03 42	414	07 44	287	127	4‡
336	312	320	327	346	365	350	344	377	355	06 22	405	16 38	296	109	5‡
349	337	342	347	366	358	358	373	360	348	08 10	389	06 26	305	84	6‡
344	314	352	365	344	315	358	347	367	366	05 42	440	14 06	319	121	7‡
343	344	360	343	368	359	360	365	359	363	06 20	434	12 18	320	114	8
366	359	350	374	385	383	384	382	364	374	05 58	456	10 56	327	129	9
373	367	384	375	375	382	377	378	374	393	05 46	480	16 28	357	123	10
375	384	368	385	383	376	374	376	376	386	05 06	464	10 28	357	107	11
368	366	367	373	373	362	369	376	376	391	05 30	485	14 05	352	133	12
377	384	384	385	382	381	381	384	388	401	05 22	490	14 36	373	117	13
383	385	381	384	383	381	383	386	387	405	05 52	491	10 50	379	112	14†
394	384	369	363	376	375	389	391	383	406	05 26	496	17 26	360	136	15
389	384	386	379	383	382	383	382	387	407	04 50	517	12 14	375	142	16
356	368	389	391	383	385	391	390	399	402	05 10	479	14 52	352	127	17
385	374	381	386	391	390	389	391	392	409	05 52	484	15 56	372	112	18
398	397	401	401	406	407	397	405	401	419	06 42	488	00 02	389	99	19†
407	406	406	407	407	407	406	407	410	430	06 28	530	10 58	399	131	20†
364	357	361	376	368	372	389	389	385	409	05 22	594	10 22	320	274	21
376	382	376	368	369	381	376	374	363	389	05 14	448	23 50	352	96	22
365	368	368	383	355	390	399	402	408	383	05 28	463	10 31	327	136	23
381	368	366	376	386	377	387	392	384	396	05 08	452	11 34	357	95	24
384	384	381	378	383	390	392	396	388	402	05 04	478	10 36	367	111	25
395	399	391	392	391	403	402	398	398	410	05 54	481	00 51	381	100	26
384	383	394	392	394	395	399	404	400	410	05 14	480	13 38	369	111	27
416	415	413	404	415	416	413	414	414	434	07 06	496	00 10	399	97	28†
410	413	409	407	406	408	408	409	412	433	06 08	518	18 22	399	119	29
374	320	361	383	368	357	373	389	398	417	06 46	512	16 10	305	207	30
359	376	350	349	358	366	376	374	377	370	07 10	439	02 56	332	107	31‡
376	372	375	378	378	381	384	385	386	396					122	Mean
422	422	421	419	423	423	401	404	404							Mean†
344	338	343	346	352	363	362	360	368							Mean‡

* Loss of record (Day omitted for means)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 10

Hourly Values of Horizontal Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

April

39,000f plus tabular quantities

Date	Hours G M T.														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r
1	381	381	381	391	421	433	440	437	383	367	357	357	371	365	319
2‡	373	367	376	379	382	367	389	385	397	376	327	361	373	365	315
3‡	364	375	372	392	399	408	408	385	360	313	341	335	345	342	311
4	357	357	357	381	405	407	413	411	377	365	349	343	340	348	317
5	362	364	380	411	415	424	436	410	374	315	313	351	357	359	367
6	359	366	380	409	433	449	449	413	389	351	339	352	359	367	358
7	373	373	373	407	453	483	465	430	401	388	373	367	369	375	372
8	365	369	375	403	435	438	433	419	397	383	373	371	363	355	373
9	364	366	384	401	430	455	463	418	408	387	381	381	365	367	377
10	373	352	367	405	428	447	438	414	405	387	380	366	365	366	369
11	375	376	390	421	461	491	527	496	452	412	389	374	369	373	375
12‡	383	382	397	439	472	493	496	479	447	412	393	397	398	398	397
13	400	390	391	408	410	415	415	454	415	429	407	386	377	372	377
14	391	389	397	437	458	484	503	492	463	431	385	373	382	391	390
15	398	392	397	440	415	463	461	447	431	409	398	383	374	369	370
16	390	383	391	413	419	431	423	413	424	411	410	407	403	390	373
17	399	399	405	415	422	423	423	431	431	410	401	399	391	389	386
18	391	390	394	415	440	467	476	467	417	427	420	420	428	420	401
19	383	380	395	417	438	428	467	459	436	414	399	390	386	369	315
20‡	382	381	396	433	463	475	474	445	412	389	381	381	387	394	395
21‡	395	391	413	445	477	489	477	460	437	415	407	413	439	408	293
22	340	351	365	397	399	374	375	341	319	345	339	313	359	362	363
23	379	385	397	429	473	486	474	457	430	388	371	380	387	385	380
24	381	389	411	437	461	483	482	477	459	443	421	411	410	405	401
25‡	383	379	397	449	474	489	479	455	429	405	390	381	370	379	380
26‡	391	395	413	447	479	499	497	479	453	432	423	419	418	415	418
27‡	393	395	413	435	455	467	471	475	461	445	429	419	419	420	421
28	418	404	410	477	445	453	442	424	419	403	396	378	372	359	339
29‡	369	367	368	405	439	440	459	446	391	389	391	379	369	365	366
30‡	369	349	341	366	406	421	434	437	405	368	341	319	327	355	351
Mean	379	378	388	417	438	449	454	439	416	396	382	378	379	378	371
Mean‡	386	386	403	441	469	485	483	467	440	417	403	399	398	401	402
Mean‡	374	370	371	397	421	425	433	423	398	378	361	361	371	367	339

* Loss of record (Day omitted for means)

‡ Five international quiet days.

‡ Five international disturbed days

TABLE 10

Hourly Values of Horizontal Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

April

39,000Y plus tabular quantities

Hours G M T.									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Mag	Time	Mag		
<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	H M.	†	H M.	<i>r</i>	<i>r</i>	
341	332	363	369	373	371	373	375	376	379	06 52	463	15 31	327	136	1
355	357	358	350	345	358	366	365	364	366	06 32	423	10 02	309	114	2‡
333	373	337	313	345	369	368	373	367	363	06 32	431	15 08	318	113	3‡
349	351	360	357	365	366	367	367	360	367	05 56	438	11 50	327	111	4
360	366	373	388	358	373	366	367	366	376	06 18	454	09 22	341	113	5
353	378	374	373	382	391	380	372	371	381	05 46	467	09 30	322	145	6
375	374	375	388	375	371	381	381	372	391	05 18	509	11 02	363	146	7
381	375	372	384	397	391	381	373	369	387	04 50	463	13 12	350	113	8
379	375	375	385	373	375	376	385	381	391	05 34	471	12 06	363	108	9
379	376	380	375	381	382	383	385	380	387	04 52	455	01 26	350	105	10
375	374	381	381	381	382	381	381	381	404	05 54	551	12 42	367	184	11
393	397	397	397	393	389	391	393	397	411	05 54	501	01 22	379	122	12‡
372	383	383	381	384	391	390	393	396	399	06 56	455	13 05	369	86	13
385	385	382	391	393	396	392	397	397	412	06 14	513	10 22	367	146	14
365	360	363	369	381	383	385	387	389	398	04 54	478	16 10	358	120	15
371	372	377	377	389	391	398	397	397	398	05 01	445	15 12	365	80	16
385	383	382	383	383	385	394	393	391	400	07 58	439	17 03	381	58	17
403	402	390	376	366	376	389	399	391	413	06 14	478	18 50	361	114	18
343	356	372	371	388	376	374	376	398	394	05 12	485	14 02	341	144	19
395	386	392	389	387	383	381	388	395	403	05 38	481	09 51	380	101	20‡
231	197	217	295	291	277	310	337	327	370	05 22	494	15 32	163	331	21‡
367	372	367	371	373	375	373	372	379	363	03 44	435	07 56	312	123	22
379	379	375	381	386	385	383	387	381	402	05 24	490	10 10	363	127	23
397	373	360	373	379	383	383	396	389	413	05 06	491	17 04	357	134	24
379	379	374	379	383	387	387	391	391	401	05 06	495	12 05	368	127	25‡
415	413	402	391	400	403	399	396	397	425	05 28	501	18 26	389	112	26‡
419	416	415	415	415	414	412	418	423	428	05 30	480	00 18	389	91	27‡
332	330	335	346	361	373	379	379	372	389	01 50	470	16 26	328	112	28
361	351	347	353	341	365	354	354	367	381	05 44	475	17 10	333	142	29‡
357	366	373	360	372	373	371	373	365	371	06 50	457	10 50	316	141	30‡
368	368	369	373	375	378	379	382	381	392					128	Mean
400	398	396	395	396	395	391	397	401							Mean‡
327	329	332	340	339	348	354	360	358							Mean‡

