ASTRONOMICAL OBSERVATIONS

MADE AT

THE HONORABLE

THE EAST INDIA COMPANY'S OBSERVATORY

AT MADRAS

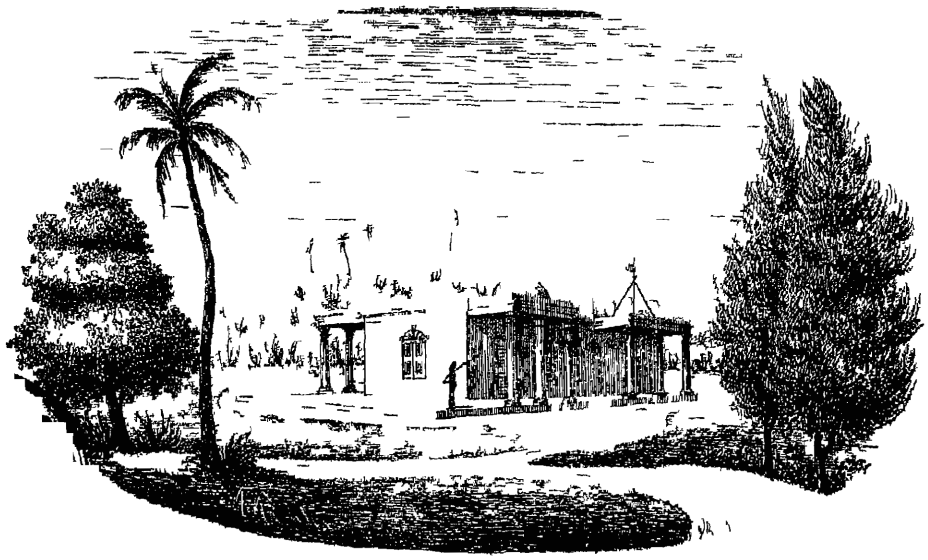
IN THE YEARS 1843—1847

TOGETHER WITH

THE RECOMPUTATION OF THE SUN AND MOON AND PLANETARY OBSERVATIONS
SINCE 1831

BY THOMAS GLANVILLE TAYLOR ESQ F R S & F R A S
ASTRONOMER TO THE HONORABLE COMPANY

Printed by Order of the Madras Government



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MDCCCXLVIII.

PREFACE

In the fifth Volume of the Madras Astronomical Observations will be found the result of an examination of the divisions of the Madras Mural Circle in which it appears—that the determinations of North Polar Distance which had up to that time been given are all erroneous to an amount (in extreme cases) of $\pm$ 4 3 and in a paper read at the Meeting of the Royal Astronomical Society on the 13th June 1845 I have shown that the hitherto presumed Longitude of the Madras Observatory was erroneous to the amount of 12 6 seconds of time Now the mischief introduced by these conjoint errors was that all the determinations of North Polar Distance required correction within the above limits and that the comparison of the Right Ascensions of the Sun Moon and Planets with the places assigned in the Nautical Almanac were likewise to some extent erroneous To remedy this evil I had re computed and re arranged all the observations of the fixed stars down to the end of 1842 and their places thus amended are given in Volume VI of these Observations what remained to be done viz the re-computation of the observations of the Sun Moon and Planets and the re computation of the places from the Nautical Almanac has been performed in the present volume in addition to which the places of the Sun Moon and Planets observed since the end of the year 1837 have now been added so as to bring all the observations complete up to the end of 1847

Agreeable to the practice which had been followed in former volumes I have given the indications of the Spirit Level and the result of observations for Collimation and Azimuth for the Transit Instrument and the Index Error for the Mural Circle the latter being determined from the observation of known stars as well as from observations with the Reflecting Collimator these values in addition to the facilities they afford to any one who may have occasion to refer to the original observations are moreover the best testimony I can offer of the consistency and stability of the Instruments and what is equally important as regards observations with the Transit Instrument I have given the daily rate of the Clock for the period following that in which it was last given viz the end of the year 1837

In choosing for myself a plan for observing during the period 1843—1847 I have thought it inexpedient to increase the present Madras Catalogue of 11 015 Stars and have therefore contented myself with re examining from year to year the places of the Stars forming the Nautical Almanac Catalogue which if it has not already done much in the way of investigating the nature of the irregular changes to which those Stars have in some instances been liable will in the end I venture to hope tend to so desireable an issue in addition to this I have re examined—on a more limited scale the places of several of the *proper motion stars* or of Stars in which a suspicion of proper motion existed the Catalogue is not a very large one but having been performed at leisure during one two or three years I venture to hope that its claims for accuracy will still render it acceptable and valuable

Following the Planetary Observations—are given the Observations of the Comets of 1840 and 1845 and after the Catalogues—will be found the Observations of Eclipses Occultations, and Moon Culminating Stars the latter class may without doubt lay claims to ordinary accuracy but the former—are by reason of the insufficient means placed at my disposal—necessarily only mere approximations it gives me pleasure however in closing this volume—to be able to assert that the Equatoreal Instrument *ordered six years ago by the Honorable Court of Directors* is now in fair train of being executed and that the plea of inefficiency here admitted will not again be made

MADRAS OBSERVATORY
3d January 1848

T G TAYLOR
H C Astronome

	h	m	
Longitude of the Madras Observatory	5	20	57 28 *E*
Latitude	13	4	8 2

ERRATA IN VOLUME VI

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lxxvii	42 —	41 36	— ——	lx	22 —	+0 38	— —0 02
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xi	29 —	24 06″	— 23 63′	ccl	39 —	—0 18	— +0 82
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ERRATA IN VOLUME VII

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TRANSIT INSTRUMENT AND OBSERVATIONS, ETC

A DRAWING and minute description of the Madras Transit Instrument having been given in Vol I of these Observations it is only necessary here to state that the Instrument was made by Dolland that the focal length of the telescope is 61 inches with a clear aperture of 3¾ inches and that a power of 150 has on all occasions been employed the pivots—originally of bell metal—had become so much worn in the year 1833 as to render it necessary to re turn them on which occasion colla of steel were applied by Mr Barrow the Honorable Company's Instrument maker at Calcutta these I am happy to say have done their duty well and now—after thirteen years wear are scarcely if at all altered in appearance or figure—indeed with the exception that the micrometer screw is out of order the Instrument is in as good working condition as when first erected

The rapid growth of vegetation during the period 1836—1840 having completely placed it out of my power to retain a view of the Southern Meridian Mark I have necessarily been reduced to dependance upon the Northern Mark alone added to this the dilapidated state of the micrometer screw—which has in consequence remained unemployed—has since 1840 prevented my continuing the use of the Reflecting Collimator or by other means ascertaining the Collimation and Azimuth errors I have in fact been reduced to the old fashioned plan of inverting the Axis and making use of screws instead of figures to get quit of Collimation or Azimuth errors In a general way the coincidence of the centre wire with the Mark has been examined twice a day at six o clock in the morning and at the same hour in the evening and the examination of the Horizontal Axis with the spirit level has usually been performed twice during the week Inversion of the Axis for the examination of the Collimator has been restricted to twice during the month and has been performed generally on the 1st and 15th In cases however in which the centre wire at evening or morning observation has failed to bisect the Meridian Mark recourse has immediately been had to Inversion The adjustment to the Meridian Mark has on an average not exceeded three times during the year and that for Collimation not nearly so often the amount to be corrected for has usually been very small having only on one occasion exceeded two seconds the level which is a very excellent one has as hitherto been applied twice a week and the correction due to error of level computed and applied to each observation On consulting the results in Vol IV it appears that the radius of the Illuminating Pivot was smaller than that of the other Pivot 0 80 satisfied with the constancy of this result from the observations of 1834—1838 no further attention was bestowed upon this subject until the 6th May 1842 when from three Inversions of the Axis the Illuminating Pivot was found to be smaller than the other Pivot by 1 1 since this time two determinations only have been obtained thus

					Values of P
1846 July	22d	the Illuminating Pivot was smaller than the other			2 13
1847 Sept	17th	do	do	do	2 11

It only remains for me to state that a late careful examination of the Pivots assures me of their having retained their perfectly circular form and that during the entire period 1838—1847 the Illuminating Pivot has continued to occupy the *Western* Pier

I m as d th t gular d te f mall dot wh h I gra ed on the d f h P t,— n e h p s t (e y 10 f th T l p) f m 0 t 360 f N P D

P

The Eye Piece is supplied with five vertical and one horizontal fixed wires and one vertical moveable wire the Equatorial Interval between these was determined in 1836 and is given in Vol IV these numbers hold good up to the 25th April 1838 when several of the wires were found broken on a new set being put in the following were found to be the Equatorial Intervals

From 1st wire to the center	+	54 856
2d —— — ——	+	27 330
4th —— — ——	—	27 470
5th —— — ——	—	54 400

Rendering necessary the correction $+\frac{064}{\sin N P D}$ to reduce the mean of five wires to the centre

October 13th 1838 found two of the wires broken on putting in a new set the Equatorial Intervals were found to be

From 1st wire to the centre	+	54 717
2d —— — ——	+	27 208
4th —— — ——	—	27 670
5th —— — ——	—	54 929

Rendering necessary the correction $-\frac{135}{\sin N P D}$ to reduce the mean of five wires to the centre

November 27th 1842 The wires appeared to have become bent by reason of the excessive dampness of the air I put in a new set when the Equatorial Intervals were found as follows

From 1st wire to the centre	+	54 982
2d —— — ——	+	27 459
3d —— — ——	—	27 410
4th —— — ——	—	54 946

Rendering necessary the correction $+\frac{017}{\sin N P D}$ to reduce the mean of five wires to the centre

On the 28th October 1844 I accidentally broke one of the wires on putting in a new set the Equatorial Intervals were found to be

From 1st wire to the centre	+	55 218
2d —— — ——	+	27 561
3d —— — ——	—	27 250
4th —— — ——	—	54 969

Rendering necessary the correction $+\frac{113}{\sin N P D}$ to reduce the mean of five wires to the centre

January 9th 1845 I took out the wire frame to examine the wires under an impression that the center wire was not tight this however proved not to be the case on applying fresh varnish to the ends of the wires the following were found to be the Equatorial Intervals

From 1st wire to the centre	+	54 790
	+	27 765
	—	26 985
	—	54 760

Rendering necessary the correction $+\frac{0\ 162}{\sin N P D}$ to reduce the mean of five wires to the centre

On the 21st October 1845 a further alteration was produced in the Equatorial Intervals by reason of dust having settled upon the wires in removing which the wires were displaced the Equatorial Interval now appeared to be

From 1st wire to the centre	+	54 980
2d —— — ——	+	27 840
4th —— — ——	—	27 140
5th —— — ——	—	54 880

Rendering necessary the correction $+\frac{0\ 160}{\sin N P D}$ to reduce the mean of five wires to the centre

On the 8th February 1846 whilst endeavouring to clean some dust off the wires the horizontal wire was broken on which I removed the whole and put in a new set of spider web lines The Equatorial Intervals now appeared to be

From 1st wire to the centre	+	54 510
2d —— — ——	+	27 150
4th —— — ——	—	27 730
5th —— — ——	—	55 380

Rendering necessary the correction $-\underset{\text{in N P D}}{\underline{0\ 290}}$ to reduce the mean of five wires to the centre

On the 1st January 1847 the wires were displaced in endeavouring to remove some dust which had settled on them the Equatorial Intervals now appear to be

From 1st wire to the centre	+	54 070
2d —— — ——	+	26 530
4th —— — ——	—	27 800
5th —— — ——	—	55 680

Rendering necessary the correction $-\underset{\text{in N P D}}{\underline{0\ 580}}$ to reduce the mean of five wires to the centre

A further and final alteration in the position of the wires took place on the 1st April 1847 in the act of removing the dust which had settled on them the Equatorial Intervals now appear to be

From 1st wire to the centre	+	54 390
2d —— — ——	+	27 020
4th —— — ——	—	27 950
5th —— — ——	—	55 480

Rendering necessary the correction $-\underset{\text{in N P D}}{\underline{0\ 400}}$ to reduce the mean of five wires to the centre

I am quite at a loss to account for the unusual quantity of black dust which has from time to time during the last two year been so frequently deposited on the wires it can only be derived from the varnish with which the inside of the instrument is coated losing its hold on the metal

ERROR OF LEVEL OF THE TRANSIT AXIS

In consequence of the inequality of the Pivot as just stated the indications of the Spirit level (L—P) require to be corrected by the amount P to give L the true error of level of the axis The method by which the values of P as given above were arrived at is however liable to some objection inasmuch as it may be supposed that each Pivot wears a bed for itself in the Y on which it reposes of a curvature corresponding to its own radius and that on inverting the axis the large Pivot does not come to the same bearings as did its predecessor the smaller one on which account the values of P just found will be too large with this view of the case I have employed for P 0 80 down to the end of 1840 P = 1 3 from 1840—1844 and 1 80 since that period as follows

Th m th d h all d d to that ally mpl yed v by pplying th Sp t level w th the Illum t g P v t E st as well West

Error of Level of the Transit Axis

(Illuminating Pivot East)

D	L — P	M
1838		
Jan 4	2 43 E	
7	2 30	
10	2 24	
13	3 03	
16	2 85	
19	2 92	
22	2 35	
25	2 47	
28	1 50	
29	1 50	
31	2 20	
Feb 3	1 96	
6	1 88	2 27 E
9	2 15	P = 0 80
12	2 27	L = 1 47 E
15	1 65 E	
18	1 33	
21	1 38	
24	1 32	
27	1 31	
March 2	1 44	
5	1 35	
8	0 51	
11	1 00	
14	0 87	
17	0 85	
20	1 41	
23	2 19	
26	1 12	
29	1 08	
April 1	1 11	
4	1 30	
7	1 16	
10	1 25	
13	0 90	
17	0 55	
20	1 24	1 16 E
23	0 66	P 0 80
26	0 81	L = 0 36 E
29	0 33 W	
May 2	0 37	
5	0 20	
9	0 85	
12	0 82	
15	0 77	
18	0 63	
21	0 74	
24	0 76	
27	1 23	
30	0 64	
June 2	0 29	
5	1 51	
8	0 59	
11	0 74	
14	0 31	
17	0 33	
20	0 11	
23	0 42	

D	L — P	M
1838		
June 26	0 10 W	
29	0 03 E	
July 2	0 42	
5	0 32	
8	0 68	
11	0 38	
14	0 40	
17	0 30 W	
20	0 46	
23	1 36	
26	0 75	
29	0 15 E	
Aug 1	0 10 W	
4	0 24 E	
6	0 81 W	
9	0 71	
11	0 59	
14	0 34 E	
17	0 65	
20	0 55	
23	0 45	
26	0 60	
29	0 53 W	
Sept 1	0 50	
4	0 55	
7	1 35	
8	1 25	
11	2 42	
14	0 63 E	0 34 W
15	0 10 W	P = 0 80
17	0 31 E	L = 1 14 W
21	0 76 E	
24	1 30	
27	1 64	
30	0 54	
Oct 1	0 01 W	
4	0 32 E	
5	0 65	
8	0 55	
9	0 20	
12	0 50	
15	1 30	
17	2 17	
20	1 95	1 05 E
23	1 80	P = 0 80
26	2 05	L = 0 25 E
29	3 01 E	3 11 E
Nov 1	3 20	P = 0 80
		L = 2 31 E
5	4 37 E	
8	5 00	
11	5 95	
14	5 75	
17	6 30	
20	4 93	
23	5 62	

D	L — P	M
1838		
Nov 26	5 00	
29	4 25	
Dec 3	4 40	
6	4 35	
9	5 15	
12	4 90	
15	4 55	
18	4 20	4 90 E
21	4 62	P = 0 80
24	4 03	L = 4 10 E
27	3 38 E	
31	2 90	
1839		
Jan 2	2 90	
5	3 60	
8	4 10	
11	3 25	3 49 E
14	3 75	P = 80
17	4 05	L = 2 69 E
20	2 38 E	
23	2 45	
26	1 95	
29	2 87	
Feb 1	3 30	
4	2 55	
7	2 62	
11	2 20	
14	2 10	
17	3 65	
18	2 75	
21	2 50	
25	2 90	
28	2 33	
March 3	2 05	
6	1 95	
9	2 00	
12	1 75	
15	2 15	2 39 E
18	1 90	P = 0 80
22	2 00	L = 1 59 E
25	2 25	
28	0 0 W	
I raised the East end of the axis		
28	5 40 E	
29	6 12	
April 1	6 05	
4	5 80	
8	6 12	
11	4 87	
14	5 50	
17	5 62	
20	6 25	
23	4 65	5 55 E
26	5 30	P = 0 80
29	4 90	L = 4 75 E

Error of Level of the Transit Axis (Conti ued)

(Illum n t ng P v t West)

D		L — P	M
1839			
M y	2	3 83 E	
	6	2 75	
	9	0 14	Hot winds
	12	3 50 E	
	13	2 19	
	16	3 41	
	20	3 45	
	23	3 40	
	26	3 45	
	29	3 40	
Ju e	1	3 85	
	4	3 87	
	10	2 93	
	13	4 70	
	16	3 73	
	19	3 85	
	22	3 15	3 53 E
	25	4 65	P = 0 80
	28	3 40	L = 2 73 E
July	4	3 05	
	8	0 81 E	
	11	2 65	
	14	2 05	2 42 E
	17	2 20	P = 0 80
	20	2 80	L = 1 62 E
	23	5 30 E	
	26	5 58	
	29	6 76	6 12 E
Aug	1	7 30	P = 0 80
	5	5 65	L = 5 32 E
	8	6 95 E	
	11	8 55	
	14	7 25	
	17	7 97	
	20	8 15	
	23	7 83	
	26	7 90	
	29	8 00	7 75 E
S pt	2	7 53	P = 0 80
	5	7 35	L = 6 95 E
	8	8 90 E	
	11	9 30	
	14	9 45	
	17	9 25	9 19 E
	20	8 93	P = 0 80
	23	9 32	L = 8 39 E
	26	8 08 E	
	29	7 25	
O t	2	6 40 E	
	5	6 32	
	8	6 00	
	11	6 50	
	14	6 55	6 33 E
	17	6 35	P = 0 80
	20	6 18	L = 5 53 E
	28	8 30 E	
N	4	10 60	

D		L — P	M
1839			
Nov	11	13 50 E	
	19	9 17	
	25	8 02	
Dec	2	6 95 E	
	9	5 24	
	16	5 90	
	23	6 95	
	30	6 00	
1840			
J n	6	7 02	
	14	7 30	
	17	7 25	
	20	7 55	
	24	8 35	
	27	7 65	
Feb	3	7 02	
	6	6 50	
	9	6 82	
	12	6 50	6 83 E
	15	6 85	P = 0 08
	18	6 30	L = 6 03 E
	21	6 10 E	
	25	6 05	
	28	6 5	6 11 E
M ch	2	5 95	P = 0 80
	5	6 12	L = 5 31 E
	8	5 50 E	
	11	5 67	5 39 E
	14	5 30	P = 0 80
	17	5 08	L = 4 59 E
	20	4 09 E	
	23	3 90	L = 3 19 E
	26	5 00 E	
	28	5 25	
	31	5 65	
April	3	5 95	5 37 E
	6	5 35	P = 0 80
	9	5 05	L = 4 57 E
	13	4 35 E	
	16	4 50	
	21	3 88	
	25	4 80	
	28	4 75	
M y	2	4 12	
	5	4 25	
	8	3 68	
	11	3 80	
	14	3 68	
	18	3 85	
	21	4 10	
	25	3 67	
	28	3 40	3 99 E
	31	3 69	P = 0 80
June	3	3 35	L = 3 19 E
	6	2 80 E	
	9	3 10	
	15	2 25	

D		L — P	M
1840			
Ju e	18	2 77 E	
	22	1 60	
	25	0 95	
	26	0 55	
	29	6 48 E	
J ly	2	6 45	
	3	5 55	
	8	6 65	6 60 E
	11	3 69	P = 0 80
	14	7 48	I = 5 80 E
	16	3 76 E	
	19	3 07	
	23	2 40	2 71 E
	26	2 25	P = 0 80
	29	2 05	L = 1 91 E
Au	1	1 38 E	
	4	1 80	
	7	1 80	1 72 L
	10	1 60	P = 0 80
	14	2 05	L = 0 92 E
	17	2 87 L	
	20	3 60	
	23	2 75	
	26	2 25	
	29	3 15	
Sept	1	4 18	
	4	4 90	
	7	3 97	
	10	4 25	3 53 E
	14	3 75	P = 0 80
	17	3 20	L = 2 73 E
	21	7 42 E	
	24	6 58 E	
	28	4 85 E	
Oct	1	3 35	
	5	3 80	
	8	4 67	4 35 E
	12	4 85	P = 0 80
	15	4 57	I = 3 55 E
	18	2 75 E	
	19	2 39	
	22	2 97	
	27	4 00	} H y rain
	30	9 51 E	
Nov	2	8 58	
	5	8 98	
	9	14 25	
	14	7 57	
	17	6 40	
	21	14 71	
	24	10 66 E	
	27	8 25	
	30	8 30	
Dec	4	5 42 E	
	8	4 75	
	11	4 50	

Om tt d n t king th M an

Error of Level of the Transit Axis (Co t nu d)

(Ill m t g P t W st)

D		L—P	M
1840			
Dec	14	4 42 E	
	18	4 92	
	21	4 00	4 71 E
	24	4 64	P = 0 80
	28	5 05	L = 3 91 E
1841			
Ja	2	3 88 E	
	5	4 55	
	8	4 45	
	11	5 22	4 57 E
	15	5 40	P = 1 40
	18	3 92	L = 3 17 E
	19	6 36 E	
	23	7 30	6 81 E
	26	6 95	P = 1 40
	30	6 65	L = 5 41 E
Feb	2	8 25 E	
	5	8 98	
	8	7 93	
	11	8 92	
	15	8 50	
	19	8 95	
	22	8 5	
	25	8 38	
March	1	8 75	
	4	7 98	
	10	7 50	
	13	8 70	
	16	9 25	
Apr l	2	7 95	
	5	7 95	
	8	8 15	
	13	7 25	
	16	7 60	
	19	8 00	
	22	7 13	
	26	7 80	
May	1	7 40	
	6	7 00	
	10	7 28	
	14	7 75	
	20	8 20	
	25	7 80	
	28	7 55	8 04 E
June	2	8 27	P = 1 40
	5	7 50	P = 6 64 E
	7	6 10 E	
	10	6 30	
	15	5 62	
	21	6 00	
	25	6 20	
	28	6 50	
	30	5 87	6 04 E
July	3	6 10	P = 1 40
	5	5 70	L = 4 64 E
	8	4 80 E	
	12	4 88	

D		L—P	M
1841			
J ly	14	4 55 E	
	17	4 80	
	19	5 10	5 08 E
	22	5 80	P = 1 40
	25	5 60	L = 3 68 E
	27	6 10 E	
	29	6 55	
	31	7 00	
Aug	4	7 30	
	6	6 88	
	8	7 00	
	11	6 55	
	14	6 80	
	16	7 00	6 77 E
	18	6 55	P = 1 40
	20	6 75	L = 5 37 E
	23	7 10 E	
	25	7 50	
	27	7 87	
	30	8 30	
Sept	2	9 88	
	4	8 50	
	8	7 25	
	10	8 00	
	13	8 70	
	15	10 55	
	18	8 87	
	20	8 70	
	23	8 30	
	25	8 70	
	28	9 00	
	30	8 85	
Oct	2	8 20	8 21 E
	5	7 77	P = 1 40
	8	8 00	L = 6 81 E
	12	10 00 E	H y a
	14	10 30	
	16	11 02	
	20	10 35	
	22	10 40	
	25	11 00	10 59 E
	28	11 25	P = 1 40
	30	10 40	L = 9 19 E
Nov	2	9 40 E	
	5	8 40	
	7	7 30 E	
	8	7 00	
	10	6 35	
	13	7 00	
	14	6 20	
	16	6 65	6 92 E
	19	7 20	L = 1 40
	22	7 62	P = 5 52 E
	26	8 00 E	
	30	8 20	
Dec	2	8 80	
	5	9 80	

