Kodaikanal Observatory

BULLETIN No. CXXXII.

PART I

SUMMARY OF PROMINENCE OBSERVATIONS FOR THE FIRST HALF OF 1950

This bulletin embodies the results of observations of prominences made at Kodaikanal Observatory during the first half of 1950, supplemented by data from other foreign observatories for those days on which Kodaikanal had imperfect or no photographs. We take this opportunity to thank the Observatories at Mt. Wilson and Meudon who have been kind enough to send their spectroheliograms for the missing days.

K Prominences at the limb.—During the half-year under review, photographs of calcium prominences at the limb were obtained at Kodaikanal on 152 days, of which the plates for 145 days were utilised for the computations; the Observatories at Mt Wilson and Meudon each supplied spectroheliograms for 25 days. In all, the records were complete for 177 days during the half year and these were counted as 168½ effective days after giving due weightage for the quality of the photographs.

The mean daily areas (in sq. minutes of arc) and the mean daily numbers derived from all the above records are given below :—

	Combined data	
	Mean daily areas (sq. minutes)	Mean daily numbers
North	1·70	4·69
South	1·11	3·39
Total .	2·81	8·08

The above figures show that compared to the previous half year there has been a decrease in both areas and numbers, the decrease being 34% in areas and 15% in numbers. The southern hemisphere was generally less active than the north as in the previous half year.

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For comparison with the data published in bulletins prior to 1923, *i.e.*, before the co-operation of other observatories came into force, the values based on Kodaikanal observations alone are also given below :—

	Kodaikanal data only	
	Mean daily areas (sq minutes)	Mean daily numbers
North	1·71	4·96
South	1·07	3·47
Total	2 78	8·43

The distribution of areas and numbers in 5° ranges of latitude is represented in the following diagram.

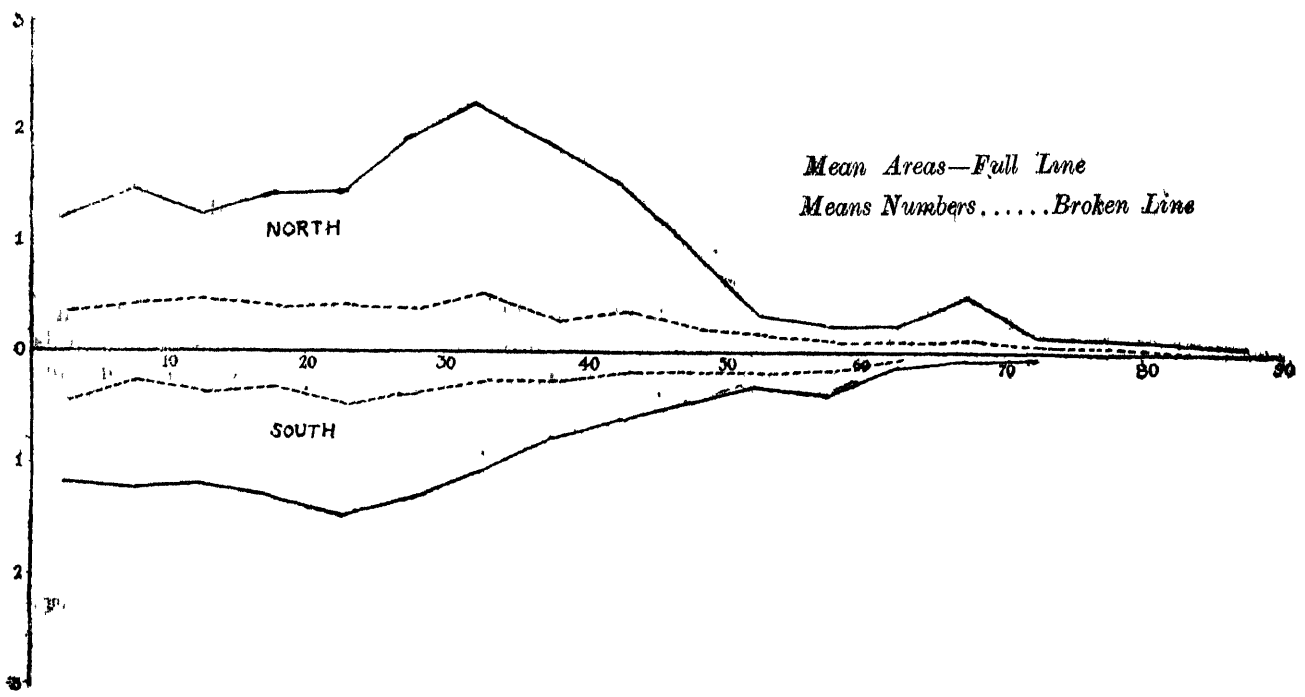

Fig 1. Mean Areas and Mean Numbers of Calcium Prominences (January 1 to June 30)

The most pronounced activity of prominences, as judged from areas, is centred in latitudes 30°—35°N and 20°—25°S . This represents an equatorial drift of the peaks of activity by 10° as compared with the previous half-year. The small high latitude maximum in the north has remained stationary at 65°—70° as in the last half-year.

The monthly, quarterly and half-yearly areas, numbers, heights and extents of prominences as obtained from photographs of all the three observatories are shown in the following table :—

TABLE I

Months	Number of days (effective)	Areas (Sq. mins.)	Numbers	Daily means		Mean height	Mean extent
				Areas (sq. mn.)	Numbers	"	°
1950							
January	27½	87·3	232	3·20	8·51	38·90	5·0 2
February	26½	74·9	198	2·80	7·40	41·49	4·48
March	28½	84·0	250	2·95	8·77	42·08	3·46
April	28½	63·55	251	2·25	8·89	37·61	3·23
May	28½	75·35	221	2·62	7·69	38·03	4·38
June	29	89·15	211	3·07	7·28	46·23	4·69
1st Quarter	82½	246·2	680	2·98	8·24	40·82	4·29
2nd Quarter	86	228·05	683	2·65	7·94	40·41	4·05
1st half-year	168½	474·25	1363	2·81	8·09	40·62	4·13

The following table gives the distribution of prominences east and west of the sun's axis :—

1950 January—June	East	West	Percentage East
Total areas (sq. minutes)	223·25	261·0	47·17
Total numbers	625	738	45·85

The eastern defect in both the areas and the numbers persists as in the previous half-year; the defect is more pronounced in the case of numbers.

Observations with the Prominence Spectroscope

Metallic Prominences.—Eleven metallic prominences were observed during the period under review ; their details are given in the table below :—

Date 1950	Time I.S.T.	Base °	Latitudes North °	Latitudes South °	Limb	Height in Hα (seconds of arc)	Lines in which observed	Remarks
January	h m.							
5	08 40	2	31		E	22·4	D's, b's and 6677	Ht. in D's=17·6″. Ht. in b's=18·4″.
20	10 25	..	12		E	Not measured	Do.	Ht. in D's and b's too Small to measure.
February						"*Nil*"		

Date 1950	Time I.S.T.	Base	Latitudes North	Latitudes South	Limb	Height in Hβ (seconds of arc)	Lines in which observed	Remarks.
March								
13	10 00	0	20		E	32	D's, b's and 6677	Ht. in D's and b's too small to measure.
15	09 30	0	30		W	40	Seen in all the 12 metallic lines.	Do.
	10 00	23	17		E	40	D's & b's	Ht. in D's=28″·0″. Ht. in b's=32″·0.
16	09 00	0	18		W	80	Do.	Ht. in D's and b's too small for measurement.
18	09 00	1	25		E	44	Do.	Ht. in D's=28″·0. Ht. in b's=28″·0.
20	09 05	0	18		E	76	Do.	Ht. in D's and b's too small for measurement.
April								
13	08 45	1	29·5		E	46·4	Do.	Do.
May								
8	09 05	1	29·5		E	14·4	D's only	Ht. in D's too small for measurement
16	09 20	0	20		W	Speck-Ht. too short to measure	D's, b's & 6677	Ht in D's and b's too small for measurement.
June						"*NIL*"		

NOTE—The key to the wave-lengths of the metallic lines is given below —

No.	λ	Element	No.	λ	Element
1 . . .	4924·1	Fe+	7 . . .	5276·2	Fe+
2 . . .	5016 0	He	8 . . .	5316·8	Fe+
3 . . .	5018·6	Fe	9 . . .	5363 0	Fe+
4 . . .	b_4, b_3, b_2, b_1	Mg. Fe+	10 . . .	D_2, D_1	Na
5 . . .	5234·8	Fe	11 . . .	6677	He
6 . . .	5276·0	Cr	12 . . .	7065	He

The metallic prominences were distributed as follows :—

Latitudinal zone	1°—10°	11°—20°	21°—30°	31°—40°	Mean latitude	Extreme latitudes
North	..	6	4	1	22°·8	12° and 31°
South	..	..	..	..	..	..

Doppler displacements of ' C ' line in the chromosphere and prominence.

Particulars of Doppler shifts observed in the chromosphere and the prominences with the spectroscope are collected in table III.

TABLE III

Date & month	Time I S T (GMT.+05 h. 30m)	Mean latitude North °	Mean latitude South °	Limb	Displacements To red A°	Displacements To violet A°	Remarks
	h. m.						
January							
5	08 40	31		E	0·5	1	Metallic.
5	08 45		39	W	0 5		At top.
20	10 25	12		E	1·5	1·5	Metallic.
29	09 30		20	W	1,5		
February							
3	09 45	10		W		3	Eruptive Prominence.
3	09 46		14	W	4		Eruptive Prominence.
6	09 40		30	W	0·5		
8	09 50	26		E	0·5	0·5	
9	09 35	26		E	0·5	0·5	
10	09 20	30		E	Slight	Slight	At many pnints.
March							
5	08 45	31		W		0·5	At top.
8	11 00		2	E	0·5		
	11 00	34		E	1	1	
13	09 30	35		W	1	1	R at top and V at bottom.
	10 00	20		E	4		Metallic.
15	09 30	30		W	3	3	Metallic.
	10 00	17		E	1	2	Metallic ; displaced to Red at lat 24° and to Violet at Lat 11°.
16	09 00		12	W		0·5	Metallic.
20	09 00	18		W	1·5		
	09 02	70		E	1·0	1·0	At top.
	09 05	18		E	0·5	0·5	Metallic.

TABLE III—*contd.*

Date & month	Time I. S. T. (GMT., +05h. 30m)	Mean latitude		Limb	Displacements		Remarks
		North °	South °		To red A	To violet A	
	h. m.						
April							
10	10 15	4·5		W		2	
12	09 10	16·5		W		Slight	
13	09 00	13		E	1·5	2·0	
17	10 00	22		E	1		At bottom.
18	08 45	22		E		2	At top.
19	09 10	16·5		E	2	2	Various places on the prominence.
	09 15		15	E		3	
May							
1	10 00		16	W	1·0		Not seen on Calcium plates taken at 07·32 and 07·42 IST.
2	08 40	41		W		0·5	At top.
4	09 10 to 09 40		10	E	3·0—4·0	1·0	At base.
5	08 30	32·5		E	1·0	0·5	Top to red and bottom to violet.
	08 45		40	E	0·5	0·5	
6	08 45	5·5		E	1·5	1·0	At base.
	09 25	39		W	1·0		At top.
	09 30	23		W		1·0	Do
8	09 35	17		W		1.0	Do.
	09 40		15	W	0·5		At base.
10	08 50	8		E	0·5	0·5	Not seen on calcium plates taken at 0746 & 0846.
12	09 10	29·5		E	1·0	1·0	At top.
	09 20		21	W		1·0	In the middle.
16	09 20	20		W	1·0		
24	09 45	1		E	0·5	1·5	At base.
June					*Nil*		

In all, displacements were recorded on 43 occasions as against 17 in the previous half-year. The distribution of these displacements was as follows :—

Latitude	North	South	Total
0—30	23	10	33
31—60	7	2	9
61—90	1	..	1
Total	31	12	43
East limb		23	
West limb		20	

12 of these displacements were towards red, 11 towards violet and the remaining in both directions simultaneously.

A large eruptive prominence was observed on February 3 at a mean latitude of 2·5° south extending over 32° on the west limb and covering an area of about 8 square minutes of arc. (This prominence was seen as a long dark marking on the hydrogen spectroheliograms taken from January 22). The prominence showed large Doppler displacements before it erupted. A series of photographs were secured from 0907 hrs. I. S. T. to 1,427 hrs. I. S. T. during the different phases of the eruption. The maximum height reached by the prominence as recorded on the K spectroheliogram taken at 1112 hrs. I. S. T. was 630 seconds of arc or nearly 2,85,000 miles.

Reversals and displacements on the sun's disc.

The H-alpha line was observed in emission on the disc in the vicinity of spots on 36 occasions and the D_3 line in absorption on 27 occasions. 3 displacements of the H-alpha line were also recorded on the disc near spot regions. The distribution of these reversals and displacements was as shown below:—

	North	South	East	West	Total
Bright reversals of H-alpha line on the disc	26	10	28	8	36
Dark reversals of D_3 line on the disc	19	8	21	6	27
Displacements of H-alpha line on the disc	2	1	1	2	3

Observations of Heights of prominences in H_α, D_3 and H_β lines.

Systematic visual observations of the heights of conspicuous prominences in the H-alpha, D_3 and H_β lines were begun with the prominence spectroscope from May 1947. The values thus obtained were compared with the heights of the same prominences measured on the K spectroheliograms. The following table gives details of these observations made up to the end of the first half of 1950.

Year	Period	Total No. of prominences whose heights were measured in H_α, D_3 and H_β lines	Mean heights			
			Ca	H_α	D_3	H_β
1947	May—June	55	63·4	54·4	47·5	39·9
	July—December	114	70·5	60·7	52 6	48·6
	Whole year	169	68·2	59 3	50 9	46·4
1948	January—June	171	53·9	50 4	47 3	41·1
	July—December	159	52·6	45·0	37·9	35·7
	Whole year	330	53 3	47·8	42 8	38·5
1949	January—June	151	64·4	60·8	57 0	52·3
	July—December	77	51·3	47·1	43·7	40·4
	Whole year	228	60·0	56 1	52 5	48·3
1950	January—June	65	61·2	61·4	57·9	53·2

Observations with the Hale Spectrohelioscope.

Details of observations of the Doppler displacements of the H-alpha line over prominences and dark markings made with the spectrohelioscope are given below :—

	North	South	East	West	Total
Displacements in prominences	20	11	21	10	31
Displacements in dark markings	14	5	10	9	19

	Displacements towards		
	Red	Violet	Bothways
In prominences	7	4	20
In dark markings	5	6	8

Particulars of solar flares observed with the spectrohelioscope during the period under review are given in the following table :—

TABLE IV.

Date	Time in I. S. T.			Latitude	Longitude from C.M	Intensity	Maximum width of H-alpha Line
	Beginning	Maximum	End				
1950	H M	H M	H. M	°	°		A°
January 22		09 45		+19	70 E	1	0·8
February 17		07 40	08 14	+8	40 E	2	
22	08 40	08 45	08 55	+12	27 W	1	
March 9		09 41		—16	57 E	1	1.2
10	07 53		08 10	+27	30 W	1	
13	11 10		11 20	+13	48 E	1	2·0
		15 40		+13	45 E	1	
	08 23		08 30	+22	14 E	1	2·0
April				*Nil*			
May				*Nil*			
June 5		08 25	08 33	+6	46W	1	1·8

Details of H-alpha dark markings and prominences whose sudden disappearances within an interval of 24 hours or less were observed are summarised below :—

Nature of phenomenon	Date and time of phenomenon when last seen I. S. T.	Co-ordinates of phenomenon when last seen	
		Mean latitude	Mean longitude from C.M.
	H. M.	°	°
H-alpha dark markings	January 6 . . . . . 11 30	(*a*) 32 N (*b*) 36 N	7 W 22 W
	March 26 . . . . . 11 30	42 N	12 E
	April 11 . . . . . 11 30	39 S	21 W
	April 14 . . . . . 11 10	37½N	10 E
	April 18 . . . . . 11 30	27 N	2 E
	June 20 . . . . . 11 30	26 N	31 E

Nature of Phenomenon	Date and time of phenomenon when last seen (I. S. T.)	Co-ordinates of Phenomenon when last seen: Mean Latitude	Limb
Prominences	January 11 15 15	54 N	E
	January 21 07 45	20 N	E
	February 2 08 00	25½N	W
	February 3 07 45	2½S	W
	April 19 11 30	16½N	E
	May 18 14 26	33½N	W
	May 19 11 00	13½S	E

Prominences projected on the disc as H-alpha absorption markings.

During the period under review, photographs of the Sun's disc in the H-alpha line were obtained at Kodaikanal on 159 days, of which the plates on 5 days were rejected due to their poor quality. Spectroheliograms were also received for 23 days from the Mt. Wilson Observatory and for 17 days from the Meudon Observatory. The records were thus available for 178 days of the half-year and these were reckoned as 172½ effective days after necessary weightage being given to the quality of the photographs.

The mean daily areas (in millionths of the Sun's visible hemisphere uncorrected for foreshortening) and the mean daily numbers of the H-alpha dark markings as derived from these photographs are given below :—

	Combined data: Mean daily areas. (millionths of the sun's visible hemisphere)	Mean daily numbers
North	2425·2	18·72
South	1542·2	13·63
Total	3967·4	32·35

The above values indicate that there has been a decrease in both the areas and the numbers (similar to the trend shown by prominences on the limb), the decrease in areas being 13% and that in numbers 14%, as compared with the corresponding values of the previous half-year.

The figures based solely on Kodaikanal photographs are also given in order to facilitate comparison with the data published in Bulletins prior to 1923.