* Loss of record (Day omitted for means.)

‡ Five international quiet days.

‡ Five international disturbed days.

TABLE II

Hourly Values of Horizontal Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time

May

39,000 γ plus tabular quantities

Date	Hours G. M. T.														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	γ
1†	377	363	350	403	431	451	460	443	405	374	346	341	340	352	358
2†	367	370	357	369	383	406	422	421	403	366	341	343	339	350	340
3†	367	360	365	387	421	427	434	429	389	377	373	379	375	372	381
4	354	367	361	394	408	417	421	405	380	355	347	354	353	355	366
5	357	355	369	398	435	458	435	427	383	357	327	325	327	351	365
6	383	377	379	414	437	441	442	419	365	332	311	317	311	351	355
7†	364	363	373	433	459	452	452	413	355	333	307	306	293	301	319
8	347	355	354	371	385	397	390	377	365	355	356	341	358	365	363
9†	369	372	390	417	441	452	451	451	437	413	406	384	381	382	383
10†	379	389	407	435	457	479	479	469	451	425	415	408	403	397	397
11	392	394	405	422	451	471	485	477	465	447	424	413	412	408	389
12	395	383	380	403	453	466	467	459	437	419	405	395	390	391	391
13	397	397	403	427	457	481	490	479	453	435	412	403	397	381	373
14	396	396	399	414	445	475	475	477	464	443	421	401	404	407	412
15†	412	407	410	427	417	467	477	473	461	443	429	414	406	402	392
16‡	406	407	413	421	437	448	457	453	450	441	429	421	419	410	407
17	410	411	420	437	455	465	473	461	453	437	421	419	415	411	413
18	417	389	374	387	421	455	469	466	439	421	403	373	398	409	399
19	383	395	405	421	421	415	447	453	439	397	388	379	381	386	381
20	392	397	405	414	436	465	469	459	436	411	403	395	389	383	380
21	405	409	417	437	467	485	474	461	415	413	397	397	402	395	396
22‡	397	407	420	437	450	453	453	444	427	419	405	395	394	394	389
23	399	405	421	433	463	477	479	469	451	426	413	428	431	427	419
24	419	427	429	439	453	476	491	491	481	461	429	411	391	381	383
25	389	399	389	401	428	448	478	485	470	437	415	398	392	396	403
26	415	417	421	434	461	471	483	485	481	450	404	407	399	401	388
27‡	357	340	331	307	347	381	413	413	383	350	327	322	323	330	337
28	371	380	387	401	427	445	451	451	429	410	387	379	373	379	379
29	373	369	357	375	382	437	437	442	427	401	393	387	383	375	373
30	381	373	377	396	411	427	443	439	435	413	389	371	363	366	378
31	379	363	371	385	421	434	430	425	411	395	387	381	380	381	381
Mean	385	385	388	408	432	446	456	449	428	405	387	381	379	380	380
Mean‡	393	396	408	427	446	460	463	458	445	428	417	404	401	397	394
Mean‡	366	359	355	380	406	423	436	424	387	360	339	338	334	341	347

* Loss of record (Day omitted for means.)

‡ Five international quiet days.

† Five international disturbed days

TABLE 11

Hourly Values of Horizontal Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

May

39,000*r* plus tabular quantities

Hours G. M. T.									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Mag	Time	Mag		
<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	H. M	<i>r</i>	H. M	<i>r</i>	<i>r</i>	
356	354	371	371	370	382	376	379	371	380	06 04	485	11 10	323	162	1†
357	365	357	364	377	366	361	365	357	369	06 40	437	12 10	327	110	2‡
381	379	357	355	377	370	379	363	367	382	04 36	461	17 50	349	112	3‡
355	367	368	369	370	363	365	367	368	373	06 20	432	10 14	341	91	4
367	360	363	371	376	372	372	373	383	375	01 42	471	10 22	320	151	5
355	355	362	363	367	366	367	367	371	372	04 21	453	10 28	307	146	6
281	291	291	302	307	308	301	317	348	345	06 06	467	14 52	275	192	7†
362	355	354	353	357	360	371	370	369	364	05 30	411	02 10	345	66	8
383	381	379	375	379	375	373	373	376	397	05 02	455	00 30	365	90	9†
391	395	395	395	391	389	391	392	391	413	05 34	486	00 02	378	108	10‡
375	394	389	375	371	370	389	396	397	413	05 56	491	18 34	369	122	11
391	388	387	391	392	396	402	399	397	407	05 30	495	02 10	379	116	12
385	394	396	397	402	396	403	400	399	415	05 38	494	13 30	364	130	13
410	410	407	407	411	410	411	411	411	422	05 10	493	23 50	395	98	14
388	391	392	393	399	403	404	405	405	419	06 18	485	14 38	387	98	15†
407	405	405	406	407	407	408	410	412	420	05 58	461	15 50	403	58	16‡
411	403	403	401	412	419	425	431	425	426	06 20	478	16 10	401	77	17
395	373	383	373	381	381	391	391	387	403	06 32	497	16 12	355	142	18
381	381	382	389	393	395	396	396	395	400	06 44	461	15 42	375	86	19
381	390	389	395	397	397	399	403	400	408	05 54	477	15 10	379	98	20
391	391	391	395	394	391	394	395	393	414	04 46	494	16 30	388	106	21
389	391	394	394	395	396	397	397	398	410	04 50	461	11 10	388	73	22‡
410	400	397	398	409	410	411	419	419	426	05 30	485	17 58	396	89	23
389	391	389	395	397	399	401	397	387	421	07 26	495	13 10	379	116	24
410	406	397	403	403	405	406	408	411	416	06 32	495	00 02	383	112	25
394	389	380	413	413	403	397	407	382	421	06 34	497	23 58	353	144	26
348	357	365	363	372	387	388	379	372	358	06 02	431	03 10	277	154	27‡
373	381	363	367	369	381	384	381	377	393	06 50	465	17 10	355	110	28
373	379	391	387	384	395	387	382	381	390	06 14	459	01 48	353	106	29
380	382	383	383	386	394	388	387	382	393	05 46	453	11 34	355	98	30
381	380	380	389	393	393	387	391	389	392	04 25	445	01 10	361	84	31
379	380	379	382	386	387	388	389	388	398					111	Mean
392	393	393	393	394	394	395	395	396							Mean†
345	349	348	351	361	363	361	361	363							Mean‡