D		L—P	M
1841			
Dec	8	7 60 E	
	10	8 25	
	13	7 88	
	15	7 55	
	18	7 00	
	20	7 10	
	22	7 77	
	25	8 40	
	28	7 88	
	31	8 24	
1842			
J n	2	8 10	8 01 E
	4	8 65	P = 1 40
	7	7 30	L = 6 61 E
	10	6 80 E	
	13	6 25	
	15	6 70	
	17	6 84	
	20	7 25	
	22	7 80	
	25	7 70	
	27	7 00	
	31	6 55	6 89 E
Feb	2	6 25	P = 1 40
	5	6 70	I = 5 49 L
	8	7 20 E	
	11	7 64	
	14	6 12	
	15	6 88	
	17	6 20	
	20	6 70	
	22	7 90	
	24	7 40	
	26	7 25	
	28	7 40	
M rcl	2	7 20	
	5	7 70	
	7	7 40	
	9	7 88	7 31 E
	11	8 00	P = 1 40
	14	8 10	I = 5 91 E
	16	6 88 L	
	18	6 10	
	20	5 75	
	22	5 70	
	24	6 40	
	26	6 70	
	29	7 00	
	31	6 10	
Ap il	2	5 50	
	4	6 20	
	6	7 49	
	8	7 10	
	10	6 76	6 43 E
	12	6 40	P = 1 40
	14	6 35	L = 5 03 E
	16	6 80 E	

Om tt d ın t k ng th M

Error of Level of the Transit Axis (C ntinued)

(Ill at g P t W t)

D	L—P	M
1842		
April 18	7 00 E	
20	7 10	
21	7 87	
23	7 55	
25	7 75	
27	8 88	
28	7 75	7 63 E
29	8 00	P = 1 40
30	7 62	L = 6 23 E
May 6	11 22 E	
I r sed tl W d of the A 11		
6	0 39 E	
9	0 42 W	
12	0 25	
15	0 52	
18	0 50	
21	0 72	
24	0 65	
27	0 71	
31	1 42	
June 3	1 49	0 75 W
8	1 67	P = 1 40
9	1 02	L = 2 15 W
Adj t d f A muth		
11	3 67 W	
24	2 85	
18	2 63	
21	2 77	
24	2 69	
28	3 69	
July 1	3 42	
4	3 07	
8	2 81	
12	3 48	3 13 W
15	3 48	P = 1 40
18	3 03	L = 4 53 W
21	2 08 W	
25	3 25	
26	2 82	
29	2 86	
Aug 1	4 13	
2	4 50	
5	3 67	
8	3 10	
11	3 29	3 31 W
15	3 60	P = 1 40
18	3 12	L = 4 71 W
22	2 76 W	
25	2 45	
29	2 37	
Sept 1	3 57	
5	3 02	
8	2 54	
12	2 87	2 72 W
13	2 90	P = 1 40
16	2 01	L = 4 12 W
20	2 89 W	

D	L—P	M
1842		
Sept 23	2 21 W	
26	1 83	
29	1 86	1 91 W
Oct 3	1 46	P = 1 40
6	1 23	L = 3 31 W
9	3 25 W	
11	3 01	
13	2 80	2 72 W
17	2 36	P = 1 40
20	2 21	L = 4 12 W
25	0 41 W	
27	0 66 E	
29	0 62	
No 1	0 20	
4	1 04	
8	1 35	0 96 E
11	1 35	P = 1 40
14	1 54	L = 0 44 W
18	3 33 E	3 15 E
21	3 26	P = 1 40
24	2 85	L = 1 75 E
Adju ted f C ll t on a d A muth		
29	1 18 W	
Dec 2	1 98	
5	1 86	1 99 W
8	2 69	P = 1 40
12	2 23	L = 3 39 W
15	2 72 W	
19	2 88	
22	2 98	
24	2 80	2 99 W
27	3 41	P = 1 40
30	3 15	L = 4 39 W
1843		
J n 3	1 00 W	
4	0 07	
7	0 64 E	0 12 W
10	0 33 E	P = 1 40
14	0 53 W	L = 1 52 W
Adju t d tl L vel		
18	2 27 E	
22	2 00	
23	1 74	
26	1 58	
30	0 96	1 40 E
Feb 2	0 27	P = 1 40
6	1 00	L = 0 00
9	0 70 W	
11	0 60	
14	0 33 E	
17	0 11	
20	0 47 W	
21	0 48	
24	0 22	0 31 W
28	0 43	P = 1 40
M rch 3	0 36	L = 1 71 W

D	L—P	M
1813		
March 6	1 08 W	
9	0 65	
13	0 66	
16	1 29	
20	0 80	
23	1 71	
27	1 26	
30	0 72	
April 3	1 36	
6	0 8	
10	1 67	
14	1 70	
17	1 20	1 15 W
19	1 35	P = 1 40
22	1 23	L = 2 55 W
25	1 83 W	
28	1 49	
May 1	1 53	
5	3 63	
6	2 05	
9	2 44	
12	2 20	2 12 W
16	2 41	P = 1 40
19	1 48	L = 3 52 W
23	1 07 E	
24	1 60	
27	0 75	
30	1 24	
June 3	1 47	
6	0 78	
8	1 22	0 99 E
12	0 43	P = 1 40
14	0 35	L = 0 41 W
17	0 17 W	
20	0 97	
23	0 19	
26	1 64	
30	0 62	
July 3	0 25	
6	0 [illegible]	
10	0 66	
13	1 14	
17	0 74	
21	0 95	
25	0 85	
28	0 02	
31	0 95	
Aug 3	0 37 E	
6	0 42 W	
10	0 69	
14	0 44	
18	0 46 E	0 50 W
20	0 18 W	P = 1 40
24	0 28 E	L = 1 90 W
28	0 17 W	
31	0 04	
Sept 4	0 83	
6	1 70	

Error of Level of the Transit Axis (*Continued*)

(Illuminating Pivot West)

Date	L — P	Mean
1843		
Sept 10	1.58 W	
12	1.50	
15	0.57	
18	1.06	
21	1.35	0.86 W
25	0.01	P = 1.40
26	0.68	L = 2.26 W
29	0.47 E	
Oct 2	0.93	
4	0.30	
7	0.16	
11	0.67	
14	0.66	
17	0.42	
21	0.13	
24	0.70	0.43 E
28	0.02 W	P = 1.40
Nov 1	0.57 E	L = 0.97 W
4	1.39 E	
7	0.3	
12	1.46	1.39 E
14	1.85	P = 1.40
17	2.01	L = 0.01 W
20	0.90 E	
22	0.73	0.83 E
25	0.81	P = 1.40
29	0.88	L = 0.57 W
Dec 5	2.08 E	
9	3.35	
13	1.95	2.53 E
16	2.96	P = 1.40
19	2.30	L = 1.13 E
23	1.39 E	
26	1.61	
29	1.11	
1844		
Jan 2	1.10	
5	0.25	
7	1.18	
10	1.00	
13	0.10 W	
16	0.15 E	
19	1.20	
22	1.63	1.04 E
25	1.73	P = 1.80
29	1.33	L = 0.76 W
Feb 2	0.83 E	
5	0.38	0.70 E
9	0.80	P = 1.80
12	0.80	L = 1.10 W
15	1.05 E	
18	1.42	
21	1.99	
24	1.29	
27	1.18	1.29 E
March 1	0.98	P = 1.80
4	1.13	L = 0.51 W

Date	L — P	Mean
1844		
Adjusted the Instrument		
March 7	0.10 E	
9	0.72 W	
12	1.09	
16	0.88	0.67 W
19	0.43	P = 1.80
2	0.99	L = 2.47 W
26	1.35 W	
30	1.19	
April 2	1.06	
5	2.05	
9	1.02	1.42 W
13	1.53	P = 1.80
16	1.75	L = 3.22 W
19	2.55 W	
22	2.15	
25	2.97	
28	1.16	
May 1	2.15	
4	2.30	
7	2.14	2.19 W
10	1.94	P = 1.80
13	2.40	L = 3.99 W
16	1.45 W	
20	1.07	1.4 W
23	1.28	P = 1.80
27	1.90	L = 3.22 W
Adjusting for Azimuth appears to have altered the Level		
30	7.85 W	
31	7.82	
Adjusted for Level		
31	0.90 E	
June 3	1.78	
6	0.85	
9	1.45	
12	1.09	
15	1.23	
18	0.99	1.32 E
21	1.70	P = 1.80
25	1.92	L = 0.48 W
28	2.24 E	
July 2	1.37	
5	1.52	
8	2.54	
12	2.00	
15	1.93	
18	2.85	
21	2.55	
24	2.89	
27	1.72	
30	2.55	
Aug 3	2.70	
7	3.72	
10	2.57	
13	2.07	

Date	L — P	Mean
1844		
Aug 17	2.13 E	
20	2.13	2.32 E
24	1.85	P = 1.80
27	2.85	L = 0.52 E
31	4.19 E	
Sept 4	6.14	
5	4.44	
7	5.15	
10	5.82	
13	3.97	
17	4.47	
20	4.89	
24	5.63	5.13 E
27	5.99	P = 1.80
30	5.76	L = 3.33 E
Adjusted the Instrument		
Oct 4	8.41 E	
9	9.46	
12	8.35	
16	9.85	
19	9.04	
22	9.26	
25	8.70	
27	8.30	
30	7.24	
Nov 2	7.84	
6	8.62	8.67 E
9	8.86	P = 1.80
13	8.89	L = 6.87 E
16	8.63 E	
19	10.46 E	
22	10.86	
25	10.28	
28	10.16	
30	10.68	
Dec 3	10.87	
7	10.60	10.81 E
10	10.67	P = 1.80
16	12.70	L = 9.01 E
Heavy rain		
20	15.55 E	
22	16.33	15.23 E
23	15.7	P = 1.80
30	14.40	L = 13.43 E
1845		
Jan 2	11.35 E	
Adjusted the Instrument		
4	7.33 E	
5	7.95	
7	5.96	
11	6.88	
14	6.72	
16	8.43	
20	6.98	
24	6.99	
28	6.35	

Error of Level of the Transit Axis (Co t ued)

(Illum nat ng P t W t)

D		L—P	M
1845			
J n	31	7 25 E	7 11 E
Feb	4	6 97	P = 1 80
	7	7 51	L = 5 31 E
	11	5 49 E	
	13	5 24	
	17	5 50	
	20	5 56	
	24	5 81	
	27	5 42	
Ma	2	4 52	
	6	4 69	
	8	5 50	
	11	5 99	
	15	4 57	
	18	5 42	5 20 E
	21	5 00	P = 1 80
	24	4 11	L = 3 40 E
	27	3 81 E	
	30	2 62	3 28 E
April	2	3 25	P = 1 80
	4	3 96	L = 1 48 E
	7	5 61 E	
	10	6 45	
	13	5 46	
	17	4 17	
	21	6 70	
	24	5 77	
	27	5 17	
	30	6 06	
M y	3	5 92	
	6	5 48	
	9	6 25	
	12	6 37	
	15	6 36	
	17	5 49	
	21	6 38	5 82 E
	24	5 91	P = 1 80
	27	5 48	L = 4 02 E
		Adju ted the I t ne t	
	29	1 8 E	
	30	2 99	
June	2	1 80	
	4	1 59	
	7	1 25	1 72 E
	10	1 26	P = 1 80
	13	1 33	L = 0 08 W
		Adju ted the I trument	
	16	2 88 E	
	19	3 07	
	23	4 11	
	27	4 86	
	30	4 34	
July	4	4 98	
	7	3 74	
	11	4 10	
	14	4 46	

D		L—P	M
1845			
July	17	3 75 E	
	21	4 73	
	24	4 54	
	27	4 50	
	30	3 76	4 19 E
Aug	2	4 95	P = 1 80
	4	4 44	L = 2 39 E
		Adj ted the I st ument	
	7	1 03 E	
	8	0 92	0 73 E
	12	1 39	P = 1 80
	15	0 42 W	L = 1 07 W
	17	3 41 E	2 58 E
	19	1 96	P = 1 80
	22	2 37	L = 0 78 E
	25	1 80 E	
	28	1 13	
	31	0 30	
Sept	4	0 01	0 97 E
	8	1 86	P = 1 80
	11	0 73	L = 0 83 W
	13	2 37 E	
	17	3 91	
	20	4 41	
	23	3 89	3 47 E
	26	3 97	P = 1 80
	29	26	L = 1 67 L
Oct	2	1 78 E	
	6	1 78	1 47 E
	9	0 7	P = 1 80
	12	1 74	L = 0 33 W
	15	2 62 E	
	18	1 80	
	21	2 15	
	24	1 44	
	27	2 36	
	31	2 96	2 42 E
No	3	3 17	P = 1 80
	6	2 91	L = 0 62 E
	10	2 40	
	14	3 37 E	
	17	4 03	
	20	3 85	
	24	5 45	
	27	5 04	4 25 E
Dec	1	4 50	P = 1 80
	4	3 52	L = 2 45 E
		He y ain	
	8	5 78 E	
	11	6 81	
	13	6 79	
	17	6 54	
	20	6 25	
	23	6 74	
	28	7 55	

D		L—P	M
1846			
			6 67 E
Jan	1	6 42 E	P = 1 80
	4	7 21	L = 4 87 E
	7	9 40 E	
	10	9 55	
	13	8 70	
	16	9 19	
	19	9 70	
	22	9 83	
	26	9 55	
	29	9 11	
F b	2	9 28	
	5	8 47	
	9	8 9	
	12	8 96	
	15	8 28	
	18	7 85	
	22	7 76	
	25	7 69	8 83 E
	28	8 69	P = 1 80
Ma	3	8 00	I = 7 03 E
	6	6 03 E	
	10	6 43	6 31 E
	13	6 18	P = 1 80
	17	6 61	L = 4 51 E
		Adjusted the Instrument	
	20	3 90 E	
	21	4 17	
	24	5 14	
	27	4 24	
	30	6 56	
April	2	5 84	
	6	5 27	
	9	5 10	
	13	5 11	
	16	5 05	
	20	5 1	
	23	4 02	4 87 E
	26	4 55	P = 1 80
	29	4 85	I = 3 07 E
		Adjust d the Instrume t	
M y	2	6 56 L	
	5	4 95	5 48 E
	8	5 57	P = 1 80
	11	4 83	I = 3 68 F
		Inverted the Axi several times	
	14	2 46 E	
	18	1 01	
	21	2 71	
	25	2 00	
	27	2 80	
	30	1 88	
June	2	1 39	
	5	2 37	
	9	1 25	
	12	1 96	

Error of Level of the Transit Axis (*Continued*)

(Illuminating Pivot West)

D	L—P	M
1846		
June 15	1 54 E	
18	2 11	
22	1 57	
26	2 62	2 03 E
30	2 76	P = 1 80
July 3	2 15	L = 0 23 E
6	3 09 E	3 61 E
9	4 13	P = 1 80
		L = 1 81 E
13	6 25 E	
17	8 53	
18	8 70	
21	8 84	
	Inverted the Axis several times	
25	8 30	
28	7 78	
31	7 61	
Aug 3	6 19	
6	7 15	
10	8 43	
14	7 93	
17	9 02	
21	7 93	
24	6 07	
27	7 67	
31	6 57	
Sept 3	7 16	
7	7 09	
10	7 98	
14	7 97	
18	8 25	
21	7 73	
24	8 18	
28	7 78	
Oct 1	7 68	
5	8 32	
8	7 56	
12	8 96	7 78 E
15	7 73	P = 1 80
19	8 00	L = 5 98 E
	Heavy rain and high wind	
22	11 33 E	
24	12 01	11 48 E
27	11 32	P = 1 80
30	11 26	L = 9 68 E
	Inverted the Axis	
Nov 2	9 93 E	
5	9 06	
9	7 63	
12	7 93	8 67 E
16	8 36	P = 1 80
19	9 15	L = 6 87 E
23	12 65 E	
	Hurricane on the 25th	
27	13 72	
30	13 43	

D	L—P	M
1846		
Dec 2	14 77 E	13 85 E
6	15 15	P = 1 80
10	13 42	L = 12 05 E
13	11 73 E	11 94 E
16	11 65	P = 1 80
19	12 43	L = 10 14 E
22	10 84 E	
24	10 32	
28	8 95	9 34 E
1847		P = 1 80
Jan 2	7 25	L = 7 54 E
	Inverted the Axis	
5	4 63 E	
8	5 74	
11	5 64	
14	5 14	
18	5 00	
21	5 35	
25	3 85	
29	4 50	
Feb 1	5 45	5 07 E
5	5 90	P = 1 80
8	4 56	L = 3 27 E
	Inverted the Axis	
12	3 21 E	
15	3 29	
19	3 54	
22	4 24	
25	3 95	
March 1	4 76	
4	4 12	
8	4 03	
11	3 95	
15	4 37	
18	4 75	
22	4 66	
25	5 50	
29	3 54	
April 1	3 40	
5	4 25	
8	5 67	
12	5 24	
15	4 50	
19	5 34	
22	3 44	
24	3 72	
28	4 47	
May 1	3 69	
4	3 00	
7	4 74	4 18 E
10	4 60	P = 1 80
14	3 14	L = 2 38 E
	Adjusted the Instrument	
17	5 65 E	
21	6 05	
25	6 65	

D	L—P	M
1847		
May 28	7 03 E	6 32 E
31	6 17	P = 1 80
June 3	6 35	L = 4 52 E
	Inverted the Axis several times	
5	2 35 E	
7	2 75	2 27 E
10	2 25	P = 1 80
14	1 72	L = 0 47 E
17	3 89 E	
21	3 53	
24	4 41	
28	4 57	
July 1	4 95	
5	4 75	
8	5 34	
12	5 96	
15	4 81	
19	5 16	
22	5 93	
26	5 67	
29	5 62	
31	4 86	
Aug 3	4 75	
6	5 10	4 88 E
9	4 62	P = 1 80
12	3 98	L = 3 08 E
15	6 02 E	
18	4 50	5 71 E
21	5 60	P = 1 80
23	6 71	L = 3 91 E
26	3 00 E	
30	2 37	
Sept 2	1 65 E	
6	1 12	
9	1 60	
13	0 26 W	0 79 E
16	0 07 E	P = 1 80
18	0 57	L = 1 01 W
21	1 00 E	
24	1 17	
27	1 25	1 02 E
Oct 1	0 96	P = 1 80
4	0 74	L = 0 78 W
		0 17 E
7	0 15 E	P = 1 80
11	0 20	L = 1 63 W
15	2 35 E	
18	1 87	
22	2 22	
26	2 10	
29	1 89	2 14 E
Nov 2	1 76	P = 1 80
5	2 80	L = 0 34 E
	Adjusted for Azimuth	
9	0 34 W	
15	0 86	

ERROR OF COLLIMATION OF THE TRANSIT INSTRUMENT

Following up tle] t ce wl h obta ed up t tle end of 1837 (se Vol IV) I l d co t u d to employ tle Colli nat on eye piece (tle R flect g Collim to) u t l tle e d of J n y 1840 h ı b ı g bo t to et ı to Eu ope on Fu lough I did not feel a suffi t co fid ce n th N t e Ob e s A ta ts to t u t tl ı cl of ob tion to thc r ca e a co d ngly comme c g w tl 28th J y 1840 tle Reflect g Coll ato Ob ation l e l d s o t u d d tle p act ce l beeı to ınve t the A the fi t d fft e tl d y of e h ıo tl and to dj t tle I t nent f neces ıy fo e ro of C ll mat o I the dete m t o wl h ow f llow tle al e f L g eı tl o d lu n l a e been lcn ed f om the obse at ons fo Le l tle l e tle th d ol m ı re tle nd c tio s of tle R fl t ı Coll n to a d off by th moveable w e M cromete co ted to seco ds of c nd d vided by two tle l olc e c repı sent g 2 × (C+L)

Error of Collimation of tiie Transit Axis

D		R C		RLMARKS
	L	C +L	C	
1838				
Ja 4	+ 1 63	— 9 05	—10 68	
7	1 50	8 72	10 22	
10	1 44	9 06	10 50	
13	2 23	9 47	11 70	
16	2 05	8 81	10 86	
19	2 12	9 8	11 50	
22	1 55	8 39	9 94	
25	1 67	8 39	10 06	
28	0 70	11 86	12 56	
29	0 70	11 45	12 15	
30				By ı e C = 12 57
31	1 40	8 89	10 29	
Γcb 3	1 16	9 55	10 71	
6	1 08	9 14	10 2	
9	1 35	9 47	10 82	
12	1 47	9 39	10 86	
15	0 85	10 21	11 06	
17	I put a new mo e bl ı			
18	0 53	9 88	10 41	
24	0 52	9 39	9 91	
27	0 51	10 21	10 72	
M 2	0 64	10 70	11 34	
5	0 55	10 86	11 41	Mea == — 10 85
8	— 0 29	14 36	14 07	
11	+ 0 20	13 18	13 38	
14	0 07	13 51	13 58	

D		R (		RI MARKS
	L	C +I	C	
1838				
M r 17	+ 0 0	—1? 88	—12 93	
20	0 61	13 62	14 3	
23	1 39	13 1	14 90	
26	0 3	12 20	12 2	
29	0 28	13 18	13 46	
April 1	0 31	12 68	13 19	
4	0 0	13 18	13 68	
7	0 36	12 69	1 05	
10	0 45	12 53	12 98	Mean = — 13 50
13	0 10	11 86	11 96	
17	— 0 25	11 37	11 12	
20	+ 0 44	10 53	10 97	
23	— 0 14	11 0	10 88	Me ı = — 11 23
26				Γ d tl 1 k
26	+ 0 01	8 56	8 57	
29	— 1 13	10 21	9 08	
M y 2	1 17	10 54	9 37	
5	1 00	10 21	9 21	
9	1 65	10 54	8 89	
12	1 62	10 37	8 75	
15	1 57	10 37	8 80	
18	1 43	9 71	8 28	
21	1 54	10 54	9 00	
24	1 56	9 05	7 49	
27	2 03	10 21	8 18	
30	1 44	9 88	8 44	

Tl b t w th th C llm t y p t g tl d t b tw tl t w d t b fl t l f b f q k l plac d th g d d th tl I tr t l t mpl l tl sm ll l f l l l d l f h d w th l l t t tr d d t th y p b tw th y nd tl y p —tl l t t l tl l gl t f l mp th gh h l th d f th t l p and p j t t p p d l ly tl w e wl by th y tl t b gl t g d and ar th gh th h le n th d

ERROR OF COLLIMATION OF THE TRANSIT AXIS (C tl n ed)

D		R C		RLMARKS
	L	C + L	C	
1838				
June 2	— 1 09	— 9 88	— 8 79	
5	2 31	9 88	7 57	
8	1 39	9 71	8 32	
11	1 54	9 46	7 92	
14	1 11	9 55	8 44	
17	1 13	9 71	8 58	
20	0 91	9 88	8 97	
23	1 22	10 72	9 50	
26	0 90	10 21	9 31	Mean = — 8 64
29	0 77	7 25	6 48	
July 2	0 38	7 25	6 87	
5	0 48	7 08	6 60	
11	0 42	7 74	7 32	
14	0 40	7 00	6 60	
17	1 10	9 2	8 12	
23	2 16	8 23	6 07	
26	1 55	8 39	6 84	
29	0 65	7 58	6 93	
Au 1	0 90	7 08	6 18	
9	1 51	7 74	6 23	
11	1 39	7 91	6 5	
14	0 46	7 74	7 28	
17	0 15	7 58	7 43	
20	0 25	7 91	7 66	
23	0 35	7 91	7 56	By er C = 7 24
26	0 20	7 74	7 54	
29	1 33	8 72	7 39	
S pt 1	1 30	8 72	7 42	
4	1 35	8 89	7 54	
7	2 15	8 23	6 08	
8	2 05	10 04	7 99	Me = — 7 06
11	3 17	10 98	7 81	By e C = 7 41
	I dj t d th I tr t d p p ly lt d th C l			
14	— 0 17	+ 5 43	+ 5 60	
15	— 0 90	5 43	6 33	
17	— 0 44	5 80	6 24	
21	— 0 04	6 09	6 13	
24	+ 0 50	6 55	6 05	
27	+ 0 84	6 96	6 12	
30	— 0 26	5 92	6 18	
Oct 1	— 0 81	6 17	6 98	
4	— 0 48	6 59	7 07	
5	— 0 15	6 15	6 30	
8	— 0 25	6 92	7 17	Me n = + 6 38
12	— 0 30			By m r on C =
14	Γ nd all tl w b k p t w t			
17	+ 1 37	+ 13 01	+ 11 64	By C = + 12 33
20	1 15	13 51	12 36	
23	1 00	13 82	12 82	
26	1 25	13 98	12 73	
29	2 21	16 00	13 79	
Nov 1	2 40	16 05	13 65	
5	3 57	15 94	12 37	
8	4 20	15 81	11 61	Mean = + 12 63