	Kodaikanal data only: Mean daily areas. (millionths of the sun's visible hemisphere)	Mean daily numbers
North	2284 7	17·59
South	1434·3	12·57
Total	3719·0	30·16

The distribution of the areas of the markings in latitude is represented in the following diagram :—

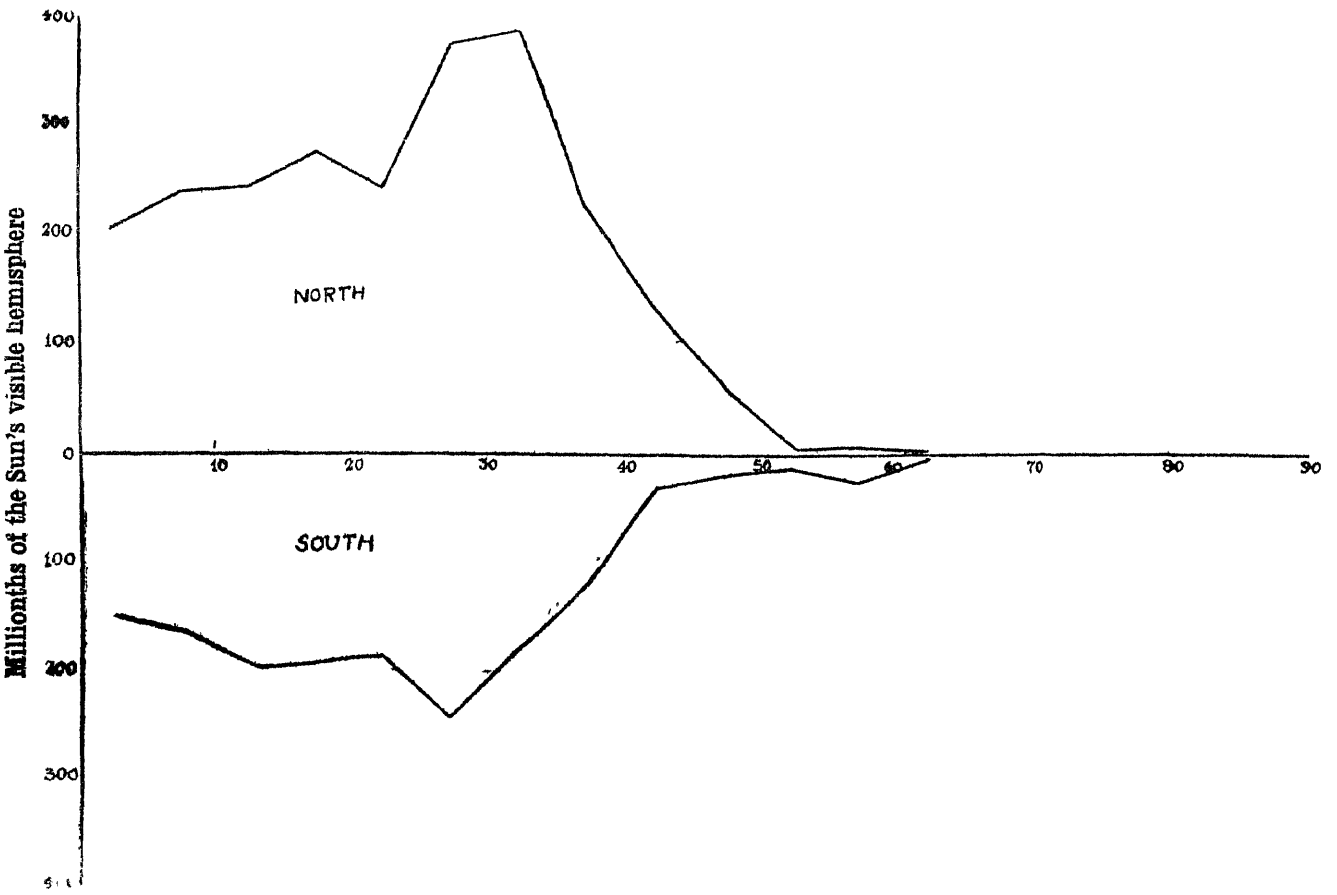

Fig. 2 Mean Areas of Hα Absorption Markings. (January 1 to June 30, 1950.)

The zones of maximum activity of the absorption markings are centred in latitudes 25°—35°N and 25°—30°S, indicating a poleward shift of the peaks of activity by 5° from the positions in the previous half-year.

The distribution of areas and numbers of the dark markings about the Sun's axis is indicated below :—

January—June 1950	East	West	Percentage East
Total areas (Millionths of the Sun's visible hemisphere)	329296	355048	48·12
Total numbers	2750	2830	49·45

The eastern defect in both the areas and the numbers still exists as in the last half-year, but the defect is slightly less.

PART II

Summary of Magnetic Observations for the First Half of 1950

Introduction

Beginning from this bulletin the results of magnetic observations made at the Kodaikanal Observatory will be included in the half-yearly bulletins of the observatory which have hitherto contained only solar data. A brief history of the magnetic observatory, the instruments and the system of observation is given below.

The Kodaikanal Magnetic Observatory is situated in the grounds of the astronomical observatory at latitude 10°14′ N and longitude 77° 28′ E at an elevation of about 7,620 ft. above mean sea level. Kodaikanal was selected as one of the five base stations for the magnetic survey of India and a magnetic observatory was started at this station in 1902 Till 1916 the magnetic observatory functioned under the control of the Survey of India with its headquarters at Dehra Dun In 1916 the observatory was placed under the control of the Director, Solar Physics Observatory, for better supervision of work. The observatory was, however, closed down on 1st October 1923 as the Survey of India no longer required the observations. The magnetic data collected during the period 1902 to 1923 have been published in Volumes 1 to 19 of the "Records of Survey of India"

In view of the growing importance of geomagnetic observations in relation to solar phenomena and because of the proximity of Kodaikanal to the magnetic equator, the magnetic observatory was restarted in January 1949 as part of the post-war development programme of the Kodaikanal Observatory. The buildings of the old magnetic observatory were almost intact and were repaired to house the instruments of the new magnetic observatory.

Location :—The observatory is built on the western slope of the hill on which the old domes and offices of the astronomical observatory stand and is about 70 feet below the floor level of the domes. The variometers are installed in an underground room, 15′ × 20′, with very thick walls which are surrounded on all sides by a 3′ wide passage The thermal insulation of the variometer room is therefore very efficient. Supported on the thick, arched roof of the variometer room is a wooden hut which houses the instruments of absolute measurements. A masonry pillar, about 300 yards to the north of the building, carries a reference mark for declination observations.

Instruments :—The new observatory started with the old instruments which were in use before 1923 ; they were renovated and put into commission. These consist of :—

(1) H.F., V.F. and Declination Magnetographs of Watson type ;

(2) Kew Magnetometer No. 3 with a pair of magnets for absolute measurements of H and D ;

(3) Wild pattern Earth Inductor No. 46 by Schulze, Potsdam ;

(4) Galvanometer No. 203 by Plath, Potsdam.

The variometers are installed on isolated pillars in the underground room in precisely the same way as they were in the old magnetic observatory. A full description of these instruments and their mounting is given in the records of the Survey of India Vol. XIX (1901—20). The data incorporated in the present summary are derived entirely from the records of these instruments. However, a set of La Cour variometers has recently been added to the equipment of the observatory ; these have been installed in the variometer room by the side of the Watson magnetographs and systematic records are being made with these instruments since June 1951.

Determination of absolute values :—

(1) Absolute observations of H. F. are made once every week (on Wednesdays) with Kew Magnetometer No. 3.

(2) Absolute observations of declination are made once a week (on every Thursday) 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 :—The charts for 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.

Determination of scale coefficient :—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 distancess of 100 cms. and 120 cms. in the case of the H.F. magnetograph and at distances of 148·6 and 122·6 cms. in the case

of the V. F. magnetograph. The value of the scale coefficient adopted for any month for H.F. is the average of the mean observed value for that month and those of the preceding and succeeding months

The scale co-efficient of the declination magnetograph has been determined once for all and is 1·03¹ per mm.

The scale coefficients of H.F. magnetograph in ϒ/cm. for the months January—June 1950 are given below:—

Instrument	*Jan.*	*Feb*	*March*	*April.*	*May*	*June.*
H.F. magnetograph	48·2	48·2	48·0	48·4	48·5	49 0

In the case of the V F. instrument, a scale coefficient of 20 ϒ/mm. has been adopted for the first six months of 1950.

Temperature co-efficient of the magnetographs :—The diurnal range of temperature in the variometer room is 0·1°F. The annual range (summer maximum—winter minimum) is about 3·5°F The temperature coefficients for the H.F. and V.F. magnetographs were determined by heating experiments For this purpose the air temperature in the magnetograph room was raised by about 5° F by lamps and heaters and a series of temperature time readings were taken during the periods of rising and falling temperature. From the corresponding ordinates on the magnetograms the temperature coefficients were deduced in the usual way. The adopted value for the H F magnetograph is 32ϒ per degree F. This is rather a high value for temperature coefficient and is due to the fact that the H F. magnet was locally made out of ordinary steel wire in the absence of a magnet of appropriate quality. This will, however, be replaced by a cobalt steel magnet which has recently been supplied by Messrs Cambridge Scientific Instrument Co The temperature coefficient of the V.F magnetograph was found to be negligible

Base-line values .—(*a*) Base line values for H.F 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 absolute horizontal force. They 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 seven values, all reduced to 65°F, including the given week as fourth of the seven. From this the base line values for the individual days of the week were determined after applying necessary temperature correction. This procedure was adopted, as certain absolute observations yielded results differing by 100 to 200 gammas for the three standard distances of 22 5, 30 and 40 cms of the deflecting magnet The accuracy of the base line value derived from the above procedure is estimated to be ± 20 ϒ.

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

The performance of the V.F. instrument during the first three months of 1950 was unsatisfactory, resulting in loss of record on many days The tabulation of V.F. for these three months is therefore omitted.

(*c*) While working out the statistics for declination, it was noticed that absolute measurements of declination made during 1950 were vitiated by considerable errors and therefore unsuitable for computation of the base-line value. It was fortunate, however, that no adjustment had been made in the D magnetograph since its initial set-up and therefore the base-line value could justifiably be taken to be constant. This circumstance permitted the utilisation of the base-line value determined with the required accuracy in 1951 for the purposes of tabulation of the data for the first half of 1950. The base-line value was derived by the usual procedure of converting the ordinate, corresponding to absolute observation with Kew Magnetometer No. 3, into angle and adding this to the corresponding observed absolute declination value. The value of the base-line, so obtained, is 3°14′·9 The tabulated values of declination are correct to ± 0·5′.

The optical arrangements for the three magnetographs are such that with the H and the V instruments an increase in the ordinate corresponds to an increase in the values of the elements ; for the D magnetograph, however, an *increase* in the ordinate corresponds to a *decrease* in the westerly declination.

Basic hourly values and associated means.

Basic results —Tables 1 to 15 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 G.M.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 as (*i*) a quiet day (*ii*) a day of slight disturbance, (*iii*) a day of moderate disturbance, (*iv*) a day of moderate storm and (*v*) a day of great storm, depending on the ranges and the oscillations in the magnetograms. At Kodaikanal, a day is provisionally being taken as 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 No. 16 gives a list of principal magnetic storms recorded during the first half of 1950.

KODAIKANAL,
Dated 4th September, ~~*1959.*~~ 1951

A. K. DAS,
Director,
Kodaikanal Observatory.

TABLE 1

Declination (Westerly)

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 1°47′.5 plus Tabular quantities.

January, 1950

Date	Hours (1) G M.T.														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	42·8	43·1	43 5	43·1	42 6	42·6	43 6	43·3	44 4	44 0	43·1	42·5	42·1	42·1	42·1
2	42·9	43·0	42·7	42·8	42 5	42 5	42·1	42·1	42 1	43·5	42 1	41·6	41·6	41·6	42·0
3	42·4	42·6	42·9	43·1	42·9	42·5	42·1	42 0	42·3	42 5	42 3	42 1	42·1	42·3	42·1
4	42·4	42 6	43·1	43·3	43·3	43·1	42 5	42·3	42·0	42·2	42·1	42·5	42·3	42·1	42·1
†5	42·9	43·1	43·3	43·2	43·3	41·9	42 6	42 1	42·1	42 5	41·6	41·6	41·5	42·6	42·9
6	43·0	43·2	43·1	43·1	43·3	43 0	42 5	42 5	42·5	43·1	41 6	41 2	41·1	41 1	41·5
7	43·1	43 3	43·3	43·0	42 8	42·9	42 9	43 4	43 7	43 0	42·2	41 4	41 2	41·5	41·5
†8	42 8	42 9	43 0	42 7	42·4	42·1	42·1	43·0	43 0	42·1	42 2	41 8	41·6	42·0	42 3
9	42.7	42·8	42 6	43·7	43·7	42 7	44 0	44 5	44·1	44·1	43 3	43·3	42 6	42 1	42·1
10	43·3	43·2	42 6	42·6	43 1	43 1	41·6	41·6	41·6	41·6	41·7	41 7	41 7	42 1	42·3
11	42·4	42·6	42·4	42·6	42·6	42·5	42·5	43·9	45·2	45·2	44·1	42·1	41·9	42·0	42·0
12	41·7	41·9	42 4	42·4	42·1	41·6	41·6	42·5	42 6	42·6	42 1	41 9	42·3	42·1	42·1
13	42·5	42·5	42 5	42 1	42·0	41 9	41·8	42·5	43 1	43·1	43·1	43·5	42·7	42·5	42 1
††14	42·3	42·6	42·6	42·6	42·9	42 5	40 9	41·3	41 3	42·1	42·4	42 6	42 0	41·9	41·9
15	42·0	42·0	42·3	42 3	41·7	42·2	41·6	41 6	41 3	43·1	42·6	42·2	42 2	42·1	42 2
16	42·6	43 2	43 2	43·0	43 0	42 5	41·4	43·1	42·3	42·5	42·2	42·0	42·0	42·3	42·5
†17	42·0	42 0	42·5	42 6	42·9	42·0	42·3	42 1	42 2	42 1	42 0	42 0	42·1	41 6	41·6
††18	42·9	42·3	41·9	40·5	39·2	39 0	40·2	42 6	42·9	42·8	42·5	42·3	42·4	42·3	42·4
19	43·1	43·1	43·3	43·1	43 5	43 3	42·5	41 6	41 5	42 1	42 0	42·2	42 0	42·1	42·1
††20	41·3	42·5	43·3	43·0	43·6	43 4	42 5	41 8	42·1	42 3	41·7	41·6	42 3	42·5	41·1
††21	42·1	42 5	43 3	43 6	44·7	44 7	43 8	43 5	44·1	44 3	44·1	43·6	43·0	42·7	43·0
22	42·5	43 1	43·1	42·9	42 7	42 3	41 6	41 1	42·3	41·1	41·5	41·6	41·9	41 3	42·0
23	42·9	43·1	42·3	42·3	43·9	44·1	44·1	43 3	43 2	43·5	43·7	43 5	43·5	43·1	42·2
††24	41·4	41·7	41·6	41·8	42·5	41·9	41 8	41 4	41 6	41·9	41·6	41 3	41·5	41·6	41·8
††25	42·1	42·1	42·3	42·1	42·5	41·9	41 9	41·4	41·6	42·0	41·6	41·6	41·6	41·8	42·0
26	41·6	41·8	42 4	42·5	42·6	42·6	42·6	42 2	42 6	43·1	42·7	42·6	42·1	42·1	41·9
27	42·4	42·6	42·6	42·8	42 8	41·8	41·8	41·6	41·7	41 7	41·3	42·1	42·1	42·1	42·3
28	42·3	42·5	42·5	42·7	43·1	41·9	42·5	43 1	43 1	43·1	43 3	41·8	43·1	42·2	42·3
†29	42·1	42·1	42·3	42·3	42·1	42·1	41·9	41·6	41 6	42·2	42·5	42 6	42 9	42·5	42·1
30	42·5	42·6	42·5	42·4	42·4	41·3	41·1	41·6	41 3	41·9	41·1	41 1	41·5	41·3	41·5
31	42·3	42·6	42·8	42 8	43·1	41 6	41 6	42·1	42·3	42 4	42·4	42 1	42 1	42·1	42 4
Mean	42·4	42 6	42·7	42·7	42 9	42·5	42 2	42 3	42·5	42·7	42·4	42·1	42 1	42·1	42·1
Mean †	42·5	42·5	42·6	42·3	42·0	41·4	41 8	42 3	42 4	42·3	42·2	42·1	42 1	42·2	42·3
Mean†‡	41·8	42·3	42·6	42·6	43·1	42·9	42 2	41·9	42 1	42 5	42·3	42·1	42 1	42 1	42 0

† Five international quiet days.
†† Five international disturbed days.
T No record. Day omitted for means.