* Loss of record (Day omitted for means.)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 12

Hourly Values of Horizontal Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

June

39,000 γ plus tabular quantities

Date	Hours G M T														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r
1	397	401	413	435	456	459	457	457	439	426	413	401	396	395	395
2	390	391	388	393	407	421	450	446	437	427	413	401	399	399	392
3	395	397	397	413	421	427	444	439	427	411	402	397	403	400	398
4	395	407	410	418	430	416	452	458	441	420	408	396	391	401	400
5	400	400	400	410	401	419	412	410	451	442	424	401	388	386	388
6†	401	410	416	432	441	455	464	459	449	432	412	407	408	409	408
7†	408	412	424	430	440	451	462	451	439	424	416	410	413	415	411
8	420	426	431	454	474	486	488	486	456	408	370	378	384	390	393
9‡	110	412	419	426	450	451	413	446	436	420	410	401	400	400	394
10‡	402	415	416	424	443	466	479	466	448	425	404	400	398	402	393
11	400	408	416	432	440	453	461	439	436	426	408	391	399	399	399
12	408	402	410	418	442	456	466	456	448	431	414	403	402	401	405
13†	415	416	416	426	441	464	466	458	449	438	414	409	411	412	413
14‡	419	418	426	444	467	480	488	480	462	431	402	386	369	341	364
15	400	407	415	426	431	447	458	466	463	448	426	414	396	385	394
16	408	408	418	418	433	449	432	418	426	410	409	405	394	393	393
17	404	404	408	415	418	431	451	440	439	437	422	420	416	410	410
18	409	408	407	409	416	427	442	450	448	415	433	412	400	394	401
19	416	418	426	435	449	458	466	460	450	441	434	430	422	410	408
20†	411	420	432	461	489	495	512	501	478	456	439	428	423	423	421
21†	426	423	422	431	447	469	485	495	486	471	462	442	433	430	431
22	447	448	448	455	465	485	493	509	493	473	462	439	429	423	407
23†	397	404	419	408	440	451	462	462	440	406	402	378	366	360	377
24†	410	408	395	390	400	438	462	479	474	438	417	399	378	373	373
25	398	406	416	410	460	478	486	482	465	448	434	429	411	399	393
26	424	421	422	436	458	472	480	482	463	417	424	397	397	408	400
27	425	431	431	449	461	468	480	449	446	432	423	421	423	426	419
28	423	423	430	442	464	476	484	480	462	418	410	422	418	418	417
29	423	427	439	454	472	486	486	477	470	454	440	442	434	428	426
30‡	440	440	418	424	420	362	320	296	288	262	258	280	307	312	321
Mean	411	414	418	428	443	451	462	458	447	429	415	405	401	398	398
Mean†	412	416	422	436	452	467	478	473	460	445	429	419	418	418	417
Mean‡	415	416	415	418	435	436	435	433	420	391	378	369	364	357	366

* Loss of record. (Day omitted for means)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 12

Hourly Values of Horizontal Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

June

39,000 r plus tabular quantities

Hours G. M. T.									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Mag	Time	Mag.		
r	r	r	r	r	r	r	r	r	r	H. M.	r	H. M.	r	r	
393	391	390	389	390	389	391	391	391	411	04 46	469	19 34	387	82	1
391	393	394	391	392	389	391	391	393	403	06 02	454	19 12	387	67	2
402	396	392	391	389	391	390	389	390	404	05 58	452	18 26	385	67	3
400	399	402	403	404	407	402	402	400	412	06 46	465	11 36	393	72	4
384	394	394	398	399	400	401	401	400	407	07 14	458	15 16	380	78	5
408	408	408	410	410	409	410	409	408	420	06 26	467	00 01	400	67	6†
412	413	410	410	408	413	416	416	418	422	06 02	465	16 10	406	59	7†
396	409	411	404	404	413	416	408	411	421	05 20	500	10 16	364	136	8
384	394	399	401	402	400	402	408	407	413	04 26	486	14 50	370	116	9‡
399	396	402	404	406	418	415	410	400	418	05 36	494	14 26	392	102	10
393	400	408	407	410	410	406	413	409	415	05 40	480	14 50	392	88	11
405	410	411	412	413	416	412	411	416	420	06 02	472	00 54	397	75	12
414	415	412	415	412	417	424	428	426	425	06 08	474	10 56	408	66	13†
379	384	370	379	388	381	386	391	404	410	05 58	496	13 36	338	158	14‡
404	401	402	400	406	408	408	411	409	418	06 48	489	12 50	384	105	15
385	396	390	390	400	400	400	402	403	407	04 46	462	15 02	381	81	16
405	401	403	405	408	410	412	415	413	417	05 58	460	16 02	399	61	17
402	393	396	401	402	408	409	405	410	414	07 02	456	16 10	391	65	18
410	410	409	408	409	410	410	410	410	425	05 32	470	17 50	405	65	19
422	421	421	417	421	422	423	429	429	442	06 13	517	00 07	408	109	20†
431	431	436	437	437	437	437	439	445	445	06 50	496	02 14	415	81	21†
397	397	393	405	403	395	390	387	393	435	07 16	522	21 22	383	139	22
381	393	400	402	402	408	416	427	424	409	07 06	494	13 20	358	136	23‡
370	378	381	384	390	392	400	398	398	405	06 58	489	15 14	368	121	24‡
398	400	396	394	397	400	420	422	434	425	06 10	488	13 46	387	101	25
410	416	415	416	416	418	418	420	423	428	06 34	500	11 38	388	112	26
422	413	414	430	422	420	420	419	419	432	06 02	485	16 44	408	77	27
419 ^c	422	422	424	424	425	426	426	424	436	05 48	488	13 30	416	72	28
430	427	429	430	432	453	438	428	424	444	05 38	492	00 02	422	70	29
333	341	350	359	366	374	377	380	376	350	03 12	480	10 14	247	233	30‡
399	401	402	404	405	408	409	410	410	418					95	Mean
417	418	417	418	418	420	422	424	425							Mean†
369	378	380	385	390	391	396	401	402							Mean‡

* Loss of record (Day omitted for means.)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 13