D		R C		RLMARI S
	L	C + L	C	
1838				
	I d d th C ll m t rr			
No 14	+ 4 90	+ 9 71	+ 4 81	By mver C = 2 63
20	4 13	8 98	4 85	
23	4 82	8 06	3 24	
29	3 45	6 42	2 97	
Dec 3	3 60	6 43	2 83	
6	3 55	6 29	2 74	
9	4 35	8 72	4 37	
12	4 10	6 34	2 24	
1	3 75	8 19	4 44	
18	3 40	7 44	4 04	
21	3 82	7 37	3 55	
24	3 23	6 67	3 44	
27	2 58	6 59	4 01	
31	2 10	6 26	4 16	Me n = + 3 69
1839				
Ja 2	2 10	7 16	5 06	
5	2 80	7 09	4 29	
8				By n er C = 1 29
8	3 30	6 59	3 29	
11	2 45	6 67	4 22	
14	2 95	6 34	3 39	
17	3 25	6 59	3 34	
20	1 58	4 61	3 03	
23	1 65	5 59	3 94	
26	1 15	4 61	3 46	
29	2 07	7 08	5 01	
F b 1	2 50	7 41	4 91	
4	1 75	6 59	4 84	
7	1 82	5 59	3 77	
11	1 40	6 09	4 69	
17	2 85	6 12	3 27	
21	1 70	6 26	4 56	
25	2 10	6 09	3 99	
28	1 53	6 26	4 73	Mean = + 4 10
M ch 3	1 25	6 17	4 92	
6	1 15	6 09	4 94	
9	1 20	5 92	4 72	
12	0 95	6 26	5 31	
15	1 35	6 12	4 77	
18	1 10	6 26	5 16	
22	1 20	5 92	4 72	
25	1 45	5 76	4 31	
28	— 0 85	2 14	2 99	
29	+ 5 32	8 23	2 91	
Apr l 1	5 25	8 72	3 47	
4	5 00	9 05	4 05	
8	5 32	8 72	3 40	
11	4 07	8 89	4 82	
14	4 70	8 72	4 02	
17	4 82	8 56	3 74	
20	5 45	9 38	3 93	
23	3 85	6 75	2 90	
26	4 50	7 91	3 41	
29	4 10	6 43	2 33	
M y 2	3 03	6 26	3 23	

Error of Collimation of the Transit Axis *(Continued)*

D		R C		REMARKS	D		R C		REMARKS
	L	C + L	C			L	C + L	C	
1839					1839				
May 6	+ 1 95	+ 6 00	+ 4 05		Sept 14	+ 8 65	+ 11 53	2 88	Mean = + 2 80
9	— 0 66	3 95	4 61		17	8 45	11 19	2 74	
13	+ 1 39	6 09	4 70		20	8 13	11 03	2 90	By inver C = + 2 30
20	2 65	5 10	2 45		Oct 5	5 52	8 89	3 37	
29	2 60	7 25	4 65		8	5 0	6 92	1 7	
June 1	3 05	7 44	4 39		17	5 55	10 21	4 66	
4	3 07	7 44	4 37		Nov 11	12 70	13 18	0 48	
10	2 13	6 75	4 62		19	8 37	12 85	4 48	
25	3 85	6 92	3 07	Mean = + 1 03	25	7 22	11 03	3 81	
July 4				By ve C = + 4 11	Dec 2	6 15	11 85	5 70	
26	4 78	7 41	2 63		9	4 44	10 54	6 10	
29	5 96	8 39	2 43		16	5 10	10 54	5 44	
Aug 1	6 50	9 22	2 72		23	6 15	10 37	4 22	
8	6 15	10 37	4 22		30	5 20	9 46	4 6	
11	7 75	10 87	3 12		1840				
14	6 45	8 89	2 44		Jan 6	6 22	10 54	4 3	
Sept 5	6 55	8 72	2 17		14	6 50	10 37	3 87	
11	8 50	11 03	2 53		27	6 85	11 53	4 68	Mean = + 4 08

Tl mtt d t l tl M

From 27th January 1840 to end of the year 1847 C = 0 00

AZIMUTH ERROR

Commencing with 17th January 1837 the centre wire was adjusted to a Mark which had only roughly been estimated to represent the meridian the comparison of observations above and below the Pole showed that the Mark thus assumed was situated 2 58 to the *West* of the Meridian On the 20th February 1840 the meridian mark having become somewhat obscured by the action of wind and weather I directed it to be removed and a new mark to be painted on the same pier exactly on the meridian or 2 6 to the *Eastward* of that hitherto in use by some mistake however on the part of the Assistant to whom I had entrusted this alteration the new mark was found to be situated 4 0 to the *Eastward* of the meridian hence from 17th January 1837 to the 20th February 1840 the corrections due to an Azimuth error of 2 58 W have been employed and for the observations subsequent to that period in a general way corrections due to an Azimuth of 4 E have been allowed save in a few cases where from observation of δ or λ *Ursæ Minoris* a slight modification of this amount has been considered justifiable the limits however have been between 2 5 E and 5 2 East

Th lt t was ff ted f w days b f my d p rtur fr m I d f E gl d (fh l gh) b t the b v t h v g ed d d d g my b th was t d c v d t l my t rn t I d 1842

Referring to the Errors of Collimation as already given and recollecting that the errors of Azimuth (A) = C + 2 58 for the period January 1 1838 to February 20 1840 and that since that period (C having been made = 0) A = + 4 0 we get altogether as follows—

1838						C		A	Remarks
January	1	to	March	5	—	10 85	+	8 27	
March	6	—	April	10	—	13 50	+	10 92	
April	11	—	——	23	—	11 23	+	8 65	Put in a new set of wires
April	24	—	June	26	—	8 64	+	6 06	
June	27	—	September	11	—	7 06	+	4 48	I found it convenient to alter the Collimation error
September	12	—	October	8	+	6 38	—	8 96	
October	16	—	November	8	+	12 63	—	15 21	Put in a new set of wires
November	10	—	December	31	+	3 69	—	6 27	I had reduced the Collimation error
1839									
January	1	—	February	28	+	4 10	+	6 68	
March	1	—	June	2	+	4 03	+	6 61	
June	26	—	September	20	+	2 80	+	5 38	
1839			1840						
September	21	—	January	27	+	4 08	+	6 66	
1840									
January	28	—	February	20		0 00	+	2 58	During this period the adjustment for Collimation has been made whenever necessary
1840			1847						
February	20	—	December	31		0 00	+	4 00	

CLOCK ERRORS AND RATES

In the computation of Clock Errors the places of Stars as given in Vol VI had invariably been employed down to the end of the year 1842 but—commencing with the year 1843 I have employed the apparent places as taken from the Nautical Almanacs except in a few instances in which the Nautical Almanac mean places have differed to the amount of one tenth of a second of time from the Madras Catalogue in which case the Stars so differing have been considered ineligible for the determination of Clock Errors The Transit Clock during the period embraced by these observations has it will be seen generally speaking gone well but in the few cases in which irregularities have occurred the practice observed—of not trusting it for a period of more than two or three hours has gone far to render its irregularities unimportant The two transit observers each differ from one another and myself in the estimation of the time at which a Star transits the largest amount for Equatorial Stars not exceeding four tenths of a second of time I have reason however to believe that these amounts— personal equations —are not invariable and that the allowance which would be proper in the case of equatorial Stars would not apply to Stars situated near to the Pole I am not at present prepared with a good series of observations to substantiate this opinion but nevertheless feel considerable confidence in stating such to be the fact

A d wh t furtl t d m terially t p pl th q ti th t th t whi h m ght b du t an b at n f the S M t th t wh h p p ly tt h t th b ti n f a fi d Sta

Daily Rate of the Transit Clock

1838		s
Jan	4	— 0 47
	5	+ 0 25
	6	+ 0 8
	7	+ 0 72
	8	+ 1 05
	9	+ 1 38
	10	+ 1 46
	11	+ 1 61
	12	+ 1 28
	13	+ 1 26
	14	+ 1 31
	15	+ 1 79
	16	+ 1 70
	17	+ 1 75
	18	Stopt ı w ndı g
	19	+ 2 01
	20	+ 1 69
	21	+ 1 58
	22	+ 1 70
	23	+ 1 92
	24	+ 1 46
	26	— 0 05
	27	+ 0 05
	28	+ 0 24
	29	+ 0 27
	30	+ 0 59
	31	+ 0 83
Feb	1	— 0 40
	2	— 1 97
	3	— 0 12
	4	T pt ıı w nd g
	5	— 0 52
	6	+ 0 90
	7	+ 0 44
	8	+ 0 15
	9	+ 0 20
	10	+ 0 29
	11	+ 0 26
	12	— 0 33
	13	— 0 28
	14	— 0 37
	15	— 0 37
	16	— 0 35
	18	+ 0 56
	19	+ 0 70
	20	+ 0 71
	21	Stopt four seconds
	24	— 0 68
	25	— 0 60
	26	— 2 00
	27	— 2 78
	28	Cl aned the Clock
Mar	3	— 1 72
	4	— 1 16
	5	— 1 25
	6	— 0 87
	7	— 0 80
	8	— 0 70
	9	— 0 61

1838		s
Mar	10	— 0 49
	11	— 0 61
	12	— 0 54
	13	— 0 88
	14	— 0 69
	15	— 0 93
	16	— 0 51
	17	— 0 85
	18	— 0 85
	19	— 0 89
	20	— 1 39
	21	— 1 55
	22	— 0 39
	23	— 0 81
	24	— 0 81
	25	— 0 36
	26	— 0 48
	27	— 0 41
	28	— 0 40
	29	— 0 65
	30	— 0 42
	31	— 1 40
April	1	— 1 26
	2	— 1 33
	3	— 1 19
	4	— 1 02
	5	— 1 14
	6	— 1 08
	7	— 1 18
	8	— 0 96
	9	— 1 08
	10	— 0 84
	11	— 1 34
	12	— 1 26
	13	— 1 18
	15	— 1 23
	16	— 1 04
	17	— 1 12
	18	— 0 91
	19	— 0 86
	20	— 0 67
	21	— 0 67
	23	— 0 83
	24	— 0 82
	26	— 0 88
	27	— 0 77
	28	— 0 94
	29	Cleaned the Clock
May	6	+ 1 16
	7	+ 1 16
	9	+ 1 06
	10	+ 1 14
	11	+ 1 11
	12	+ 0 81
	13	+ 0 93
	14	+ 1 16
	15	+ 0 85
	17	+ 1 00
	18	+ 1 15
	19	+ 1 19

1838		s
May	20	+ 1 04
	21	+ 1 21
	22	+ 1 14
	23	+ 1 29
	24	+ 0 95
	25	+ 0 90
	26	+ 1 12
	27	+ 0 94
	28	+ 1 21
	31	+ 1 19
June	1	+ 1 30
	2	+ 1 33
	3	+ 1 06
	8	+ 0 99
	9	+ 1 31
	10	+ 1 12
	12	+ 1 24
	13	+ 1 11
	14	+ 1 33
	15	+ 1 06
	16	+ 1 12
	18	+ 0 99
	19	+ 1 31
	20	+ 0 90
	21	+ 1 41
	22	+ 1 36
	23	+ 1 42
	24	+ 1 27
	25	+ 1 50
	26	+ 1 57
	27	+ 1 72
	28	+ 1 24
July	2	+ 1 48
	3	+ 1 11
	4	+ 1 41
	5	+ 1 26
	6	+ 1 52
	7	+ 1 22
	8	+ 1 33
	9	+ 1 29
	10	+ 1 45
	11	+ 1 5
	12	+ 1 32
	13	+ 1 44
	14	+ 1 52
	15	+ 1 11
	16	+ 1 50
	17	+ 1 24
	18	+ 1 22
	20	+ 1 31
	21	Put back one min
	23	+ 1 33
	24	+ 1 90
	25	+ 1 70
	26	+ 1 73
	27	+ 1 70
	28	+ 1 85
	29	+ 1 43
	31	+ 1 86
Aug	1	+ 1 72

1838		s
Aug	2	+ 1 75
	3	+ 1 95
	4	+ 1 44
	8	+ 1 80
	9	+ 1 87
	10	+ 1 77
	14	+ 1 87
	15	+ 1 80
	16	+ 1 62
	20	+ 1 86
	28	+ 1 49
	29	Put back one min
	30	+ 1 20
	31	+ 1 26
Sept	1	+ 1 31
	2	+ 1 41
	3	+ 1 39
	4	+ 1 18
	5	+ 1 45
	6	+ 1 13
	7	+ 1 41
	8	+ 1 48
	9	+ 1 60
	11	+ 1 60
	12	+ 1 33
	13	+ 1 12
	18	+ 1 46
	19	+ 1 50
	25	+ 1 73
	26	+ 1 38
	27	+ 1 39
	28	+ 1 45
	29	+ 1 36
	30	+ 1 32
Oct	1	+ 1 55
	2	+ 1 71
	3	+ 1 44
	4	+ 1 60
	7	+ 1 68
	9	+ 1 66
	10	+ 1 40
	11	+ 1 39
	12	+ 1 56
	13	+ 1 64
	20	+ 1 52
	22	+ 1 64
	23	+ 1 95
	24	+ 1 68
	25	+ 1 97
	26	+ 2 17
Nov	1	+ 2 04
	2	+ 1 96
	3	+ 1 71
	14	+ 1 89
	16	Put back one min
	18	+ 2 10
	19	+ 2 09
	21	+ 2 20
	22	+ 2 26
	23	+ 2 01

Daily Rate of the Transit Clock (*Continued*)

1838	s
Nov 24	+ 2 03
27	+ 1 95
Dec 1	+ 1 95
2	+ 2 12
9	+ 1 87
10	+ 1 90
11	+ 1 62
12	+ 1 86
13	+ 1 73
14	+ 1 93
15	Put back one min
16	+ 1 95
17	+ 1 85
18	+ 2 06
19	+ 1 97
20	+ 2 44
21	+ 2 17
22	+ 2 13
23	+ 2 21
24	Stopt 10 m in windg
25	+ 2 20
26	+ 2 00
28	+ 2 28
29	+ 2 33
31	+ 2 30
1839	
Jan 3	+ 2 36
4	+ 2 34
5	+ 2 34
6	+ 2 16
7	+ 2 57
8	+ 1 95
10	+ 2 28
11	+ 1 82
13	+ 2 16
15	+ 2 21
16	+ 2 45
17	+ 2 85
18	+ 2 33
19	Put back one min
20	+ 2 17
21	+ 2 46
22	+ 2 00
23	Stop 15 m in windg
27	+ 2 30
28	+ 2 16
29	+ 2 12
30	+ 1 91
31	+ 1 99
Feb 1	+ 2 20
2	+ 2 10
3	+ 2 00
4	+ 2 25
5	+ 2 00
6	+ 2 00
10	+ 2 03
11	+ 1 98
12	+ 2 15
13	+ 2 17

1839	s
Feb 14	+ 2 29
15	+ 2 25
16	+ 2 27
17	+ 2 09
18	Put back one min
19	+ 2 04
20	+ 2 26
21	+ 2 33
22	Stopt in windg
23	+ 2 94
24	+ 2 81
25	+ 2 66
26	+ 2 47
27	+ 2 67
28	+ 2 69
Mar 1	+ 2 69
2	+ 2 56
3	+ 2 47
4	+ 2 70
5	+ 3 04
6	+ 3 47
7	+ 2 94
8	+ 2 65
9	+ 2 63
10	+ 2 61
11	Regulated the Clock
12	+ 0 79
13	+ 0 94
14	+ 1 17
15	+ 1 15
16	+ 1 37
17	+ 1 03
18	+ 1 12
19	+ 1 00
20	+ 1 00
22	+ 0 77
23	+ 0 51
24	+ 0 73
25	+ 0 81
26	+ 0 85
27	+ 0 77
28	+ 0 72
29	+ 0 78
30	+ 0 78
31	+ 0 86
April 1	+ 0 82
2	+ 0 80
3	+ 0 61
4	+ 0 41
5	+ 0 88
6	+ 0 65
7	+ 0 72
8	+ 0 85
9	+ 0 60
11	+ 0 79
13	+ 0 80
14	+ 0 83
15	+ 0 83
16	+ 0 82

1839	s
April 17	+ 0 84
18	+ 0 76
19	+ 0 80
20	Stopt 4 m in windg
23	+ 0 70
25	+ 0 75
26	+ 0 90
27	+ 0 46
28	+ 0 62
29	+ 0 71
30	+ 0 60
May 1	+ 0 50
2	+ 0 56
3	+ 0 77
4	+ 0 94
6	+ 1 22
7	+ 1 10
8	+ 0 60
9	+ 0 72
10	+ 0 53
11	+ 1 16
12	+ 0 63
13	+ 0 70
14	+ 0 94
15	+ 1 08
16	+ 0 86
17	+ 1 00
18	Stopt 15 m in windg
20	+ 0 90
21	+ 0 54
22	+ 0 10
23	0 00
24	+ 0 10
25	— 0 06
30	+ 0 30
31	+ 0 10
June 1	+ 0 10
4	0 00
7	— 0 10
8	— 0 20
9	0 00
11	+ 0 10
12	+ 0 10
13	+ 0 20
14	+ 0 10
15	+ 0 30
16	+ 0 10
17	Stopt 10 m in windg
19	— 0 15
21	— 0 05
22	+ 0 10
24	+ 0 14
26	— 0 06
27	+ 0 10
28	+ 0 10
29	— 0 30
30	— 0 10
July 4	— 0 28
5	+ 0 03

1839	s
July 6	+ 0 10
10	— 0 10
11	— 0 10
13	— 0 10
14	Forwarded one min
16	+ 0 40
17	+ 0 20
18	+ 0 30
20	+ 0 20
22	+ 0 10
23	+ 0 15
24	+ 0 30
25	— 0 10
26	+ 0 20
27	— 0 10
28	+ 0 20
29	— 0 10
30	+ 0 07
31	+ 0 08
Aug 2	— 0 10
3	+ 0 30
5	+ 0 20
6	+ 0 30
7	+ 0 01
8	+ 0 30
11	+ 0 50
12	+ 0 40
14	+ 0 20
17	+ 0 30
22	+ 0 40
27	+ 0 30
29	+ 0 30
Sept 2	+ 0 20
3	+ 0 05
5	+ 0 30
6	+ 0 40
7	+ 0 20
21	+ 0 20
22	+ 0 30
23	— 0 01
24	+ 0 09
25	+ 0 20
26	— 0 10
27	+ 0 20
28	+ 0 30
29	— 0 30
30	+ 0 20
Oct 1	+ 0 02
2	+ 0 30
3	+ 0 20
4	+ 0 30
5	+ 0 12
6	+ 0 32
7	+ 0 31
8	+ 0 30
9	+ 0 40
10	Stopt 2 m in winding
12	+ 0 24
13	+ 0 21
15	— 0 07

Daily Rate of the Transit Clock (*Continued*)

1839	s
Oct 16	0.00
17	+0.28
18	+0.58
19	+0.40
21	+0.27
22	+0.20
23	+0.27
24	+0.40
25	+0.40
26	+0.38
27	+0.29
28	+0.60
29	+0.36
Nov 15	+0.70
16	+0.63
18	+0.67
19	+0.21
20	+0.33
22	+0.58
23	+0.50
24	+0.60
25	+0.98
26	+0.60
27	+0.53
28	+0.82
29	+0.74
30	+0.95
Dec 2	+0.90
3	+0.60
4	+0.59
8	+0.42
9	+0.18
10	+0.68
12	+0.50
13	+0.31
14	+0.20
16	+0.10
17	+0.20
18	+0.30
19	+0.40
20	+0.22
21	+0.02
23	+0.30
24	+0.36
25	+0.30
26	+0.20
27	+0.22
28	+0.31
29	+0.15
30	+0.55
31	+0.11
1840	
Jan 2	+0.63
3	+0.34
4	+0.07
5	Stopt in winding
7	+0.49
8	+0.75
9	+0.64
11	+0.59

1840	s
Jan 14	+0.52
15	+0.37
16	+0.59
17	+0.65
18	+0.60
19	+0.72
20	+0.73
21	+0.66
22	+0.73
23	+0.82
24	+0.79
25	+0.75
26	+1.18
27	+1.01
28	+0.80
29	+0.76
30	+0.89
31	+0.89
Feb 1	+1.02
2	+0.87
3	+0.82
4	Clock stopt in winding
5	+0.85
6	+0.88
7	+1.00
8	+0.74
9	+0.68
10	+0.60
11	+0.94
12	+0.93
13	+0.72
14	+1.29
15	+1.03
16	+0.90
17	+0.97
18	+0.97
19	+1.15
20	+0.97
21	+1.11
22	+1.12
23	+1.53
24	+1.03
25	+0.93
26	+0.99
27	+0.91
28	+0.90
29	+0.74
Mar 1	+0.76
2	+0.89
3	Stopt in winding
4	+0.44
6	+0.32
7	+0.22
8	+0.30
9	+0.25
10	+0.22
11	+0.64
12	+0.34
13	+0.63
15	+0.42

1840	s
Mar 16	+0.41
17	+0.48
18	+0.25
19	+0.54
20	+0.38
21	+0.47
22	+0.22
23	+0.22
24	+0.31
25	+0.50
26	+0.33
27	+0.64
28	+0.41
29	+0.51
30	+0.53
31	+0.21
April 1	Clock stopt in winding
2	+0.32
3	+0.29
4	+0.54
5	+0.52
6	+0.33
7	+0.78
8	+0.67
9	+0.78
10	+1.00
11	+0.95
13	+0.84
14	+0.94
15	+0.99
16	+0.80
17	+0.72
18	+0.60
19	+0.48
20	+0.56
21	+0.68
23	+0.52
24	+0.44
25	+0.56
26	+0.32
30	Stopt in winding
May 2	+0.30
4	+0.50
5	+0.50
7	+0.50
9	+0.60
13	+0.50
15	+0.50
16	+0.41
18	+0.38
19	+0.80
20	+0.50
21	+0.60
22	+0.70
23	+0.69
24	+0.44
25	+0.80
26	+0.87
27	+0.70
29	+0.73

1840	s
May 30	+0.74
31	+0.70
June 2	+0.80
3	+0.78
4	+0.67
	+0.72
6	+0.73
7	+0.74
8	+0.86
9	+0.70
10	+0.48
11	+0.44
16	+1.12
17	+0.73
18	+0.30
20	+0.70
22	+0.69
23	+0.[illegible]6
24	+0.27
25	+0.61
26	Put backward 1 min
27	+1.05
28	+0.92
30	+0.85
July 2	+1.03
3	+0.90
4	+1.00
6	+0.90
8	+1.10
14	+0.80
16	+0.79
17	+0.74
18	+0.74
21	+1.00
22	Stopt in winding
24	+0.66
26	+0.65
27	+0.52
28	+0.57
29	+0.72
30	+0.75
31	+0.75
Aug 1	+0.70
5	+0.99
7	+1.09
10	+1.16
15	+1.49
19	+1.39
20	Stopt in winding
21	+0.72
22	+0.83
23	+0.68
24	+1.08
25	+0.93
26	+1.25
27	+0.80
28	+1.00
29	+1.06
31	+1.15

Daily Rate of the Transit Clock (*C nt d*)

1840	s
Sept 5	+ 1 25
6	+ 1 41
7	+ 1 56
8	+ 1 27
12	+ 1 28
14	+ 1 37
15	+ 1 31
16	+ 1 37
17	+ 1 47
18	St pt l w lg
22	+ 0 99
24	+ 0 72
26	+ 0 77
27	+ 0 65
28	+ 0 89
29	+ 0 58
30	+ 0 73
Oct 1	+ 0 62
2	+ 0 52
3	+ 0 46
4	+ 0 44
5	+ 0 50
7	+ 0 73
8	+ 0 76
9	+ 1 02
10	+ 0 67
12	+ 0 93
13	+ 0 83
16	+ 0 79
17	+ 0 93
18	+ 0 74
19	+ 1 08
20	+ 1 03
21	+ 0 94
22	+ 1 10
23	+ 0 90
24	+ 0 86
30	+ 0 90
31	+ 0 76
Nov 1	+ 0 87
2	+ 0 69
4	+ 0 77
20	+ 0 64
21	+ 0 70
23	+ 0 24
24	+ 0 31
29	+ 0 41
30	+ 0 42
Dec 3	+ 0 50
4	+ 0 57
6	+ 0 41
11	+ 0 60
12	+ 0 31
13	+ 0 63
14	+ 0 35
1	+ 0 42
16	+ 0 71
17	+ 0 76
18	+ 0 73
19	+ 0 64