TABLE 1

Declination (Westerly)

(Averages for sixty minutes centred at the full hours of Greenwich meantime) 1°47′·5 plus tabular quantities.
January 1950

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.	′	′	
42·1	42·1	42·1	42·1	42 3	42·3	42·3	42·6	42·9	42·7	7 38	44·7	11 34	42·1	2·6	1
41·6	41 6	42 6	42·6	42·5	42·3	42·1	42·1	42 1	42·3	7 50	44·1	13 50	41·5	2 6	2
42·1	42·0	42·1	42·1	41·7	42 3	41·7	42·1	42·4	42 3	1 50	43·2	5 22	39·8	3·4	3
42·0	42 0	42·3	42·5	42·6	42·6	42·5	42·5	42·9	42 5	1 30	43·3	13 54	41·2	2·1	4
42·1	42·3	42·1	42 6	42 6	42·7	42 4	42·6	42·7	42·5	2 26	43·8	9 58	40·6	3·2	†5
41 6	41·9	42·5	42·5	42·5	42·6	42·3	42·6	42·7	42·4	1 00	43·2	10 54	40·0	3·2	6
41·8	42 3	42·1	42·5	42·5	42·5	42·6	42·6	42·6	42·5	7 32	43·5	11 30	40·9	2·6	7
42·1	42·0	42 3	42·5	42·4	42·1	42·3	42·4	42·5	42·4	6 38	43·1	10 34	41·1	2·0	†8
42·1	41·6	42·2	42·2	42·1	42·5	42·5	42·8	43·3	42·9	5 50	44·1	14 34	41·1	3 0	9
42·1	41·8	42·4	42·5	42·5	42·5	42·6	42·5	42·5	42·3	1 02	43·3	7 50	40·9	2·4	10
42·0	42·1	42·1	41 9	42·1	42·1	42·0	41·9	41·9	42·6	7 30	43·2	11 38	41·2	4·0	11
41·9	41 7	42 2	42 5	42·2	42 2	42 1	42·1	42·2	42·1	7 26	43·2	5 00	40·9	2·3	12
41·6	41·6	41·6	41 7	42·1	42·0	42·0	42·1	42·5	42·3	7 30	44·1	5 10	41·1	3·0	13
41·6	41 6	41·6	42·1	42·1	42·3	42·5	42·6	42·8	42·1	1 28	43·3	4 46	40·5	2·8	††14
42·6	42·3	42·3	42·5	42 3	42·6	42 5	42·7	42 7	42·2	1 10	43·1	5 10	41·1	2·0	15
42·9	42·1	42·1	42·2	42·5	42·6	42·7	42 3	42·0	42·5	6 50	43·3	4 50	40·9	2·4	16
41·5	41 5	41·5	41·1	42 2	42 2	41·9	42·2	42·6	42·1	2 26	43·2	5 10	39·9	3·3	†17
42·5	42·7	42·6	2·3	42·6	42 8	42 7	43·1	43·1	42·1	3 30	42·9	4 30	38·1	4·8	†18
42·1	41·6	42 0	42 2	42·0	42·0	41·6	41·6	41·6	42 3	2 06	43·6	6 30	41·1	2·5	19
41·1	41·1	41·5	41·6	42·3	42·0	42·0	42 0	42·0	42·1	2 30	44·1	10 50	39·4	4·7	††20
41·9	42·1	42·5	42·5	42·5	42	42 3	42·3	43·0	43·1	3 30	44·3	11 54	41·3	3·0	††21
41·6	41·6	42·0	42·5	42·4	42 5	42·5	42·5	42·7	42·1	0 45	43·1	5 26	40·8	2·3	22
42·1	41·5	42·0	42·0	41 6	41·1	41·1	41·7	42·6	42·7	2 10	43·2	6 24	41·1	2·1	23
41·5	41·1	41·3	42·0	41·7	41 4	41 1	41·4	42·1	41 7	3 10	43·6	8 58	41·1	2·5	††24
41·6	41·6	42·1	41 9	41·7	41·7	41 4	41·4	41·6	41·7	3 38	44·1	15 14	40·8	3·3	††25
41 8	42·1	42·3	42 4	42·4	42·1	41·9	42·1	42 2	42·3	8 00	43·1	4 34	41·1	2·0	26
42·4	42 2	42·1	41·7	42·1	42 1	41·9	41·9	42·3	42·1	1 50	43·3	10 30	40·8	2·5	27
42·3	42 3	42·5	42 5	42·5	42·4	42·5	42·3	42·6	42·5	8 46	43·3	20 34	41·1	2·2	28
42 1	41·7	41·7	41·9	42·1	42·1	42·1	42·3	42·5	42·1	2 50	42·9	5 00	41·1	1·8	†29
41·6	41 6	41 6	42·7	42·1	42 1	41·9	42·1	42 3	41·8	2 20	42·9	9 06	40·3	2·6	30
42 1	42·0	41·9	41·9	41 6	41 6	42·0	42 1	42·5	42 2	2 10	43·1	4 30	41·1	2·0	31
41 9	41·9	42·1	42·2	42 2	42·2	42·1	42·2	42·3	42 3	..	..	..	..	2·7	Mean
42·1	42·0	42·0	41·7	42·4	42·4	42 3	42 5	42·7	.		..	.	..	..	Mean†
41·6	41 5	41·8	42·0	42·1	41·9	41·9	41·9	42·3	..	.	..	..	..	..	Mean††

† Five international quiet days.
†† Five international disturbed days.
Ø No record. Day omitted for means.

TABLE 2

Declination (Westerly)

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 1°47′·5 plus tabular quantities.

February 1950

Date	Hours (G.M.T.)														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	42·9	43·3	43·3	43·2	43·1	42·1	40·9	42·1	43·0	43·0	42·2	41 9	41·6	41·6	42·5
2	42·7	43·1	43·1	43·3	43·5	41·6	41·1	40·9	40·6	40 0	39·7	39·7	40 4	41·4	41·8
3	42·9	42·9	43·4	44·1	43·1	42·5	41·4	41·1	41·1	40·0	39·9	39·8	40·5	40·5	41·1
4	42·6	43·1	43·6	43·5	43·1	42·7	41·5	40·5	40·5	40·5	40·6	41·6	41·6	41·1	41·1
5	42·8	43·1	43·4	43·3	43·1	42·9	42·1	41 6	42·3	42·6	42·5	42·6	42 0	41·6	41 6
6	41·8	41·9	41·8	41·9	42·1	42·0	41·6	41·1	41·7	41·6	41·7	41·6	41·6	41·6	41·7
7	42·4	41·3	42·3	43·0	42·9	42 6	42 3	41·5	41·8	41·6	41 4	41·6	41 4	41 6	41·7
8	41·1	41·1	41·3	41·8	42·3	42·0	41 6	41·1	41 3	41·5	41·6	41 6	41·3	41·3	41·5
9	41·1	41·2	41·8	41·7	41·3	41·1	40 5	41 2	41 2	41·4	41·3	40·9	41·1	41·4	41·2
†10	41·6	41·6	42·0	42·1	42·3	42·5	42·6	42·9	42·7	42·9	43·1	42·5	42·8	42·8	42·6
11	43·4	43·5	43·2	43·0	43·4	43·3	43·0	43·0	43·5	43·1	43·2	43·1	43·1	43·0	42·7
12	42·1	42·2	43·0	42·8	42 6	43·2	42 8	42 5	43 1	42·8	42·8	42·8	42·9	42·8	42·7
†13	42·6	42·8	43·2	43·4	43·3	43 1	42 6	42 3	42·6	42·6	42·7	42 6	42·6	42·6	42·7
14	43·2	43·5	43·5	43·3	42·7	42·3	42·2	42·3	42 5	42·3	42·3	42·2	42·4	42·4	42·3
15	42·9	43·0	42·5	42·6	42·9	43·1	42·7	42·8	42·9	42·8	42·5	41·6	41 6	41·8	42·3
†16	43·3	43·5	43·5	43·6	42·3	42·3	42·1	42·9	43 1	42·9	42·9	43·3	42·8	42·6	42·7
†17	42·9	42·9	43·3	43·1	42·7	42 1	41 7	41·9	42 6	42·1	42·1	42·1	42 1	42·1	42·5
18	43·4	43·6	43·6	43 6	42·6	42 4	42 0	42 1	42 6	42·8	42 6	42 1	42·1	42·5	42·4
19	43·1	43·1	43·4	42·4	42 1	41·6	41·1	41 9	42·0	42·0	42 0	41·8	41·8	42·0	42·1
††20	43·0	43·1	42·6	41·7	41·2	41 1	41 6	41 8	41 9	41 5	41·4	41·3	41·7	42·1	42 1
††21	41·1	41·9	42 0	43 5	43 6	43·1	43 4	43 4	42 8	43·0	43·1	42·6	41·7	40·9	41·1
††22	41·3	42·6	43·3	43·4	43 3	43·4	43 3	42·9	43·0	43 2	42·6	41 7	41·1	41 1	41·4
††23	40·6	40·3	41·3	42·3	42 3	42·6	42 6	42 1	41·9	41·6	41·5	40·9	41·1	41·5	42·0
††24	42·5	42·6	42·6	42·7	43·2	42 8	42 5	42 3	41·6	41·7	41·7	41·6	41·6	42·1	42 1
25	42·6	43·3	43·3	43·1	43·0	42 1	41·9	41·9	42 0	42 4	42 4	42·4	42·1	41·7	41·9
†26	42·9	42·9	42·8	42·2	41·4	41·3	41 3	41 6	42·0	42·2	42·1	41·9	41·6	41·8	42·0
27	42·5	43·1	43·2	43·2	43 2	42 5	42 4	42 2	42·2	42·6	42·8	42·6	42·8	42·6	42·4
28	42·5	42·8	43·1	43 1	43 3	43·3	42 7	42·5	42·5	42·9	43 0	42·8	43·0	42·6	42·5
Mean	42·4	42·5	42·9	42 9	42·7	42·4	42 1	42 0	42·2	42·1	42·1	41·9	41·9	41·9	42·0
Mean†	42·7	42 7	43 0	42 9	42 4	42 3	42 1	42 3	42·6	42 5	42·6	42·5	42·4	42 4	42 5
Mean††	41·7	42·1	42·4	42·7	42 7	42·6	42 7	42 5	42·2	42 2	42·1	41 6	41 4	41·5	41·7

† Five international quiet days.
†† Five international disturbed days
Δ No record. Day omitted for means.

TABLE 2

Declination (Westerly)

(Averages for sixty minutes centred at the full hours of Greenwhich mean time) 1°47'·5 plus Tabular quantitise.

February, 1950

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.	′	′	
42·1	42·5	42·1	42·3	42·1	42·1	42 3	42·4	42·6	42·4	2 00	43·4	4 58	40·1	3·3	1
41·1	41·1	41·1	41·4	41 6	41·6	42 1	42·3	42·6	41 6	2 10	43·6	8 54	39·0	4·6	2
40·6	41·1	41·4	41·5	41·7	41·6	41·6	41·7	42·4	41·6	1 58	44·1	10 54	39·3	4·8	3
41·3	41·1	41·1	42 1	41·7	41·6	41·8	41·7	42·3	42·6	0 56	43·6	7 30	39·9	3·7	4
41·7	40·9	41·1	41·2	41 6	42·0	41 9	41·9	41 9	42 2	0 50	43·4	14 10	40·9	2·5	5
41·6	41·6	41·6	41·6	42 0	41·7	41·4	41·6	41·6	41 7	0 58	42·9	5 30	40·8	2·1	6
41·8	41·6	41·6	41·6	41·8	41·8	41·4	41·6	41·1	41 8	2 18	43·4	5 38	40·9	2·5	7
41·6	41·5	41·5	41·6	41·6	41 6	41·6	41·4	41·5	41 5	3 10	42·6	10 42	40·7	1·9	8
41·2	41·4	41·3	41·1	41·1	41·1	40·9	41·1	41·2	41·2	2 20	42·1	5 58	40·4	1·7	9
42·6	42·7	42·8	42 7	42·6	42·8	42 9	43·1	43·1	42 6	9 30	43·3	0 06	41·4	1·9	†10
42·6	42·5	42·4	42·6	42 3	42·5	42·5	42·2	42·0	42·9	6 38	43·6	13 34	42·0	1·6	11
42·5	42 6	42 5	42·7	42·6	42 7	42 8	42·6	42·4	42·7	7 10	43·3	15 00	42 0	1·3	12
42·6	42 6	42 6	42·7	42·8	42·9	42·9	43·0	43·4	42·8	1 00	43·6	5 14	41·1	2·5	†13
42·3	42·4	42·3	42·5	42·4	42 5	42·9	43 2	43·4	42·6	1 38	43·6	11 38	42·1	1·5	14
42·4	42·4	42·5	42·6	42 5	42 5	42·6	42·9	43 2	42·6	2 10	44 1	12 10	41·5	2·6	15
42·5	42·5	42 5	42·7	42 5	42·5	42·6	42·4	42 7	42 8	3 20	44·1	10 26	41·2	2·9	†16
42·4	42·4	42 6	42·6	42·8	42·8	42·8	43·0	43·3	42·5	1 38	43·5	4 38	41·6	1·9	†17
42·2	42·6	43 1	43 0	43 0	42 8	42·8	42·8	43·1	42·7	0 50	43·6	5 00	41·1	2·5	18
42·1	42·5	42·5	42 6	42·4	41·3	41 9	41·6	41·4	42·1	2 10	43·4	10 18	41·9	1·5	19
42·3	42·5	42·6	42 3	41·1	41·6	44·1	43·9	43·1	42·1	22 14	45·4	19 50	40·2	5·2	††20
41·7	41·6	42 0	42 0	42·0	42 1	42 3	42·4	42·1	42 3	1 58	44·1	8 22	39·3	4 8	††21
41·9	41·6	41·9	42·1	42 2	42·4	42 5	42·1	42 1	42 3	5 30	44·1	12 10	41 1	3·0	††22
42·0	42 3	42 6	42·6	42·7	42·5	42 6	42 7	42 6	42 0	8 10	43·4	22 14	39·4	4 0	††23
42·1	41·8	42 5	42 5	42·5	42·5	42·5	42 5	42 5	42·3	1 42	42 8	10 28	40·5	2·3	††24
42·1	42 2	42·3	42 5	42 7	42·5	42 4	42·5	42 5	42·4	2 50	43·3	10 18	41·1	2·2	25
42·1	42·3	42·4	42 3	42 2	42 3	42·4	42·4	42 7	42 1	0 50	43·1	6 30	41·2	1·9	†26
42·3	42·2	42 4	42 5	42·7	42 6	42 6	42 5	42 5	42·6	6 50	43 3	12 38	41 9	1·4	27
42·5	42 0	42 3	42·4	42 9	42 8	42 8	42·9	43 1	42·8	1 00	43·3	14 55	41·2	2 1	28
42·0	42·0	42·1	42·2	42 2	42·2	42 4	42 4	42 4	42 3	.	.		.	2·7	Mean
42·4	42·5	42·6	42·6	42 6	42 7	42 7	42 8	43 0	.	.	.	..		.	Mean†
42·0	42·0	42·3	42 3	42 1	42·2	42·8	42·7	42·5	..	..		.	..	..	Mean††

† Five international quiet days.
†† Five international disturbed days.
A No record. Day omitted for means.

TABLE 3

Declination (Westerly)

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 1°47′·5 plus tabular quantities.

March 1959

Day	Hours (G.M.T.)														
	0	1	2	3	4	5	6			9	10	11	12	13	14
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	43·3	43·4	43·4	43 4	43·1	42 5	42·6	43·0	43·1	43·1	43·2	43·1	42·4	42·1	42·2
2	42·9	42 9	43·1	42·9	42·6	42·6	41 7	42·5	42·7	42·9	43·2	43·4	42·8	42·1	41 9
3	42 7	42 9	43·0	42 6	42 3	41 4	41 4	41 5	42 3	43·1	43·2	42·9	41·6	41·3	41·5
†4	43·2	42·9	42·1	42 1	42·5	42 1	42 3	44·0	44 7	44·3	44·2	43·3	42·7	42·5	42·2
5	42·7	42·7	42·8	42·6	42 6	41·3	41·3	42 1	42·5	43·0	42·7	42·1	41 3	41·4	41·5
	42·6	42·6	42·5	42·1	42·1	40·8	42·5	41 5	41 7	42·3	41·6	41 7	41·1	41 4	42·1
7	42 1	42·2	42·2	42·2	42·3	42·3	42·3	42 2	42 3	42·1	42·1	42 2	42·4	42·3	42·4
8	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
9	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
†10	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ
†11	42·5	42·7	42·6	42 6	42·5	41·6	41·7	41·7	41 8	42·5	42·6	42·9	42·0	41·3	41·4
†12	42·1	42 3	42 3	42 1	42·1	42·1	42·3	42·1	43·4	43·4	43·1	42·7	42·2	42·1	42·1
13	42·6	42·6	42·5	42 6	42·2	42 1	42 0	42 3	42·5	42 6	42·4	42·4	42·4	42·3	42·2
14	42·1	42·4	42 9	42·8	42·1	41·3	41·3	41·4	42·3	42·1	42·1	42·1	42·3	42 3	42·3
††15	42·5	42·6	42·9	43·0	42 8	41 7	41·6	41 4	41·5	41·7	42·1	41·6	41·6	42·1	42·1
16	42·5	42·5	42 5	41·8	41 5	41·3	42 1	41·6	41·9	42·1	42·0	41·6	41·5	41·7	42·1
17	42·5	42·5	42·6	41·5	41·3	41·1	42 1	41·5	41 9	42·5	42·5	42·1	41·9	42·2	42·1
†18	42·1	42·1	41·7	42 1	41 7	41 3	41·5	41 7	41 8	41·7	41·1	41·1	40·5	41·1	40·6
††19	42 0	41 8	41·8	41 7	41 6	41 6	41·1	41 1	42 0	42·6	42·4	42 4	42·1	41·6	41·8
20	42·1	42·4	42 4	41·5	40·9	40 4	40·5	40·9	40·9	41·6	42·3	41·6	41·7	42·0	41·6
††21	42·1	42·4	42·1	41·6	40·6	42·1	42·0	42·1	41·9	41·8	42·3	42·2	42·2	41·9	41·6
††22	41·1	41·8	42·1	41·6	41 3	41·1	41·1	41 5	42 4	42 9	42·5	42·0	41·6	42·0	41·9
23	41·5	41·7	41·1	40·9	41 1	41 2	42·1	42·4	42·5	42·1	41 6	41·4	41·9	41·8	42·0
24	41·5	41·6	41·7	41·4	40·9	40·4	40·4	40·8	40 5	42·9	42·2	42·5	42·6	42·1	42·4
25	42 5	42·4	42·5	42·0	41 6	41·6	41·6	41·7	42·5	42 1	41·8	42·3	42·5	42·0	42·5
26	42·2	42·6	42·6	42·0	42 1	41·1	40·9	40·9	42·2	42 5	42·1	41·6	41·5	41·5	41·7
††27	42·4	42·4	42·5	42·0	42 0	41·7	41·6	42·1	42 3	42 1	42·4	42·4	42 4	42 2	42·1
28	42·9	42·7	43·1	42 3	41 7	42·5	42·1	42·1	43·1	44·1	42·6	41·5	41·3	42·0	42·5
29	42·4	42·4	42·0	41·1	40 1	39·5	39·4	42·1	42·5	42·1	41·3	41·3	42·1	42·3	42·7
30	42·7	42 6	42·6	41·5	41·5	41·1	41 1	41·7	42 9	42·4	41·7	42 0	41 3	41 5	42·1
31	42 4	42 4	42·0	41 3	41 1	41 1	41·1	42 1	42·3	42 3	41·9	41·8	41·5	41·4	42·1
Mean	42·4	42 5	42·4	42 0	41 8	41 5	41 6	41·9	42·3	42 5	42·3	42·1	41·9	41·9	42·0
Mean†	42 5	42 5	42 2	42 2	42 2	41 9	41·9	42 4	42·9	43·0	42·7	42·5	41·9	41·7	41·6
Mean††	42·0	42·	42·3	42·0	41·7	41 6	41·5	41·6	42·0	42·2	42·3	42·1	42·0	42·0	41·9

† Five international quiet days.
†† Five international disturbed days.
Δ No record. Day omitted for means.

TABLE 3

Declination (Westerly)

(Averages for sixty minutes centered at the full hours of Greenwich mean time) 1°47′·5 plus tabular quantities.