Hourly Values of Vertical Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

January

2,000F plus tabular quantities

Date	Hours G. M. T														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r
1	410	410	409	408	406	399	398	403	395	406	412	408	416	411	417
2	417	417	412	410	409	408	403	404	397	100	404	410	413	417	416
3	418	416	413	417	417	408	395	389	387	392	396	404	405	408	410
4	418	415	421	423	418	406	388	379	381	391	408	411	113	412	408
5†	413	416	416	403	400	401	390	383	383	373	393	406	408	412	415
6	415	416	416	417	419	412	416	411	413	410	408	413	415	417	415
7	421	419	420	417	415	412	413	403	389	397	401	406	407	397	403
8	415	415	413	415	417	413	406	398	391	387	390	399	400	406	410
9	415	416	417	419	419	420	418	408	388	385	375	388	405	410	415
10	412	410	413	412	408	416	428	409	395	391	397	405	403	408	410
11	409	417	410	408	406	401	406	397	387	381	393	408	415	406	403
12	413	416	416	408	401	405	406	406	405	408	408	403	409	406	412
13†	416	410	412	415	411	410	417	417	410	406	406	401	399	407	401
14†	409	407	407	413	413	412	404	403	401	403	400	399	401	408	409
15	406	403	404	407	405	399	398	391	397	401	405	399	404	406	409
16	407	407	408	411	409	410	395	404	408	406	409	404	403	406	407
17	411	409	406	412	417	413	404	389	377	379	389	400	401	404	406
18†	408	409	411	412	410	407	403	395	397	395	388	397	399	401	407
19†	407	407	406	411	410	406	405	399	394	391	393	396	399	400	405
20†	405	401	404	410	408	408	406	405	403	405	407	405	401	406	406
21†	403	403	404	410	409	412	413	397	386	388	391	395	398	401	405
22	407	406	405	406	403	398	401	395	389	388	397	100	403	408	408
23	406	408	415	417	417	407	390	373	379	391	395	401	404	407	403
24	413	415	411	417	416	410	404	397	395	393	399	401	409	408	408
25	411	413	415	416	409	404	393	375	372	382	395	408	406	405	404
26†	415	415	412	411	413	408	405	408	417	419	413	407	408	412	412
27†	410	409	406	405	407	410	418	419	405	396	385	394	388	386	386
28	415	411	415	421	423	423	422	421	416	416	415	413	409	411	413
29†	410	410	408	406	406	399	397	397	391	388	389	397	400	406	409
30	413	412	408	405	407	408	407	400	398	398	405	409	410	417	413
31	416	413	416	417	412	404	398	388	384	384	386	395	403	407	400
Mean	412	411	411	412	411	408	405	399	395	395	398	403	405	407	408
Mean†	408	408	407	411	410	408	406	401	399	400	398	400	401	405	405
Mean‡	412	410	410	408	407	406	405	404	398	393	395	399	399	404	404

* Loss of record (Day omitted for means.)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 13

Hourly Values of Vertical Force, 1950

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

January

2,000*r* plus tabular quantities

Hours G M T									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Mag	Time	Mag.		
<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	<i>r</i>	H M	<i>r</i>	H M	<i>r</i>	<i>r</i>	
413	415	412	417	419	413	411	409	412	409	18 55	420	08 04	394	26	1
116	410	413	418	419	416	418	416	419	412	00 15	419	08 00	394	25	2
413	411	413	418	417	411	411	411	413	408	03 17	419	08 13	386	33	3
410	407	409	417	419	416	421	417	415	409	03 05	425	08 05	377	48	4
411	413	421	417	412	413	415	417	419	406	17 04	428	08 53	372	56	5†
416	412	417	410	416	417	418	419	419	415	03 30	421	16 02	401	20	6
107	416	421	410	411	413	415	417	416	410	16 38	425	08 05	389	36	7
408	408	411	409	411	410	412	412	415	407	03 50	421	09 40	385	36	8
411	410	409	407	413	415	413	413	408	408	05 10	423	09 30	372	51	9
409	410	416	407	410	412	415	416	410	409	05 50	430	08 20	389	41	10
415	408	417	410	409	411	413	415	413	407	01 20	418	09 10	379	39	11
406	408	419	410	417	411	413	409	419	410	17 20	426	15 08	399	27	12
409	407	417	413	410	420	416	407	410	410	20 20	425	11 27	387	38	13‡
407	404	406	409	408	408	417	408	407	407	03 40	417	15 10	397	20	14†
396	395	401	410	408	408	411	415	410	401	17 15	421	15 20	386	35	15
406	409	409	408	409	411	408	406	413	407	23 35	415	06 35	391	24	16
406	406	407	408	409	411	408	406	406	403	04 30	418	08 00	373	15	17
406	407	406	406	407	409	408	408	408	404	03 10	413	09 50	386	27	18‡
406	405	403	404	407	409	406	405	405	403	03 30	413	09 25	389	24	19†
405	408	401	404	408	406	405	406	407	405	05 05	411	08 40	399	12	20‡
405	406	408	408	409	412	408	408	407	404	05 33	416	08 10	381	32	21
409	408	409	408	407	406	405	403	401	403	15 45	411	09 04	386	25	22
399	407	408	406	405	407	406	410	413	403	03 17	420	07 08	372	48	23
407	409	410	417	415	416	413	413	417	409	03 55	419	08 53	390	29	24
412	417	416	417	412	413	418	418	416	406	17 20	421	07 51	369	52	25
415	411	410	410	410	410	413	413	412	412	08 22	421	05 42	403	18	26†
383	411	407	413	419	419	420	416	417	405	06 23	422	14 53	373	49	27
417	413	418	418	413	416	416	417	416	416	05 23	425	12 35	406	19	28
415	407	397	408	407	408	420	411	417	404	20 43	430	09 30	386	44	29
415	415	412	416	419	417	418	418	418	411	19 10	422	08 52	397	25	30
403	409	412	417	418	413	417	416	416	406	17 26	421	08 40	382	39	31
408	409	411	411	412	412	413	412	413	407					34	Mean
405	406	406	406	408	409	408	408	408							Mean
405	408	410	412	411	414	418	412	414							Mean‡

* Loss of record (Day omitted for means)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 14

Hourly Values of Vertical Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

February

2,000 γ plus tabular quantities

Date	Hours G. M. T.														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r
1	420	420	423	426	418	404	396	394	396	391	405	391	398	421	412
2	413	412	414	422	426	422	421	421	417	407	407	408	410	411	409
3†	418	419	419	423	422	418	408	401	398	399	407	414	419	417	418
4†	416	418	423	428	422	418	411	408	404	404	406	404	404	406	408
5†	412	412	416	422	420	414	402	405	404	407	409	408	409	410	411
6†	419	417	420	423	432	422	407	417	412	401	392	391	389	408	414
7	411	410	410	412	416	408	407	396	397	406	408	410	412	419	420
8†	417	414	412	420	427	423	432	434	418	420	419	409	410	413	411
9	411	412	411	417	419	421	427	431	433	431	420	416	418	420	414
10	417	416	412	412	418	421	421	423	431	432	429	422	417	420	418
11	421	412	412	417	419	413	409	409	412	420	424	412	411	418	420
12	417	411	410	418	420	410	417	428	429	423	420	410	407	409	417
13	418	416	411	409	409	405	399	400	401	416	417	416	410	409	411
14	409	408	408	404	409	409	406	401	407	405	411	411	409	411	417
15	412	411	408	404	404	400	399	408	419	419	423	422	417	419	418
16‡	411	411	410	409	408	394	387	378	366	369	386	400	411	408	406
17	410	405	407	418	416	412	412	413	413	412	414	411	407	412	411
18	412	411	410	404	411	409	409	410	408	408	407	401	405	416	418
19	412	418	408	411	416	417	416	417	412	414	418	416	407	409	417
20	418	419	420	418	418	411	412	418	411	408	404	407	409	418	421
21†	420	419	420	429	429	423	422	428	429	426	421	416	413	413	416
22†	423	424	420	418	419	420	420	417	414	419	421	420	419	420	422
23	420	420	414	410	410	406	401	407	411	416	411	406	406	413	418
24†	409	429	418	404	401	409	417	421	423	421	407	412	408	419	419
25	422	420	417	409	409	408	410	418	426	423	422	412	409	404	413
26	419	420	417	413	416	406	408	408	413	426	431	428	420	420	416
27†	417	412	408	401	374	372	387	396	119	138	431	424	409	410	412
28	414	*	*	*	410	409	*	409	411	113	422	417	417	416	110
29	420	420	423	429	411	406	407	411	419	420	418	412	409	406	413
Mean	416	416	414	415	415	411	410	411	412	414	414	411	410	414	415
Mean†	418	418	420	424	422	419	413	412	410	411	413	412	413	413	415
Mean‡	415	417	414	411	408	404	406	409	408	410	408	407	405	412	412

* Loss of record (Day omitted for means)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 14