1840	s
Dec 22	+ 0 47
23	+ 0 39
24	+ 0 20
25	+ 0 60
27	+ 0 60
28	+ 0 50
1841	
Jan 3	+ 0 38
5	+ 0 33
6	+ 0 44
7	St pt w ıdıng
10	+ 0 78
11	+ 0 58
15	+ 1 03
16	+ 1 08
17	+ 1 16
20	+ 1 16
21	+ 1 07
22	+ 1 15
23	+ 1 07
24	+ 1 05
25	+ 0 97
26	+ 1 15
28	+ 1 04
29	+ 1 00
Feb 1	+ 0 99
2	+ 1 00
3	+ 1 03
5	+ 0 76
6	+ 0 54
7	+ 0 71
8	+ 1 16
9	+ 0 87
10	+ 0 76
11	+ 0 90
12	+ 0 81
13	+ 1 00
17	+ 0 52
19	+ 0 80
20	+ 0 67
23	+ 0 97
24	+ 1 17
25	+ 0 93
26	+ 0 73
27	+ 1 01
28	+ 0 79
Ma 3	+ 0 80
4	Stopt n wınd ng
5	+ 1 09
6	+ 0 92
8	+ 0 81
9	+ 0 73
10	+ 0 61
11	+ 0 91
12	+ 0 92
13	+ 0 89
16	+ 0 76
17	+ 1 00
Ap l 3	+ 0 02
4	+ 0 32

1841	s
Ap ıl 5	+ 0 43
6	+ 0 46
7	+ 0 45
8	+ 0 47
14	+ 0 26
15	+ 0 31
16	+ 0 14
18	+ 0 25
19	+ 0 41
20	+ 0 35
21	+ 0 42
22	+ 0 43
23	+ 0 55
24	+ 0 43
26	+ 0 38
27	+ 0 13
28	+ 0 22
M y 6	+ 0 14
8	+ 0 26
10	+ 0 13
11	+ 0 40
12	+ 0 47
14	+ 0 28
18	+ 0 47
19	+ 0 70
20	+ 0 47
21	+ 0 67
24	+ 0 35
25	+ 0 23
26	+ 0 34
27	+ 0 22
29	+ 0 16
30	+ 0 29
31	+ 0 40
June 2	+ 0 32
3	+ 0 22
4	+ 0 50
5	+ 0 48
7	+ 0 81
9	+ 0 97
11	+ 0 88
12	+ 1 24
16	+ 1 92
17	+ 2 70

Tl e Clock was taken dov n by Mr O r w th ev to e medy g ts te de cy to stop wh l t beı g wou d p the Ob- er t o dur ng th ınter l were taken w th a Box Cl o nometer by De t

1841	s
Aug 4	+ 0 41
6	+ 0 48
7	— 0 17
11	— 0 04
16	— 0 20
18	+ 0 51
19	+ 0 55
21	+ 0 67
24	+ 0 75

1841	s
Aug 27	+ 1 00
28	+ 0 54
29	+ 0 75
30	+ 0 83
31	+ 0 84
Sept 3	+ 0 91
4	+ 0 88
6	+ 0 64
7	+ 0 79
9	+ 0 35
10	+ 0 50
14	+ 0 49
16	+ 0 75
17	+ 0 75
23	+ 1 00
24	+ 0 97
25	+ 0 45
27	+ 0 71
28	+ 0 73
29	+ 0 60
Oct 1	+ 0 70
2	+ 0 84
7	+ 0 94
8	+ 0 85
16	+ 1 41
17	+ 1 83
19	+ 1 80
21	+ 1 30
26	+ 1 70
27	+ 1 10
No 4	+ 1 17
5	+ 1 69
12	+ 0 93
13	+ 0 75
14	+ 1 11
16	+ 1 17
17	+ 0 87
19	+ 0 53
20	+ 0 15
22	— 0 51
23	— 0 46
24	— 0 60
27	— 0 56
Dec 3	— 0 20
5	— 0 10
7	— 0 20
10	+ 0 30
11	+ 0 34
14	+ 0 63
15	+ 0 60
17	+ 0 60
18	+ 0 50
20	+ 0 44
21	+ 0 34
26	+ 0 70
27	+ 0 60
1842	
Jan 3	+ 1 00
5	+ 0 51
6	+ 0 70
7	+ 0 67

Daily Rate of the Transit Clock (Contin ed)

1842	s
Jan 8	+ 0 81
10	+ 0 64
13	+ 0 86
14	+ 1 10
15	+ 1 18
17	+ 1 08
18	+ 1 14
19	+ 0 81
20	+ 0 62
22	+ 1 01
27	+ 1 07
28	+ 0 41
29	+ 0 70
31	+ 0 71
Feb 1	+ 0 43
4	+ 0 67
5	+ 0 41
7	+ 0 42
8	+ 0 65
9	+ 0 68
10	+ 0 60
11	+ 0 69
14	+ 0 68
15	+ 0 72
16	+ 0 73
17	+ 0 37
18	+ 0 44
19	+ 0 28
21	+ 0 30
22	+ 0 40
23	+ 0 03
24	+ 0 33
25	+ 0 39
26	+ 0 13
28	+ 0 18
Mar 2	+ 0 17
3	+ 0 12
4	+ 0 56
5	+ 0 31
7	+ 0 29
9	+ 0 31
10	+ 0 54
15	+ 0 38
16	+ 0 41
17	+ 0 41
18	+ 0 35
19	+ 0 75
22	+ 0 68
23	+ 0 26
24	+ 0 53
25	+ 0 52
29	+ 0 31
30	+ 0 30
April 1	+ 0 51
2	+ 0 60
4	+ 0 26
5	+ 0 25
6	+ 0 18
7	+ 0 12
8	+ 0 53
9	+ 0 15

1842	s
Apr l 10	+ 0 15
11	+ 0 40
12	+ 0 41
13	+ 0 21
14	+ 0 48
15	+ 0 39
17	+ 0 64
19	+ 0 36
20	+ 0 44
21	+ 0 42
22	+ 0 70
26	+ 0 58
27	+ 0 88
28	+ 0 73
29	+ 0 80
30	+ 1 15
M y 1	+ 0 97
2	+ 0 71
3	+ 0 38
4	+ 0 57
8	+ 1 46
9	+ 1 64
10	+ 1 27
11	+ 0 81
12	+ 1 64
13	+ 1 14
14	+ 0 90
16	+ 1 71
17	+ 1 27
18	+ 1 61
19	+ 1 28
20	+ 1 61
22	+ 1 72
23	+ 1 63
24	+ 1 62
2	+ 1 84
26	+ 1 52
27	+ 1 68
28	+ 1 41
30	+ 1 60
June 1	+ 1 42
4	+ 1 37
6	+ 1 42
8	+ 1 61
9	+ 1 69
10	+ 1 47
11	+ 1 81
12	+ 1 84
13	+ 1 92
14	+ 1 82
15	+ 1 58
21	+ 1 55
22	+ 2 09
23	+ 2 04
24	+ 2 14
25	+ 1 89
27	+ 1 89
29	+ 2 43
30	+ 2 41
July 1	+ 2 35
4	+ 2 46

1842	s
July 6	+ 2 69
7	+ 2 45
9	+ 2 5?
10	+ 2 36
11	+ 2 14
12	+ 2 17
13	+ 2 37
14	+ 2 41
15	+ 2 37
16	+ 2 63
20	+ 2 51
21	+ 2 61
22	+ 2 17
23	+ 2 46
24	+ 2 28
25	Stopt in winding
26	+ 2 15
27	+ 1 88
28	+ 1 88
29	+ 1 90
Aug 1	+ 2 13
2	+ 1 43
4	+ 2 15
6	+ 2 48
7	+ 2 65
8	+ 2 87
9	+ 2 53
10	+ 2 49
11	+ 2 33
12	+ 1 91
13	+ 1 48
14	+ 1 19
15	+ 1 52
16	+ 1 16
21	Put back one min
26	+ 1 02
31	+ 1 38
Sept 1	+ 0 80
3	+ 0 68
4	+ 1 18
7	+ 1 57
8	+ 1 71
9	+ 1 87
10	+ 1 85
11	+ 2 22
12	+ 2 32
13	+ 2 16
14	+ 2 01
15	+ 2 10
16	+ 2 27
17	+ 2 06
18	+ 2 45
19	+ 2 70
21	+ 2 66
22	+ 2 72
23	+ 2 77
27	+ 3 10
28	+ 3 26
30	+ 3 42
Oct 1	+ 3 06

1842	s
Oct 2	+ 2 82
3	+ 2 91
4	+ 2 85
5	+ 2 74
6	+ 2 39
7	+ 2 51
8	+ 2 67
9	+ 2 41
10	+ 2 79
11	+ 2 83
12	+ 2 45
13	+ 2 55
14	+ 2 61
15	Put bacl two min
16	+ 2 97
17	+ 2 56
18	+ 2 70
19	+ 2 41
20	+ 2 42
21	+ 2 58
22	+ 2 68
26	+ 3 64
27	+ 3 42
28	+ 3 58
29	+ 3 04
30	+ 3 42
Nov 1	+ 3 70
2	+ 3 75
3	+ 3 83
4	+ 3 58
I regulat d the Clock	
13	— 2 48
15	— 1 87
17	— 2 08
18	— 1 93
19	— 2 09
20	— 1 73
21	— 1 93
22	— 1 82
23	— 1 52
26	— 1 85
27	— 1 32
29	— 1 85
30	— 1 62
Dec 2	— 1 70
3	— 1 42
5	— 0 94
6	— 1 34
7	— 1 31
8	— 1 48
9	— 1 13
12	— 1 54
13	— 1 65
14	— 1 05
16	— 0 81
Cleaned tl e Clock	
22	+ 3 03
23	+ 2 48
24	+ 2 47
25	+ 2 42

Daily Rate of the Transit Clock (*Continued*)

1842	
Dec 26	+ 2 23
27	+ 2 18
28	+ 2 15
29	+ 2 12
30	+ 2 15
1843	
Jan 3	+ 2 09
4	+ 2 26
5	+ 2 26
6	+ 2 27
7	+ 2 38
9	+ 2 25
11	+ 2 54
12	+ 2 43
17	+ 2 58
18	+ 2 51
19	+ 2 7
20	+ 2 48
21	+ 2 68
22	+ 2 67
23	+ 2 62
24	+ 2 56
25	+ 2 45
27	+ 2 74
28	+ 2 66
29	+ 2 64
30	+ 2 63
31	+ 2 59
Feb 1	+ 2 64
2	+ 2 52
3	+ 2 56
4	+ 2 69
5	+ 2 47
6	Put back two min
7	+ 1 89
8	+ 2 57
9	+ 2 46
10	+ 2 64
11	+ 2 04
12	+ 2 61
13	+ 2 72
14	+ 2 69
15	+ 2 60
16	+ 2 85
17	+ 2 59
18	+ 2 84
19	+ 2 66
20	+ 2 60
21	+ 2 79
22	+ 2 79
23	+ 2 74
24	+ 2 73
25	+ 2 74
26	+ 2 73
27	+ 2 89
28	+ 2 88
Mar 2	+ 2 95
3	+ 2 93
4	+ 2 88
5	+ 2 82

1843	s
Mar 6	+ 3 38
7	+ 2 96
8	+ 3 09
9	+ 3 08
10	+ 3 14
11	+ 3 16
12	+ 3 34
15	+ 2 49
17	+ 3 29
18	+ 3 59
19	+ 3 49
20	+ 3 53
21	+ 3 68
22	+ 3 58
23	+ 3 86
24	+ 3 88
25	Put back two min
26	+ 3 57
27	+ 3 63
28	+ 3 70
29	+ 3 50
30	+ 3 58
31	+ 3 53
April 1	+ 3 85
3	+ 3 84
4	+ 3 48
5	+ 3 49
6	+ 3 33
7	+ 3 35
8	+ 3 60
9	+ 3 56
10	+ 4 17
11	+ 4 46
12	+ 3 64
13	+ 3 59
14	+ 3 89
15	+ 3 95
16	+ 3 62
17	+ 3 86
18	+ 4 46
19	Wound up and put it back two minutes
20	+ 3 49
21	+ 3 30
22	+ 2 89
23	+ 3 25
24	+ 3 01
25	+ 2 88
26	+ 3 23
27	+ 3 18
28	+ 3 27
29	+ 3 35
30	+ 3 48
May 2	+ 3 45
3	+ 3 58
4	+ 3 96
5	+ 3 64
6	+ 3 78
7	+ 3 45
9	+ 3 56

1843	s
May 10	+ 3 40
11	+ 3 73
12	+ 3 48
13	+ 3 49
15	+ 3 82
16	+ 3 43
17	+ 3 2
18	+ 3 28
19	+ 3 51
The Clock had stopt by reason of a spider having got inside	
24	+ 3 67
25	+ 3 22
29	+ 3 44
30	+ 3 59
31	+ 3 23
June 1	+ 3 34
2	+ 3 39
3	Put back three min
4	+ 3 75
6	+ 3 32
7	+ 3 20
8	+ 3 58
9	+ 3 30
10	+ 3 02
13	+ 3 01
15	+ 2 69
16	+ 3 33
17	+ 2 87
20	+ 2 61
21	+ 2 63
22	+ 2 55
23	+ 2 54
26	+ 3 06
27	+ 3 58
28	+ 3 01
29	+ 3 14
30	+ 3 07
July 1	+ 3 47
6	+ 2 85
8	+ 2 54
10	+ 2 86
11	+ 2 77
13	+ 2 92
14	+ 3 07
21	+ 3 14
22	+ 3 30
25	Wound up and put it back three minutes
27	+ 4 15
29	+ 3 62
31	+ 3 82
Aug 2	+ 3 48
3	+ 3 78
5	+ 3 92
6	+ 3 92
Found the Clock stopt regulated it	

1843	s
Aug 9	— 2 60
12	— 3 28
14	— 67
17	— 80
18	— 2 41
19	— 2 78
20	— 2 82
23	— 2 79
25	— 2 8
26	— 2 41
28	— 2 8
30	— 5
31	— 2 56
Sept 1	Advanced the Clock two minutes
3	— 3 00
4	— 2 63
5	— 2 74
6	— 2 [illegible]
7	— 63
Removed a spider from the inside of the Clock	
9	— 1 4[illegible]
10	— 1 80
12	— 1
13	— 2 54
14	— 2 4[illegible]
18	— 2 0
19	— 44
20	— [illegible]0
21	— 2 30
22	— 19
23	— 1 9[illegible]
24	— 1 [illegible]7
25	— 1 70
26	— 1 83
27	— 1 84
28	— 1 6[illegible]
29	— 1 34
30	— 1 28
Oct 1	— 1 06
2	— 1 3[illegible]
3	— 1 36
4	— 1 61
5	— 1 45
7	— 0 94
Cleaned the Clock	
Nov 1	+ 4 41
2	+ 5 17
3	+ 5 79
4	+ 5 94
5	+ 5 [illegible]2
6	Regulated the Clock
7	+ 0 77
8	+ 0 76
9	+ 0 84
12	+ 1 33
15	+ 0 90
16	+ 0 78

Daily Rate of the Transit Clock (*Continued*)

1843		s
No	17	+ 1 20
	18	+ 1 00
	19	+ 0 96
	20	+ 1 07
	23	+ 1 00
	24	+ 0 95
	25	+ 0 63
	26	+ 0 88
	27	+ 0 35
	28	+ 0 33
	29	+ 0 29
	30	+ 0 45
Dec	5	+ 0 29
	8	+ 0 80
	9	+ 0 93
	10	+ 0 86
	12	+ 0 86
	13	+ 0 88
	14	+ 0 80
	15	+ 0 63
	16	+ 0 62
	17	+ 0 48
	18	+ 0 28
	19	+ 0 33
	20	+ 0 18
	21	+ 0 01
	22	+ 0 18
	23	+ 0 27
	26	+ 0 12
	27	— 0 09
	28	+ 0 12
	29	+ 0 07
	30	— 0 08
	31	+ 0 04
1844		
Jan	2	+ 0 09
	3	+ 0 08
	4	+ 0 06
	5	— 0 11
	6	+ 0 02
	7	— 0 02
	8	— 0 06
	9	+ 0 02
	10	— 0 03
	11	+ 0 01
	12	+ 0 10
	13	+ 0 09
	16	+ 0 28
	17	+ 0 32
	18	+ 0 44
	19	+ 0 26
	20	+ 0 30
	21	+ 0 19
	22	+ 0 15
	23	+ 0 03
	24	+ 0 13
	25	+ 0 14
	26	+ 0 14
	27	+ 0 21
	28	+ 0 44
	29	+ 0 73

1844		s
Feb	1	+ 0 63
	3	+ 0 92
	4	+ 1 00
	5	+ 1 12
	6	+ 1 03
	7	+ 0 95
	8	+ 1 05
	9	+ 0 96
	10	+ 0 94
	11	+ 0 80
	12	+ 0 43
	13	+ 0 52
	14	+ 0 41
	15	+ 0 30
	16	+ 0 18
	17	+ 0 05
	18	— 0 01
	19	+ 0 16
	20	+ 0 09
	21	+ 0 01
	22	+ 0 04
	23	+ 0 03
	24	+ 0 02
	25	— 0 28
	26	— 0 10
	27	— 0 02
	28	+ 0 19
	29	+ 0 21
Mar	1	+ 0 08
	2	+ 0 25
	3	+ 0 36
	4	+ 0 24
	5	+ 0 54
	6	+ 0 47
	7	+ 0 44
	8	+ 0 47
	9	+ 0 42
	10	+ 0 37
	11	+ 0 28
	12	+ 0 18
	13	+ 0 29
	14	Wound up the Clock and put back 1 min
	15	+ 0 36
	16	+ 0 22
	17	+ 0 59
	18	+ 0 60
	19	+ 0 61
	20	+ 0 59
	21	+ 0 71
	22	+ 1 04
	23	+ 0 87
	24	+ 0 68
	25	+ 0 68
	26	+ 0 89
	27	+ 0 78
	28	+ 0 77
	29	+ 0 96
	30	+ 0 82
	31	+ 0 82

1844		s
April	2	+ 1 16
	3	+ 1 25
	4	+ 0 92
	5	+ 1 24
	6	+ 1 10
	7	+ 1 04
	8	+ 1 28
	9	+ 1 16
	10	+ 0 72
	11	+ 0 78
	12	+ 0 47
	13	+ 0 50
	14	+ 0 55
	15	+ 0 61
	16	+ 0 56
	17	+ 0 64
	18	+ 0 44
	19	+ 0 48
	20	+ 0 51
	21	+ 0 42
	22	+ 0 37
	23	+ 0 33
	24	+ 0 27
	25	+ 0 29
	26	+ 0 08
	27	+ 0 19
	28	+ 0 15
	29	+ 0 05
	30	+ 0 49
May	1	+ 0 69
	2	+ 0 75
	3	+ 0 54
	4	+ 0 73
	5	+ 0 76
	6	+ 1 16
	10	+ 0 67
	11	+ 0 44
	12	+ 0 72
	13	+ 0 69
	14	+ 0 76
	15	+ 0 88
	16	+ 0 86
	17	+ 0 92
	18	+ 0 88
	19	+ 0 81
	22	+ 0 53
	23	+ 0 48
	24	+ 0 51
	25	+ 0 9
	26	+ 0 49
	29	+ 0 90
	30	+ 0 69
	31	+ 0 42
June	2	+ 0 69
	3	+ 0 70
	4	+ 0 40
	5	+ 0 01
	6	— 0 23
	7	— 0 45
	8	— 0 62
	9	— 0 43

1844		
June	10	— 0 33
	12	— 0 16
	13	— 0 25
	14	— 0 26
	15	— 0 22
	18	— 0 01
	19	— 0 05
	20	— 0 08
	22	— 0 21
	23	+ 0 16
	25	— 0 08
	26	+ 0 02
	27	— 0 05
	28	— 0 02
	29	+ 0 21
July	3	+ 0 12
	4	+ 0 01
	5	+ 0 09
	6	+ 0 24
	8	— 0 13
	9	+ 0 27
	11	+ 0 03
	15	— 0 41
	16	— 0 09
	19	— 0 16
	20	+ 0 06
	21	+ 0 33
	23	+ 0 39
	24	+ 0 46
	25	+ 0 13
	27	+ 0 67
	30	+ 0 80
	31	+ 0 67
Aug	1	+ 0 78
	2	+ 0 89
	3	+ 1 07
	4	+ 1 00
	5	+ 1 09
	6	+ 0 95
	7	+ 0 91
	8	+ 0 42
	9	+ 0 75
	10	+ 0 83
	12	+ 0 46
	13	+ 0 42
	14	+ 0 71
	16	+ 0 48
	17	+ 0 72
	18	+ 0 52
	19	+ 0 70
	20	+ 0 62
	22	Stopt a few seconds in winding
	24	+ 0 36
	26	+ 0 76
	30	+ 1 27
Sept	5	+ 1 26
	6	+ 1 50
	7	+ 1 39
	8	+ 1 45

Daily Rate of the Transit Clock *(Continued)*

1844		
Sept	9	+ 1 21
	10	+ 1 07
	11	+ 1 50
	12	+ 0 98
	13	+ 0 90
	14	+ 1 17
	15	+ 1 19
	17	+ 0 94
	18	Put back one min
	19	+ 1 10
	20	+ 1 52
	21	+ 1 47
	22	+ 1 40
	23	+ 1 56
	24	+ 1 91
	25	+ 2 40
	26	+ 1 96
	27	+ 1 93
	28	+ 1 89
	29	+ 1 80
	30	+ 1 78
Oct	1	+ 1 56
	2	+ 1 84
	3	+ 1 88
	4	+ 1 78
	5	+ 2 17
	9	+ 2 07
	10	+ 2 45
	12	+ 2 34
	14	+ 2 19
	15	+ 2 00
	16	Stopt 15 in windg
	17	+ 1 59
	18	+ 1 54
	19	+ 1 62
	21	+ 1 66
	22	+ 1 61
	23	+ 1 58
	24	+ 1 62
	25	+ 1 69
	27	+ 1 32
	28	+ 1 28
	29	+ 1 26
	30	+ 1 32
	31	+ 1 61
Nov	2	+ 1 46
	3	+ 1 48
	4	+ 1 51
	5	+ 1 69
	6	+ 1 64
	7	+ 1 64
	8	+ 1 21
	9	+ 1 38
	10	+ 1 43
	11	+ 1 27
	12	+ 1 48
	13	Put back one min
	14	+ 1 02
	15	+ 1 22
	16	+ 1 57

1844		s
Nov	17	+ 1 11
	18	+ 1 46
	19	+ 1 42
	20	+ 1 29
	21	+ 1 50
	2	+ 1 29
	23	+ 1 55
	24	+ 1 16
	25	+ 1 11
	26	+ 1 2
	27	+ 1 31
	28	+ 1 18
	29	+ 1 16
	30	+ 1 24
Dec	2	+ 1 30
	3	+ 1 26
	4	+ 1 24
	5	+ 1 30
	6	+ 1 23
	9	+ 1 33
	10	+ 1 65
	11	Stopt i wind ng
	12	+ 1 36
	15	+ 1 32
	16	+ 1 78
	21	+ 1 73
	22	+ 2 21
1845		
Jan	3	+ 2 27
	4	+ 2 34
	5	+ 2 39
	8	Put b ck one min
	10	+ 1 72
	11	+ 1 59
	12	+ 1 59
	13	+ 1 48
	14	+ 1 60
	15	+ 1 44
	16	+ 1 57
	17	+ 1 56
	18	+ 1 45
	19	+ 1 42
	20	+ 1 35
	21	+ 1 55
	22	+ 1 30
	23	+ 1 34
	24	+ 1 55
	25	+ 1 48
	26	+ 1 50
	27	+ 1 62
	28	+ 1 52
	29	+ 1 59
	30	+ 1 59
	31	+ 1 64
Feb	1	+ 1 67
	2	+ 1 65
	3	+ 1 80
	4	+ 1 38
	6	+ 1 33
	7	+ 1 37

1845		s
Feb	8	+ 1 35
	9	+ 1 42
	10	+ 1 28
	11	+ 1 44
	12	+ 1 35
	13	+ 1 30
	14	+ 1 45
	15	+ 1 46
	16	+ 1 27
	17	+ 1 31
	18	+ 1 32
	19	+ 1 49
	20	+ 1 35
	21	+ 1 40
	22	+ 1 53
	23	+ 1 44
	24	+ 1 58
	25	+ 1 53
	26	+ 1 66
	27	+ 1 62
	28	+ 1 55
Mar	1	+ 1 40
	2	+ 1 51
	3	+ 1 27
	4	Stopt n winding
	5	+ 1 27
	6	+ 1 36
	7	+ 1 50
	8	+ 1 41
	9	+ 1 40
	10	+ 1 45
	11	+ 1 44
	12	+ 1 22
	13	+ 1 22
	14	+ 1 30
	15	+ 1 44
	16	+ 1 07
	17	+ 1 51
	19	+ 1 52
	20	+ 1 44
	21	+ 1 57
	22	+ 1 51
	23	+ 1 39
	24	+ 1 58
	25	+ 1 40
	26	+ 1 60
	27	+ 1 77
	28	+ 1 70
	29	+ 1 68
	30	+ 1 68
	31	+ 1 86
April	1	Put back one min
	2	+ 1 28
	3	+ 1 30
	4	+ 1 58
	5	+ 1 48
	6	+ 1 48
	7	+ 1 52
	8	+ 1 60
	9	+ 1 48