March 1950

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.	′	′	
42 1	42 1	43 2	42 5	42 9	42 7	42 6	42 5	12 9	42·8	1 20	43·6	11 38	41 4	2 2	1
41 9	42·1	42 0	42·4	42·6	42·5	42 5	42·5	42·5	42.5	0 22	43·4	4 50	41·1	2·3	2
41 8	42 1	42 2	42 1	42 4	42 4	42·5	42·3	43·1	42 3	8 30	43·3	11 54	40 9	2·4	3
42 1	42 3	42 6	42 7	42 9	42 9	42 8	42 6	42·6	42 9	6 50	44·7	13 36	41 4	3·3	†4
41 8	42 1	42 2	42 5	42·9	42 7	42 7	42 7	42 6	42 3	7 50	43 1	4 24	40·8	2·3	5
41·1	41 8	42 2	42 4	42 5	42 3	42 4	42 4	42 3	42·0	7 42	41·1	4 46	41 1	0	6
42·2	42 3	42 5	42 4	42 5	42 1	42 1	42 1	42·1	42·2	8 10	42·4	11 10	40·3	1	7
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ							8
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ							9
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ							†10
41·8	42·1	42 1	42 1	42 1	42·1	42 0	41 9	42 0	42 1	0 46	42·9	4 30	40·8	2·1	†11
42·1	42·1	42 1	42 2	42 2	42·2	42 3	42 5	42 5	42 4	8 22	43·5	11 26	41·3	2·2	†12
42 3	42·5	42 4	42 4	42 5	42 2	42 1	42 1	42 1	42·3	8 22	44·1	11 50	41 9	2·2	13
42·1	42 1	42 1	42·3	42 2	42·1	42 3	42·4	42·6	42 2	6 30	42·9	4 42	41·3	1·6	14
42 2	42 4	42 1	42·1	42 3	42 3	42 4	42·4	42·5	42·2	1 22	43·0	8 10	41·4	1·6	††15
42 1	42 2	42 5	42 4	42·3	42 5	42·5	42 4	42·4	42 4	0 40	42·9	10 26	40·9	2·0	16
42 5	42 4	42 6	42·8	42 6	42 5	42·6	42·6	42 7	42 2	7 50	43·2	4 38	41 1	2·1	17
40 4	40 5	40·0	41·3	41 4	41·7	42 0	42 1	42 1	41 4	8 22	42·4	4 18	40·0	2·4	†18
42 0	42 2	42 4	42 1	42 1	41 9	41·9	42 0	42·1	41·9	0 18	43·1	11 10	39·9	3·2	††19
41 6	42 0	41 6	41 9	42·1	41 8	41·7	41 9	42·0	41·6	8 42	42·5	5 02	40·3	2·2	20
41 6	41 8	41 8	41 9	42 1	42 0	41 8	41·6	41 6	41·9	9 00	42 3	3 50	40·0	2·3	††21
42 1	42 3	42 4	42 5	42 5	42 5	42·5	42 5	42·6	42 0	9 26	43·4	3 10	40·1	3·3	††22
42 2	42·2	42 1	42 4	42·4	42·4	42 1	41 9	1 6	41·9	7 38	42 8	3 34	40·9	1·9	23
42 3	42 3	42 3	42 3	42·3	42 4	42·4	42 5	42·5	41 9	8 10	43 1	4 38	39·9	3·2	24
42 6	41 9	41 9	41 9	41 8	42·5	42 4	42 2	42 3	42·0	6 50	42 6	4 42	40·0	2·6	25
42 1	42·1	41·7	42 1	42 3	42 5	42 2	43 0	42 7	42·0	7 30	43·2	5 46	40·8	2·4	26
42 2	42 5	42 5	42 5	42 5	42·7	42·7	42·7	43·1	42 3	22 00	42 9	5 10	40 4	2·5	††27
42·5	42 6	42·6	42·5	42 5	42 4	42 4	42 5	42 5	42·5	9 02	44·1	5 00	41·1	3·0	28
42 3	42 3	42·2	42 2	42 1	42 1	42 1	42 1	42 5	41 8	0	42·6	5 20	39·2	3·4	29
42 4	41·7	42 3	42 0	42 5	42·3	42 3	42 4	42 4	42·9	38	43·4	5 20	41·1	2·3	30
41 8	41 9	42 0	42·0	42 1	41 9	41 4	41 1	41·1	41 8	7 00	43·2	3 00	40·8	2·4	31
42·0	42 1	42·2	42 2	42 3	42 3	42 3	42 3	42 4	42 1					2 4	Mean
41 6	41 7	41·7	42 1	42 1	42·2	42 3	42·3	42·3							Mean†
42·0	42 2	42 2	42 2	42 3	42 3	42 3	42 2	42 4							Mean††

† Five international quiet days.
†† Five international disturbed days.
Δ No record Day omitted for means

TABLE 4

Declination (Westerly)

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 1°47′·5 plus tabular quantities.

April 1950

Date	Hours (G. M. T.)														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
††1	41 7	41 2	41 3	41 1	41 7	42·4	42 6	43 5	43 1	42 2	41 9	41 3	41 6	42 1	42·1
††2	42 1	41 7	42·0	42·3	42 3	42·1	42 5	42 9	42 6	42 1	41 4	41 2	41 5	42 0	42·2
††3	41·6	41 6	41·9	42 2	43 1	43 2	43 9	44 6	44·1	43·9	43 4	42 7	42·1	42 2	42·4
4	41·9	41 6	41 9	41 1	40 8	41 9	43·1	44 3	44·7	44·2	43 2	42 2	41 8	41 8	42·1
††5	42·6	43 2	42 0	41 7	41 4	41 2	41 9	42 4	43 0	42·5	42 1	41 9	42 0	42 6	42·2
6	41·1	40 9	40 7	41 3	41 8	41 9	42 5	42 9	43 5	43 6	43 1	43 0	42 6	42 3	42 4
7	41 3	41 8	41 2	41 1	40 5	40 4	40 7	41·6	42 ,,	1' 2	42 ,,	41·5	41·4	41 5	41·7
8	42 2	42 3	42·0	41 5	41 5	41 4	43·1	44 2	44 4	43 9	43 2	42·6	42·1	41·8	41 8
9	42 2	42 1	41 3	40 9	40 9	41 1	41·6	42 3	43 1	43 0	42 5	42 0	41 9	41·9	41·7
10	42 5	42 1	41 3	41 2	40 9	41 1	42 1	43 2	43 4	42 2	42·1	41·3	40·9	41 2	41·6
†11	42 0	41 3	40 3	40 5	41·2	42 0	42 7	43 7	44 2	43·3	42 3	41·1	41 1	41 7	41·9
12	42·1	41·6	40·9	41·1	41 6	42·4	43 5	43·6	43·3	41 8	40·9	40·2	40 4	41 4	42·1
13	42·1	41·3	40·5	41·2	42·5	43 5	44·1	44·1	44·2	44·0	43·2	42·7	42·1	41·6	42·0
†14	42·1	42 0	41·2	41 1	41 3	42 0	42·9	43 3	42·9	42·2	41·5	41·1	40·9	41 3	42·0
15	41 9	41·1	40·8	41 1	41·8	42 3	43 7	43 9	43·4	43·0	42·3	42·2	42·0	42 1	42 5
16	41 5	40·9	40·0	40 2	40·5	41 6	42 6	43 3	43·3	43·0	42 7	42·0	42 1	42·2	42·4
17	42·1	41·6	40 9	41 2	41 1	42 0	43 6	41 4	44·4	43·9	43 2	42 3	42·3	42·2	42 3
18	42 2	41·7	41·8	41 9	42 4	43 5	44 6	45·3	45 2	44 1	42·0	41·9	42·1	42 2	42·4
19	42·1	41·6	40·8	41·1	42·2	43·1	43 6	44 0	43 8	43 9	43 6	43·0	42 4	42·3	42·5
20	42·1	41 4	40 9	41 1	42·0	42 6	43·6	44 7	45 1	44·4	44·1	43·5	43·1	42 5	42 6
†21	42 9	42 7	42 2	41·6	41 3	42 1	42 9	43 1	42 7	42·2	41 9	41·5	41·6	42 0	42 6
22	42·5	42 1	41 3	41 1	41 6	42·5	43·5	44 1	43·8	43·1	42·9	42·6	42·8	42·7	43·0
23	42·1	41 5	40 9	41·3	42 1	43 1	43 6	44 8	44·6	43·3	42·8	42·8	42·6	42·5	42·6
24	42·5	41 9	41·3	41·1	41·1	41 1	42 5	43 7	43 8	43·4	43 0	42·4	42·1	41 6	42·5
25	42 3	41 7	40 8	40 2	40·7	42 1	43 5	44 6	45·5	45·0	44·4	43·9	43·5	42·6	42·7
†26	42·4	42 0	41 3	40 9	41·2	42·1	42 9	43·8	43 6	43 2	42·2	42 0	42·0	42·1	42·3
†27	42·7	41 7	41 2	41·5	41·9	43 0	44·2	44 8	45 1	44 8	44 3	43 4	43·0	42 5	42·7
28	42·4	42 0	41·2	41·4	42 5	43 5	44 6	46 2	47 0	46 2	45 4	44·2	42·0	42·4	42·4
29	42 5	42 2	41 4	41 7	42·6	43 4	44 3	45 1	45 4	44 8	43·7	43 0	42·5	42·3	42·5
††30	41 3	40 3	39 4	39·3	41·1	42 4	44 1	44 7	43 9	43 5	42 6	42·0	42·0	41·9	42·2
Mean	42 1	41 7	41 2	41·2	41·6	42·2	43·2	43·9	44 0	43 4	42·8	42·3	42 0	42·1	42·3
Mean†	42 4	41 9	41 2	41 1	41 4	42 2	43 1	43 7	43 7	43·1	42 4	41 8	41 7	41·9	42·3
Mean††	41 9	41 4	41·3	41·3	41·9	42 3	42·8	43 0	43 3	42 8	42 3	41 8	41·8	42·2	42·2

† Five international quiet days
†† Five international disturbed days,
Δ No record Day omitted for means.

TABLE 4

Declination (Westerly)

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 1° 47′·0 plus tabular quantities.

April 1950

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	′	′	
42·7	42 7	42 4	42 2	42·3	42·1	42 1	41 9	42·3	42 1	7 02	43·7	3 28	41·1	2·6	††1
42·3	42·5	42 2	42 1	42 0	41·6	41·6	41·5	41·2	42 0	7 38	43 1	23 10	41·1	2 0	††2
42 3	42 5	42 2	42 1	42 2	42 0	42·0	42 1	42·1	42·6	7 20	44·7	1 50	41·5	3·2	††3
42·1	42 2	41·8	42·3	42·4	42 4	42·4	42·5	42 3	42 4	7 40	44 8	3 40	40·7	4·1	4
41 8	41·9	41·3	41 2	40 8	40 0	40 8	40 8	41·1	41·8	8 12	43·1	21 28	40·5	2·6	††5
42·4	42 1	41·9	41·7	41 4	41·2	41·2	41·1	41 1	42·0	8 20	43·7	1 56	40 5	3·2	6
42·0	42 1	42·1	41 9	41 8	41·7	41·6	41·9	42·1	41 6	8 46	42 3	4 40	40·2	2·1	7
41·9	42 1	41·8	42 0	41·9	41·8	42·0	42 1	42·1	42 3	7 20	44 7	4 46	41·3	3·4	8
42·1	42 1	42·2	42 3	42 2	42 1	42 2	42·3	42·4	42·0	8 40	43 1	3 50	40·8	2·3	9
42·0	42 1	42·1	42·2	42·2	42 1	42 1	42·1	42 0	41·9	7 40	43 5	12 00	40 8	2·7	10
42·3	42 2	42·2	42·3	42·3	42·1	42 2	42·1	42·1	42 0	8 00	44·3	2 30	40·1	4·2	†11
42·3	42·2	42 1	42 1	42·1	42·0	42·0	42·2	42·3	41·9	7 10	43·8	11 50	40·6	3·2	12
42·3	42 3	42 2	42 2	42 2	42·1	42 1	42·3	42·2	42·5	8 18	44 3	1 42	40 3	4·0	13
42·2	42 4	42 4	42 4	42 2	42·1	42·1	42 1	42·1	42 0	7 06	43 4	11 30	40·8	2·6	†14
42·4	42 4	42·2	42·1	42 0	41·9	41·8	41·7	41 8	42 2	6 30	44 1	2 06	40 6	3 5	15
42 3	42 3	42 2	41·9	42 1	42·0	42·1	42 1	42·0	42·0	7 40	43·5	2 30	39 8	3·7	16
42 4	42 5	42 3	42·2	42 1	42·0	42·0	42·0	42·1	42·4	7 30	44·7	1 46	40·6	4·1	17
42·3	42·2	42 2	42·1	42 0	41 9	42·0	42 1	42 2	42·6	7 32	45 4	3 00	41·4	4 0	18
42·1	41·9	42 2	42·0	41·9	41·7	42·0	42 0	42·0	42·4	7 20	44·1	2 10	40·6	3 5	19
42 7	42·3	42 3	42 1	42 0	41 8	41 9	41 7	42 5	42·6	8 00	45 3	1 32	40·8	4 5	20
42 7	42·8	42 4	42 2	42 2	42 2	42·2	42 3	42 5	42 3	7 20	43 3	3 08	41·2	2·1	†21
43 2	43·1	42 9	42 9	42·5	42·2	42·2	42 1	42·1	40 9	7 26	44·2	2 56	40·9	3·3	22
42·5	42·6	42 6	42 8	42 5	42 4	42 6	42·8	42 7	42 7	7 26	45·0	2 18	40 8	4 2	23
42·6	42·8	42·5	42 5	42 4	42·4	42 3	42 3	42·2	42 3	7 28	43·9	2 50	40 8	3·1	24
42·7	42·8	42 4	42 4	42·4	42 3	42·2	42·4	42 5	40 1	7 40	45·6	2 56	40·1	5·5	25
42·6	42·9	42·8	42·5	42·3	42 3	42·1	42·5	42·5	40 1	7 18	43·8	2 56	40 1	3·7	†26
42·8	43·0	42 9	42·6	42·4	42·1	42·1	42 2	42 2	42·0	7 34	45 2	1 42	40·0	4·3	†27
42·7	42·7	42 3	42·1	42 1	42 0	42 0	42 4	42·4	43 1	8 20	47 2	2 18	41 1	6·1	28
42·7	42·7	42·4	42 1	42 0	41·4	41 3	....	41·3	42 7	8 00	45 5	2 22	41·2	4 3	29
42·1	42·1	42 0	42 2	42 3	42 3	42 4	42 4	42 3	42·1	6 38	44 8	2 58	30·1	5 7	††30
42 4	42·4	42·3	42·2	42 1	42 0	42 0	42 0	42 1	42·3	.			.	3·6	Mean
42·5	42 7	42 5	42·4	42·3	42 2	42·1	42·2	42 3		.					Mean†
42·2	42 3	42 2	42 0	42 1	41 8	41 8	41 7	41·8		.		..	.	.	Mean††

| Five international quiet days
†† Five international disturbed days.
⊼ No record Day omitted for means.

TABLE 5

Declination (Westerly)

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 1°47′ 5 plus tabular quantities,

May 1950

Date	Hours (G M T)														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	41 9	40 9	40 8	41 7	42 7	44 0	44 6	45 2	45 1	44 7	43 6	43 0	43 0	42 8	42 8
2	42·8	42 1	40 9	40 9	41 1	41 6	42 7	43 7	43 4	42·9	42 2	41 9	41 1	41 7	42 0
††3	42·0	40·6	40 9	40 6	41 6	42 7	43 5	44 2	44 1	43 6	42 5	42 0	41·9	42 0	42 1
4	41 3	40 5	39 4	39 6	40 4	41 5	42 6	43 6	43 8	43 4	43 1	42 5	42 1	42 0	42·2
5	41·2	40 8	40 0	39 7	40·8	42 2	44 1	45 2	45·4	45 5	44 9	43 1	41 9	41 1	41·5
6	41·3	40 4	39 8	40 2	40 4	41·8	42 3	44 6	44 8	44 0	43 1	42 0	41 4	41·3	41·9
7	41 1	40 3	40 3	40 2	41 1	42 0	42·9	44·2	44 0	43·4	42·8	41 7	41 2	41 5	42·1
†8	41·4	40·7	39 8	39 6	40 4	41·7	41 6	42 1	42 1	42 2	41 4	41·1	41·6	42·1	42·1
†9	41·9	41 1	40 4	40·4	41 2	42·0	42 5	42 1	43 1	43 5	43·6	42·8	42 3	42·1	42·3
10	41·8	41 2	40 7	40 7	42 1	43 5	45 3	46 2	45 6	44·6	43 6	42 8	42 2	42·2	42·5
11	41·6	41·2	40 5	41 1	41 6	42·5	43 9	44 6	44·7	44·1	43·5	42·8	42 1	41·6	42·1
†12	41 4	41 1	40·9	41·1	41 3	42·5	43 1	43 4	43·5	43·0	42·3	42·0	41 6	1·7	42·6
13	41·7	40·8	39·7	39·6	39 9	40·5	42·2	42·8	42 9	42·7	42·0	43·2	42·5	42·1	42·1
14	41 8	40 8	40·0	40·0	41·5	43·5	44·7	46 2	46·2	44·7	43·6	43·1	43·5	41·6	42·1
††15	41·8	40·9	39·6	39·0	39 4	40·3	42 0	42·5	43·5	43·0	42 5	42·6	42·7	42·8	42·9
16	41 8	41·3	40 1	40 0	40 4	41·6	42·7	44 0	43·9	44·3	42 6	41 5	41·9	41·9	42·3
17	41·5	41 1	40 2	40·4	41 5	42 6	43·5	44 0	43 9	43·6	43·0	42·6	42·2	42·1	42·1
†18	41 6	40 6	40 1	40 0	40 6	42·1	43·1	44 6	44 8	44·3	43·5	42·4	42·1	42 0	42·6
†19	41·7	40·8	40 0	40·0	40 8	42·4	43·2	44 0	44 1	43·8	42 7	41·9	42 0	42 0	42·0
20	42·1	41·9	40·4	39·9	42 0	43·5	44 1	44·4	44·2	43·6	42·8	42 4	41 5	42·0	42·5
21	42 2	41·6	41·1	40·2	41·3	41 6	44·2	44 6	44·2	43·9	43·6	42·8	42·1	42 0	42·1
22	42·2	41·7	40·9	40·7	41·5	42 9	44 1	45 1	45·4	45 0	44 4	43 5	42·9	43 2	43·1
†† 23	42 2	41·2	40 7	40 3	41·6	43 3	45 2	46·2	46 2	45·6	45 0	44·1	43·5	42·1	42·0
24	40·4	40 8	40 9	41·1	41 6	42·0	44 1	44 6	45·0	44·6	44 2	43·6	43·2	42 9	43·0
25	42·1	41·6	40·9	40 9	41·2	42·2	43 1	43 8	43·9	43 2	43·1	42·9	42·6	42·0	42·9
26	42·1	41·4	40·7	40·3	41·2	42·5	43 6	44·6	44·8	44·9	44 1	43 2	42·8	42·9	43·0
††27	41·9	41·1	40·9	41·1	41·4	42 6	43·8	44·6	44·6	43·2	42·7	42·7	42·9	42·9	42·3
††28	42·1	41·1	39·4	39·0	40 2	42 2	44·0	45·3	45 4	44·8	43·9	43·6	43·2	42·8	42·7
29	41·2	40 6	40 1	40 0	42 0	43·3	44 6	44 8	44 2	43 9	43 5	42·9	42·6	42·3	42·3
30	41	40 8	40 3	40·1	40 9	42 5	42 4	43·5	44 1	43·9	43·1	42·3	42·1	42·1	42·5
31	41·4	40 5	39·7	39 2	40 6	42·3	43 5	44 2	44 1	43·1	42·4	42·4	42·2	42 0	42 7
Mean	41·7	41 0	40 3	40 2	41·1	42·3	43 5	44·3	44 4	43·9	43 2	43·6	42·3	42·2	42·4
Mean†	41·6	40·9	40 2	40 2	40 9	42 2	42 8	43 3	43 7	43 4	42·7	41 9	41·9	42·0	42·4
Mean††	42·0	41·0	40 1	40·0	40 8	42 2	43 7	44 6	45 8	44·0	43·3	43 0	42·8	42·3	42·6