Hourly Values of Vertical Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

February

2,000 γ plus tabular quantities

Hours G. M. T.									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Mag	Time	Mag		
r	r	r	r	r	r	r	r	r	r	H M.	r	H M.	r	r	
401	412	418	411	413	409	412	411	411	409	03 35	429	11 40	376	53	1
411	412	413	419	420	419	419	417	414	415	03 55	429	09 20	401	28	2
417	416	416	416	417	412	413	412	413	414	03 42	426	08 30	396	30	3†
411	411	409	409	409	410	411	411	411	411	03 22	429	12 08	401	28	4†
417	416	416	416	416	414	413	411	411	412	03 20	424	08 05	400	24	5†
412	397	398	420	419	419	411	420	414	411	03 53	439	16 23	382	57	6†
418	420	417	421	427	420	414	421	416	413	19 00	432	08 05	390	42	7
413	419	412	414	423	422	409	408	409	417	17 07	443	14 25	407	36	8†
421	416	416	422	428	420	417	418	418	420	08 00	438	16 30	408	30	9
418	413	419	423	432	419	420	419	420	421	18 50	439	16 00	405	31	10
420	421	421	419	421	424	420	413	413	417	09 50	432	11 10	405	27	11
416	426	420	418	424	427	418	419	413	418	19 25	432	12 00	404	28	12
414	416	418	418	419	419	422	422	413	413	21 45	431	08 05	398	33	13
412	411	412	419	422	419	417	414	416	411	19 08	427	07 10	399	28	14
418	417	418	419	418	417	414	413	412	414	10 08	426	05 50	397	29	15
421	423	418	420	418	417	418	411	414	405	16 00	430	08 05	365	65	16†
412	412	412	411	411	410	413	413	414	412	03 35	422	11 30	402	20	17
417	418	418	419	419	417	409	411	412	412	19 25	423	10 55	400	23	18
418	418	417	418	406	410	419	421	418	415	18 00	426	12 18	404	22	19
423	428	424	422	422	421	420	420	420	417	16 00	429	10 18	401	28	20
419	419	419	419	420	421	423	423	423	421	03 15	433	12 15	411	22	21†
422	423	421	421	421	424	422	421	421	421	20 20	429	07 50	412	17	22†
418	420	419	418	418	418	418	428	424	415	21 15	438	06 00	400	38	23
421	433	420	417	434	429	423	427	424	419	18 55	444	10 10	394	50	24†
417	418	419	420	420	419	418	420	420	416	08 33	431	13 05	398	33	25
418	418	418	421	411	420	423	420	420	418	10 00	434	06 18	397	37	26
416	413	419	419	420	420	423	420	416	412	05 05	455	04 30	369	86	27†
412	419	419	418	427	423	422	421	421	*	*	*	*	*	*	28
411	418	419	418	418	418	418	416	418	416	08 35	431	13 15	401	30	29
416	417	417	418	420	418	417	417	416	415					35	Mean
417	417	416	416	417	416	416	416	416							Mean†
417	417	413	418	423	421	417	417	415							Mean‡

* Loss of record (Day omitted for means)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 15

Hourly Values of Vertical Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

March

2,000f plus tabular quantities

Date	Hours G M T.														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r
1	413	411	409	407	419	421	421	420	423	424	422	423	421	420	421
2†	420	419	413	405	410	407	408	408	410	412	412	412	412	416	418
3	419	420	419	416	417	411	412	417	427	428	422	421	418	400	397
4‡	429	418	416	409	408	407	405	409	419	439	419	406	412	421	422
5‡	414	416	409	409	413	410	418	435	435	423	420	430	431	427	422
6‡	422	417	420	423	412	409	412	427	423	419	410	407	418	418	419
7‡	413	410	401	396	402	408	406	414	420	420	401	412	416	419	411
8	420	418	417	417	412	405	408	412	411	418	409	410	405	412	416
9	412	417	407	404	418	411	406	401	401	409	412	413	419	419	412
10	408	407	406	401	397	383	373	367	375	379	387	391	397	407	412
11	411	410	417	418	418	409	406	403	407	407	410	411	418	409	417
12	413	417	417	418	409	398	389	390	396	400	409	411	407	401	402
13	414	417	416	409	406	391	385	384	390	396	399	401	407	408	407
14†	412	413	416	417	418	409	400	396	399	402	407	411	413	416	412
15	419	418	418	419	420	412	407	401	407	409	412	413	416	419	420
16	426	431	424	418	412	405	401	401	395	402	407	408	409	419	423
17	427	430	431	430	431	429	420	419	411	410	411	411	417	416	422
18	429	430	432	432	428	421	418	419	413	413	419	418	418	419	419
19†	420	421	423	423	423	419	407	401	405	409	410	418	418	420	420
20†	420	421	422	420	423	417	404	392	385	387	398	408	417	419	419
21	420	424	429	424	427	412	386	367	375	384	396	409	407	408	422
22	424	418	419	420	417	405	395	397	399	407	409	407	407	410	411
23	411	416	420	420	420	409	400	390	398	407	409	411	418	419	420
24	421	422	422	418	418	424	421	418	409	416	411	407	421	423	424
25	423	428	428	421	423	417	409	402	401	401	406	410	413	419	420
26	420	421	421	421	422	419	417	408	408	413	420	420	418	418	419
27	423	426	429	430	427	419	413	407	400	407	408	409	410	417	417
28†	423	424	423	422	420	417	408	404	400	400	404	410	413	419	420
29	423	426	422	432	428	421	409	405	400	406	410	410	412	417	419
30	422	424	429	431	422	418	408	395	391	400	401	405	409	412	408
31‡	416	408	427	420	420	410	411	407	396	394	406	416	421	422	424
Mean	419	419	420	418	417	412	406	404	404	408	409	411	414	416	417
Mean†	419	420	419	417	419	414	405	400	400	402	406	412	415	418	418
Mean‡	419	414	415	411	411	409	410	418	419	419	411	414	420	421	420

* Loss of record (Day omitted for means)