1845		
April	10	+ 1 52
	11	+ 1 73
	12	+ 1 67
	13	+ 1 51
	14	+ 1 85
	15	+ 1 53
	16	+ 1 81
	17	+ 1 65
	18	+ 1 78
	19	+ 1 61
	20	+ 1 66
	21	+ 1 86
	22	+ 1 72
	23	+ 1 95
	24	+ 1 89
	25	+ 1 86
	26	+ 1 83
	27	+ 1 82
	28	Stopt in winding
	29	+ 1 24
	30	+ 1 30
May	1	+ 1 17
	2	+ 1 20
	3	+ 1 18
	4	+ 1 16
	5	+ 1 19
	7	+ 1 40
	8	+ 1 24
	10	+ 1 42
	11	+ 1 17
	12	+ 1 07
	13	+ 0 93
	14	+ 0 77
	15	+ 0 58
	16	+ 0 80
	17	+ 0 78
	18	+ 0 77
	19	+ 0 77
	20	+ 0 85
	21	+ 0 75
	22	+ 0 76
	23	+ 0 48
	24	Stopt in winding
	25	+ 0 38
	26	+ 0 50
	27	+ 0 41
	28	+ 0 50
	30	+ 0 42
	31	+ 0 43
June	2	+ 0 46
	3	+ 0 35
	4	+ 0 61
	5	+ 0 36
	6	+ 0 54
	7	+ 0 26
	8	+ 0 72
	9	+ 0 60
	10	+ 0 85
	11	+ 0 70
	12	+ 0 87

Daily Rate of the Transit Clock (Continued)

1845		s
May	13	+ 0 91
	14	+ 0 90
	16	+ 1 40
	17	+ 1 39
	18	Stopt in winding
	19	+ 0 83
	20	+ 0 77
	24	+ 0 77
	25	+ 0 97
	26	+ 0 66
	27	+ 0 89
	28	+ 0 51
	29	+ 0 98
	30	+ 0 52
July	1	+ 0 7
	2	+ 0 64
	3	+ 0 65
	4	+ 0 55
	5	+ 0 71
	6	+ 0 72
	7	+ 0 72
	8	+ 0 91

The oil on the c pement ap pearing to be th ck I caused the Clock to be cleaned

	12	— 2 55
	14	— 2 03
	16	— 2 23
	17	— 2 55
	18	— 2 47
	21	— 2 39
	22	— 2 26
	24	— 2 11
	25	— 2 26
	26	— 2 25
	27	— 2 32
	30	— 2 52
	31	— 2 70
Aug	1	— 2 43
	2	— 2 40
	5	— 2 87
	6	— 2 03
	7	— 2 40
	8	— 2 41
	9	— 2 75
	12	— 2 40
	13	— 2 36
	14	— 2 33
	16	— 2 53
	18	— 2 23
	19	— 2 35
	20	— 2 52
	21	— 2 62
	22	— 2 52
	23	— 2 52
	24	— 2 34
	25	— 2 45
	26	— 2 34
	27	— 2 26

1845		s
Aug	28	— 2 26
	29	— 2 38

Put forward two m nutes

	31	— 2 34
Sept	1	— 2 21
	2	— 2 49
	3	— 2 18
	4	— 26
	5	— 1 95
	7	— 1 82
	8	— 1 91
	9	— 2 09
	10	— 2 10
	11	— 2 02
	12	— 2 09
	13	— 2 09
	14	— 1 95
	15	— 1 77
	17	— 1 82
	18	— 1 71
	19	— 1 71
	20	— 1 93
	21	— 1 19
	24	— 1 70
	25	— 1 73
	26	— 1 81
	28	— 1 70
	29	— 1 87
	30	— 1 70
Oct	1	— 1 85
	2	— 1 81
	3	— 1 72
	5	— 1 63
	6	— 1 76
	7	— 1 78
	8	— 1 60
	9	— 1 53
	10	— 1 69
	11	— 1 77
	12	— 1 54
	17	— 1 42
	18	— 1 64
	20	— 1 60
	21	— 1 57
	22	— 1 41
	23	— 1 42
	24	— 1 52
	25	— 1 65

Put forward one minute

	27	— 1 57
	28	— 1 55
	30	— 1 78
	31	— 1 95
Nov	1	— 1 62
	2	— 1 92
	3	— 1 64
	4	— 1 86
	5	— 2 12
	6	— 1 74
	7	— 2 07

1845		s
Nov	8	— 2 28
	9	— 2 11
	10	— 2 38

Tl e Catgut by wh ch the weight was suspended broke

	16	— 0 51
	17	— 0 92
	18	— 0 99
	19	— 0 82
	21	— 0 85
	22	— 0 98
	24	— 0 86
	25	— 0 88
	26	— 0 93
	27	— 1 23
	28	— 0 88
	29	— 1 09
	30	— 1 31
Dec	1	— 1 20
	5	— 0 66
	6	— 0 84
	9	— 0 65

Put forward one minute

	11	— 0 63
	12	— 0 64
	13	— 0 73
	14	— 0 81
	17	— 1 04
	18	— 0 79
	19	— 0 91
	21	— 0 88
	22	— 0 82

The Clock weight became en tangled by a knot wh ch had been tied on the 10th Novem ber

	24	— 0 34
	29	— 0 16
	30	— 0 21
	31	— 0 17
1846		
Jan	2	— 0 29
	3	— 0 29
	4	— 0 32
	6	+ 0 09
	9	+ 0 38
	10	+ 0 07
	11	— 0 54
	12	— 0 56
	13	— 0 64
	14	— 0 65
	15	— 0 79
	16	— 0 73
	17	— 0 71
	18	— 1 02
	19	— 0 93
	20	— 0 69
	21	— 0 77

1846		s
Jan	22	— 0 80
	23	— 0 65
	24	— 0 71
	25	— 0 92
	26	— 0 81
	27	— 0 76
	28	— 0 69
	29	— 0 66
	31	— 0 80
Feb	1	— 0 95
	2	— 0 76
	3	— 0 77
	4	— 0 57
	5	— 0 33
	6	— 0 36
	10	+ 0 46
	11	+ 0 38
	12	+ 0 61
	13	+ 0 40
	14	+ 0 56
	15	+ 0 18
	16	+ 0 08
	17	— 0 15
	18	0 00
	19	— 0 03
	20	— 0 18
	21	— 0 16
	22	— 0 16
	23	— 0 04
	24	— 0 04
	25	— 0 06
	26	— 0 13
	27	— 0 16
	28	— 0 50
Mar	1	— 0 31
	2	— 0 36
	3	— 0 28
	4	— 0 08
	5	— 0 09
	6	— 0 04
	7	— 0 17
	8	— 0 01
	9	+ 0 33
	10	+ 0 24
	11	+ 0 17
	12	+ 0 72
	13	+ 0 37
	14	+ 0 48
	15	+ 0 5
	16	+ 0 71
	17	+ 0 80
	18	+ 0 83
	19	+ 0 57
	20	+ 0 43
	21	+ 0 50
	22	+ 0 47
	23	+ 0 53
	24	+ 0 93
	25	+ 1 42
	26	+ 1 08
	27	+ 0 73

Daily Rate of the Transit Clock (*Continued*)

1846		
Mar	28	+ 0 73
	29	+ 0 49
	30	+ 0 78
	31	+ 0 55
April	1	+ 0 28
	2	+ 0 51
	3	+ 0 49
	4	+ 0 35
	5	+ 0 38
	6	+ 0 35
	7	+ 0 50
	8	+ 0 46
	9	+ 0 41
	10	+ 0 53
	11	+ 0 26
	12	+ 0 38
	13	+ 0 49
	14	+ 0 76
	16	+ 1 14
	17	+ 0 84
	18	+ 0 77
	19	+ 0 49
	20	+ 0 52
	21	+ 0 44
	22	+ 0 28
	23	+ 0 22
	24	+ 0 38
	25	+ 0 07
	26	+ 0 16
	27	+ 0 15
	28	+ 0 19
	29	+ 0 17
	30	+ 0 50
May	1	+ 0 20
	2	+ 0 30
	3	+ 0 34
	4	+ 0 37
	5	+ 0 60
	7	— 0 21
	8	— 0 28
	9	— 0 10
	10	+ 0 09
	11	— 0 06
	12	— 0 23
	13	+ 0 10
	14	— 0 12
	15	— 0 16
	16	+ 0 22
	19	+ 0 21
	20	+ 0 41
	21	+ 0 15
	22	+ 0 17
	24	+ 0 27
	27	+ 0 38
	28	+ 0 23
	29	+ 0 55
	31	+ 0 56
June	1	+ 0 39
	3	+ 0 32
	4	+ 0 51
	5	+ 0 60

1846		s
The Clock stopped applied oil to the escapement		
June	7	— 1 15
	8	— 1 09
	9	— 1 00
	10	— 1 48
	11	— 1 27
	12	— 0 94
	13	— 0 82
	14	— 0 75
	15	— 0 46
	16	— 0 57
	17	— 0 51
	18	— 0 63
	19	— 0 77
	20	— 0 90
	21	— 0 82
	22	— 0 89
	23	— 0 85
	24	— 0 69
	25	— 0 70
	26	Stopt in winding
	30	— 0 64
July	2	— 0 98
	3	— 1 07
	4	Forwarded 2 mins
	5	— 1 23
	6	— 1 17
	8	— 0 84
	9	— 1 03
	10	— 1 08
	13	— 0 83
	14	— 0 84
	20	— 0 55
	27	— 0 64
	28	— 0 85
	29	— 0 96
	30	— 1 20
	31	— 1 11
Aug	1	— 1 53
	2	— 1 48
	3	— 1 14
	5	— 1 41
	6	— 1 07
	10	— 1 28
	11	— 1 07
	12	— 0 86
	13	— 0 78
	15	— 0 81
	17	— 0 73
	18	— 0 91
	19	— 0 89
	20	— 1 05
	21	Forwarded 1 min
	22	— 1 16
	24	— 1 08
	25	— 1 10
	26	— 1 43
	27	— 1 38

1846		s
Aug	28	— 1 12
	29	— 1 36
	31	— 1 22
Sept	3	— 1 17
	4	— 1 23
	5	— 1 03
	6	— 1 31
	7	— 1 34
	8	— 1 38
	10	— 1 33
	11	— 1 31
	12	— 1 24
	14	— 1 33
	15	— 1 32
	16	— 1 49
	17	— 1 39
	18	— 1 05
	21	— 1 17
	22	— 1 33
	23	— 1 60
	24	— 1 30
	25	— 1 28
	26	— 1 26
	28	— 1 29
	29	— 1 41
	30	— 1 25
Oct	2	— 1 20
	3	— 1 12
	6	— 1 00
	7	— 0 97
	8	— 0 77
	9	— 0 67
	10	— 0 86
	13	— 0 88
	14	— 0 93
	15	— 0 84
	16	— 0 93
	23	— 1 27
	24	— 1 52
	26	— 1 51
	27	— 1 48
	28	— 1 30
	29	— 1 48
	30	— 1 89
	31	— 2 00
Nov	2	— 0 95
	3	— 0 82
	4	— 0 96
	5	— 0 90
	6	— 0 88
	7	— 0 88
Clock stopt		
	11	— 0 68
	12	— 0 65
	14	— 0 70
	17	— 1 45
	19	— 1 85
	20	— 1 73
	28	— 1 29
	30	— 1 50
Dec	1	— 1 14

1846		s
Dec	2	— 1 06
	8	— 0 24
	9	— 0 22
	10	— 0 16
	11	— 0 27
	12	— 0 25
	14	— 0 23
	18	— 0 80
	19	— 0 86
	21	— 0 94
	22	— 0 88
	27	— 0 56
1847		
Jan	5	— 0 07
	6	— 0 03
	7	+ 0 18
	8	— 0 35
	9	— 0 15
	11	— 0 08
	12	+ 0 04
	13	— 0 19
	14	+ 0 12
	15	+ 0 03
	16	— 0 11
	18	— 0 34
	19	— 0 31
	20	— 0 49
	21	— 0 47
	22	— 0 68
	23	— 0 46
	25	— 0 65
	26	— 0 71
	27	— 0 49
	28	— 0 67
	29	— 0 49
	30	— 0 57
	31	— 0 59
Feb	1	— 0 87
	2	— 0 84
	3	— 0 94
	4	— 1 11
	5	— 0 87
	6	— 1 13
	9	— 0 98
	11	— 0 95
	12	— 0 72
	13	— 0 86
	15	— 0 80
	16	— 0 76
	17	— 0 68
	18	— 0 82
	19	— 0 78
	20	— 0 62
	22	— 0 70
	23	— 0 72
	24	— 0 42
	25	— 0 21
	26	+ 0 14
	27	+ 0 09
Mar	2	— 0 39
	3	— 0 20

DAILY RATE OF THE TRANSIT CLOCK (Continued.)

1847	s	1847	s	1847	s	1847	s
Mar 4	+ 0 05	April 23	+ 0 34	June 12	— 0 25	Sept 21	+ 0 66
5	— 0 03	24	+ 0 69	14	— 0 26	22	+ 0 83
6	+ 0 12	25	+ 0 23	15	— 0 42	25	+ 1 19
8	— 0 01	26	+ 0 54	19	— 0 18	27	+ 1 16
9	+ 0 16	27	+ 0 19	July 2	— 0 44	Oct 3	+ 1 26
10	+ 0 16	28	+ 0 18	6	— 0 45	4	+ 1 26
11	+ 0 19	29	+ 0 03	7	— 0 04	5	+ 1 09
12	+ 0 16	30	+ 0 01	8	+ 0 10	6	+ 1 32
13	+ 0 18	May 1	+ 0 16	9	— 0 12	7	+ 2 39
16	+ 0 25	3	+ 0 09	10	+ 0 01	8	+ 2 26
17	+ 0 17	4	+ 0 08	14	+ 0 0	9	+ 2 83
18	+ 0 12	5	+ 0 19	15	+ 0 35	11	+ 2 52
19	+ 0 22	6	+ 0 03	20	— 0 43	12	Put back one min
23	+ 0 37	7	+ 0 09	21	— 0 30	16	+ 2 36
24	+ 0 84	8	+ 0 04	22	+ 0 34	18	+ 2 33
25	+ 0 67	10	+ 0 20	Aug 6	+ 0 75	19	+ 2 71
26	+ 0 85	11	+ 0 11	10	+ 0 94	20	+ 2 40
27	+ 0 81	12	— 0 17	11	+ 1 03	21	+ 2 23
28	+ 0 58	13	+ 0 02	12	+ 0 80	22	+ 2 60
29	+ 0 77	14	+ 0 16	13	+ 0 44	23	+ 2 61
30	+ 0 77	15	+ 0 18	16	+ 0 48	26	+ 2 50
31	+ 0 96	17	— 0 03	17	+ 0 64	27	+ 2 39
Apr l 1	+ 0 75	18	— 0 08	18	+ 0 50	28	+ 2 72
2	+ 0 91	19	+ 0 07	20	+ 0 76	29	+ 2 29
3	+ 0 70	20	+ 0 10	21	+ 0 71	Nov 5	+ 2 44
5	+ 0 78	21	0 00	23	+ 0 92	6	+ 2 50
6	+ 0 72	2	+ 0 28	24	+ 0 77	7	+ 2 72
7	+ 0 83	23	— 0 05	25	+ 0 76	8	+ 2 38
8	+ 0 8	25	— 0 06	26	+ 0 71	9	+ 2 42
9	+ 0 [illegible]0	26	— 0 02	Sept 3	+ 1 01	10	+ 2 75
10	+ 1 00	31	+ 0 02	8	+ 0 86	11	+ 2 64
12	+ 0 47	June 1	— 0 08	9	+ 0 37	13	+ 2 43
13	+ 0 61	2	— 0 10	11	+ 0 63	16	+ 2 80
14	+ 0 60	3	— 0 06	13	+ 0 96	18	+ 2 74
19	+ 0 49	7	— 0 03	15	+ 0 90	19	+ 2 50
20	+ 0 44	8	— 0 13	17	+ 0 30	20	+ 2 60
21	+ 0 49	9	— 0 02	18	+ 0 51		
22	+ 0 44	11	— 0 32	20	+ 0 80		

METEOROLOGICAL INSTRUMENTS EMPLOYED

At page 34 Vol IV of the Madras Results I have given an account of the measures adopted for obtaining a knowledge of the error of the Barometer employed where it appears that the correction subsequent to the 10th May 1837 was that due to capillary action only i + 051 Inch This Barometer continued to be employed until the morning of the 5th June 1842 when sudden fall occurred to the amount of two tenths of an inch which was not confirmed by another Barometer with which I occasionally had been accustomed to compare it continuing to watch the two Barometers the difference had gradually creased during the day and on examination it turned out that the glass cister had cracked by reason of the hot land wind thereby allowing some of the Mercury to escape On the 7th June 1842 I availed myself of the loan of an excellent Barometer by *Cary* which on being compared with the Standard Barometer at the Magnetic Observatory appeared to require a correction — 0 040 *In* this Barometer continued to be employed until the 17th June 1842 when I succeeded in procuring Standard Barometer by Newman—diameter of tube 0 53 *In* with glass cistern & &c The Barometer which is marked Newman No 49 then stood 010 lower than the Standard No 42 employed by Captain Ludlow at the Magnetic Observatory and from comparison made on the 3d December 1847 it appeared that the Observatory Barometer (No 49) stood 013 lower than No 42 now the latter Instrument had been compared with the Royal Society Standard previously to leaving England in 1840 when it appeared to require a correction— 006 or the Barometrical readings as set down in the Circle Book require the following corrections

	Date					*Correction*
From	1st January	1838	to	5th June	1842	+ 051
——	7th June	184	—	16th June	1842	— 040
——	17th June	1842	—	31st December	1847	+ 007

The Thermometers employed are two of ordinary construction by Bate which nevertheless differed by only a small fraction of a degree from Standard by Troughton with which they were compared in 1836 but a recent comparison with a Standard by Newman which was supplied to the Madras Magnetic Observatory shows that they each require a correction + 0 7

THE MADRAS MURAL CIRCLE

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THE MURAL CIRCLE was constructed by Dolland (see Vol I) t is 48 inches in diameter and i provided with a telescope of 49 inches focal le th with a treble object glass of $3\frac{1}{2}$ inches aperture and a power of 120 has on all occasions been employed the divisions to every 5 are very beautifully executed on a slip of gold let into the circumference of the ring but having been inadvertently set off f om a scale of equal parts of 5 in length they are systematically erroneous and require the corrections as given at page 217 Vol V these being applied the Madras Mural C cle s I believe second to no other similarly constructed Instrument the divisions are read off by four Micrometer Microscopes these have usually been examined as to runs once in each week but since the excess or defect of their measurement from div o i to division has very seldom exceeded two or three tenths of a second no correction for runs has been allowed The observations with this instrument have with but slight exception been made simultaneously with those made with the Transit Instrument —the Refractions as heretofore have been computed from Atkinson s tables as given in the 2d volume of the Royal Astronomical Society s Memoirs and the mean places employed in computin the Index E ror are those brought up from the Madras Cat lo ue (Vol VI) In addition to the ordinary comparison of the observations of Stars with their known places I have continued to determine the Index Error by the Reflecting Collimator a plan which consists in observing the coincidence of the horizontal wire with its image as seen in a basin of quicksilver placed beneath the telescope as pointed to the Nadir whence we get

$$\frac{\quad - \ (180 \ + \ C \ I \ t.)}{\quad} = I \ I \ r$$

Where represents the Instrumental reading and the error of division due to that reading The observations with the Reflectin Collimator have generally been made at 6 A M noon 6 P M and midnight On computing the Index Er or thus determin d with those which have resulted from the observations of Stars the coincidences on the whole are by no means satisfactory the differences amounting in two instances to above four seconds! In a general way I have found these observations as made by my Assistants to agree within very narrow limits with those made by myself on one occasion however I differed from an Assistant (Verasawmy) by 2 C on examining his bisection I had no doubt whatever of its being intolerably erroneous whereas his impression of my own bisection was that it was equally in fault whereas another observer took up a mean between us we repeated our bisections several times on this and the succeeding day with like result but a few days afterwards our disagreement had ceased Observations of the Microscopes to dete mine the errors of runs have regularly been made once a week in a general way the error has been extremely regular and has seldom amounted to half a second but having omitted to employ it in the reduction of the observations I have thought it unnecessary to furnish the amount here

INDEX ERROR OF THE MURAL CIRCLE

1838	No. of Obs.	Index Error by Stars	No. of Obs.	Index Error by Reflecting Collimator	Diff.	1838	No. of Obs.	Index Error by Stars	No. of Obs.	Index Error by Reflecting Collimator	Diff.
January 1	6	—0 37 29	2	—0 36 68	—0 61	March 4	6	—0 37 04	3	—0 38 41	+1 37
2	6	36 06	3	36 7	+0 51		6	37 10	4	37 70	+0 60
4	7	36 38	4	36 08	—0 30	6	8	37 92	3	37 99	+0 07
5	7	36 66	4	35 5	—1 11	7		37 66	3	37 0	—0 46
6		37 00	4	3 45	—1 55	8	6	38 55	4	39 02	+0 47
7		37 30	3	36 2	—1 08	9	4	38 37	4	38 4	+0 08
8	9	37 91	4	35 85	— 06	10		37 76	4	38 85	+1 09
9	10	38 9	4	36 13	—2 16	11		38 06	4	39 00	+0 94
10	11	38 55	4	36 60	—1 95	12	6	37 89	3	38 1	+0 32
11		38 08	3	36 17	—1 91	13		37 31	3	37 73	+0 39
12	5	38 61	2	36 55	—2 06	14		39 06	4	38 7	—0 9
13	7	8 90	3	36 78	—2 1	15	6	38 77	3	40 38	+1 61
14	11	38 8	3	35 6	—3 20	16	5	38 74	4	39 10	+0 4
16	7	38 39	4	36 65	—1 74	17	6	39 33	3	38 8	—0 48
17	6	38 86	4	3 8	—1 01	18	6	38 93	4	38	—0 8
18	7	38 0	4	3 13	—1 56	19	6	39 40	3	39 06	+0 6
19	7	39 85	4	38 7	—1 18	0	6	39 23	4	38 78	—0 45
20	6	38 32	3	38 31	—0 01	21	5	39 27	4	38 56	—0 71
21		38 6	3	38 41	—0 8	22	7	39 62	4	38 64	—0 98
2	8	39 60	3	38 91	—0 69	23	5	39 89	4	38 43	—1 1
4 26	7	36 0	9	36 30	—0 20	24	6	39 8	4	39 00	—0 8
27	5	36 10	4	3 87	—0 23	25	6	40 10	4	38 77	—1 33
28	5	36 66	3	36 1	—0 45	26 27	6	39 99	8	38 90	—1 09
9	6	3 67	3	36 41	—1 26	28	6	38 64	4	38 23	—0 11
30	5	37 06	3	35 81	—1 25	29	6	38 99	4	38 39	—0 60
31	5	36 50	3	35 90	—0 60	30	6	39 31	4	38 88	—0 43
February 1	6	37 80	3	37 11	—0 69	31		38 23	3	38 88	+0 65
2	5	38 65	3	36 46	—2 19	April 1	5	38 79	4	38 60	—0 19
3	3	38 74	3	36 00	— 74	2	6	38 48	4	37 45	—1 03
4	6	39 16	3	37 03	—2 13	3		39 33	3	37 9	—1 74
	6	38 4	3	36 51	—1 88	4	6	38 33	4	37 95	—0 38
6	7	38 29	4	37 80	—0 49	5		39 44	4	37 19	—2 2
7	5	38 50	4	37 20	—1 30	6		39 04	4	38 5	—0 49
8		38 1	4	37 54	—0 97	7	6	39 4	4	37 99	—1 25
9	6	38 74	4	38 6	—0 09	8 9	8	39 0	8	38 04	—1 02
10	6	38 29	4	37 76	—0 3	10 11	6	39 83	6	37 86	—1 97
11	5	38 43	4	39 09	+0 66	12 13	5	38 97	6	38 55	—0 42
12	5	39 08	4	38 71	—0 37	15 16	6	37 83	4	37 74	—0 09
13	5	37 55	3	37 59	+0 04	17 18	8	37 86	6	37 34	—0 2
14	6	38 05	4	38 08	+0 03	19	6	37 33	4	37 73	+0 40
15	6	38 36	4	39 22	+0 86	20	5	37 93	4	38 15	+0 22
16	8	38 15	4	38 21	+0 06	21	6	37 97	4	37 17	—0 80
17	8	38 20	4	38 61	+0 41	23	4	37 46	4	37 51	+0 05
18	5	37 67	4	38 27	+0 60						
19	5	38 74	4	38 50	—0 24						
20	5	39 14	4	40 00	+0 86	24	4	+0 2 15		+0 4 45	—2 30
21	5	38 3	4	38 98	+0 63	26	5	3 09	4	4 24	—1 15
22		38 08	4	38 10	+0 02	27	3	3 20	3	4 20	—1 00
23	5	38 07	3	37 08	—0 99	28	5	3 91	4	4 15	—0 24
24	8	38 1	4	37 70	—0 42	29		4 26	4	3 24	+1 02
25	6	37 47	3	37 42	—0 05	May 1	6	4 64	4	3 77	+0 87
26	7	37 19	3	37 78	+0 9	2	7	4 80	4	6 23	—1 43
27	6	38 06	4	38 26	+0 20	3	6	5 30	3	6 95	—1 6
8	5	37 90	4	37 97	+0 07	5 6	8	4 91	8	5 06	—0 15
March 2	4	37 60	3	38 65	+1 05	7 9	7	00	9	6 65	—1 65
3	5	37 48	2	38 84	+1 36	10	6	5 10	3	7 23	—2 13