† Five inte national quiet days
†† Five international disturbed days.
Δ No record. Day omitted for means

TABLE 5

Declination (Westerly)

(Averages for sixty minutes centred at the full hours of Greenwich mean) 1° 47′·5 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.	′	′	
42·8	42 6	42·2	42 1	42 1	42 1	42 1	42 2	42 5	42 8	8 10	45 3	2 00	40·8	4·5	1
42·2	42 0	41 9	42 0	41·9	42·0	42 1	42 1	42·0	42 1	7 20	43·9	2 16	40 7	3·2	2
42 1	42 0	41 9	41 3	41 4	41 3	41·5	41·8	41·7	42 0	6 38	44 3	1 58	39·9	4·4	††3
42 4	42·3	42·0	41·5	41 4	41 9	41·9	41 6	41 9	41·9	7 28	44 3	1 46	39·3	5·0	4
42 0	42 1	42·1	42 0	42 0	42 0	42·1	42·1	41·9	42 3	8 50	45·6	2 18	39·6	6 0	5
42·0	42 2	42 1	42·0	42 1	42·1	42·0	41 9	41·4	42·0	7 50	45·1	2 12	39·6	5·5	6
42·1	42 1	42·0	42·1	42·2	42 1	42 0	41·9	41·8	42·0	7 12	44·7	2 10	39·8	4·9	7
42 1	42 0	41·9	42 1	42·1	42 0	41·9	42·0	42 0	41·6	7 34	42·3	2 48	39·7	2·6	†8
42 4	42 4	42·1	42·1	41 9	41·9	42·0	42·0	41·9	42·1	9 56	43·8	3 06	40·1	3 7	†9
42 6	42·4	42·2	42 0	41·8	41·6	41 5	41·5	41·5	42·6	7 04	46·3	2 18	40·5	5·8	10
42 2	42 3	42·5	42·2	41 5	41·3	41·4	41·8	41 7	42·3	7 00	45·2	1 30	40·3	4·9	11
42 8	42 6	42·4	42·3	42 2	42·1	42 0	42·0	41·9	42·2	8 00	43 6	1 34	40·8	2·8	†12
42·1	42·0	42 0	42 0	41 3	41·5	41 7	41·9	41 8	41·7	8 26	43·1	2 50	39·2	3·9	13
42·3	42·3	42·3	42 1	42 1	42·0	41 9	41·8	42 0	42·6	7 20	46·2	1 54	39·7	6·5	14
42·7	42 8	42·9	42·1	42·0	41·9	41·8	41·5	41 5	43·5	7 50	43 9	2 48	38·9	5·0	††15
42·4	42·3	42·2	42 2	42·1	42 1	42·1	42·0	41·9	42·1	7 30	44·6	2 58	39.8	4·8	16
42·0	42 4	42 4	42·4	42·2	42·2	42·2	42·1	42 0	42·3	6 48	44·1	2 02	40·1	4·0	17
42 7	42·5	42 5	42·3	42·2	42·1	42 1	42·1	42·1	42·3	7 56	45·1	3 00	39·8	5 3	†18
42 3	42·4	42·3	42·3	42 3	42·2	42·1	42·1	42·1	42·2	8 14	44·2	2 56	39·9	4·3	†19
42·5	42 6	42 6	42 1	42 4	42·2	42 1	42 6	42 4	42·5	7 08	44·7	2 56	39·8	4·9	20
42 2	42 1	42 2	42·3	42 2	42·2	42·2	42·1	42 5	42·4	6 42	44·7	2 50	40·2	4·5	21
43·2	43 3	43 0	42·7	42 4	42 6	42 3	42 5	42·6	43·0	7 54	45 6	2 54	40 6	5·0	22
42·1	42·1	42 1	42 1	41·9	41 5	41·6	41·3	41 3	42 7	7 40	46·3	2 38	40·3	6·0	††23
43·1	43·0	42 4	42·4	42·1	42·1	42 1	42·1	42 1	42·6	8 00	45·2	1 13	40·3	4·9	24
42·2	42·8	42 8	42 4	42 1	42 1	42 1	42 1	42 2	42 4	7 10	44 1	2 42	40·8	3·3	25
42·8	42·9	42·3	42 3	42 2	42 1	42 1	42 1	42·1	42·6	8 18	45·1	2 40	40 1	5·0	26
42 0	42·3	42 1	42 1	42·2	42·0	41 9	41 9	42·5	42·5	8 00	44·8	2 30	40·8	4·0	††27
42·8	42·5	42 5	42·1	41 4	41 1	41 6	41 2	41 5	42·3	7 40	45 6	2 46	38·9	6·7	††28
42·8	42·7	42 4	42 3	42·2	42 1	42·1	42·0	42 0	42·5	7 06	45·0	2 32	39·8	5·2	29
42·4	42 2	42 3	42 3	42 1	41 9	41·9	41 9	41 8	42·1	7 52	44·2	2 06	40·0	4 2	30
42·7	42 6	42·3	42 3	42 2	42 1	42 0	41 8	42 0	42 1	7 28	44 4	2 24	39·1	5 3	31
42 4	42 4	42 3	42 1	42 0	41 9	41 9	41 9	42 0	42 3	..		.		4 7	Mean
42 5	42 4	42 2	42 2	42 3	42·3	42 0	42 0	42 0		..	.	..	..	.	Mean†
42 5	42 4	42 3	41 9	41 8	41 6	41 7	41 5	41 8	..	..	..	..	..	.	Mean††

† Five international quiet days.
†† Five international disturbed days.
T No record. Day omitted for means.

TABLE 6

Declination (Westerly)

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 1° 47′·5 plus tabular quantities.

June 1950

Date	Hours (G M.T.)														
	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	′	′	′	′	′	′	′	′	′	′	′	′	′	′	′
1	41 7	40 9	40 3	40·5	41·7	43 2	44 0	44·3	43 9	42·9	42 3	42·5	42·2	42·1	42·4
2	41 8	40 7	39·7	39 5	42·1	44·0	45·2	45·2	44 6	44·1	43·3	42 5	42 3	42·3	42·8
3	41·9	41·3	40 9	40 0	40 4	40 9	41·6	41·7	43 1	43·1	43·1	43·0	42 4	42·9	43 2
4	42 2	41·5	40 3	40·0	40·6	41·5	43·2	44 1	43 7	43 1	43·2	43 0	42·9	42·3	42 8
5	42·2	41·2	40·1	40·0	40 0	40 3	41·2	42·6	43 1	42·9	42 4	42·2	42·2	42 4	42·8
†† 6	41·4	40·5	39·9	39 9	41·1	42·1	43·3	44·4	44 2	43·6	43·1	43 2	43·8	43·5	43·4
†7	41 1	40 4	40·4	40 9	42 2	43 5	44 0	44·7	44·6	43 5	43 1	43 0	42 8	42 9	43 0
8	41 9	41·2	41·1	41·1	42 6	43 7	44 5	44·6	43·6	43 1	42·5	42·4	42 4	43·0	43·2
††9	41·8	41 3	40 5	40 2	41·5	42 6	43 2	43 3	43·7	43·3	43 1	42·6	42 6	43·0	43·2
10	41·9	40 9	39 8	40 0	41 2	41 7	41·9	41 8	42·1	42 0	42 0	42·1	42·4	42·6	42·9
11	41 3	40·5	40·2	40 7	41·7	42 5	43 1	43 5	43·3	43·1	42·8	42·3	42·6	42·7	42·8
12	41·6	41 4	40 8	40 6	41·4	42·2	42·6	43·5	43·6	42 7	42 0	41·9	42·8	42·4	42·1
†13	41·5	41·2	41 1	41 2	42 6	44 1	44 5	44 4	44 2	43·4	43·1	42·9	43 0	42·4	42·6
14	41·6	41·1	40·7	40·6	41 5	42 5	43 8	44·2	44 3	43 6	43·0	42·5	42·2	42 4	42·6
†15	41 9	41·1	40 9	40·8	41·6	42·8	43 7	43·8	44·1	43·0	42·3	41 4	41·4	42·2	42·8
16	41 4	40 4	40 4	42·2	43 2	43 5	43·9	45·0	45·2	44 9	43·5	42·6	42·1	42·1	42·5
17	41 4	41·1	40·8	41 5	42 7	43 3	43 8	44 8	43·8	43 4	43 7	43·1	42 5	42·6	42·9
18	41 3	40·8	40 5	41 1	42 1	42 8	43 5	44 3	44 1	43·1	42·2	42 1	41·9	42·2	42·4
†19	41 4	41·2	40 9	41 1	41 4	43·1	44 2	44·9	44·9	43·8	42·7	42 1	42·2	42 2	42·5
†20	41·4	40·8	40 6	40 9	41·5	42·5	43 0	43 1	43 0	43·1	42 4	42 1	41·8	42·1	42·4
21	42·0	41·1	40 3	41·1	41·5	42 5	43 1	42 9	41·8	41·1	41 3	41·6	41 3	41·4	42·5
22	42·1	41·2	40 2	40·1	41·5	42 5	43·1	43 3	43·2	43·0	42·9	42·3	42·5	42·8	43·2
23	41·7	41 2	40 6	40 9	42·1	43 3	44 7	45 4	45·1	44 6	44·1	43 9	43 2	42·9	43·0
††24	40 2	40 0	40 2	40 2	41·2	41·4	42·4	43 3	44 2	43 0	43 1	43·1	43·1	43·0	43·4
25	41·9	40 6	40 3	41·1	42·3	42 8	43 6	44 7	45 0	44·0	43·7	43 2	43 1	42·8	42·7
26	41·1	40 9	40 7	40 9	41·5	42 4	42 9	43 2	43·1	42·4	43 4	43·1	42 4	42 6	42·8
27	42 0	41 3	41 1	40 8	41·1	42·2	43 5	44 1	43 8	43·1	43·2	43 0	42 5	42·6	42·9
28	41 2	40 3	39 4	39·2	40·4	41·7	42 9	43·6	43·6	43·4	43 2	42 9	42·9	43·1	43 1
††29	41·9	40 8	40 0	39·9	41 5	42·9	44 0	45 4	45·1	45·1	44 2	43·1	43 1	43·5	43·6
††30	40 1	39 6	38 5	39 0	40·3	42 1	44 2	45 6	45 3	45 1	44 1	43·3	43·1	42 9	42·9
Mean	41 6	40 9	40 4	40·5	41·6	42 5	43 4	44 0	43 9	43·4	43·0	42·6	42 5	42 6	42·9
Mean†	41·5	40 9	40 8	41 0	41 9	43 2	43 9	44 2	44 2	43·4	42·7	42·3	42 2	42·2	42·7
Mean ††	41 1	40 4	39 8	39 8	41 1	42 2	43 4	44 4	44 5	44 0	43·5	43 1	43 3	43 2	43·3

† Five international quiet days
†† Five international disturbed days.
Δ No record . Day omitted for means.

TABLE 6

Declination (Westerly)

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 1° 47′·5 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.	′	′	
42 5	42·0	42 9	42·4	42·3	42 0	41 8	41 9	41 5	42 3	6 56	44·6	1 46	40 2	4·4	1
43·0	42·5	42·2	42 2	42 1	42 1	42 1	41·4	42 0	42·5	6 20	45·3	2 34	39·3	6·0	2
43·2	43 1	42 8	42 4	42 3	42 7	42·4	42·3	42 3	42·2	7 48	43 2	2 46	39·9	3·3	3
42·8	42·8	42 7	42 6	42 3	42 2	42·2	42 3	42·5	42·4	7 06	44·1	2 42	39·9	4·2	4
42·9	42·9	42 8	42·4	42 3	42 1	42·1	42·1	42·1	41·9	7 46	43·3	3 50	39·6	3·7	5
43·1	43 2	43·1	42 4	42 0	41 5	42·0	41·5	41·3	42 4	7 22	44·3	2 30	39·6	5·2	†6
43 1	43·1	43 1	42 6	42 1	42·1	41·9	41·9	41·7	42·6	7 18	45 1	1 40	40·1	5·0	†7
43·2	43·2	43·1	43 0	42 4	42·1	41·9	41·4	41 5	42·6	6 50	44 8	2 12	40·9	3·9	8
43 3	43·2	43 0	42 6	42 3	42·2	42 1	42·1	41·7	42 4	6 50	43·8	2 46	40·1	3·7	†9
43·0	43 0	42 8	42 6	42 1	42 0	42 0	41 9	41·3	41·9	6 58	43 1	2 16	40·0	3 1	10
43·0	42 9	42·6	42 2	42·2	42 1	42·0	41 9	41·8	42·2	7 10	43 7	1 40	40·0	3·7	11
42·9	42 8	42 3	42 3	42·1	42 1	42 0	42·0	42 1	42 2	7 38	44 1	2 30	40 3	3 8	12
43·0	42 8	42·6	42·4	42 2	42 1	42 0	42·0	41·9	42·6	6 10	45·0	1 42	40·9	4·1	†13
42·7	42 8	42 6	42·4	42·3	42·1	42 1	42 1	42 0	42·4	7 40	44·6	2 30	40 2	4 4	14
42·8	42 9	42·9	42 3	42 4	42 2	42 1	42·3	42·1	42·3	6 54	44·7	1 48	40·3	4·4	†15
43 0	43·1	43·1	43 0	42 6	42 1	41 9	42 0	41 9	42 7	7 50	45·2	1 44	40·2	5 0	16
42·8	42·4	42 2	42 1	42 1	42 0	41·7	42·0	42·0	42·5	7 00	44·3	2 00	40·8	3·5	17
42·8	42·4	42 2	42 1	42 1	42 1	42 1	42 1	42 1	42·2	7 26	44·4	1 46	40·1	4·3	18
42·8	42·8	42·8	42·3	42·4	42 3	42·3	42·1	42 1	42·5	7 30	45·2	1 46	40·4	4 8	†19
42·4	42·5	42·5	42 7	42 8	42 7	42 2	42 2	42 3	42·2	6 40	43 1	1 30	40·3	2·8	†20
42·7	42 8	42·8	42 8	43 0	43 1	42·8	42·7	42 5	42·1	6 10	43·3	1 46	40 0	3 3	21
43·0	42·9	43 0	42·7	42 6	42 1	42·1	42·1	42 1	42·4	7 02	43·6	2 34	40·0	3·6	22
42·8	42·4	42 3	42 2	42 0	41·3	40·1	40 1	40·1	42 5	7 10	45 6	2 22	40 3	5 3	23
42·8	42 2	42 1	42 1	41 9	41 4	41 3	41 7	42 0	42 1	8 20	44 6	1 54	39·8	4 8	††24
43·1	43·1	43 0	42·5	42 3	42 1	41 9	42 2	42 1	42 6	7 26	45 2	1 34	40·2	5·0	25
43·1	43·1	42 9	42 7	42·5	42·3	42 4	42 3	42 1	42·4	8 50	43 4	1 30	40·6	2·8	26
43·1	43·0	42 8	42 2	42·1	42·0	42 0	41·9	41 9	42·4	7 30	44 2	2 30	40 7	3·5	27
43·1	43·1	42·9	42·6	42·2	42·1	42·1	42·1	42·1	42·2	6 50	43·7	2 36	39 1	4·6	28
43·3	42·8	42·3	42·4	41 4	41 1	40 9	40 7	40 6	42·5	7 06	45·6	2 30	39·8	5·8	††29
42 6	42·2	42·3	42·3	42·1	42·5	42·2	42·3	41·6	42 2	7 30	45·7	1 30	38·2	7·5	††30
42·9	42 7	42·7	42 5	42 3	42·1	41·9	41·9	41 8	42·3					4·3	Mean
42·8	42 8	42·8	42 5	42·4	42 3	42·1	42·1	42·0							Mean†
43·0	42·7	42 6	42·4	41·9	41 7	41·7	41·7	41 4							Mean††

† Five international quiet days.
†† Five international disturbed days.
⌅ No record. Day omitted for means.

TABLE 7

Horizontal Force

Average for sixty minutes centred at the full hours of Greenwich mean time) 39000 γ plus tabular quantities.