† Five international quiet days

‡ Five international disturbed days

TABLE 15

Hourly Values of Vertical Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

Marr b

2,000Z plus tabular quantities

Hours G M T.									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Mag	Time	Mag		
r	r	r	r	r	r	r	r	r	r	H M.	r	H M	r	r	
428	421	423	422	427	423	421	420	420	420	15 00	429	06 40	405	24	1
419	419	419	420	420	420	419	419	420	415	00 20	422	03 30	401	21	2†
418	426	423	431	420	418	438	421	430	420	20 50	416	13 50	389	57	3
418	413	423	419	420	431	418	412	416	417	08 55	448	11 33	401	47	4‡
422	417	422	423	430	435	423	422	434	423	08 05	443	02 45	407	36	5‡
422	418	420	422	424	421	420	424	413	418	21 40	435	10 38	405	30	6‡
420	420	427	428	419	420	419	414	422	414	17 30	439	10 08	394	45	7‡
421	419	423	413	423	417	418	413	410	414	18 53	432	12 20	400	32	8
416	411	408	420	421	414	411	409	407	412	19 00	431	08 08	398	33	9
412	411	420	412	416	418	412	414	413	401	17 00	439	06 53	365	67	10
412	419	412	419	414	410	411	412	414	412	03 50	420	06 30	399	21	11
413	412	411	418	418	410	411	417	416	409	18 45	424	06 50	387	37	12
411	413	418	420	419	417	418	418	418	408	18 25	422	06 55	378	44	13
417	418	418	419	419	419	420	420	420	413	03 55	423	06 45	394	29	14‡
423	422	420	422	431	430	433	431	423	419	20 35	444	07 00	397	47	15
424	424	427	423	428	424	423	423	426	417	17 20	433	08 08	392	41	16
420	429	434	431	430	429	429	429	431	424	03 25	434	11 15	409	25	17
416	414	420	420	421	420	419	420	420	421	03 15	433	08 45	411	22	18
420	420	423	424	426	424	421	421	420	418	03 15	432	07 10	396	36	19‡
419	420	420	420	420	421	421	420	421	414	03 30	429	08 30	384	45	20‡
416	419	423	427	422	423	427	423	423	412	03 30	430	07 08	365	65	21
413	417	414	412	413	417	414	412	412	411	03 30	427	06 45	394	33	22
422	424	423	433	430	423	428	424	424	417	18 10	450	07 00	387	63	23
423	420	422	427	430	423	426	424	421	420	04 55	431	11 05	401	30	24
422	423	420	420	422	423	422	421	419	417	03 15	429	08 30	400	29	25
424	424	423	424	424	431	426	423	423	420	20 15	438	07 08	407	31	26
422	422	424	427	428	427	427	426	423	419	03 10	432	08 10	398	34	27
421	422	422	423	424	426	423	423	423	417	03 20	427	08 43	397	30	28‡
420	422	422	422	421	423	423	421	422	419	03 20	434	08 00	398	36	29
398	387	417	423	418	416	423	427	423	413	22 25	433	16 05	385	48	30
420	429	417	420	429	430	433	430	432	418	20 30	443	08 45	387	56	31‡
418	419	421	422	423	422	422	420	421	416					38	Mean
419	420	420	421	422	422	421	421	421							Mean†
420	419	422	422	424	427	423	420	423							Mean‡

* Loss of record (Day omitted for means.)

† Five international quiet days

‡ Five international disturbed days.

TABLE 16

Hourly Values of Vertical Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

April

2,000f plus tabular quantities

Date	Hours G M T.														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	r	r	r	r	r	r	r	r	r	r	r	r	r	r	r
1	429	428	424	419	412	411	409	405	400	416	421	424	426	418	416
2†	427	428	433	427	417	428	427	423	423	411	401	427	426	422	420
3‡	431	431	419	412	402	407	404	395	411	408	419	423	427	427	429
4	430	427	424	418	417	412	412	411	401	413	418	419	420	429	429
5	429	429	427	426	424	421	419	400	400	409	424	431	431	431	435
6	433	440	430	424	418	410	402	398	397	399	412	429	424	424	422
7	429	428	428	422	422	417	395	387	402	417	423	423	424	428	429
8	430	434	431	424	422	413	407	400	401	409	413	420	420	422	434
9	429	435	433	421	409	412	407	402	400	409	418	423	419	424	431
10	433	431	424	419	410	401	396	400	407	411	418	116	417	421	424
11	431	433	438	429	428	418	404	398	398	407	421	429	428	428	430
12†	435	438	440	439	435	423	412	404	406	416	426	433	431	424	423
13	434	434	435	424	418	423	418	407	405	406	409	412	414	419	422
14	423	427	428	421	427	419	407	397	398	407	414	428	426	421	422
15	431	432	430	423	424	423	421	420	424	430	432	426	422	423	427
16	433	434	433	430	433	430	427	428	424	427	429	430	427	427	423
17	436	436	433	424	409	406	406	410	417	420	431	431	431	431	432
18	431	432	433	430	432	427	418	417	421	427	431	431	431	429	423
19	431	432	432	428	423	420	414	412	418	422	429	431	431	427	418
20†	434	435	431	420	409	400	400	406	416	422	432	432	431	431	432
21‡	433	434	433	421	412	406	396	397	407	416	422	432	440	430	396
22	444	446	443	433	427	419	412	411	422	432	431	438	440	440	439
23	439	444	443	440	*	*	*	*	*	434	440	448	443	438	434
24	438	439	436	431	429	420	417	414	413	412	418	428	434	435	434
25†	434	439	444	444	435	428	418	410	412	419	429	426	424	429	429
26†	431	433	431	423	419	410	406	402	406	417	424	429	432	434	434
27†	431	433	431	429	433	424	420	412	416	420	424	429	429	430	431
28	432	431	440	434	423	418	412	417	422	432	432	429	430	427	422
29‡	439	438	434	431	421	409	407	401	407	427	434	432	431	433	439
30‡	442	435	436	436	439	420	416	418	420	424	423	422	432	442	438
Mean	433	434	432	426	422	416	411	407	410	417	423	427	428	428	427
Mean†	433	436	435	431	426	417	411	407	411	419	427	430	429	430	430
Mean‡	434	433	431	425	418	414	410	407	414	417	420	427	431	431	424

* Loss of record (Day omitted for means)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 16

Hourly Values of Vertical Force, 1952

(Averages for sixty minutes centered at the full hours of Greenwich Mean Time)

April

2,0001 phis tabular quantities

Hours G. M. T.									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Mag.	Time	Mag.		
1	1	1	1	1	1	1	1	1	H. M.	T	H. M.	T	T		
118	117	130	131	130	128	127	128	128	127	17 25	416	07 30	396	50	1
121	129	130	121	123	133	133	133	131	425	20 10	412	10 08	395	47	2†
126	115	127	132	133	113	110	139	136	421	15 50	457	06 55	389	68	3†
130	131	138	132	131	435	131	131	427	121	20 30	416	08 15	396	50	4
132	132	110	113	133	135	132	131	132	427	17 35	451	07 25	392	59	5
143	131	431	129	432	131	128	122	123	422	16* 08	445	06 20	390	55	
131	132	432	131	129	128	132	430	428	423	18 20	443	06 50	385	58	7
435	133	131	139	110	131	131	423	121	424	18 35	446	07 30	397	49	8
433	133	133	435	129	131	130	432	430	423	17 38	449	07 51	391	55	9
131	132	133	432	131	131	133	132	131	422	19 25	440	06 30	391	49	10
131	133	131	131	134	135	132	132	133	126	03 15	440	08 15	396	41	11
127	130	131	132	432	132	134	132	433	128	03 10	444	06 50	401	43	12†
421	128	129	129	131	131	129	128	427	122	19 15	438	08 30	402	36	13
423	121	129	433	431	133	131	132	131	122	03 30	436	07 30	395	41	14
426	129	132	131	139	136	135	133	433	429	19 20	445	13 00	412	33	15
123	133	436	138	143	111	112	139	136	132	19 12	448	11 05	422	26	16
133	131	131	135	131	133	135	132	430	427	20 45	441	05 00	401	40	17
129	131	429	121	131	132	135	138	431	129	21 30	444	06 30	412	32	18
124	131	111	139	111	131	135	135	443	129	19 15	449	13 55	410	39	19
133	131	131	131	133	132	131	133	131	126	10 15	138	01 50	397	41	20†
395	399	138	160	118	110	151	153	112	425	17 55	472	15 38	374	98	21†
433	139	138	140	440	139	138	135	135	134	11 20	418	06 20	406	42	22
134	135	131	139	439	436	136	135	134	*	*	*	*	*	*	23
135	428	128	138	139	110	138	112	138	130	21 40	452	09 10	410	42	24
137	431	130	132	133	133	133	432	131	429	03 30	446	07 35	408	38	25†
144	135	133	132	138	135	432	431	431	426	18 55	445	06 30	401	44	26†
431	131	132	433	131	433	432	435	136	429	22 25	443	06 55	410	33	27†
128	131	135	139	145	111	112	141	438	431	19 10	454	05 45	408	46	28
135	132	135	111	135	119	136	135	445	430	19 55	457	07 10	389	68	29†
139	112	110	133	111	135	135	110	433	133	16 30	458	10 30	113	45	30†
426	131	133	135	435	135	431	431	433	427					47	Mean
431	132	432	133	131	433	132	133	133							Mean†
121	129	131	138	436	110	439	440	437							Mean‡

* Loss of record (Day omitted for means.)