INDEX ERROR OF THE MURAL CIRCLE (Continued)

1838	N f b	I d Err by St	N f b	I d E by R fl g C ll t	D ff
May 11	4	+0 5 40	4	+0 6 61	—1 21
12	5	5 37	3	7 32	—1 95
13	5	5 89	3	7 0(	—1 17
14 15	8	5 66	8	6 68	—1 02
16 17	8	6 22	7	6 27	—0 05
18	6	6 12	4	6 31	—0 19
19	5	5 65	4	5 74	—0 09
20	5	5 9	4	4 50	+0 89
21 22	5	5 89	8	5 53	+0 36
23 24	9	5 95	7	36	+0 59
	6	6 52	4	4 77	+1 75
26	5	6 84	4	5 35	+1 49
27	4	6 96	3	6 37	+0 9
28		7 4	3	6 12	+1 03
31	5	6 44	4	5 96	+0 48
J 1	5	6 77	4	6 29	+0 48
2	5	6 46	4	5 9	+0 1
3 8	5	5 90	16	7 00	—1 10
9 18	6	7 29	24	7 7	+0 02
20 6	10	5 76	2	5 53	+0 23
27	6	5 23	4	5 79	—0 6
28	6	5 20	4	5 95	—0 7
J ly 1 5	5	7 01	14	5 97	+1 04
6 10	7	6 41	15	6 01	+0 40
12	6	6 69	4	5 36	+1 33
13 22	7	7 10	27	5 81	+1 29
23	4	6 29	3	5 33	+0 96
24	5	5 97	4	5 80	+0 17
27	6	5 81	4	5 49	+0 32
28	5	6 11	4	5 16	+0 J
29	6	5 67	4	5 10	+0 57
30 31	5	6 48	7	4 90	+1 8
Augu t 1 2	5	5 63	6	4 75	+0 88
3 6	5	6 40	13	4 51	+1 89
8 9	8	5 64	7	4 56	+1 08
10	6	4 14	8	4 55	—0 41
12 17	7	5 34	19	4 88	+0 4(
19 °	5	5 35	20	4 77	+0 58
29 S pt 1	5	4 41	1	4 (J	—0 28
3 4	6	3 57	6	4 38	—0 81
6	5	3 (8	3	4 13	—0 75
7 9	6	3 84	9	4 48	—0 (4
11	6	—1 23 72	4	—1 4 3	+0 63
12	6	1 2 89	4	26 54	+3 6
13 15	6	3 54	9	24 9°	+1 38
26 27	8	+1 3 48	7	+1 3 39	+0 09
28 29	8	2 64	7	3 48	—0 84
30 O t 1	8	2 39	8	3 40	—1 01
2 6	9	2 49	14	3 07	—0 58
7 8	8	2 85	8	2 67	+0 18

1838	N f l	I d L by St	N f b	I d Err ly Refl g C ll t	D ff
O t b 9		+1 1 8	4	+1 3 0	+0 78
10	8	3 43	4	3 88	—0 45
11	8	2 29	4	3 50	—1 1
12	6	2 18	4	3 20	—1 02
13 19	6	2 62	22	3 4°	—0 80
20	6	1 93	4	2 98	—1 05
22 23	10	1 6	8	3 48	—1 83
24 °5	10	1 33	7	3 19	—1 86
26	5	2 59	3	2 74	—0 15
N mb 2	6	3 03	4	5 57	—2 4
4 7	8	4 13	11	5 04	—0 91
13 15	6	6 53	9	7 36	—0 83
17 18	7	6 0(	6	7 05	—0 98
19 3	8	6 86	12	8 26	—1 40
°4	6	93	3	8 0J	—2 12
2 27	6	6 29	10	7 89	—1 60
Dec ul r 1	6	07	4	8 46	—3 39
2 4	6	5 83	8	7 94	—2 11
8	6	5 8°	3	7 27	—1 4
9 10	8	6 1'	6	7 0	—1 38
11	6	6 66	4	7 7	—1 09
12		6 34	4	7 57	—1 23
13		5 86	4	7 70	—1 84
14	6	6 34	4	7 82	—1 48
15 16	10	5 77	7	7 70	—1 93
17	6	5 24	4	7 81	—2 7
18	6	4 72	4	7 71	—2 99
19	6	3 28	4	7 09	—3 81
20 21	8	3 78	7	7 22	—3 44
22	8	3 17	4	6 09	—2 92
23 °4	10	3	7	5 82	—2 7
°5	5	4 19	4	5 38	—1 19
26 28	6	3 51	5	4 90	—1 39
29 31	8	2 83	6	4 22	—1 39
1839					
J y 1 2	5	3 (	5	4 38	—0 93
3 4	8	3 89	6	5 29	—1 40
		2 91	4	4 5	—1 34
6	5	3 04	4	4 68	—1 64
7 8	7	3 02	7	4 8	—1 6
10	5	2 9	3	4 68	—2 39
11 12	7	1 47	6	4 09	—2 62
13 15	6	2 73	9	5 25	—2 52
16	5	1 95	4	3 84	—1 89
17	7	1 70	3	4 30	—2 60
18	6	1 91	4	4 10	—2 19
19	6	1 81	4	3 50	—1 69
20	6	2 6°	3	4 08	—1 46
21	4	2 54	4	4 70	—2 16
23	5	1 43	4	4 65	—3 22
25 27	6	2 54	10	4 17	—1 63
28 29	6	2 22	7	3 97	—1 75
30		3 39	4	4 58	—1 19
31	5	2 86	4	4 49	—1 63
Feby 2 3	5	1 98	8	4 84	—2 86
4 5	6	1 5	7	4 48	—2 93

INDEX ERROR OF THE MURAL CIRCLE *(Continued)*

18 9	N f b	I l E by St	N f b	I d E by Refl t g C ll t	D ff	1839	N f b	I l E by St	N f b	I d E by R fl t g C ll t	D ff
F b'uary 8	4	+1 3 20	4	+1 4 20	—1 00	M y 12	5	+1 5 04	4	+1 6 61	—1 57
10	5	2 93	4	4 03	—1 10	14 15	7	4 83	7	97	—1 14
11	5	1 78	4	3 92	—2 14	16 0	7	03	16	6 35	—1 32
12	6	1 82	3	3 71	—1 9	21 5	8	4 97	13	6 36	—1 39
13	6	0 60	3	3 75	—3 1	J 13 1	9	6 27	2	6 94	—0 67
14	6	1 61	4	3 8	— 21	22 23	7	6 78	5	7 17	—0 39
1 16	7	1 70	7	3 83	—º 13	24 8	8	7 14	14	7 63	—0 49
17 18	7	2 29	6	3 91	—1 65	J ly 5 29	8	6 62	72	8 3	—1 73
19	5	2 03	3	3 78	—1 7	30 31	10	6 3	6	8 (	—1 31
20	7	1 41	2	3 98	—? 57	A g 1 6	7	6 20	15	7 14	—1 1
21	5	1 02	4	3 (7	—2 65	7 16	8	6 61	28	7 8	—1 1
22	6	1 50	4	3 83	— 33	S pt 4 13	7	11 29	30	8 32	+2 97
23 24	10	2 19	3	3 73	—1 54	16 21	7	12 03	18	1 28	—0 25
2 26	10	1 68	6	3 59	—1 91	23	(	1 1	4	12 90	—0 3(
27	8	1 26	3	3 (1	—2 35	24		12 5	4	12 51	+0 01
28 M 1 1	7	0 59 99	6	3 99	—4 00	2 27	5	12 31	10	11 60	+0 71
2	6	1 00	3	3 37	—3 32	O t b 4		10 80	3	12 84	—2 01
3	6	0 48	2	3 93	—3 45	9		9 47	4	11 33	—1 86
5	5	1 35	2	3 59	— 24	10 12		10 11	8	11 8	—1 71
6	6	0 9	3	4 03	—3 06	13 1	7	10 18	9	11 95	—1 77
7	6	1 69	3	4 13	—2 44	16	6	10 17	4	12 º7	—? 10
8 9	7	1 63	6	4 18	—? 5	17 18	9	10 01	6	11 66	—1 6
10 12	8	2 20	12	3 71	—1 51						
13 14	8	0 78	8	3 7	—2 97						
15 16	6	0 67	8	3 61	—2 94						
17 18	8	1 15	8	3 9	—2 44	N b 16	(	+ 1 39	3	+2 0 44	+0 9
19 22	9	2 63	12	3 14	—0 51	17	6	2 07	3	0 22	+1 8
23	6	1 68	4	3 82	—2 14	18	7	0 53	3	1 93	—1 40
24	6	2 15	4	3 65	—1 50	19	6	1 58	3	1 9	—0 37
25	6	2 04	4	2 89	—0 8	20	6	0 68	3	1 81	—1 13
26	6	1 96	4	3 39	—1 43	21	6	1 19	3	1 83	—0 64
27	6	2 6	4	3 25	—0 33	22	6	0 6º	3	1	—0 93
28	6	1 73	4	4 25	—2 52	23	6	0 7	3	1 9	—1 0
29	5	2 2	4	73	—1 51	24	8	0 4	6	1 17	—1 3
30	5	4·07	4	3 97	+0 10	27	5	1 7 97	3	0 89	— 92
31	5	3 01	4	4 18	—1 17	29 30	8	1 8 21	6	1 9	—3 08
Ap 1 1 2	9	2 83	6	3 63	—0 80						
3 4	10	3 35	5	3 85	—0 0						
5	6	2 83	4	3 90	—1 07						
6 7	8	3 37	7	3 92	—0 55	1840					
8	5	4 29	4	4 12	+0 17	J y 15	5	+0 11 08	4	+0 12 02	+0 94
11 12	9	3 16	6	4 75	—1 59	16	6	11 30	4	11 02	+0 34
14 15	8	3 69	7	5 59	—1 90	17 18	7	11 24	7	10 44	+0 80
16 17	8	3 45	6	6 42	—2 97	19	4	12 75	4	11 65	+1 10
18	5	3 57	4	5 64	—2 07	0	5	10 35	4	11 36	—1 01
19	6	3 42	4	5 95	—2 53	21	5	9 67	4	10 99	—1 32
20	6	3 49	4	5 78	—2 29	22	4	11 37	3	11 10	+0 27
25 26	10	4 31	7	7 48	—3 17	23	4	11 45	3	10 47	+0 98
27 28	9	4 75	6	7 38	—2 63	24	4	10 40	4	11 04	—0 64
29 M y 1	6	4 93	10	7 28	—2 3	25	6	11 30	3	11 2	+0 05
º 3	6	4 10	6	7 26	—3 16	26 27	6	10 34	7	12 00	—1 66
4 6	5	4 41	7	7 33	—2 92	28	6	9 7	3	11 30	—1 8
7 8	7	4 75	8	6 36	—1 61	29	5	10 12	4	11 96	—1 84
9	6	4 08	4	6 87	—2 79	30	6	10 85	4	11 59	—0 74
10	6	4 42	4	6 84	—2 42	31	5	9 58	4	12 13	—2 5
11	6	3 98	4	6 95	—º 97	Γ b ry 1	5	9 69	3	11 31	—1 62

Index Error of the Mural Circle *(Continued)*

1810	N f b	I d Err by Star	N f b	I d Lrr by R fl t g C ll t	D ff	1840	N f b	I d F by St	N f b	I d E ly R fl ti g C ll m t	D ff re
F bru y 2	6	+0 10 66	3	+0 11 31	—0 65	M y 18 19	5	+0 18 ?3	5	+0 18 71	—0 48
3	6	9 21	4	12 14	—2 93	20 ?3	11	17 78	11	18 45	—0 67
4	5	11 73	8	11 00	+0 73	24 29	15	17 ?7	1	18 46	—1 19
5	8	10 46	4	10 92	—0 46	30	4	17 46	4	18 18	—0 72
6	6	11 23	3	11 34	—0 11	Ju 2	4	18 25	4	18 62	—0 37
7	5	11 03	4	11 30	—0 27	4 5	5	18 07	5	18 56	—0 49
8 9	7	10 95	7	11 23	—0 28	6	3	17 99	3	18 29	—0 30
10	6	10 78	4	11 54	—0 76	7 8	5	18 10		18 69	—0 59
11 12	7	10 37	6	11 5?	—1 1?	23 2	9	18 21	9	18 41	—0 20
13 14	10	10 42	7	10 91	—0 49	26 J ly 1	17	18 59	17	18 88	—0 29
15	8	10 89	4	11 32	—0 93	2	3	18 91	3	18 39	+0 52
16 17	8	10 40	8	11 62	—1 2	4 23	53	18 75	53	18 38	+0 37
18 19	9	12 18	8	11 98	+0 20	28 30	7	18 56	7	18 04	+0 52
20	5	12 27	4	1 0	+0 20	31 Au 10	25	18 34	2	18 37	—0 03
21	6	12 27	4	12 03	+0 24	11 15	12	17 45	1	18 28	—0 83
22 23	8	11 94	7	12 22	—0 28	20 S pt 16	71	17 43	71	18 11	—0 68
24	6	11 66	4	12 34	—0 68	29	3	19 07	3	19 14	—0 07
25 26	8	12 93	7	14 12	—1 19	30	3	19 25	3	19 11	+0 14
27	5	12 65	4	13 82	—1 17	O t b r 1	3	18 33	3	18 78	—0 45
28	6	12 98	4	13 33	—0 35	2	3	18 75	3	18 68	+0 07
29	6	12 64	3	13 (5	—1 01	3	6	18 72	2	18 59	+0 13
M l 1	5	11 99	4	14 06	—2 07	4	5	18 37	3	18 46	—0 09
2	5	11 20	4	13 2	—2 02	5 6	(	17 70	4	19 26	—1 56
3	5	11 29	3	13 23	—1 94	7	6	19 12	3	18 60	+0 52
4	7	11 70	4	14 28	—2 8	8 9	6	18 23	5	18 47	—0 24
5 6	6	11 31	7	13 20	—1 89	12		19 31	3	18 92	+0 39
7 8	9	11 70	7	14 42	—2 72	12 16	6	19 37	1	18 70	+0 67
9 10	8	12 42	6	13 67	—1 25	17	4	20 07	2	18 44	+1 63
11 12	8	11 84	8	13 32	—1 48	18 19	6	18 97	7	18 91	+0 06
13	7	12 77	4	14 77	—2 00	21 22	8	18 67	6	19 24	—0 7
15	6	13 36	4	14 28	—0 92	24 31	4	18 (2	22	19 07	—0 55
16	5	13 57	4	14 75	—1 18	N v 18 19	6	27 19	6	26 52	+0 67
17	5	12 80	3	15 20	— 40	21 22	6	27 74	6	27 20	+0 54
18	6	12 70	4	14 78	—2 08	23	5	28 02	4	28 08	—0 06
19	5	13 48	4	14 78	—1 30	Dec 3 5	8	22 12	3	25 08	—2 96
20	5	12 91	3	15 30	—2 39	6 12	6	21 70	21	23 89	—2 19
21 22	6	13 79	7	15 05	—1 26	15 17	6	21 02	9	21 61	—0 59
23	5	13 47	4	14 97	—1 50	18 19	5	20 42	5	21 72	—1 30
24	5	12 88	4	14 91	—2 03	1841					
25 26	9	13 07	7	15 38	—2 31	J y 2 3	8	16 22	4	16 75	—0 53
27	7	13 82	4	15 7	—1 93	4	4	15 65	2	18 19	—2 54
28	5	13 5	3	15 66	—2 14	5	8	14 90	2	16 85	—1 95
29	6	13 44	4	15 58	—2 14	9 16	8	17 70	19	17 76	—0 06
30	3	13 87	3	15 22	—1 35	17 19	9	17 78	10	17 98	—0 20
31	3	13 72	4	15 37	—1 65	20	6	17 83	3	17 04	+0 79
Ap il 1	4	13 55	4	15 31	—1 76	21	4	17 35	3	17 93	—0 8
2	6	14 08	4	15 04	—0 96	22	6	16 15	4	16 28	—0 13
3 6	7	13 58	12	1 71	—2 13	23	4	16 73	2	18 53	—1 80
7 8	6	13 13	6	15 71	—2 8	27 29	6	16 40	9	17 78	—1 38
9	5	14 23	4	15 76	—1 53	30 31	6	15 72	5	17 53	—1 81
10 13	8	13 84	11	16 31	—? 47	Feby 1	11	16 20	7	17 32	—1 12
14 16	5	15 78	7	14 93	+0 85	3	5	15 83	2	17 10	—1 27
21 23	6	16 01	10	15 71	+0 30	4 5	5	14 64	6	17 2?	—2 58
24 25	4	16 78	4	1 92	+0 86	6	6	14 69	3	16 37	—1 68
26 M y 2	17	16 77	17	15 72	+1 05	7	3	15 89	3	16 41	—0 55
14 16	9	18 23	9	17 24	+0 99	8	6	1 54	4	16 6	—1 02

INDrX FRROR OF THI MURAL CIRCLr

1841	N f b	I d L by St rs	f b	I d E ly R fl t g C ll m t	D ff
F by 9	6	+0 16 39	4	+0 16 6	+0 33
10	4	15 94	3	16 33	—0 39
11	5	15 41	3	16 77	—1 36
12	5	15 20	4	16 83	—1 63
13	6	16 16	3	16 12	+0 04
19 20	6	17 53	6	17 52	+0 01
22 23	7	17 07	6	17 70	—0 63
24 25	8	16 89	6	17 51	—0 6
26 M h 1	6	17 02	11	17 63	—0 61
3 7	11	14 88	16	17 17	—2 29
9	3	16 23	3	17 52	—1 29
11 12	5	16 41	6	17 41	—1 00
13 15	5	15 61	8	17 58	—1 97
17 18	6	18 17	7	18 24	—0 07
19	3	18 49	3	17 66	+0 83
21	5	18 82			
22	5	17 51	2	18 50	—0 99
23 24	4	18 12	6	17 96	+0 16
25	7	16 69	3	18 18	—1 49
26	4	16 13	3	18 09	—1 96
27	3	17 39	3	18 68	—1 29
28 29	4	17 63	6	19 14	—1 51
30	4	16 82	3	18 60	—1 78
Apr l 1 2	9	17 36	6	19 24	—1 88
3	7	17 93	3	19 38	—1 45
4	7	18 13	4	19 02	—0 89
5 7	7	17 09	8	18 72	—1 63
8 13	5	18 24	13	18 67	—0 43
17	4	19 49	4	19 03	+0 46
18 19	5	18 91	7	18 40	+0 51
20 21	7	19 41	7	18 79	+0 62
22 27	8	18 48	16	18 75	—0 27
M y 5 7	9	18 98	7	19 54	—0 56
Jun 9 10	8	20 38	5	19 97	+0 41
15	21	20 05	2	19 86	+0 19
16 26	16	19 74	22	19 07	+0 67
28 J ly 14	4	20 51	23	19 11	+1 40
28 A g 3	10	19 42	19	19 57	—0 1
7	8	19 45	2	18 57	+0 88
8	5	19 96	3	18 53	+1 43
9 16	8	19 22	21	18 48	+0 74
21 22	8	19 06	4	17 84	+1 22
28	8	19 67	2	18 03	+1 64
29	7	19 41	2	18 36	+1 05
30	12	19 75	2	18 51	+1 24
31	9	19 82	2	20 25	—0 43
S pt 1	8	20 23		18 91	+1 32
6 7	5	19 17	4	19 94	—0 77
8 9	6	19 39	3	19 47	—0 08
13 14	6	22 32	5	20 58	+1 74
15 18	8	20 17	9	20 07	+0 10
20 23	11	21 54	7	20 82	+0 72
S pt 24 29	9	21 40	4	20 87	+0 53
O t b 6	9	20 22			
8	6	20 20			
15	5	23 94			

1841	N f b	I d E by St	N f b	I l E ly R fl ti g C ll t	D ffe
O t b 16	4	+0 23 03			
18	4	21 34			
19	3	24 0			
27	5	25 71			
N v mb 5	12	27 6			
6	8	31 04			
7	13	31 20			
10	4	32 85			
12	7	32 10			
14	6	31 48			
15	9	31 22			
16	10	31 38			
17	7	30 5			
18	5	28 74			
19	5	28 4			
20	5	27 76			
21	3	27 8			
22	3	27 65			
30	6	26 67			
D ml 2	5	26			
4	7	27 89			
5	6	6 71			
6	6	26 46			
7	11	2 37			
8	10	25 47			
11	9	24 64			
12	6	21 09			
13	8	23 53			
14	4	24 63			
15	4	22 80			
16	4	22 31			
17		21 08			
20		21 25			
21	4	2 32			
23	9	20 73			
24	11	20 89			
1812					
J y 5	7	1 04			
6	10	20 90			
7	13	19 3			
8	11	19 21			
9	13	19 4			
10	8	19 09			
13 14	10	19 80			
15 21	11	20			
22	7	19 24			
23 4	10	18 54			
25	8	19 75			
26	8	19 28			
27	7	19 36			
28	6	18 91			
29	7	18 70			
31	6	18 01			
F by 1 2	12	18 04			
3	5	18 10			
4	9	17 98			

INDEX ERROR OF THE MURAL CIRCLE (Continued)

1842	No of Obs	Index Error by Stars	No of Obs	Index Error by Reflecting Collimator	Diff	1842	No of Obs	Index Error by Stars	No of Obs	Index Error by Reflecting Collimator	Diff
February 5	10	+0 17 44				April 27	10	+0 21 19			
6	7	18 29				28	8	21 71			
7	7	17 45				29	9	20 45			
8	7	18 30				30	8	20 87			
9	8	18 87				May 1	7	21 25			
10	9	18 45					4	23 79			
11	10	18 59				3	4	23 70			
12	8	17 83				8	8	31 65			
13	10	18 35				10	10	31 18			
14	11	18 49				11	8	31 0			
15	13	17 94				17	6	3 61	2	+0 33 70	—1 09
16	12	18 45				18	6	32 20	3	35 00	—2 80
18	7	16 83				20	5	31 70	3	34 25	—2 55
19 20	10	16 78				22		31 72	4	33 46	—1 74
21	9	16 78				23	6	3 02	4	33 06	—1 04
22 25	25	17 61				24	5	31 46	3	33 71	—2 25
26 27	10	17 03				27	8	30 63	4	32 85	— 22
28 March 1	9	17 94				June 3 6	9	31 14	14	33 11	—1 97
2	7	18 20				8	8	31 56	3	33 60	— 04
3	9	18 22				17	5	31 79	3	32 6	—0 77
4		17 19				19	5	34 27	3	33 35	+0 92
5 6	12	17 78				20 21	6	31 82	7	33 22	—1 40
8	10	17 98				22 23	8	31 88		33 49	—1 61
9	8	18 16				24	7	32 21	3	33 17	—0 96
11	7	18 16				27 28	10	32 69	7	32 78	—0 09
12	7	18 18				29 30	9	32 62	7	32 82	—0 20
14	7	18 76				July 1 6	10	31 61	16	32 92	—1 31
15		18 07				8 11	9	31 29	12	32 90	—1 61
17	8	18 78				19 20	9	31 83	8	32 10	—0 27
18	9	18 21				21 26	10	32 47	19	32 73	—0 26
21	9	18 3				Aug 1 6	9	32 20	16	32 2	—0 12
23	9	18 00				7 8	9	31 73	7	31 75	—0 02
24	9	18 74				9 12	8	33 08	10	31 90	+1 18
25 26	6	18 33				13	5	31 48	2	31 70	—0 22
27	5	17 86				14 15	9	3 33	6	31 80	+0 53
28	5	18 47				16 21	6	30 02	17	31 33	—1 31
30	8	18 72				22 23	8	28 33	5	30 99	—2 66
31	7	18 88				24	6	29 71	3	31 33	—1 62
April 1	7	19 29				27 31	6	27 69	14	29 64	—1 95
2	8	18 51				Sept 2 4	7	29 15	7	29 71	—0 56
4	12	19 14				6 7	8	28 41	6	30 09	—1 68
5	9	18 97				8	5	28 56	2	30 11	—1 55
6	9	18 83				9	7	29 40	3	9 10	+0 30
7	8	19 26				10	4	29 92	2	29 61	+0 31
8	9	19 03				11	6	28 09	4	28 97	—0 88
9	8	19 21				12	6	27 48	3	28 98	—1 50
11	11	19 58				13 14	9	29 42	6	29 30	+0 12
12	8	20 24				15	8	28 0	8	29 85	—1 33
14	2	19 6				16	6	27 92	4	28 58	—0 66
15	7	19 60				17	5	28 40	3	28 88	—0 48
16	6	20 79				18	5	27 35	3	28 78	—1 43
18	8	20 00				19	5	26 01	3	28 44	—2 43
20	6	20 30				21	5	28 51	3	28 41	+0 10
23	11	20 56				22 24	8	29 20	7	28 56	+0 64
25	11	20 97				27	6	29 96	4	28 10	+1 86
26	9	20 5				28 30	9	29 07	7	27 97	+1 10