January 1950

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	377	377	393	413	435	461	452	452	415	402	403	405	407	403
2	396	396	410	423	423	442	458	450	441	450	396	395	399	410	408
3	402	402	411	418	442	480	483	503	491	470	455	436	425	430	430
4	421	420	421	439	468	480	521	530	510	454	459	459	435	438	432
†5	39	392	392	400	432	475	488	476	480	436	448	442	438	434	419
6	415	415	415	422	458	511	542	561	532	486	459	443	433	429	420
7	417	408	402	399	442	480	543	572	582	529	476	442	430	424	416
†8	410	410	410	420	458	482	508	536	532	506	478	448	434	434	434
9	414	414	411	423	431	468	531	551	536	511	474	441	425	425	434
10	436	436	437	488	488	501	526	541	544	516	475	452	440	441	443
11	446	440	432	452	468	479	482	504	509	516	502	482	455	444	440
12	436	430	436	436	466	468	490	494	495	492	478	466	459	445	436
13	425	425	417	411	416	427	452	466	500	500	476	456	450	434	432
††14	431	445	445	480	496	526	527	530	514	515	523	514	488	469	448
15	434	443	447	468	483	499	541	545	530	504	446	426	414	406	422
16	422	434	435	456	487	482	483	553	524	483	451	411	411	402	397
†17	411	411	406	415	425	358	408	428	418	386	348	324	302	302	299
†18	303	305	31	320	331	348	383	407	447	402	406	335	275	273	273
19	275	274	280	306	319	346	383	423	424	387	398	308	261	260	263
††20	229	229	229	246	267	359	389	311	405	391	380	360	341	315	292
††21	340	345	34	42	377	389	401	409	429	412	388	401	343	319	327
22	332	330	33	41	344	370	399	403	435	435	427	395	361	345	346
23	325	325	325	325	341	367	390	417	439	443	421	403	392	398	362
††24	360	348	343	363	417	439	439	468	463	461	435	387	365	349	355
††25	258	258	258	266	311	331	373	389	407	389	367	341	319	290	278
26	300	291	300	294	338	364	380	398	406	396	377	358	343	332	327
27	358	349	347	356	379	411	438	436	436	428	412	403	381	373	351
28	338	338	347	339	365	404	421	430	431	397	401	383	367	360	349
†29	349	349	349	349	371	401	415	432	425	416	411	398	390	382	379
30	358	358	360	383	429	446	466	440	409	363	335	335	370	391	382
31	366	366	366	371	431	459	467	469	443	439	389	375	381	393	393
Mean	374	373	374	385	410	433	458	468	471	450	429	407	391	386	380
Mean†	374	373	373	381	403	413	440	456	460	429	436	389	360	358	354
Mean††	324	325	323	340	374	409	426	421	444	434	419	401	371	348	340

† Five international quiet days.

†† Five international disturbed days.

Δ No record. Day omitted for means.

TABLE 7

Horizontal Force

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 39000 γ plus tabular quantities.

January 1950

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	
396	388	388	396	399	399	396	397	398	405	5 32	466	1 42	389	77	1
408	396	404	408	400	400	402	404	404	413	5 38	472	0 12	395	77	2
419	420	420	419	413	416	416	421	421	435	6 04	500	0 06	401	99	3
425	426	419	425	415	411	420	421	420	445	5 06	540	19 06	409	131	4
419	407	412	412	407	410	402	402	414	426	4 24	504	1 10	390	114	5
415	408	395	392	393	393	401	399	400	439	5 42	564	1 46	386	78	6
419	414	418	414	403	412	410	419	417	445	6 50	586	1 38	397	189	7
434	422	422	433	426	426	422	424	426	448	6 12	539	1 56	416	120	8
436	436	436	436	433	433	435	429	429	450	6 14	560	1 30	410	150	9
430	436	422	418	420	426	426	420	420	458	7 30	550	18 12	415	135	10
432	432	434	430	432	434	436	436	434	456	7 34	530	2 14	427	103	11
434	436	432	410	406	418	430	420	420	447	6 54	516	18 54	405	111	12
432	430	418	416	424	418	427	418	427	437	7 38	524	2 25	411	113	13
432	432	446	445	432	440	456	430	432	471	5 36	562	18 44	425	137	‡‡14
422	424	424	428	432	432	424	432	433	452	7 42	550	13 00	404	146	15
399	394	389	389	389	389	389	432	405	434	5 58	572	17 38	389	183	16
297	295	290	291	290	290	286	329	289	346	6 26	442	19 38	284	158	‡17
292	292	293	291	287	285	284	288	288	322	6 20	409	20 38	283	126	‡18
282	282	282	280	282	280	278	289	290	305	6 32	433	22 12	228	205	19
286	287	293	293	309	315	324	327	333	313	7 06	421	2 48	184	237	‡20
334	331	337	345	341	329	341	331	330	360	7 26	451	12 04	315	136	‡21
346	339	339	346	345	343	345	339	341	361	7 41	453	0 02	326	127	22
355	352	348	342	329	325	345	351	351	365	7 46	465	1 18	323	142	23
365	319	273	258	186	178	191	200	210	341	5 42	499	18 06	162	337	‡‡24
278	293	290	294	290	297	326	304	313	314	7 14	436	1 24	256	180	‡‡25
314	301	299	307	293	303	310	313	320	332	7 11	408	1 44	288	120	26
348	346	348	352	361	358	364	352	352	376	5 11	445	13 54	345	100	27
358	325	361	324	324	325	337	338	338	363	6 30	439	16 14	315	124	28
377	373	373	373	367	360	356	354	358	379	6 38	436	0 20	348	88	‡29
3	378	370	369	363	360	371	369	368	381	4 00	479	9 18	318	161	30
389	82	382	381	386	391	388	388	395	400	5 26	4.7	0 10	365	112	31
378	376	373	371	367	367	372	373	373	97					142	Mean
357	354	355	354	355	354	350	359	355	.			..	.		Mean‡
347	344	330	327	312	312	328	320	324	..	..	.	..	..	..	Mean‡‡

‡ Five international quiet days.

‡‡ Five international disturbed days.

A No record. Day omitted for means.

TABLE 8

Horizontal Force

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 39000 γ plus Tabular quantities.

February 1950

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	406	408	428	458	505	534	522	514	485	438	417	413	416	404	399
2	416	421	450	484	532	551	571	537	486	417	373	368	363	368	354
3	380	385	405	425	465	475	486	478	447	409	377	361	376	384	372
4	420	430	456	491	528	549	531	498	472	451	414	430	425	397	378
5	396	404	426	437	462	460	451	454	439	426	420	412	405	403	399
6	402	408	427	441	479	500	506	478	450	420	393	398	400	407	409
7	401	408	423	453	485	499	508	503	479	456	437	422	417	403	397
8	413	417	413	438	453	481	470	457	435	409	386	375	375	370	358
9	370	365	358	377	411	415	419	426	415	399	382	370	361	362	359
†10	336	348	339	361	391	407	421	417	405	386	362	355	352	347	341
11	345	353	348	369	384	389	394	394	390	380	364	360	359	352	353
12	338	342	339	361	383	402	404	398	394	379	364	349	341	339	321
†13	321	321	332	350	395	408	408	400	370	355	337	323	320	319	314
14	316	316	328	349	379	416	410	415	417	401	393	365	350	340	331
15	319	325	331	355	393	416	422	475	400	364	347	333	322	316	314
†16	307	314	333	358	389	403	416	404	388	362	346	337	331	329	32
†17	316	318	346	367	391	418	431	423	408	393	375	356	345	331	320
18	316	315	330	354	391	430	411	431	417	393	371	348	344	340	339
19	344	344	355	375	422	451	466	460	439	409	388	373	369	365	356
††20	327	330	350	379	423	447	444	447	437	394	379	358	352	346	331
††21	124	138	143	165	192	211	206	202	221	204	197	199	186	204	191
††22	234	238	230	230	274	282	307	268	263	264	269	272	264	254	248
††23	223	220	230	259	287	297	291	269	252	240	240	237	191	198	183
††24	211	224	248	263	263	308	321	315	302	301	289	280	263	253	246
25	278	281	282	296	331	353	382	391	402	382	346	327	308	289	286
†26	304	308	320	341	365	387	398	394	388	381	373	360	346	327	320
27	295	299	316	332	355	366	373	368	364	364	365	358	341	324	317
28	317	316	329	355	375	396	404	400	400	348	339	335	322	320	300
Mean	328	332	343	365	396	416	422	415	363	376	360	349	341	335	327
Mean†	317	322	334	355	385	405	415	408	394	375	359	346	339	331	323
Mean††	224	230	240	259	288	309	314	300	295	281	275	269	251	251	240

† Five international quiet days.

†† Five international disturbed days

Δ No record Day omitted for means

TABLE 8

Horizontal Force

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 39000 γ plus tabular quantities.

February 1950

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	
407	409	408	404	406	410	409	412	412	434	4 50	547	13 42	398	149	1
335	325	331	346	362	372	377	380	383	413	6 10	584	16 10	320	264	2
357	352	368	352	367	387	381	380	390	398	6 28	496	18 02	347	149	3
66	395	391	377	372	380	404	397	462	432	5 10	560	14 58	363	197	4
493	393	387	403	402	396	396	401	402	415	4 56	470	0 01	378	92	5
406	387	389	381	388	391	396	401	401	420	5 48	514	16 16	374	140	6
397	400	396	406	406	407	409	398	397	430	5 18	513	23 24	393	120	7
349	348	351	344	353	353	351	353	360	392	5 08	495	17 58	341	151	8
376	349	330	328	328	331	348	346	342	369	6 58	430	18 06	327	103	9
425	336	337	339	338	338	343	345	344	359	6 02	425	0 10	327	98	†10
351	350	346	343	341	341	340	338	336	359	6 44	399	20 38	289	110	11
326	313	331	321	315	319	319	319	319	347	5 52	412	19 12	311	101	12
332	310	301	295	303	304	304	306	309	335	5 36	413	17 58	290	123	†13
326	316	314	313	319	321	320	321	326	350	4 12	426	19 16	311	115	14
314	312	307	297	301	301	300	298	302	340	6 52	508	18 34	294	214	15
315	312	312	312	311	314	313	315	316	340	5 42	417	0 14	297	120	†16
312	309	310	312	307	309	312	313	316	348	5 30	437	19 14	297	140	†17
334	331	331	325	326	328	334	332	335	356	6 02	449	1 00	315	134	18
351	346	337	335	331	328	327	330	329	372	6 02	486	21 02	327	159	19
324	327	321	225	129	028	067	104	091	307	5 18	476	20 36	000	476	††20
178	177	199	209	209	217	235	222	230	194	4 54	257	4 06	120	137	††21
239	240	226	249	225	235	245	234	214	250	6 16	341	20 40	214	127	††22
172	173	197	186	202	187	185	217	219	223	5 22	301	15 34	149	152	††23
246	249	251	249	249	256	272	268	266	266	6 40	357	0 16	200	157	††24
288	288	289	290	288	291	293	296	298	315	8 02	426	0 44	279	147	25
317	313	312	312	312	313	313	314	313	339	5 06	404	0 38	303	101	†26
318	319	317	316	316	314	313	317	319	333	5 42	370	0 02	295	84	27
293	298	300	301	301	306	310	313	313	333	6 24	423	14 50	293	130	28
322	321	321	317	315	313	319	320	321	349					150	Mean
319	316	315	314	314	316	317	319	320							Mean†
232	233	230	224	203	185	201	209	204							Mean††

† Five international quiet days.

†† Five international disturbed days.

Δ No record. Day omitted for means.

TABLE 9

Horizontal Force

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 39000 γ plus tabular quantities.
March 1950

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	324	320	347	367	359	353	371	395	395	369	345	365	299	296	293
2	289	290	293	306	348	366	382	388	370	353	375	297	286	280	301
3	308	308	308	321	359	384	412	412	402	377	355	338	330	331	327
*4	311	307	309	312	355	376	414	410	387	359	341	309	332	331	323
5	318	318	318	321	341	369	413	413	400	385	362	347	343	338	340
6	329	328	328	346	404	438	466	465	447	402	376	345	337	342	345
7	315	312	322	330	387	412	439	439	419	399	31	297	270	273	276
8	311	312	314	324	378	407	441	459	447	416	386	368	360	356	354
9	336	335	332	341	378	422	473	480	488	469	417	380	408	361	337
†10	335	333	335	335	370	383	403	425	403	402	401	391	383	379	391
†11	349	348	348	361	392	428	458	467	451	432	402	378	392	378	368
†12	346	351	355	372	371	422	458	471	456	416	410	384	378	374	369
13	321	323	328	346	368	424	455	450	444	424	402	385	370	376	363
14	341	343	353	375	399	433	481	498	491	483	423	405	387	381	354
††15	Δ	Δ	Δ	Δ	Δ	380	399	426	436	434	398	406	368	370	350
16	Δ	Δ	Δ	Δ	Δ	428	472	455	416	372	347	333	342	341	333
17	334	334	356	374	405	435	478	481	478	431	365	342	339	337	335
†18	359	361	361	360	426	461	500	518	501	468	428	412	370	362	392
††19	377	375	377	386	434	488	528	589	586	496	400	232	142	088	081
20	236	236	244	256	299	328	358	389	376	353	328	313	306	305	299
††21	284	291	290	310	376	420	450	442	438	416	394	328	295	276	267
††22	318	317	320	337	385	445	437	447	426	428	405	417	355	358	355
23	315	323	330	322	324	399	442	468	482	470	432	390	371	371	371
24	333	332	330	333	365	388	415	421	381	379	351	327	315	301	300
25	330	333	334	346	368	393	429	419	407	405	390	383	401	373	397
26	346	345	343	353	398	423	452	463	458	465	416	390	370	378	380
††27	337	339	349	367	387	449	454	454	477	461	416	369	330	334	333
28	326	325	322	342	384	407	434	435	422	386	411	354	331	331	331
29	337	336	337	353	389	412	411	455	452	467	462	459	375	376	375
30	348	340	344	362	400	436	460	474	473	448	408	378	366	370	365
31	369	370	387	387	393	441	511	526	528	471	417	393	381	375	385
Mean	326	327	332	343	377	411	442	453	443	421	392	362	344	337	334
Mean †	340	340	342	349	383	412	447	458	440	415	408	375	371	371	369
Mean ††	329	321	334	350	395	438	454	472	473	447	403	350	300	283	277

† Five international quiet days.
†† Five international disturbed days.
Δ No record. Day omitted for means.

TABLE 9
Horizontal Force

Aver ages for sixty minutes centred at the full hours of Greenwich meantime) 39000 γ plus tabular quantities.
March 1952

Hours (G M T.)									Mean	Maximum		Mmimum		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	
291	287	287	294	286	290	287	289	290	325	6 30	407	19 22	285	122	1
292	294	286	278	279	283	285	2 6	289	312	5 38	395	17 10	275	120	2
311	304	294	299	301	306	307	310	311	334	6 00	429	16 38	292	137	3
305	312	311	307	304	308	307	307	310	331	5 50	432	14 16	304	128	†4
323	318	321	321	321	320	318	329	323	343	5 42	429	22 06	318	111	5
339	352	324	310	300	298	310	320	320	357	4 56	483	18 22	295	188	6
270	280	281	285	290	295	294	295	292	326	5 34	455	10 58	267	188	7
340	344	343	339	339	339	340	339	339	363	5 50	461	0 02	310	151	8
325	320	324	322	325	326	333	335	334	370	7 18	495	14 30	316	179	9
358	353	349	348	344	343	343	344	344	366	5 50	434	0 14	333	101	†10
362	360	357	357	355	355	361	352	348	384	5 42	474	0 50	348	126	†11
360	353	349	347	343	340	338	338	338	377	6 22	478	21 54	338	140	†12
352	344	343	332	322	323	333	331	335	367	5 22	466	18 26	314	152	13
352	343	329	329	329	328	332	⊼	⊼							14
342	332	329	330	333	333	332	⊼	⊼							††15
329	315	315	315	319	322	324	327	329							16
341	334	333	330	330	330	331	334	337	343	5 26	495	22 04	330	165	17
383	390	380	375	371	368	376	378	380	404	5 50	536	0 57	359	177	†18
105	075	083	109	202	221	236	242	251	296	6 22	530	14 50	061	469	††19
294	291	282	281	265	274	282	282	282	299	6 14	401	0 02	236	165	20
260	264	257	261	268	277	301	309	309	324	4 44	464	14 44	250	214	††21
359	351	351	350	353	329	329	341	344	360	5 38	467	23 10	317	150	††22
360	358	355	351	347	349	352	346	354	375	5 51	487	0 10	306	181	23
304	304	302	306	313	316	321	321	323	337	6 10	444	13 12	299	145	24
357	353	350	348	346	343	353	370	349	367	4 48	442	0 02	330	112	25
374	374	372	372	374	372	376	372	363	389	6 14	467	0 58	343	124	26
331	332	355	357	337	323	320	332	340	371	7 30	490	20 38	311	179	††27
329	329	329	329	326	329	333	332	336	355	5 30	442	0 56	324	118	28
373	357	347	345	346	341	346	346	348	381	7 26	514	18 50	335	170	29
346	336	344	344	343	348	352	353	354	379	5 42	487	15 24	333	154	30
388	353	342	344	347	345	344	349	369	396	6 58	538	15 40	334	204	31
328	323	320	320	321	322	326	327	329	356					164	Mean
354	352	349	347	343	343	345	344	344							Mean†
279	271	275	281	299	297	304	306	311							Mean †

† Five international quiet days
†† Five international disturbed days.
⊼ No record. Day omitted for means.

TABLE 10
Horizontal Force.