† Five international quiet days

‡ Five international disturbed days

TABLE 17

Hourly Values of Vertical Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

M.W.

2,000r plus tabular quantities

Date	Hours G M T														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1‡	439	438	432	427	423	416	411	407	406	420	423	435	440	444	444
2‡	446	450	441	431	429	424	419	412	410	411	418	436	433	439	434
3‡	445	440	436	426	428	413	417	417	418	424	435	439	439	440	441
4‡	446	450	435	427	419	409	408	406	409	421	431	441	439	438	443
5	442	444	411	431	419	410	409	409	412	423	420	433	433	442	442
6	446	442	438	434	424	409	402	405	406	418	433	450	451	445	442
7‡	440	410	438	438	440	423	418	405	416	418	423	435	429	440	442
8	445	444	435	433	442	434	431	433	434	442	449	448	446	449	448
9‡	449	449	440	433	424	413	410	417	419	423	431	440	445	443	441
10‡	445	455	453	442	423	418	414	409	412	420	430	442	443	440	441
11	444	445	449	445	438	428	419	418	420	429	431	433	432	430	423
12	438	439	449	449	455	442	432	427	427	428	434	439	441	440	440
13	446	448	448	449	451	439	423	420	422	423	427	439	440	434	440
14	446	454	462	461	453	439	431	429	428	428	434	442	449	448	448
15‡	450	453	455	451	449	442	432	430	434	436	444	449	451	449	444
16‡	456	461	461	456	461	455	453	452	452	453	454	456	456	455	454
17	463	464	463	461	454	450	450	445	443	442	445	451	456	457	456
18	461	462	473	478	473	463	461	451	445	443	440	438	456	461	456
19	465	468	467	458	442	434	444	441	440	434	452	465	467	464	463
20	467	470	468	464	463	461	451	441	444	451	465	465	461	454	455
21	465	464	465	464	462	452	441	440	441	438	445	451	446	446	451
22‡	456	457	453	450	443	435	424	420	420	426	432	433	439	441	442
23	450	451	449	448	446	442	441	439	448	455	460	462	453	446	444
24	446	453	451	443	438	434	428	417	413	418	429	439	441	434	438
25	443	455	451	445	440	431	419	412	406	402	411	424	438	442	443
26	445	449	452	449	442	440	438	434	434	418	421	443	442	440	434
27‡	433	445	451	431	431	428	418	410	414	429	440	448	445	441	443
28	450	451	451	449	449	440	433	427	426	424	428	435	441	443	443
29	449	455	453	451	435	430	422	418	413	412	427	431	434	436	435
30	444	446	448	445	446	441	429	419	411	416	421	424	433	441	442
31	445	446	451	451	441	427	422	432	439	439	442	445	444	445	444
Mean	449	451	450	446	441	433	427	424	425	428	435	442	444	444	444
Mean‡	451	455	452	446	440	433	427	426	427	432	438	444	447	446	444
Mean‡	441	443	440	431	430	421	417	410	413	420	428	439	437	441	441

* Loss of record (Day omitted for means)

‡ Five international quiet days.

‡ Five international disturbed days.

TABLE 17

Hourly Values of Vertical Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

May

2,000f plus tabular quantities

Hours G M T									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Mag	Time	Mag		
<i>r</i>	<i>l</i>	<i>l</i>	<i>r</i>	<i>l</i>	<i>l</i>	<i>r</i>	<i>r</i>	<i>l</i>	<i>r</i>	H M	<i>l</i>	H M	<i>l</i>	<i>r</i>	
143	415	452	150	448	452	416	445	444	435	17 15	160	07 45	392	68	1†
145	445	440	416	451	411	441	112	410	431	19 20	455	08 08	406	49	2†
442	442	436	110	450	411	448	444	450	436	18 45	462	09 00	407	55	3†
439	445	411	443	115	111	442	413	416	434	16 15	451	07 10	400	54	4†
443	440	443	145	143	113	114	115	450	431	23 10	452	05 25	402	50	5
441	445	416	148	446	115	444	113	413	135	11 30	455	07 35	398	57	6
424	431	438	416	111	115	113	155	453	431	22 30	475	07 10	399	76	7†
448	446	449	450	151	152	453	448	448	441	09 40	455	06 00	422	33	8
442	444	444	444	445	415	144	411	414	436	12 35	451	05 50	408	43	9†
440	443	445	445	443	443	411	413	442	436	01 35	457	06 53	407	50	10†
424	440	440	436	431	130	411	441	439	434	21 30	451	07 10	413	38	11
441	440	442	441	443	445	416	443	443	440	03 25	462	08 35	424	38	12
441	446	448	448	449	445	451	145	144	440	21 00	461	07 20	417	44	13
448	450	451	452	453	452	450	449	119	446	03 15	467	08 33	426	41	14
445	450	451	450	453	153	453	452	453	117	03 12	457	07 12	430	27	15†
446	456	457	458	460	461	461	461	462	457	03 23	466	06 18	450	16	16†
455	453	455	456	461	462	463	461	462	455	22 10	471	09 20	440	31	17
455	451	461	457	462	163	464	164	463	458	03 00	488	10 45	431	54	18
465	467	467	471	470	472	467	466	166	159	18 20	473	04 31	424	49	19
458	461	464	165	465	464	464	463	463	460	03 10	473	07 08	438	35	20
451	453	455	456	454	451	453	153	453	452	03 20	467	09 00	435	32	21
443	445	415	445	446	148	445	415	448	441	03 05	458	07 55	418	40	22†
445	445	448	449	153	449	448	148	416	449	10 35	465	07 00	431	34	23
442	443	442	413	141	444	444	441	438	438	02 55	455	07 25	412	43	24
444	445	444	445	145	445	444	443	412	436	03 00	452	08 35	400	52	25
440	445	441	456	452	149	451	453	411	442	21 35	476	09 20	408	68	26
445	451	451	449	452	457	453	445	415	440	20 20	464	08 03	408	56	27†
445	445	441	445	418	453	450	448	146	442	03 15	455	08 50	419	36	28
440	444	451	443	444	450	443	441	442	437	02 52	457	09 07	409	48	29
443	443	412	442	444	446	443	412	442	437	19 35	458	08 35	409	49	30
441	445	448	452	452	150	450	451	450	444	02 50	462	05 45	420	42	31
445	447	448	449	450	150	449	449	448	442					45	Mean
445	448	448	448	449	450	449	449	450							Mean†
440	443	443	446	440	448	446	446	446							Mean‡

* Loss of record. (Day omitted for means.)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 18