INDEX ERROR OF THE MURAI CIRCLE (Continued)

1842	N f ob	I d l by St	N f b	I d Err by R fl t g C llim t	D ff
O tob 1	13	+0 29 41	3	+0 27 78	+1 63
2 3	8	28 03	8	28 01	+0 02
4	8	30 40	3	8 10	+ 30
5	7	29 09	4	28 10	+0 99
6	4	29 84	4	27 85	+1 99
7	6	28 47	4	28 02	+0 45
8	6	30 31	3	27 66	+2 65
9	7	29	3	27 87	+1 88
10	9	30 1	3	28 10	+ 05
11	9	29 93	3	28 00	+1 93
12	6	29 39	4	27 80	+1 59
13	7	29 65	3	28 28	+1 37
14	10	9 41	3	28 40	+1 01
15	8	30 10	3	28 09	+2 01
16	9	29 51	4	28 27	+1 24
17	7	28 36	4	8 46	—0 10
18	8	29 28	4	28 49	+0 79
19	10	29 37	4	27 92	+1 45
20 21	8	29 11	4	28 05	+1 06
22	9	28 88	3	28 13	+0 75
25 26	6	29 39	5	28 01	+1 38
27	6	30 82	4	28 50	+2 32
28	7	29 56	4	29 27	+0 29
29 30	6	29 47	4	28 77	+0 70
N vr 1	7	31 17	3	28 75	+2 42
2 3	6	30 16	6	29 18	+0 98
4	4	31 01	3	28 83	+2 18
5	6	31 12	2	30 45	+0 67
11 12	7	33 36	6	34 00	—0 64
13	6	31 48	3	33 49	—2 01
15	4	32 65	3	33 44	—0 79
17	6	32 71	4	33 99	—1 28
18	5	33 35	4	33 39	—0 04
19	6	32 49	3	32 98	—0 49
20	8	32 35	4	33 31	—0 96
21	4	32 95	3	33 23	—0 28
22	7	31 81	4	3 64	—0 83
23	7	32 87	3	31 98	+0 89
2	7	32 78	4	32 38	+0 40
2(	8	3 26	4	31 90	+0 36
27	6	3 53	4	32 62	—0 09
28	9	32 07	3	3 84	—0 77
29	9	31 68	3	32 45	—0 77
30	8	31 08	4	32 14	—1 06
D emb r 1	4	31 25	4	31 41	—0 16
2	11	30 38	3	31 56	—1 18
3	10	30 00	3	31 98	—1 98
4	12	29 67	4	30 90	—1 23
5	8	30 55	3	31 31	—0 76
6	13	29 22	4	30 99	—1 77
7	10	29 95	4	31 16	—1 21
8	6	29 32	3	30 76	—1 44
9	4	29 56	3	30 54	—0 98
12	12	29 61	4	30 84	—1 23
13	7	29 39	4	31 09	—1 70
14	9	31 07	4	30 72	+0 35

1842	N f l	I d E by Sta	N f b	I d E by Refl t g C ll t	D ffe
D 16	10	+0 29 92	4	+0 30 54	—0 62
17	10	30 63	3	31 19	—0 (
18	14	30 11	4	31 02	—0 91
19	14	29 2	4	30 81	—1 6
20	8	30 06	3	31 20	—1 14
21	13	29 11	4	31 3	— 24
22	1	29 07	4	31 0	—1 98
23	16	29 93	4	31 0	—1 14
24	10	29 77	4	31 13	—1 36
25	11	29 04	4	31 2	—2 18
26	7	28 48	3	31 35	—2 87
27	8	28 04	4	31 01	— 97
28	10	29 90	4	30 94	—0 94
29 31	9	28 72	9	30 66	—1 94
1843					
J ry 3	11	26 37	3	30 7	—4 20
4	14	28 23	4	29 77	—1 51
5	13	27 98	4	30 21	—2 23
6	7	27 86	3	30 30	—2 44
7 9	12	27 10	9	29 8	—2 7
10 11	12	27 83	6	29 99	—2 16
12 17	14	27 96	21	29 8	—1 89
18 20	11	29 13	8	29 80	—0 67
21	12	29 79	3	29 83	—0 04
22	12	30 06	5	29 88	+0 18
23	10	28 97	3	29 97	—1 00
24 25	10	28 77		29 77	—1 00
26		28 71	2	29 63	—0 92
27	11	29 59	3	30 19	—0 60
28	12	29 14	3	29 93	—0 79
29	13	30 30	4	30 06	+0 24
30	14	29 31	5	30 16	—0 8
31	13	29 22	4	30 72	—1 50
F b y 1	7	29 03	3	31 13	—2 10
	12	29 00	4	30 69	—1 69
3	13	28 29	4	30 31	—2 0
4	9	28 87	3	30 6	—1 69
5 6	6	29 04	6	30 43	—1 39
7	13	27 83	4	30 26	—2 43
8	15	27 98	4	30 33	—2 35
9	12	27 57	3	30 07	—2 0
10	12	27 78	4	30 07	—2 29
11	12	28 23	3	30 44	—2 21
12	10	28 15	3	29 86	—1 71
13	14	26 78	4	30 47	—3 69
14	14	27 07	3	30 12	—3 0
15	12	27 77	4	30 45	— 68
16	10	27 25	4	29 98	— 73
17	10	26 38	4	30 32	—3 94
18	8	27 04	3	30 34	—3 30
19	9	26 95	2	29 91	— 96
20	12	27 07	4	29 75	—2 68
21	13	26 23	3	29 17	—2 94
22	12	25 71	3	28 43	—2 72
23	11	26 32	4	28 27	—1 9
24	12	26 49	4	28 65	—2 16

Index Error of the Mural Circle (*Continued*)

1843	No. of Obs.	Index Error by Stars	No. of Obs.	Index Error by Reflecting Collimator	Difference	1843	No. of Obs.	Index Error by Stars	No. of Obs.	Index Error by Reflecting Collimator	Difference
February 25	8	+0 25 73	3	+0 28 47	—2 74	May 14 18	12	+0 25 43	12	+0 26 87	—1 44
26	10	26 03	4	28 38	—2 35	24 30	12	31 12	13	32 28	—1 16
27	13	25 43	4	28 41	—2 98	31	7	32 88	2	31 47	+1 41
28	12	26 74	4	28 55	—1 81	June 1	7	32 23	3	31 46	+0 77
March 1	11	27 77	4	28 12	—0 35	2	9	32 73	4	33 19	—0 46
2	12	27 14	4	28 39	—1 25	3	7	32 43	4	33 07	—0 64
3	12	26 58	4	28 65	—2 07	4 7	11	33 20	11	33 95	—0 75
4	8	26 51	3	28 21	—1 70	8 9	8	32 67	7	34 68	—2 01
5	12	27 27	3	28 23	—0 96	10 11	7	33 65	5	34 49	—0 84
6	7	27 79	3	28 30	—0 51	12 16	12	33 82	15	34 37	—0 55
7	8	26 42	4	28 58	—2 16	17	8	34 41	4	34 41	—0 00
8 9	9	27 60	5	28 27	—0 67	21	8	33 60	4	34 59	—0 99
10 11	7	26 79	2	28 47	—1 68	23 26	7	33 96	10	35 18	—1 22
12	8	26 61	3	28 44	—1 83	27 28	9	33 56	5	34 72	—1 16
14	6	26 57	3	28 70	—2 13	29	5	31 08	3	34 80	—3 72
15	4	26 56	3	28 31	—1 75	30 July 1	7	30 52	6	34 01	—3 49
16	8	27 13	3	28 42	—1 29	21 27	8	33 78	19	33 91	—0 13
17 18	11	27 03	5	28 56	—1 53	August 1	7	31 69	3	33 98	—2 29
19	7	27 23	4	28 38	—1 15	3 14	14	32 49	35	34 31	—1 82
20	7	27 88	2	28 71	—0 83	22	15	32 52	4	34 19	—1 67
21	6	27 28	3	28 76	—1 48	23	13	33 66	4	33 91	—0 25
24	11	24 41	3	26 57	—2 16	25 29	17	33 30	3	33 97	—0 67
25	8	25 04	2	25 65	—0 61	Sept 1 6	11	34 99	7	34 95	+0 04
26 27	9	23 38	6	27 30	—3 92	7 9	18	33 67	0	34 95	—1 28
28 30	15	23 65	11	26 55	—2 90	10 12	12	33 13	9	33 63	—0 50
31	10	21 77	3	26 36	—4 59	13	15	33 68	4	33 92	—0 24
April 1	8	23 54	2	25 75	—2 21	14	15	32 91	3	34 05	—1 14
4 5	12	23 61	7	25 89	—2 29	15 17	8	33 21	10	34 19	—0 98
6	8	22 67	3	26 46	—3 79	18	11	32 36	4	34 55	—2 19
7	9	23 11	3	26 61	—3 50	19	6	33 40	4	33 73	—0 33
8	8	24 16	3	26 80	—2 64	20	5	33 32	8	34 01	—0 69
9	8	23 10	1	26 85	—3 75	21	5	32 35	3	34 17	—1 82
10	9	22 77	3	26 85	—4 08	22	7	31 67	3	33 49	—1 82
11 12	9	23 31	7	26 49	—3 19	23	12	32 52	3	34 06	—1 54
13	8	23 50	3	26 37	—2 87	24	9	32 10	4	33 92	—1 82
14	10	23 28	3	26 59	—3 31	25	13	32 23	4	33 48	—1 25
15	8	23 23	3	26 47	—3 24	26	7	32 20	3	33 33	—1 13
16	8	23 89	3	26 76	—2 87	28	17	32 21	4	33 92	—1 71
17	6	23 76	4	26 89	—3 18	29	13	32 66	4	33 39	—0 73
18	8	23 87	4	26 67	—2 80	30	12	31 64	3	33 44	—1 80
20 21	9	23 98	6	26 31	—2 33	October 1	4	33 95	3	33 11	+0 84
22	8	23 34	3	26 17	—2 83	2	11	33 40	4	33 15	+0 25
23	6	24 41	4	27 04	—2 63	3	6	32 85	3	33 19	—0 34
26	8	24 50	3	26 26	—1 76	4	12	32 72	4	33 52	—0 80
27	9	24 72	3	26 36	—1 64	5 6	6	33 48	6	33 31	+0 17
28	7	24 61	3	26 50	—1 89	7	5	34 45	3	33 50	+0 95
29	7	24 59	2	26 50	—1 91	11	8	34 10	2	34 11	—0 01
30	7	25 15	2	26 74	—1 59	12	14	33 61	4	34 24	—0 63
May 1	8	23 48	2	26 33	—2 85	13	11	33 81	4	33 60	+0 21
2	6	25 87	4	26 62	—0 7	14	1	33 44	3	33 53	—0 09
3	6	25 18	4	26 42	—1 24	15	7	34 48	3	33 47	+1 01
4	8	25 71	4	26 92	—1 21	17	9	33 97	4	33 77	+0 20
5 6	9	25 25	6	26 38	—1 13	18	8	34 75	3	33 44	+1 31
7	6	24 72	3	26 70	—1 98	19	7	—1 1 99	3	—1 4 83	+2 84
8 9	10	25 29	6	27 08	—1 79	20 21		53 04	4	—0 50 80	—2 24
11 13	9	24 64	9	27 67	—3 03	22	10	53 43	4	53 16	—0 27

Index Error of thf Mural Circle

1843	N f b	I d Err by Stars	N f b	I d Err by R fl ti g C ll m t	Diff	1844	N f b	I d Err by St	N f b	I d Err by R fl t g C ll m t	D ff
O tob 23	8	—0 53 65	3	—0 51 28	— 37	Ja u y 18	13	—0 55 31	3	—0 52 73	—? 58
24	12	54 06	4	52 61	—1 45	19	17	54 14	4	51 2	—2 62
25	12	54 27	4	52 14	—2 13	20	17	51 53	3	51 90	—2 63
26	7	54 54	3	50 60	—3 94	21	16	51 55	4	53 31	—1 4
31	5	53 15	3	52 23	—0 92	22	7	54 13	3	52 34	—1 79
Novembe 2	11	53 03	4	54 41	+1 38	3	17	54 42	4	53 51	—0 88
3	10	54 04	3	53 24	—0 80	24	19	54 77	4	52 79	—1 98
4	11	53 45	3	51 90	—1 55	25	20	55 ?5	4	53 78	—1 47
5 6	7	54 19	8	51 67	—2 52	26	20	57 36	4	4 98	—2 38
7	5	53 07	4	51 40	—1 67	27	14	57 64	4	55 42	—2
8	6	53 91	4	51 62	—2 29	28	15	57 37	4	56 49	—0 88
9 11	10	52 94	8	51 75	—1 19	29	5	57 77	3	53 44	—4 33
12 14	8	51 82	9	50 94	—0 88	30 F by 2	15	50 07	13	49 92	—0 15
15	7	51 85	4	50 55	—1 30	3	5	51 73	3	50 51	—1 2
16	8	52 95	4	51 64	—1 31	4	11	50 87	5	48 03	— 84
17	12	53 43	4	51 67	—1 76	5 6	10	49 63	5	49 22	—0 41
18	13	54 05	3	51 40	—2 65	7	12	50 75	4	50 30	—0 45
19	11	54 57	4	51 90	—2 67	8	11	51 31	3	49 0	—1 61
20 22	11	53 74	9	52 08	—1 66	9	9	52 21	3	49 32	—2 89
23	10	54 07	3	52 06	—2 01	10	8	53 96	3	51 7	—2 39
24	12	53 72	4	52 31	-1 41	11	11	5? 13	3	49 06	—3 07
25 26	12	53 65	6	51 16	—2 49	12 13	9	5 24	5	49 53	—2 71
27	12	54 50	3	51 18	—3 32	14	6	53 01	4	49 65	—3 36
28	15	54 32	4	2 43	—1 89	15	10	52 82	4	50 06	—2 76
29 30	5	53 64	6	52 42	—1 22	16	12	51 47	4	49 60	—1 87
December 7	5	51 18	3	49 45	—1 73	17	8	51 85	3	49 35	—1 90
9	11	48 99	3	48 53	—1 46	18	15	51 76	4	49 87	—1 89
10	8	50.25	4	47 81	—2 44	19	12	54 40	4	51 12	—3 28
12	8	51 00	4	48 72	—2 28	20	14	53 96	4	51 01	—2 9
13 14	15	51 96	7	49 70	—2 26	21	14	53 84	4	50 57	—3 27
15	9	52 67	3	49 01	—3 66	22	12	54 20	4	51 26	—2 94
16 17	11	53 43	6	49 60	—3 83	23	13	54 31	4	50 50	—3 81
18	15	53 74	4	0 38	—3 36	24	10	53 9?	4	0 31	—3 61
19 20	9	3 41	6	50 60	—2 81	25	11	54 02	4	50 41	—3 61
21	11	53 99	4	50 36	—3 63	26	9	53 66	4	0 77	—2 89
22	13	54 29	4	52 52	—1 77	27	6	54 37	4	51 36	—3 01
23 24	11	54 31	5	51 36	—2 95	28	9	53 18	4	51 01	—2 17
26	15	54 11	4	51 88	—? 23	29	9	54 87	4	51 28	—3 59
27	16	54 30	4	51 96	—2 34	Ma h 1	10	54 33	4	51 99	—2 34
28 29	11	55 27	7	51 45	—3 82	2	11	54 01	3	51 84	—2 17
30 31	10	53 62	6	51 48	—2 14	3	14	52 07	4	0 20	—1 87
1844						4	17	52 92	4	51 56	—1 36
J ny 1 2	15	51 99	5	52 42	+0 43	5	11	52 91	4	51 56	—1 35
3	15	3 45	4	52 01	—1 41	6	16	52 68	4	50 68	—2 00
4	11	53 01	3	51 76	—1 25	7	14	52 43	4	49 90	— 53
5	15	52 95	4	52 10	—0 85	8	11	52 99	4	50 86	—2 13
6	13	53 71	3	52 15	—1 56	9	10	52 40	3	50 53	—1 87
7	14	54 05	4	5 40	—1 65	10	9	53 11	4	50 26	—2 85
8	16	53 72	4	51 59	—2 13	11	12	53 47	4	50 76	—2 1
9	16	54 42	4	52 38	—2 06	12	9	54 20	4	50 86	—3 34
10	14	54 83	4	52 88	—1 95	13	9	53 0	4	51 86	—1 34
11	16	4 63	4	52 83	—2 30	14	7	2 88	4	51 16	—1 72
12	17	56 25	4	52 41	—3 84	15	9	51 90	4	51 13	—0 77
13	11	55 41	3	51 81	—3 60	16	7	52 09	3	51 02	—1 07
14 16	11	54 87	8	51 17	—3 20	17	12	52 04	4	51 37	—0 67
17	15	55 55	4	51 96	—3 59	18	11	52 13	4	51 62	—0 51

INDEX ERROR OF THE MURAL CIRCLE (Continued)

1844	N f b	I d Er by St	N f b	I d E ly Refl t g C llm t	D ff	1844	N f b	I d E by St	N f b	I d Err by R fl g C lli t	D ffe
M d 19	11	—0 52 11	4	—0 50 61	—1 50	M y 22 23	9	—0 53 81	7	—0 0 52	—3 29
20	11	52 40	4	51 05	—1 35	25	6	53 15	3	49 45	—3 70
21	12	52 36	4	51 44	—0 9	26	9	52 01	3	49 07	—2 94
22	8	52 05	2	50 75	—1 30	28	3	52 82	2	50 11	—2 71
23	11	53 00	3	50 99	—2 01	29	›	4 47	1	50 33	—4 14
24 25	8	52 33	6	50 94	—1 39	30	8	53 01	4	50 16	—2 85
26	9	53 66	4	49 73	—3 93	31	10	2 5	4	49 26	—3 29
27	4	53 16	4	50 58	— 8	J ne 1	7	51 63	4	49 09	—1 94
28	7	53 45	4	50 82	—2 63	2 3	9	52 38	6	50 27	—2 11
29	5	53 66	4	50 49	—3 17	4	4	1 7	3	49 69	—2 03
30	9	52 85	3	50 2	—2 33	5	7	51 31	4	48 96	—2 3
31	11	52 68	3	50 76	—1 92	6	6	51 75	4	49 62	—2 13
Ap l 1	10	52 56	4	50 49	—2 07	7	3	5? 94	3	0 20	— 74
2	10	52 78	4	50 19	—2 59	8	7	50 44	3	50 16	—0 28
3	7	52 49	3	50 76	—1 73	9	8	51 94	4	49 93	—2 01
4	10	52 90	4	50 86	—2 04	10	9	51 96	4	50 34	—1 62
5	5	52 94	4	50 21	—2 73	12	7	51 96	4	49 84	—2 12
6	6	52 48	3	50 95	—1 53	13	6	51 94	4	49 61	—2 33
7	10	53 85	4	50 91	—2 94	14	6	51 48	4	49 73	—1 75
8	3	54 7	3	50 54	—4 18	15	9	51 63	3	49 86	—1 77
9	10	5 84	4	50 39	—2 45	18	9	5 38		50 62	—1 76
10	10	53 32	4	49 98	—3 34	19	8	5 08		51 1	—0 93
11	11	52 98	4	50 30	—2 68	23 24	4	52 92	7	50 23	— 69
12	9	53 37	4	51 10	—2 27	2 7	11	2 76	9	50 71	—? 0
3	9	53 24	4	50 76	—2 48	28 29	4	52 89	6	50 56	—2 33
14	8	53 88	4	50 53	—3 35	July 1 3		2 48	9	50 60	—1 88
15	8	3 97	4	50 11	—3 86	4 5	10	5 28	7	50 28	—2 00
16	9	53 86	4	50 43	—3 43	11 15	10	52 44	7	51 63	—0 81
17	8	54 06	4	51 06	—3 00	17	10	52 89	3	50 3	—2 54
18	8	54 13	4	51 21	—2 9	20	5	51 81	2	50 56	—1 25
19	8	54 07	4	51 54	—2 53	23	8	51 13	3	49 50	—1 63
20	10	53 97	4	0 70	—3 27	2 6	4	51 29	4	49 86	—1 43
21	10	53 82	4	51 41	—2 41	27 28	8	51 27	5	49 77	—1 50
2	11	53 64	4	50 40	—3 24	Augu t 2	3	53 23	3	51 71	—1 52
23	9	53 68	4	50 89	—2 79	4 5	6	51 92	7	0 40	—1 5?
24	12	52 81	4	51 63	—1 18	6 7	4	53 91	6	51 20	—2 71
25	10	52 99	4	51 39	—1 60	9 10	5	51 99	6	52 47	+0 48
26	12	5? 92	4	51 36	—1 56	14 15	8	50 87	7	50 77	—0 10
27 28	10	53 51	7	51 12	—? 39	16	15	51 63	4	51 01	—0 62
29	5	5 94	4	51 74	—1 20	17	5	51 64	3	51 08	—0 56
30	12	51 59	4	51 12	—0 47	18	9	52 06	3	51 28	—0 78
M y 1	9	52 22	4	50 58	—1 64	19	7	51 74	3	0 83	—0 91
	8	52 46	4	51 38	—1 08	20	4	52 18	4	51 17	—1 01
3	12	5 76	4	50 94	—1 82	23	7	52 84	3	0 77	—2 07
4	12	53 22	3	51 22	—2 00	24 25	6	1 59	5	51 18	—0 41
5	6	53 32	3	51 25	—2 07	26	2	51 90	3	50 08	—1 82
6	8	53 47	3	50 26	—3 21	30 31	13	51 38	5	51 60	+0 22
9	5	53 95	3	50 83	—3 12	S pt 5 6	1	51 24	6	50 59	—0 65
10	8	52 47	4	50 93	—1 54	7	11	51 34	3	50 51	—0 83
11	4	52 49	2	50 51	—1 98	9	4	51 02	3	49 94	—1 08
12	10	52 43	3	50 13	—2 30	10	13	51 68	4	49 51	—? 17
13	10	53 95	3	51 05	—2 90	11	16	51 05	4	49 87	—1 18
14	10	53 06	3	50 68	—2 38	12	10	51 18	3	49 45	—1 73
15 16	6	53 60	6	51 27	—2 33	13 15	4	51 08	6	50 37	—0 71
17	5	52 93	3	50 31	—2 62	16 17	18	50 08	6	50 17	+0 09
18 19	12	5 10	7	51 08	—1 02	18 19	15	50 04	6	49 05	—0 99

INDEX ERROR OF THE MURAL CIRCLE (*Continued*)