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 39000 γ plus Tabular quantities.
April 1950

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	380	378	392	441	445	466	465	470	458	419	397	385	380	368	382
††2	363	361	377	426	450	462	450	426	435	385	370	361	368	367	364
††3	373	375	379	409	463	510	496	474	442	394	389	365	377	394	380
4	371	372	401	440	483	502	522	484	443	385	372	372	363	349	334
††5	399	404	428	453	508	505	514	505	505	451	424	401	392	384	394
6	372	365	389	442	493	524	505	459	457	438	425	427	413	404	401
7	390	389	392	415	466	506	527	509	486	461	434	417	424	389	381
8	402	400	413	448	502	540	567	572	518	474	450	434	446	420	407
9	409	411	423	455	517	564	592	576	544	493	457	429	416	415	400
10	424	422	434	458	504	540	546	545	531	504	500	453	447	450	435
††11	423	427	450	499	536	557	552	528	499	475	458	444	439	441	436
12	437	440	462	495	559	608	574	545	524	480	465	456	451	447	439
13	417	427	450	476	518	549	556	529	500	472	451	445	444	437	423
††14	431	430	455	494	561	601	559	509	419	414	404	407	406	416	412
15	409	415	443	499	564	583	583	525	453	450	452	458	440	424	424
16	418	421	445	479	510	528	528	512	512	428	414	416	434	435	430
17	406	409	431	460	501	537	535	521	502	456	432	426	416	412	407
18	396	398	420	454	472	512	507	498	466	425	402	406	411	411	407
19	417	413	430	458	492	521	529	494	475	461	461	456	444	429	419
20	408	412	419	438	470	477	450	460	475	470	459	448	455	417	413
†21	400	401	423	474	513	540	540	515	481	450	434	425	426	426	422
22	408	411	431	466	461	543	551	547	517	490	482	461	451	451	447
23	448	456	479	522	561	610	603	581	574	545	516	485	466	459	445
24	453	425	451	477	510	546	534	560	545	498	481	458	443	439	439
25	438	441	449	490	526	573	563	550	544	516	490	478	465	456	449
†26	466	461	467	492	526	554	562	560	545	531	511	502	491	482	478
†27	488	489	508	532	590	624	638	618	581	549	527	520	521	510	501
28	500	498	504	527	565	590	612	618	611	578	551	518	502	488	474
29	468	478	491	507	550	581	575	550	541	496	476	456	440	436	443
††30	475	482	500	539	555	552	578	544	509	489	477	467	463	447	432
Mean	420	420	438	471	512	543	544	526	503	469	452	430	435	427	421
Mean†	442	442	461	498	545	573	570	546	505	484	467	460	457	455	450
Mean††	398	400	415	454	484	499	501	484	470	428	411	396	396	392	390

† Five international quiet days.
†† Five international disturbed days.
Δ No record. Day omitted for means.

TABLE 10
Horizontal Force

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 39000 γ plus Tabular quantities. April 1950.

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	
380	378	378	368	366	357	355	365	365	397	5 16	500	20 28	348	152	††1
363	365	363	373	361	365	369	377	369	386	4 52	479	19 00	344	135	††2
379	368	355	358	358	359	372	375	372	397	5 06	525	20 36	349	176	††3
327	324	319	366	377	385	389	393	390	395	6 00	534	17 48	317	217	4
361	350	339	346	359	380	380	391	382	415	4 26	536	17 49	330	206	††5
396	394	385	385	388	415	410	407	402	420	4 54	534	0 50	363	171	6
393	407	398	388	388	406	405	402	402	424	5 48	541	13 40	379	162	7
393	393	394	401	404	409	409	406	409	442	6 50	586	15 28	389	197	8
388	392	402	412	417	422	421	421	426	450	5 48	599	15 22	387	212	9
435	434	429	426	424	424	424	426	422	459	6 16	550	0 42	420	130	10
436	436	436	438	438	438	438	438	437	462	5 18	567	0 42	422	145	†11
437	437	437	435	435	433	433	435	426	470	4 50	617	23 34	419	198	12
419	415	413	407	412	409	423	431	429	452	6 18	562	23 55	406	156	13
412	407	406	408	409	414	416	412	409	442	5 06	659	9 34	398	261	†14
423	419	419	419	418	421	420	420	421	454	6 15	627	0 22	409	218	15
421	415	411	392	406	402	401	400	397	440	6 26	537	0 22	392	145	16
403	403	398	387	382	386	387	391	391	432	5 12	552	18 58	377	175	17
405	406	404	423	423	417	412	411	421	429	5 00	522	0 02	396	126	18
400	376	374	361	364	381	393	402	403	431	5 26	541	17 56	359	182	19
410	410	410	421	400	401	396	404	403	430	4 30	498	20 50	385	113	20
419	419	419	411	411	411	408	409	410	441	5 44	549	0 36	399	150	†21
442	440	437	443	443	443	443	445	445	462	6 32	577	0 30	406	171	22
439	441	442	443	448	451	450	455	461	491	5 54	661	14 26	435	226	23
430	428	434	437	432	432	430	430	439	465	6 36	575	16 42	420	155	24
445	443	442	473	470	468	468	470	468	482	5 04	597	0 42	435	162	25
477	477	473	483	483	484	484	488	488	499	6 14	570	1 58	461	109	†26
495	495	490	497	498	497	507	506	500	528	5 42	641	0 30	461	180	†27
464	459	462	451	449	451	453	454	454	510	7 30	628	15 44	446	182	28
410	423	423	447	457	452	458	465	470	479	5 08	588	14 56	410	178	29
420	412	415	450	452	477	481	489	493	483	5 56	617	16 10	404	213	††30
414	412	410	415	416	420	421	424	424	449					173	Mean
448	447	445	447	448	449	451	451	449							Mean†
381	375	370	379	379	388	391	399	396							Mean††

† Five international quiet days.
†† Five international disturbed days.
T No record. Day omitted for means.

TABLE 11
Horizontal Force.

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 39000 γ plus Tabular quantities. May 1950.

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	498	505	530	566	593	615	619	615	590	569	559	554	554	546	539
2	539	533	549	579	623	671	693	691	673	637	618	594	591	570	564
††3	515	515	531	561	575	584	569	599	594	595	555	545	536	536	536
4	529	529	539	588	618	655	674	678	650	611	573	550	548	553	555
5	520	517	526	580	609	640	660	652	628	598	570	546	531	512	510
6	533	535	555	597	638	676	691	694	641	611	584	562	555	555	550
	544	553	563	606	655	684	679	673	622	600	573	577	578	572	573
†	571	572	591	621	654	678	694	707	667	640	620	599	588	586	582
†9	582	580	582	605	657	682	690	687	675	658	638	618	629	603	593
10	594	589	590	613	654	686	701	693	672	646	626	616	608	599	598
11	606	593	584	598	637	666	692	709	686	651	613	593	581	577	565
†12	598	598	604	628	667	700	712	710	687	661	631	625	624	622	616
13	607	615	626	643	679	724	731	698	659	625	607	592	591	588	585
14	611	606	617	640	663	691	707	715	693	683	664	644	614	597	606
††15	609	612	620	640	665	673	693	707	709	656	633	607	612	618	619
16	610	608	606	624	647	674	680	688	682	663	649	624	615	612	610
17	624	621	628	650	690	719	725	713	687	659	640	630	633	624	621
†18	620	617	630	654	705	745	753	738	707	668	642	630	632	631	632
†19	628	627	635	657	711	761	790	800	769	719	679	650	647	651	640
20	644	641	650	672	718	751	766	755	727	699	668	654	660	663	654
21	630	624	627	650	690	737	761	757	737	706	677	657	653	653	647
22	657	658	665	691	757	764	785	784	781	738	706	679	655	636	634
††23	663	640	638	663	704	741	765	776	733	726	678	625	607	605	571
24	600	601	604	562	533	562	579	576	576	559	542	536	538	538	527
25	523	526	533	552	596	633	640	618	630	605	579	560	557	551	534
26	512	515	522	545	588	598	615	608	597	556	519	506	512	523	523
††27	485	490	501	510	523	544	564	560	540	530	525	518	520	517	489
††28	443	430	427	399	381	402	399	419	433	433	410	402	389	391	412
29	424	454	498	507	507	556	576	580	564	534	483	459	447	442	430
30	459	454	455	469	503	545	575	573	556	526	487	466	464	465	468
31	440	445	457	489	525	556	561	546	532	512	486	466	483	454	449
Mean	562	561	570	592	625	655	669	669	649	622	595	577	573	568	563
Mean †	600	599	608	633	679	713	728	728	700	669	642	624	624	619	614
Mean ††	543	537	543	555	570	589	598	612	604	588	562	539	533	533	545

† Five international quiet days
†† Five international disturbed days.
‡‡ No record. Day omitted for means.

TABLE 11

Horizontal Force.

Averages for sixty minutes centred at the full hours of Greenwich mean time) 39000 γ plus Tabular quantities.
May 1950.

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	
538	532	528	537	529	529	540	541	541	553	6 00	625	0 02	498	127	1
550	539	520	507	505	511	510	507	512	575	6 54	700	19 00	501	199	2
529	524	531	531	521	521	527	535	533	546	6 36	652	0 14	512	140	†3
550	541	531	519	516	528	519	529	526	567	6 30	691	19 18	512	179	4
518	524	517	527	530	531	545	540	535	557	6 08	691	14 26	510	181	5
543	540	538	551	551	553	551	550	548	579	6 46	700	0 30	531	169	6
571	563	562	567	568	568	567	567	566	590	5 14	695	1 18	543	152	7
582	581	577	581	580	578	576	580	586	608	6 46	717	0 48	571	146	†8
588	588	586	590	595	595	595	594	594	617	5 26	698	1 22	578	120	†9
594	590	588	593	594	595	598	602	594	618	5 58	705	2 00	585	120	10
564	569	582	587	589	594	600	599	599	610	7 00	716	15 22	562	154	11
611	606	600	593	592	597	601	607	607	629	6 22	720	18 48	507	123	†12
583	586	584	603	594	599	613	611	611	623	5 44	753	15 00	573	180	13
606	600	592	593	590	595	600	600	605	631	7 22	732	19 00	591	141	14
615	609	603	[illegible]	595	603	599	598	612	620	7 16	716	18 46	586	130	††15
604	601	598	596	603	605	612	613	611	626	7 26	701	17 48	591	110	16
615	615	616	616	620	622	623	624	621	643	6 16	733	15 30	611	122	17
627	622	621	624	632	632	632	632	632	652	5 58	757	16 36	620	137	†18
642	638	642	646	646	646	644	646	644	674	6 30	807	1 22	627	180	†19
648	646	652	659	655	651	659	645	643	674	6 10	771	23 58	631	140	20
643	639	643	645	650	651	651	653	656	668	6 22	767	0 42	624	143	21
649	650	653	644	648	646	658	668	671	687	7 22	804	13 22	627	177	22
556	556	564	564	561	578	576	581	588	636	6 42	812	16 14	552	260	††23
523	523	521	523	523	523	523	526	523	548	5 12	620	3 22	504	116	24
527	528	526	506	509	513	518	514	514	555	7 10	659	18 45	502	157	25
511	501	504	491	488	489	486	484	486	528	6 10	622	21 50	483	139	26
476	473	452	438	446	450	441	432	443	495	6 10	573	21 50	419	154	††27
423	424	433	415	415	434	434	425	418	417	8 58	460	5 32	351	109	††28
449	442	440	450	459	454	461	464	464	481	6 42	590	0 02	421	169	29
452	452	459	431	436	440	440	435	440	477	6 18	586	15 40	430	156	30
448	445	442	442	440	441	442	456	459	476	5 26	574	0 14	435	139	31
559	556	555	554	554	557	559	560	561	606					151	Mean
610	607	605	607	609	610	610	612	613							Mean †
520	517	517	509	508	517	515	514	519							Mean ††

†Five international quiet days.
†† Five international disturbed days.
[illegible] No record. Day omitted. [illegible] means.

TABLE 12

Horizontal Force.

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 39000 γ plus Tabular quantities.

June 1950

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	461	467	471	495	515	539	550	562	539	504	481	460	445	440	437
2	465	460	453	471	490	498	508	504	493	474	459	449	445	441	446
3	465	470	455	452	499	541	574	580	565	541	516	480	457	462	462
4	457	457	463	472	506	526	546	548	553	535	516	499	487	477	474
5	469	469	479	503	544	566	557	562	534	508	490	476	469	467	469
††6	481	494	493	494	503	513	517	503	501	481	465	444	425	415	430
†7	477	479	505	532	541	559	560	556	553	537	519	504	495	489	485
8	492	487	491	505	529	547	562	569	568	563	545	531	520	505	496
††9	490	499	494	504	509	528	508	538	548	532	513	484	464	445	464
10	487	484	486	504	474	479	513	550	543	538	516	481	484	482	493
11	500	502	516	Δ	Δ	Δ	Δ	Δ	Δ	⊼	Δ	Δ	Δ	Δ	⊼
12	Δ	Δ	Δ	Δ	557	584	602	616	592	550	532	514	503	508	514
† 13	514	522	533	556	567	590	599	584	566	547	527	520	522	527	518
14	541	551	567	589	603	610	620	630	620	595	566	551	544	544	544
†15	543	546	553	560	578	595	612	605	581	548	533	533	547	551	547
16	559	567	596	604	620	638	648	648	637	627	614	599	585	580	580
17	575	564	566	584	608	613	610	574	601	583	581	572	564	554	554
18	⊼	⊼	⊼	⊼	⊼	606	627	627	621	598	580	569	559	555	556
†19	553	554	552	564	594	596	604	613	618	609	584	569	564	564	564
†20	575	583	594	608	623	631	636	629	612	594	575	569	569	574	574
21	567	579	607	626	631	651	624	606	591	577	562	558	558	560	563
22	548	555	570	582	603	654	648	619	624	604	576	555	545	550	550
23	540	545	554	569	603	632	636	639	630	610	575	551	541	537	542
††24	482	487	487	473	478	473	452	434	453	392	434	414	384	409	419
25	435	437	451	465	481	502	515	519	509	465	441	421	417	415	417
26	428	432	425	423	457	477	477	482	482	472	453	432	423	423	428
27	424	434	441	463	493	510	512	501	489	468	444	437	439	443	443
28	423	433	443	463	487	496	500	493	482	469	453	453	448	448	444
††29	433	444	454	470	503	514	488	472	466	474	474	470	470	479	456
††30	352	358	348	333	335	367	384	426	442	434	415	398	391	396	393
Mean	490	495	501	513	533	552	556	558	552	532	515	500	492	491	492
†Mean	532	537	547	564	582	595	602	597	586	567	548	539	539	541	538
††Mean	448	456	462	455	466	479	470	475	482	463	460	442	427	429	432

† Five international quiet days.
†† Five international disturbed days.
Δ No record. Day omitted for means.

TABLE 12

Horizontal Force

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 39000 γ plus Tabular quantities, June 1950.

Hours (G.M.T.)									Mean	Maximum		Minimum		Range	Date
15	16	17	18	19	20	21	22	23		Time	Max	Time	Min		
γ	γ	γ	γ	γ	γ	γ	γ	γ	γ	H M	γ	h M	γ	γ	
432	430	433	441	441	4..	451	452	452	473	6 42	570	16 54	434	136	1
439	436	439	449	452	455	458	456	472	463	6 14	594	2 08	486	108	2
451	450	445	446	459	462	461	455	455	483	6 54	595	17 40	440	155	3
465	460	462	466	469	468	466	467	472	487	7 42	560	1 54	452	108	4
466	466	467	471	474	471	471	471	477	492	5 58	573	20 30	464	10	5
428	438	430	443	460	460	460	466	470	467	6 02	539	13 42	409	130	††6
485	490	490	486	486	490	490	490	492	507	6 38	566	15 30	484	82	†7
491	490	491	490	489	496	492	494	490	513	7 28	572	23 14	481	91	8
474	473	467	469	474	479	477	474	473	491	5 06	570	12 50	442	128	††9
493	487	484	489	490	492	503	501	500	497	7 06	567	5 04	464	103	10
Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ	Δ							11
514	511	510	508	508	507	513	517	515							12
525	525	526	536	536	536	537	538	541	542	5 58	604	0 06	514	90	†13
534	535	536	538	540	543	544	545	543	564	7 32	639	15 32	533	106	14
547	545	544	558	560	560	561	560	560	559	6 40	618	10 30	529	89	† 15
584	584	580	563	568	568	571	575	577	595	6 02	651	0 10	558	93	16
549	544	544	Δ	Δ	Δ	Δ	Δ	Δ							17
553	553	556	557	557	557	557	561	554							18
566	566	564	566	569	569	574	573	575	576	5 10	630	1 10	561	69	†19
573	574	575	562	562	565	564	563	564	584	6 00	638	11 02	568	70	†20
563	558	552	540	541	535	535	535	541	573	4 22	636	22 10	532	104	21
541	535	540	541	539	541	542	541	541	567	6 06	667	15 50	535	132	22
541	531	526	526	522	507	514	497	487	556	6 06	650	23 30	487	163	23
413	414	419	405	410	412	433	434	436	4..	4 26	700	12 00	374	135	††24
421	421	421	416	418	415	422	427	4..	..6	6 54	535	13 18	413	122	25
428	428	426	413	409	415	419	419	4..	4..	7 40	487	18 38	401	83	26
438	439	437	423	418	419	423	419	41..	..	5 54	518	10 12	414	104	27
439	439	438	433	433	432	431	431	4..	452	5 50	507	0 05	419	88	28
435	408	390	391	359	351	343	359	355	436	5 10	524	20 50	337	187	†††29
386	399	396	398	400	399	396	398	397	389	8 30	445	4 20	308	137	††30
489	487	486	483	484	484	486	486	487	501					112	Mean
539	540	540	542	543	544	546	545	546							Mean†
427	426	420	421	421	421	421	424	427							Mean††

† Five international quiet days.
†† Five international disturbed days.
Δ No record Day omitted for means.