Hourly Values of Vertical Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

June

2,000T plus tabular quantities

Date	Hours G. M. T.															
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
1	432	455	454	450	439	429	423	427	430	430	433	438	440	443	444	
2	445	448	447	443	439	433	434	431	429	430	433	432	434	439	438	
3	442	444	450	455	457	454	451	441	444	444	448	447	443	441	442	
4	445	453	450	447	*	*	455	449	450	451	451	450	449	450	448	
5	432	453	452	452	451	448	440	431	434	431	431	433	443	449	449	
6†	451	453	452	450	451	448	442	439	442	441	445	450	455	455	451	
7†	451	451	455	455	452	441	438	440	442	443	441	441	443	445	447	
8	453	453	450	450	447	431	426	429	425	430	442	450	453	453	441	
9‡	449	454	461	461	462	452	450	448	450	451	451	448	435	450	451	
10	457	461	463	463	457	443	429	429	431	441	454	459	460	453	448	
11	454	459	462	461	454	449	432	422	428	435	439	441	452	452	453	
12	451	454	459	456	451	452	448	441	441	450	455	459	454	452	452	
13	451	457	463	470	471	467	459	449	449	450	455	463	459	453	452	
14	453	455	457	449	443	422	416	406	401	401	417	423	426	430	443	
15	444	449	448	454	452	453	454	448	445	439	442	441	443	443	452	
16	452	452	451	450	448	448	442	439	430	437	435	443	442	441	441	
17	448	449	448	447	444	443	439	429	428	431	431	435	442	449	452	
18	451	459	456	453	452	451	449	445	445	447	448	444	448	449	450	
19	455	459	460	453	449	442	438	426	425	429	432	433	439	443	447	
20	456	459	454	451	*	*	432	430	439	441	443	445	450	451	450	
21†	445	448	452	453	454	451	443	433	437	442	443	443	443	442	441	
22	449	450	451	454	451	442	433	439	447	441	440	445	438	439	431	
23‡	455	456	456	457	454	453	451	448	441	442	440	453	451	449	455	
24	461	454	460	463	466	457	439	429	428	423	434	439	440	441	443	
25	451	452	450	445	443	441	440	431	427	422	428	431	432	432	437	
26	450	451	452	455	445	444	442	432	426	427	428	433	442	444	441	
27	443	444	441	434	428	429	432	430	440	449	459	452	451	448	447	
28	450	447	445	444	450	444	444	447	445	444	442	439	440	442	443	
29	449	452	450	441	438	426	420	421	421	428	429	431	431	439	441	
30‡	461	460	457	452	446	407	401	412	422	429	452	469	471	463	463	
Mean	451	453	454	453	449	443	438	434	431	436	440	443	445	445	447	
Mean†	450	453	455	457	449	452	445	440	443	445	447	449	450	449	446	
Mean‡	458	456	458	456	448	438	432	429	428	429	441	446	445	447	451	

* Loss of record (Data omitted for means)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 18

Hourly Values of Vertical Force, 1952

(Averages for sixty minutes centred at the full hours of Greenwich Mean Time)

June

2,000Y plus tabular quantities

Hours G M T.									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Mag	Time	Mag		
r	r	r	r	r	r	r	r	r	r	H. M	r	H. M	r	r	
444	444	445	445	445	444	444	443	443	441	02 50	456	06 05	422	34	1
439	441	442	441	442	441	441	411	411	439	03 05	450	07 55	427	23	2
444	443	442	442	444	445	443	413	443	446	02 55	462	12 20	439	23	3
449	450	451	451	450	452	450	451	451	*	*	*	*	*	*	4
447	453	452	453	454	454	452	452	450	117	03 10	463	10 00	430	33	5
452	453	454	454	454	454	452	451	419	150	03 20	463	06 40	438	25	6†
449	451	452	452	452	451	551	452	451	148	03 00	464	06 25	435	29	7†
449	454	455	452	451	454	455	449	448	446	16 25	470	07 50	419	51	8
448	455	459	459	460	457	457	457	456	453	03 15	474	14 55	441	33	9†
452	450	454	454	454	459	456	454	450	451	03 03	467	06 05	427	40	10
451	456	457	454	456	455	454	459	454	450	03 05	469	07 00	420	49	11
452	455	455	455	454	455	454	454	454	453	03 20	463	07 35	437	26	12
454	454	453	453	455	455	457	455	453	457	04 30	477	08 20	445	32	13†
451	450	443	451	452	444	448	445	452	436	18 25	463	08 48	396	67	14‡
452	452	451	450	450	451	451	452	451	410	03 05	463	09 10	437	26	15
447	444	449	448	447	450	419	418	418	445	02 55	454	06 00	425	29	16
450	452	454	455	455	456	456	455	454	446	03 10	461	07 48	426	35	17
449	447	451	452	452	454	454	451	455	451	03 25	462	11 30	442	20	18
450	453	452	453	454	454	453	454	453	446	03 05	461	07 15	421	40	19
450	450	451	451	451	450	449	150	448	*	*	*	*	*	*	20†
442	443	447	448	448	447	448	448	449	445	01 20	460	07 15	428	32	21†
439	443	443	450	449	447	418	445	451	444	03 15	461	14 18	432	29	22
454	459	462	461	460	460	462	464	460	455	22 12	469	08 40	434	35	23†
444	450	451	452	454	453	452	450	451	447	03 45	471	09 05	417	54	24‡
441	442	441	442	444	450	459	455	451	441	21 17	464	08 43	420	44	25
450	448	451	450	448	447	445	442	442	443	03 15	463	08 30	423	40	26
449	444	449	453	449	448	448	447	450	444	17 55	456	04 15	422	34	27
448	448	448	449	449	449	449	447	445	446	03 55	452	11 05	435	17	28
441	441	442	443	445	455	449	448	445	439	19 40	463	08 10	419	44	29
464	464	463	463	462	462	461	459	455	450	11 25	474	06 08	395	79	30‡
448	450	451	451	451	452	452	451	450	447					37	Mean
449	450	451	452	452	453	453	451	451							Mean†
452	456	456	457	458	455	456	455	455							Mean‡

* Loss of record. (Day omitted for means.)

† Five international quiet days.

‡ Five international disturbed days.

TABLE 19

PRINCIPAL MAGNETIC STORMS

(January-June, 1952)

Greenwich date 1952	Storm time		Sudden commencement			Degree of activity (4)	Maximal activity Greenwich day	Ranges					
	G M T. of beginning		Type (2)	Amplitude (3)				D	H	Z			
	H	M		D	H						D	H	Z
January 27 . . .	04	14	28	18			ms	27	1	272	55		
January 29 . . .	06	24	30	15			m	29	2	174	42		
February 1 . . .	06	00	1	21	.		m	1	1	186	55		
February 5 . . .	23	30	14	21			m	6	2	192	56		
February 16 . . .	00	30	17	03			m	16	2	242	63		
February 23 . . .	21	22	24	19	s c	-1	+24	+12	m	24	3	173	52
February 26 . . .	01	50	27	21			m	26	3	212	60		
March 3	07	26	10	09	s c	.	+20	+9	m	3	3	194	60
March 21	03	30	22	09			ms	21	2	260	71		
April 1	00	56	6	11			m	3	4	157	63		
April 21	11	48	22	11	s.c		+28	+ 11	ms	21	2	286	97
April 29	02	30	02	19			m	30	4	168	64		
May 7	01	56	8	16			m	7	4	190	66		
May 26	05	54	27	11	.		m	27	5	224	64		
June 29	19	26	30	20	s c		+20	+11	m	30	3	228	71

(1) Approximate time of ending of storm construed as the time of cessation of reasonably marked disturbance movements in the traces.

(2) s c—Sudden commencement, ()—Gradual commencement

(3) Signs of amplitudes of 'D' and 'Z' taken algebraically; (D—reckoned negative being westerly), (Z—reckoned positive being vertically downwards).

(4) Storm described by three degrees of activity . (m)—for moderate (when range in H is between 150 γ and 250 γ), (ms)—for moderately severe (when range is between 251 γ and 400 γ); (s)—for severe (when range is above 400 γ)