TABLE 13
Vertical Force

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 2400γ plus Tabular quantities
April 1950

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	114	114	112	110	104	106	114	106	104	100	106	108	112	112	116
††2	115	113	153	185	175	163	157	157	161	165	169	167	165	169	16
††3	158	160	162	152	150	146	150	148	150	152	150	152	150	144	(
4	145	147	141	143	137	135	121	119	111	119	125	127	127	131	129
††5	135	137	127	129	137	135	125	125	121	119	121	123	125	131	137
6	133	137	137	137	⍩	⍩	⍩	⍩	⍙	131	129	129	129	131	131
7	129	131	131	129	⍙	⍙	⍙	⍙	⍙	Δ	⍙	⍙	Δ	Λ	Λ
8	⍙	Δ	Λ	137	137	135	133	123	119	125	127	131	131	131	129
9	133	133	133	133	153	151	141	133	133	137	137	143	143	143	145
10	151	151	151	109	95	99	91	91	91	91	95	105	107	105	107
†11	114	112	112	114	156	152	148	144	140	148	146	150	150	146	148
12	153	153	153	135	133	121	99	101	129	133	133	135	133	133	133
13	134	136	134	132	134	134	⍩	⍩	⍩	⍩	⍙	⍩	⍩	⍩	⍩
†14	⍙	⍩	⍩	161	153	143	139	139	139	143	153	153	153	155	155
15	154	158	156	154	130	118	112	108	126	126	134	134	132	126	130
16	132	132	132	132	126	122	118	118	124	120	128	128	126	126	126
17	127	127	123	127	153	147	139	137	145	149	151	149	151	151	151
18	161	159	157	137	129	126	123	119	123	131	137	139	137	137	137
19	146	148	146	146	148	144	144	140	144	146	150	148	150	148	148
20	174	174	178	178	186	182	178	180	174	170	172	176	178	178	180
†21	188	192	194	192	132	126	120	120	116	118	122	122	124	120	116
22	127	129	127	127	195	179	173	169	169	173	175	175	175	175	175
23	183	187	187	179	195	183	179	⍙	⍙	⍙	⍙	⍙	⍙	⍙	Δ
24	⍙	⍙	⍙	142	122	122	122	122	120	122	126	134	138	140	140
25	146	148	146	144	122	116	106	104	104	108	112	118	120	124	124
†26	133	135	141	167	171	163	151	147	147	147	147	147	147	147	147
†27	151	153	149	139	129	121	117	115	117	129	133	135	143	141	141
28	148	152	152	132	126	120	112	106	106	110	112	114	126	128	128
29	137	139	137	95	95	93	95	97	101	99	97	95	95	97	109
††30	117	111	103	119	119	115	119	131	137	141	137	137	⍩	Λ	⍙
Mean	142	143	143	141	141	136	131	127	129	132	134	136	137	137	138
Mean†	147	150	150	166	160	160	135	133	132	137	140	141	141	140	141
Mean††	128	127	131	139	137	133	133	133	135	135	135	137	138	139	138

† Five international quiet days.
†† Five international disturbed days
⍙ No record. Day omitted for means.

TABLE 13

Vertical Force

(Averages for sixty minutes centred at the full hours of Greenwich mean time) 2100γ plus Tabular quantities.

April 1950

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	
116	118	118	113	111	111	113	115	115	111	19 10	120	8 40	80	40	††1
165	165	163	158	158	156	160	158	156	159	3 04	187	1 30	107	80	††2
146	148	146	141	145	143	145	143	143	149	2 32	164	5 20	144	20	††3
131	129	129	135	137	135	131	137	135	131	2 00	147	8 00	107	40	4
129	135	137	133	135	139	135	139	137	131	21 20	145	8 32	115	30	††5
127	131	131	131	133	135	133	129	129							6
⍓	⍓	⍓	Δ	Δ	⍓	⍓	⍓	⍓							7
127	131	131	133	133	133	133	133	133							8
141	149	151	151	151	151	151	151	151	144	22 10	155	7 42	131	24	9
105	107	109	112	110	112	112	112	112	110	0 42	153	6 36	89	64	10
150	148	150	151	153	153	153	153	153	144	3 20	158	2 16	110	48	††11
133	135	134	134	136	136	136	136	136	133	0 40	155	6 26	97	58	12
⍓	⍓	⍓	⍓	⍓	⍓	⍓	⍓	⍓							13
155	155	155	154	156	156	158	158	158							††14
132	134	134	132	134	132	132	132	132	133	2 36	160	7 06	104	56	15
122	126	126	127	127	125	125	127	125	128	1 00	134	6 30	116	18	16
151	151	151	157	157	157	157	157	159	147	3 20	153	2 20	121	32	17
137	137	137	148	146	146	140	146	146	139	0 18	163	7 06	117	46	18
146	146	148	166	166	174	176	176	174	153	21 10	162	7 10	138	24	19
182	180	180	190	190	190	190	188	188	181	3 10	190	7 30	166	24	20
118	118	118	123	123	127	127	129	125	134	2 28	196	6 36	112	84	††21
175	175	175	179	181	181	181	181	179	169	3 20	190	1 28	125	71	22
⍓	⍓	⍓	Δ	Δ	⍓	⍓	⍓	⍓							23
138	140	142	144	144	144	144	148	148							24
124	126	126	131	131	131	131	131	131	125	1 56	159	6 28	109	50	25
147	149	149	149	151	151	149	149	149	149	3 08	182	0 18	150	32	††26
145	147	146	146	148	152	152	152	148	140	1 24	161	7 00	115	46	††27
126	130	130	135	135	135	135	135	135	129	2 00	158	8 10	108	50	28
105	111	111	115	115	115	117	115	115	108	1 34	143	5 32	93	50	29
⍓	⍓	⍓	Δ	⍓	⍓	⍓	⍓	⍓							††30
138	139	139	142	142	143	143	143	142	139	.	..	.	..	45	Mean
141	143	144	145	146	148	148	156	147		.	.		..		Mean†
137	141	141	136	137	135	138	139	138		.	..	..	..	..	Mean††

† Five international quiet days.

†† Five international disturbed days.

⍓ No record. Day omitted for means.

TABLE 14

Vertical Force

(Averages for sixty minutes centred at the full hours of Greenwich mean time)

2400γ plus Tabular Quantities

May 1950

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	[illegible]	[illegible]	[illegible]	117	107	103	105	105	109	111	107	113	113	115	117
2	130	130	130	132	132	[illegible]	[illegible]	[illegible]	120	128	130	130	132	130	130
††3	45	145	143	143	171	163	157	155	157	159	157	161	161	161	161
4	171	171	169	163	153	147	145	139	[illegible]	147	153	161	150	163	161
5	166	168	166	148	128	122	114	108	108	108	112	120	128	128	128
6	131	131	135	135	129	127	123	121	117	119	125	127	127	127	127
7	130	140	140	140	[illegible]	[illegible]	126	126	126	128	138	136	132	126	126
†8	133	137	135	127	125	109	103	101	103	103	109	117	117	121	121
†9	126	130	130	146	150	146	146	146	148	151	152	158	158	154	152
10	166	166	168	172	170	168	164	166	166	168	170	170	168	168	168
11	171	171	171	149	153	157	149	147	145	143	143	147	147	149	149
†12	159	161	161	179	181	177	173	173	173	175	181	179	175	171	169
13	180	184	180	170	152	148	134	132	132	136	142	148	152	152	156
14	164	166	166	166	182	180	166	170	168	168	166	166	164	164	170
††15	179	179	177	179	165	161	161	157	151	149	145	[illegible]	153	161	161
16	158	162	162	170	162	156	154	150	138	140	144	142	154	156	156
17	161	163	167	161	139	137	133	129	121	119	121	123	133	133	137
†18	139	137	141	161	175	159	155	153	155	155	157	161	163	163	163
†19	173	173	177	143	141	141	143	127	125	127	139	143	145	145	143
20	147	147	147	163	163	161	161	159	155	151	153	157	157	159	161
21	160	162	164	176	184	174	162	162	162	164	164	164	164	164	164
22	166	176	176	180	174	166	162	162	162	158	156	156	162	162	164
††23	175	177	179	167	157	149	145	145	145	147	145	145	145	149	147
24	166	166	166	168	170	166	164	152	148	150	152	160	160	160	160
25	167	167	167	147	119	115	115	107	107	111	109	111	115	115	117
26	121	123	123	123	121	123	123	123	123	115	111	123	123	123	123
††27	119	121	121	119	175	173	173	169	169	173	177	177	177	[illegible]	[illegible]
††28	[illegible]	[illegible]	[illegible]	164	146	136	136	142	154	156	162	170	170	174	176
29	170	174	174	172	140	136	132	134	134	140	140	148	148	148	150
30	152	150	148	148	146	140	140	130	130	128	132	142	148	150	152
31	158	162	164	164	100	102	102	102	102	102	102	102	102	102	102
Mean	155	157	157	155	150	146	142	140	138	140	142	145	147	146	147
Mean†	146	148	149	151	150	147	144	140	141	142	146	152	152	151	150
Mean††	152	155	155	154	153	153	154	154	155	157	157	161	161	161	161

†Five international quiet days.

††Five international disturbed days.

[illegible] No record. Day omitted for means.

TABLE 14

Vertical Force

(Averages for sixty minutes centred at the full hours of Greenwich mean time)

2400γ plus Tabular Quantities

May 1950

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	
117	117	119	130	130	130	130	130	130							1
128	130	128	141	143	141	143	143	147							2
161	161	161	169	169	169	169	171	169	160	4 40	173	8 32	141	32	††3
163	163	159	162	162	164	164	166	166	159	1 40	173	6 28	137	36	4
128	128	128	129	127	127	131	129	133	130	1 20	170	8 40	106	64	5
127	127	127	126	126	126	126	128	128	127	3 40	137	8 52	115	22	6
128	126	126	127	131	133	133	127	129							7
125	125	125	126	126	126	126	126	126	121	1 58	130	7 40	97	42	†8
154	156	158	162	164	164	164	164	162	152	20 40	165	0 30	126	39	†9
168	168	168	169	169	169	171	169	171	168	3 20	174	0 40	164	10	10
149	149	155	157	157	155	157	157	159	153	1 40	173	9 40	141	32	11
171	173	175	176	174	178	182	180	180	174	10 56	183	0 10	157	26	†12
160	164	164	162	162	164	164	162	164	157	1 30	184	7 40	128	56	13
170	170	172	173	173	177	175	175	177	170	7 00	172	0 00	142	30	14
163	165	165	158	158	158	158	158	160	161	0 18	181	0 10	143	38	††15
158	158	158	157	159	157	159	159	159	155	3 22	172	8 24	136	36	16
135	137	137	137	137	139	139	137	137	138	2 50	169	9 40	117	52	17
163	161	163	171	171	175	169	169	171	160	20 40	171	1 20	137	34	†18
145	143	147	143	145	147	149	147	147	146	3 00	181	8 1·	123	58	†19
155	155	161	162	160	160	160	160	160	157	4 30	165	1 40	144	21	20
164	164	164	166	166	166	164	164	164	166	3 32	188	6 46	160	28	21
166	168	170	171	173	169	169	171	177	167	3 08	184	9 40	152	32	22
140	153	161	160	164	164	164	164	164	157	2 28	181	7 18	143	38	††23
162	164	164	167	167	167	167	167	167	163	4 28	172	7 44	144	28	24
117	123	123	119	121	121	123	123	123	124	1 40	167	6 58	105	62	25
123	123	123	119	119	119	119	119	119	121	13 30	125	9 22	109	16	26
⊼	⊼	⊼	⊼	⊼	⊼	⊼	⊼	⊼							††27
176	176	176	172	170	172	170	168	170							††28
150	152	152	150	150	148	148	150	150	150	1 34	172	6 48	140	32	29
152	156	158	156	158	158	158	154	158	148	19 30	159	9 12	126	33	30
102	102	102	100	100	100	102	102	104	112	2 15	166	9 50	99	67	31
148	149	150	151	151	151	152	151	152	150					37	Mean
152	152	154	155	156	158	158	157	157							Mean†
162	164	166	165	165	166	165	165	166							Mean††

† Five international quiet days.

†† Five international disturbed days

⊼ No. record, Day omitted for means,

TABLE 15

Vertical Force

(Averages for sixty minutes centred at the full hours of Greenwich mean time)

2400γ plus Tabular Quantities

June 1950

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	104	102	100	104	102	100	98	98	100	100	100	102	102	104	104
2	120	120	118	118	98	98	⊼	⊼	⊼	⊼	⊼	⊼	⊼	⊼	⊼
3	⊼	⊼	⊼	⊼	⊼	188	172	160	160	160	156	158	156	160	160
4	164	168	170	172	154	142	124	120	120	120	120	124	126	132	138
5	140	140	140	140	136	130	118	112	112	116	120	120	120	120	122
††6	132	132	124	122	114	116	110	102	104	104	106	106	110	110	112
†7	130	128	128	124	126	126	120	118	118	120	118	114	116	120	120
8	126	128	134	132	124	120	118	118	118	110	108	112	114	114	112
††9	120	120	120	120	118	120	126	122	120	118	120	118	118	120	124
10	128	128	130	132	120	120	118	116	102	104	106	106	112	120	120
11	124	126	126	126	116	116	118	118	120	118	120	118	118	118	118
12	122	124	126	120	110	108	104	100	100	100	102	104	108	114	114
†13	120	120	120	120	118	116	116	112	108	104	102	104	106	112	112
14	120	120	118	120	100	100	100	98	92	94	94	96	100	100	⊼
†15	⊼	⊼	⊼	102	112	106	110	106	118	120	124	120	116	112	114
16	118	118	120	118	58	60	68	68	74	76	70	72	⊼	⊼	⊼
17	⊼	⊼	⊼	⊼	84	80	80	78	76	78	72	72	74	78	80
18	84	84	82	82	80	80	80	78	76	80	80	80	80	80	80
†19	82	88	92	92	102	100	100	100	100	96	98	96	98	96	96
†20	98	100	100	100	118	120	118	116	122	122	120	120	120	120	120
21	122	124	126	126	154	154	152	154	158	160	162	160	160	156	156
22	158	160	160	158	⊼	⊼	⊼	⊼	⊼	⊼	⊼	⊼	⊼	⊼	⊼
23	⊼	⊼	⊼	124	122	120	120	120	120	120	120	120	122	122	122
††24	124	126	132	136	⊼	118	120	134	112	128	136	124	120	124	132
25	134	138	138	140	132	132	126	120	108	104	104	112	118	118	122
26	134	134	134	134	128	138	132	142	148	148	142	140	⊼	⊼	⊼
27	150	148	148	146	144	140	138	138	138	138	140	142	140	140	140
28	150	148	143	144	124	126	120	122	124	132	132	134	132	128	128
††29	140	140	140	140	142	138	140	144	144	152	154	154	148	146	140
††30	144	146	152	⊼	⊼	⊼	⊼	⊼	⊼	⊼	⊼	138	140	140	140
Mean	126	127	128	126	117	118	117	115	115	116	116	117	118	119	121
Mean†	107	110	111	108	115	114	113	110	117	112	112	111	111	112	112
Mean††	132	133	134	129	125	123	124	125	120	125	129	124	127	128	130

† Five international quiet days

†† Five international disturbed days.

⊼ No record Day omitted for means.

Table 15

Vertical Force

(Averages for sixty minutes centred at the full hours of Greenwich mean time)

2400γ plus Tabular Quantities

June 1950

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	
106	110	118	120	120	120	120	120	120	107	23 30	122	6 40	96	26	1
⍙	⍙	⍙	⍙	⍙	⍙	⍙	⍙	⍙							2
160	162	162	160	160	162	162	164	162							3
136	136	138	140	140	140	140	140	140	139	3 16	180	6 32	118	62	4
124	128	126	126	126	128	126	126	132	126	3 18	142	7 08	110	32	5
110	110	110	120	122	122	124	124	120	115	1 00	134	7 30	100	34	††6
120	120	124	124	124	124	124	126	126	122	0 18	130	10 40	112	18	†7
112	112	118	120	120	118	120	120	120	119	2 22	134	10 36	106	28	8
126	126	128	128	128	126	124	124	130	123	23 40	132	3 44	116	16	††9
120	112	112	120	122	122	124	124	124	118	2 04	134	7 36	100	34	10
118	120	120	120	120	122	120	122	120	120	2 12	128	4 28	116	12	11
118	116	116	120	120	118	120	120	118	113	2 40	128	7 42	98	30	12
112	114	116	116	118	116	118	118	118	114	0 34	122	10 40	100	22	†13
⍙	⍙	⍙	⍙	⍙	⍙	⍙	⍙	⍙							14
117	116	114	116	118	118	120	118	118							†15
⍙	⍙	⍙	⍙	⍙	⍙	⍙	⍙	⍙							16
80	80	82	80	82	80	84	84	84							17
80	80	80	80	82	80	80	80	80	80	1 15	86	8 46	74	12	18
96	96	96	96	96	98	96	100	98	96	6 02	104	0 30	80	24	†19
120	120	120	120	120	120	124	122	124	117	20 58	124	0 40	96	28	†20
156	158	156	154	154	154	156	158	158	151	9 40	164	1 22	120	44	
⍙	⍙	⍙	⍙	⍙	⍙	⍙	⍙	⍙							22
120	120	120	124	122	122	124	124	124							23
130	130	130	132	130	134	136	136	136	129	10 12	138	7 58	108	30	††24
124	124	124	126	126	126	132	132	130	125	2 40	142	8 32	102	40	25
⍙	⍙	⍙	⍙	⍙	⍙	⍙	⍙	146							26
140	140	142	142	140	140	142	144	150	142	1 46	150	6 00	136	14	27
132	132	134	138	138	138	138	138	140	134	1 10	150	6 12	118	32	28
140	140	138	140	136	138	140	142	144	143	10 36	156	20 00	134	22	††29
140	140	140	142	140	138	138	140	140							††30
121	122	123	124	124	124	125	126	127	122					28	Mean
113	113	114	114	115	115	116	117	117							Mean†
129	129	129	132	131	132	132	133	134							Mean††

† Five international quiet days.
†† Five international disturbed days.
⍙ No record Day omitted for means.

TABLE 16

Principal Magnetic Storms (January—June 1950)

Greenwich date 1950	Storm time		Type (2)	Sudden commencement amplitude (3)			C-figure, degree of activity(4)	Maximal activity Greenwich day	Ranges			Remarks
	G M.T. of beginning h m.	G M T. of ending (1) d. h.		D γ	H γ	Z γ			D γ	H γ	Z γ	
January 23	07 02	25 23	s.c.	—1	+34	.	ms	24	2	340	Σ	
February 19	23 42	23 01	s c.	...	+10	..	s	20	5	476	Σ	
February 28	10 40	24 12	s.c.	—1	+24	...	m	25	3	193	Σ	
March 19	05 48	19 23	s.c	...	+58	...	s	19	2	554	Σ	
March 31	13 24	6 23	s.c (probable)	...	+20	..	m	1	4	220	Σ	
April 22	09 14	25 10	s.c.	—2	+39	+4	m	23	4	246	96	
May 2	09 46	5 11	s.c.	—1	+17	...	m	3	4	240	42	
May 22	20 50	24 10	s.c	...	+17	+4	ms	23	6	319	38	
May 27	12 02	29 13	s.c.	—1	+20	...	ms	27	6	255	Δ	
June 6	00 10	6 21	..	—1	+12	...	m	6	5	188	24	
June 23	18 00	25 10	s.c.	—2	+27	+10	m	24	4	178	36	
June 29	08 18	30 09	s.c.	...	+22	...	m	30	7	178	18	

(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 150γ and 250γ.
(ms)—for moderately severe when range is between 251γ and 400γ.
(s)—for severe when range is above 400γ.

Σ No record.

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