1844	N f b	I d Err by St s.	N f b	I d Err by R fl ti g C llm t	Diff
Sept 20	9	—0 50 03	3	—0 0 71	+0 68
21	14	48 ,0	3	49 40	+0 ,0
22	12	48 46	4	49 9	+1 13
23	6	48 41	3	48 25	—0 16
24	14	48 17	3	48 66	+0 49
25	11	48 70	3	48 45	—0 25
26	10	48 37	3	48 2	—0 12
7	11	49 11	3	48 28	—0 83
28	14	0 2	3	48 68	—1 84
29	13	50 37	3	49 08	—1 29
30	18	50 04	4	48 30	—1 74
Octobe 1	14	50 31	4	48 79	—1 52
	13	49 50	4	48 26	—1 24
3	16	49 87	4	48 12	—1 5
4	5	30 31	3	28 64	—1 67
6 9	4	+0 35 63	11	+0 33 4	+2 0)
10 11	15	33 81	7	33 23	+0 58
12	6	34 72		34 86	—0 14
14	6	33 90	3	33 41	+0 49
15	4	34 28			
16 17	10	33 41	3	34 00	—0 59
18	13	33 77	3	33 77	0 00
19 20	13	32 ,7	5	34 57	—1 80
21	11	32 46	3	34 09	—1 63
22	14	33 00	2	35 14	—2 14
23	11	33 00	3	33 05	—0 05
24	14	32 41	3	31 83	+0 8
2	15	32 98	4	32 87	+0 11
26	12	33 34	4	32 59	+0 75
27	11	32 48	4	33 08	—0 60
28	10	32 63	3	32 19	+0 44
29	12	32 70	4	32 31	+0 39
30	15	32 51	4	33 85	—1 34
30 Nov 1	15	32 84	8	32 45	+0 39
2	6	32 91	2	33 41	—0 50
3	16	33 4	4	33 92	—0 50
4	11	32 52	4	34 26	—1 74
5	10	33 51	4	35 62	—2 11
6	8	33 12	3	35 21	—2 09
7	10	32 69	4	37 03	—4 34
8	6	32 73	3	36 98	—4 25
9	9	32 58	4	36 07	—3 49
10	7	32 33	4	35 68	—3 35
11	15	32 97	4	36 55	—3 58
12	10	33 19	3	36 69	—3 50
13	12	32 70	4	35 84	—3 14
14	15	32 76	5	35 98	—3 22
15	12	32 18	3	3 53	—3 35
16	11	31 77	3	35 62	—3 85
17	1?	32 32	3	35 17	— 85
18	12	32 46	4	35 41	—2 95
19	13	31 94	4	35 66	—3 72
20	12	31 90	4	35 72	—3 82
21	11	31 08	4	34 90	—3 82
22	14	31 18	4	33 02	—1 84
23 24	9	31 05	5	32 56	—1 51

1844	N f b	I d E by Star	N f b	I d E by R fl t g C llm t	D ff
Nov mb 25	6	+0 32 ,9	4	+0 33 93	—1 14
26 27	13	32 11	7	33 24	—1 13
28	13	31 09			
29	8	30 83	2	32 49	—1 66
30	10	31 08	3	32 51	—1 43
D c mb 1	9	30 50	4	3 62	—2 12
2	13	31 90	4	3 40	—0 50
3	14	30 53	4	3 09	—1 6
4	13	31 42	4	32 36	—0 94
5	9	31 58	5	32 77	—1 19
6 9	6	32 90	8	33 45	—0 5
10	9	32 02	4	3 61	—0 59
11	11	32 89	4	34 01	—1 12
12	12	32 88	4	33 88	—1 00
15	8	33 72	4	33 74	—0 02
16	2	35 35	2	34 70	+0 65
21	7	40 3	3	39 08	+1 27
22 24	8	40 13	9	42 01	—1 88
1845					
J u ry 1 2	7	49 07			
4	12	14 35		13 70	+0 65
5	17	15 80	4	1 44	+0 36
6	11	16 10	3	16 27	—0 17
7	7	16 20	4	16 84	—0 64
8	8	15 33	4	16 28	—0 95
9	12	15 83	4	1 70	+0 13
10	11	15 79	4	1 2	+0 57
11	11	14 69	3	14 96	—0 7
12	13	14 64	4	15 15	—0 1
13	6	14 29	4	14 90	—0 61
14	8	13 44	3	14 91	—1 47
15	12	1 99	4	13 33	—0 34
16	11	12 88	4	12 95	+0 03
17	10	11 85	3	11 90	—0 06
18	10	11 18	3	12 44	—1 26
19	11	11 16	3	12 01	—0 85
20	11	11 38	4	13 14	—1 76
21	6	10 11	4	1 1	—2 40
22	19	10 78	4	11 32	—0 54
23	17	10 16	4	11 42	—1 26
24	15	9 7	4	9 75	—0 18
2	11	9 34	3	9 61	—0 27
26	8	8 68	3	9 63	—0 95
27	10	9 30	4	9 74	—0 44
28	9	8 03	2	9 24	—1 21
29	11	8 60	4	8 84	—0 24
30	9	8 52	4	8 57	—0 05
31	15	8 24	4	8 38	—0 14
Febru y 1	10	8 39	4	8 94	—0 55
2	5	7 50	4	8 06	—0 56
3	6	8 01	4	8 39	—0 38
4	10	7 90	3	8 11	—0 21
5	11	6 34	3	7 20	—0 86
6	9	6 18	4	7 16	—0 98
7	8	5 43	3	5 65	—0 22
8	11	6 26	4	6 32	—0 06

Index Error of the Mural Circle (*Continued*)

184	No. of Obs.	Index Error by Stars	No. of Obs.	Index Error by Reflecting Collimator	Diffce
February 9	16	+0 5 93	4	+0 6 49	—0 56
10	16	5 5	4	89	—0 34
11	14	4 81	4	5 65	—0 84
12	11	3 80	4	6 10	—2 30
13	13	4 42	4	4 85	—0 43
14	9	3 14	3	5 13	—1 99
15	9	3 36	4	3 99	—0 63
16	8	3 53	4	2 97	+0 56
17	9	3 16	4	3 94	—0 78
18	10	3 07	4	3 98	—0 91
19	10	3 13	4	3 58	—0 45
20	14	2 92	4	3 62	—0 70
21	12	3 02	4	3 28	—0 26
22	11	2 38	4	2 91	—0 53
23	14	1 84	4	2 77	—0 93
24	13	1 48	4	0 75	+0 73
25	13	1 45	4	1 09	+0 36
26	16	1 45	4	0 90	+0
27	13	1 15	4	0 84	+0 31
28	13	0 98	4	1 36	—0 38
March 1	14	0 19	3	0 76	—0 27
2	13	0 84	3	0 79	+0 05
3	14	0 47	3	2 05	—1 8
4	14	1 43	3	3 10	—1 67
	10	2 12	3	2 05	+0 07
6	16	3 16	4	2 74	+0 42
7	14	3 28	4	1 69	+1 59
8	11	1 69	3	0 31	+1 38
9	14	1 78	4	1 04	+0 74
10	11	2 01	4	1 93	+0 08
11	10	2 77	4	1 82	+0 95
12	10	1 11	4	0 73	+0 38
13	6	1 49	3	2 19	—0 70
14 16	9	1 69	9	1 60	+0 09
17	9	1 88	3	1 30	+0 58
18 19	15	1 67	8	1 40	+0 27
20	10	1 79	5	1 4	+0 34
21	1	1 10	5	1 77	—0 37
22	5	1 74	2	1 45	+0 29
23	12	2 48	5	1 33	+1 15
24	10	2 7	3	1 01	+1 56
25	13	2 28	5	2 18	+0 10
26	12	2 46	4	1 62	+0 84
27	11	1 36	4	1 4	+0 42
28	7	1 79	3	0 90	+0 89
29	10	1 93	3	1 03	+0 90
30	11	2 91	4	2 37	+0 54
31	11	2 87	4	1 88	+0 99
April 1	11	2 87	4	1 41	+1 46
2	7	2 18	4	1 09	+1 09
3	11	2 21	4	2 09	+0 12
4	13	2 11	4	2 51	—0 40
5	13	2 16	4	2 46	—0 30
6	9	2 66	4	2 34	+0 32
7	14	3 62	4	2 78	+0 84
8	11	3 07	4	2 46	+0 61
April 9	13	+0 7 50	4	+0 5 48	+2 02
10	12	8 01	4	7 29	+0 72
11	8	8 19	4	7 54	+0 65
12	10	8 54	3	8 05	+0 49
13	6	7 78	4	7 55	+0 23
14	8	7 98	4	10 10	—2 12
15	7	7 32	4	7 79	—0 47
16	[illegible]	7 99	4	9 80	—1 81
17	8	7 43	4	7 92	—0 49
18	10	7 7	4	8 20	—0 4
19	9	8 41	4	8 00	+0 41
20	11	8 15	4	7 72	+0 43
21	10	8 6	4	8 18	+0 44
22	9	7 93	4	7 83	+0 10
23	11	6 99	4	7 64	—0 65
24	10	8 34	4	7 42	+0 9
25	10	24 30	3	24 09	+0 21
26	11	23 82	4	24 03	—0 21
27	9	25 03	4	25 83	—0 80
28	9	23 51	4	25 34	—1 80
29	11	24 45	4	24 85	—0 40
30	9	22 1	4	23 67	—1 16
May 1	7	22 33			
2	10	22 38	4	22 07	+0 31
3	8	24 52	3	24 36	+0 16
4	9	26 00	5	25 66	+0 34
5 7	8	27 97	11	27 01	+0 96
8 11	12	38 40	4	39 06	—0 66
12	10	38 49		40 79	—2 30
13 15	10	37 97	8	39 20	—1 3
16	4	38 11	3	38 69	—0 5
17 18	7	38 79	7	38 29	+0 0
19 21	18	38 03	9	38 48	—0 4
22	10	38 66	4	39 13	—0 47
23	12	38 79	5	38 88	—0 09
24	4	39 14	4	38 78	+0 36
26	7	38 29	3	38 32	—0 03
27	11	38 39	4	37 95	+0 44
28 30	7	38 92	12	37 94	+0 98
31	7	39 16	4	38 92	+0 24
June 1	9	3 73	4	38 77	—1 04
2	9	38 11	4	38 38	—0 27
3	11	38 72	4	37 97	+0 75
4	9	39 45	4	38 49	+0 96
5	7	38 47	3	38 37	+0 10
6	11	38 29	4	38 66	—0 37
7	9	38 18	3	38 22	—0 04
8	9	38 43	4	38 90	—0 47
9	10	38 82	4	38 94	—0 12
10	7	38 56	3	37 88	+0 68
11	4	38 55	3	37 65	+0 90
12	8	39 28	3	37 0	+1 78
13	7	38 33	3	38 28	+0 05
14 15	2	39.96	5	37 96	+2 00
16	11	39 25	3	38 19	+1 06
17	5	38 67	4	38 32	+0 35

INDEX ERROR OF THE MURAL CIRCLE (*Continued*)

1845	N f b	I d Err by Sta	N f b	I d E by Refl ti g C llim t	D ff
Jun 23 27	8	+0 39 00	17	+0 37 65	+1 44
28 30	8	38 97	11	37 66	+1 31
July 1 3	12	38 22	10	38 04	+0 18
4	8	38 80	5	37 85	+0 95
5 6	10	37 66	7	37 73	—0 07
7	9	37 19	4	38 22	—1 03
8 11	10	38 14	14	38 64	—0 50
12 14	8	38 25	10	38 25	0 00
15 17	9	39 20	10	37 91	+1 29
18 23	9	37 94	13	38 17	—0 23
24	10	37 2	3	37 51	+0 01
26 27	10	39 75	2	37 57	+2 18
28 29	6	39 25	4	37 73	+1 52
30 31	8	37 85	4	37 93	—0 08
Augu t 1	7	38 68	3	38 01	+0 67
2 6	6	38 83	13	37 91	+0 92
8 11	8	38 80	14	37 48	+1 32
12	9	39 93	4	37 66	+2 27
13	5	39 13	3	37 51	+1 62
15	4	38 44	4	36 92	+1 52
16	4	39 22	3	37 38	+1 84
17 18	5	38 67	6	37 27	+1 40
19-20	3	38 65	6	37 43	+1 22
21	10	38 59	4	37 61	+0 98
22	9	38 67	3	37 00	+1 67
23	5	40 08	4	37 23	+ 85
24	3	38 24	3	37 07	+1 17
26	11	37 78	4	35 89	+1 89
27	11	37 54	4	36 57	+0 97
28	10	37 56	4	36 27	+1 29
29	8	38 05	4	35 97	+2 08
30	11	37 81	4	35 95	+1 86
31	11	37 81	4	36 88	+0 93
S ptember 1	6	37 01	3	36 48	+0 53
2	15	45 53	4	43 30	+2 23
7 8	6	4 50	9	44 68	+0 82
9	6	46 52	4	46 10	+0 42
10	10	4 78	5	45 54	+0 24
11	9	45 71	4	4 44	+0 27
12	10	47 23	3	45 72	+1 51
13	10	46 35	4	4 69	+0 66
14	12	46 61	5	46 05	+0 56
17	5	44 35	5	44 58	—0 23
18 19	9	44 23	8	45 01	—0 78
20	10	45 63	8	44 35	+1 28
21 22	7	45 39	8	45 36	+0 03
23 24	15	46 49	7	45 50	+0 99
25	12	46 35	5	45 24	+1 11
26	9	45 67	4	45 80	—0 13
27	12	46 39	2	46 78	—0 39
28	6	46 09	5	46 66	—0 57
29	16	45 88	4	45 65	+0 23
30	12	46 09	4	46 18	—0 09
October 1	9	46 46	4	45 35	+1 11
2	8	45 47	4	45 39	+0 08
3	12	45 61	4	45 31	+0 30

1845	N f b	I d E by St	N f b	I d E by R fl ti g C ll m t	D ffe
O t b 5	10	+0 43 26	3	+0 45 27	—2 01
6	9	43 32	3	44 52	—1 20
7	11	42 52	4	44 33	—1 81
8	9	43 13			
9	7	1 11 69	4	1 10 64	+1 05
10	7	11 14	3	9 89	+1 5
11	8	11 77	3	9 38	+2 39
15	10	15 86	3	13 85	+2 01
17 19	5	15 85	12	14 00	+1 8
20	10	14 87	4	13 37	+1 0
21	5	15 53	3	13 12	+ 41
22	7	15 62	3	12 95	+2 67
23	8	15 44	4	14 41	+1 03
24	9	15 03	5	13 60	+1 43
25	11	13 30	4	12 78	+0 5
26	12	13 63	4	12 56	+1 07
27	7	13 83	4	12 61	+1 22
28	9	12 86	3	11 81	+1 05
30	8	13 97	4	12 57	+1 40
31	7	14 04	3	11 70	+2 34
N vemb r 1	10	13 79	4	12 26	+1 53
2	8	14 17	5	12 2	+1 92
3	7	13 12	4	12 00	+1 12
4	8	12 75	4	10 98	+1 77
5	14	13 03	4	11 31	+1 72
6	9	11 10	5	11 64	—0 54
7	11	11 64	4	11 36	+0 28
8	8	11 77	4	11 59	+0 18
9	7	11 88	5	11 59	+0 9
10	10	12 27	5	11 89	+0 38
15	8	12 73	3	11 80	+0 93
16	7	12 40	5	11 60	+0 80
17	7	11 63	5	10 59	+1 04
18	5	9 91	5	11 00	—1 09
19	9	10 54	3	10 80	—0 26
21 24	7	11 87	11	11 61	+0 23
25	9	11 59	5	12 1	—0 56
26	9	11 24	4	12 45	—1 21
27	8	10 20	4	11 88	—1 68
28	4	10 53	4	12 42	—1 89
29	9	10 79	8	12 44	—1 65
30	6	10 74	8	11 38	—0 64
D mb r 1	8	11 31	4	11 42	—0 11
4	7	13 15	5	12 26	+0 89
5	7	12 45	5	12 32	+0 13
6	5	12 34	2	11 87	+0 47
9	7	0 46 81	3	0 46 30	+0 51
10	6	46 92	3	46 43	+0 49
11	9	45 64	5	46 64	—1 00
12 13	5	46 16	9	45 65	+0 51
14 15	3	47 03	7	46 16	+0 87
17	7	46 32	4	46 30	+0 02
18	9	45 54	5	45 56	—0 02
19	10	45 00	4	44 92	+0 08
21	10	46 45	3	44 97	+1 48
22 23	10	45 81	7	45 58	+0 23

INDEX ERROR OF THE MURAL CIRCLE (Cont nu d)

1845	N f b	I d Err by St	N f b	I d E by Refl t g C ll m t	D ff	1846	N f b	I d Err by Sta	N f b	I d Err by R fl t g C llm t	Diff
D 24 28	10	+0 46 45	11	+0 46 47	—0 0	Fl y 28	12	+0 44 73	4	+0 46 09	—1 36
29	5	46 07	2	46 25	—0 18	M l 1	16	46 31	5	46 92	—0 61
30 31	8	4 89	2	46 32	—0 43	2	17	47 0	5	47 04	—0 02
1846						3	18	47 80	5	47 75	+0 05
J y 1 2	9	45 15	7	45 45	—0 30	4	17	48 95	5	47 93	+1 02
3	6	42 76	4	44 90	—2 14	5	17	48 64	4	49 17	—0 83
4	8	43 4	5	43 83	—0 41	6	15	48 44	5	48 78	—0 34
5	9	42 91	4	43 75	—0 84	7	11	48 24	3	18 77	—0 53
6	8	42 84	5	43 88	—1 04	8	14	48 26	5	49 54	—1 28
9	3	44 03	5	44 83	—0 80	9	15	48 29	4	48 14	+0 15
10	6	11 68	4	43 81	— 13	10	16	47 99	4	48 73	—0 74
11	11	41 50	4	42 80	—1 30	11	18	4(86	5	48 00	—1 14
12	8	41 86	4	4° 25	—0 39	12	9	46 38	5	48 00	—1 62
13	6	40 93	5	41 5	—0 62	13	10	46 48	5	46 47	+0 01
14	9	40 59	5	40 74	—0 15	14	11	47 86	3	48 71	—0 85
15	7	39 62	3	39 61	+0 01	15	9	48 08	4	48 69	—0 61
16	9	41 77	5	40 82	+0 95	16	12	48 27	5	48 43	—0 16
17	6	46 77	3	46 82	—0 05	17	10	47 28	5	49 00	—1 72
18	14	45 00	4	45 46	—0 46	18	9	48 08	5	48 06	+0 02
19	4	44 00	4	44 21	—0 21	19	9	47 41	5	47 06	+0 35
20	10	47 29	5	47 31	—0 0	20	13	46 90	4	47 73	—0 83
21	13	47 51	5	46 52	+0 99	21	8	48 40	4	47 60	+0 80
22	13	46 22	5	46 25	—0 03	22	8	47 72	4	47 73	—0 01
23	12	45 06	5	44 11	+0 9	3	15	47 67	4	47 67	0 00
24	7	44 09	2	44 19	—0 10	24	13	47 31	5	48 02	—0 71
2	13	15 11	5	44 68	+0 43	25	12	47 16	5	47 28	—0 12
26	14	41 0°	5	44 51	—0 49	26	14	46 81	5	47 47	—0 66
27	14	44 40	5	44 87	—0 47	27	15	47 91	4	48 32	—0 41
28	10	44 69		4ʋ 24	—0 55	28	11	46 44	4	47 98	—1 54
29	11	45 17	5	45 07	+0 10	29	14	47 37	5	48 14	—0 77
30 31	10	4 12	7	44 76	+0 36	30	13	48 17	5	48 64	—0 47
Fb a y 1	10	43 84	3	45 10	—1 26	31	13	54 56	5	54 55	+0 01
2	11	44 23	5	44 20	+0 03	April 1	12	55 04	4	54 59	+0 45
3	12	44 44	4	44 25	+0 19	2	8	53 68	5	53 57	+0 11
4	9	44 73	4	44 94	—0 1	3	14	54 07	4	53 82	+0 25
5	10	44 90	3	44 54	+0 36	4	11	52 67	3	52 49	+0 18
6	12	43 9	3	44 24	—0 32	5	14	52 13	4	53 17	—1 04
0	14	45 15	5	45 70	—0 55	6	16	52 84	5	53 29	—0 45
10	16	45 47	5	45 70	—0 23	7	14	52 35	5	53 99	—1 64
11	16	46 24	5	45 74	+0 50	8	15	52 19	5	53 29	—1 10
12	13	46 38	4	45 90	+0 48	9	13	5° 59	4	52 98	—0 39
13	11	46 51	3	46 23	+0 28	10	10	52 64	5	52 80	—0 16
14	7	47 80	3	46 40	+1 40	11	10	53 22	4	53 46	—0 24
15	13	45 26	5	45 66	—0 40	12	10	53 37	3	54 °4	—0 87
16	7	45 81	4	45 63	+0 18	13	9	52 36	5	53 31	—0 95
17	10	44 90	4	46 36	—1 46	14	10	52 90	4	3 83	—0 93
18	14	45 32	5	46 39	—1 07	15	10	52 85	4	f4 39	—1 54
19	16	45 14	5	45 90	—0 76	16	9	53 09	5	53 22	—0 13
20	10	46 57	5	46 92	—0 35	17	9	53 82	5	54 19	—0 37
21	12	43 46	4	44 30	—0 84	18	8	52 76	3	53 40	—0 64
22	18	43 56	5	43 67	—0 11	19	3	53 89	3	55 41	—1 52
23	18	42 98	5	44 34	—1 36	20	10	54 41	5	53 84	+0 57
24	13	45 74	4	44 90	+0 84	21	10	53 35	4	53 86	—0 51
25	17	45 43	5	45 35	+0 08	22	14	53 06	5	53 54	—0 48
26	15	45 68	5	45 57	+0 11	23	12	52 28	4	53 87	—1 59
27	15	45 25	5	46 21	—0 96	24	7	52 70	5	52 75	—0 05

Index Error of the Mural Circle (Continued)

1846	No of Obs	Index Error by Stars	No of Obs	Index Error by Reflecting Collimator	Diff	1816	No of Obs	Index Error by Stars	No of Obs	Index Error by Reflecting Collimator	Diffs
April [illegible]	11	+0 53 34	3	+0 3 5	+0 09	August 15 16		+0 58 83	4	+0 57 19	+1 69
6	14	53 21	4	4 44	—1 23	17	1	9 31	4	7 4	+ 07
27	13	3 80	5	4 48	—0 68	18	9	8 79	3	58 45	+0 34
28	11	3 36	4	51 38	—1 0	19	4	58 (	3	58 39	+0 3
29	8	54 16	4	4 66	—0 0	0	7	) 3	4	57 50	+1 82
30	9	54 01	4	54 4	—0 23	21 2	8	57 81	6	5 07	+0 74
May 1	10	54 52	5	4 31	+0 1	24	16	78	4	57 7	+0 06
2	10	54 7	4	55 24	—0 2		13	58 03	4	7 5	+0 51
3	10	54 34	4	54 73	—0 39	(	9	57 61		5 06	+0 5
4	9	4 68	4	54 0	+0 18	7	8	57 9	3	57 41	+0 38
5	11	54 72	4	4)0	—0 18	8	8	7 91	3	56 48	+1 43
6	12	54 78	4	54 72	+0 06	9		58 73	2	57 [illegible]	+1 44
7	11	54 98	5	4 34	+0 64	30 31	6	9 03	6	56 72	+2 31
8	9	4 86	4	54 83	+0 03	September 7	9	57 62	11	6 70	+0 92
9	9	54 86	3	54 63	+0 3	9	8	6 83	3	56 48	+0 3
10	13	54 64	4	51 (0	+0 01	10 11	17	57 76	9	57 28	+0 48
11	11	54 80	4	5	—0 42	1	10	5 1	3	57 53	—0 38
12	12	5 15	4	54)8	+0 17	14	11	7 69	3	56 83	+0 86
13	6	54 7		03	—0 31	1	12	6 9	4	57 0	—0 8
14	9	54 77	5	96	—1 1)	17		57 8	3	56 50	+1 08
15	8	4 80		4 48	+0 32	18	8	57 70	3	58 0	—0 0
16	9	5 31	4	54 94	+0 37	2?	7	56 80	4	56 C3	+0 17
17 19	6	34	12	54 60	+0 74	23	10	57 23	4	57 05	+0 18
20	11	5 79		4 24	+1 5	24	18	56 96	4	7 16	—0 0
21 6	8	4 66	17	55 23	—0 7	25	14	56 1	5	7 0(	—0 01
27	4	67		53 78	+1 89	26 27	1	56)0	6	00	—0 10
29 31	11	44	9	5 27	+0 17	28	14	(68	5	57 0	—0 37
June 1 3	10	5 30	9	54 91	+0 39	29	17	57 12		5(8	+0 7
4	4	54 3	4	51 41	—0 18	30	9	56 C6	3	7 0	—0 3(
		54 3	3	54 16	+0 07	October 1	14	5(75	5	( )0	—0 1
6	4	54 1	2	3 94	+0 7	2	7	5(01	4	6)0	—0 8)
7	9	5 3	3	4 86	+0 46	3	11	56 76	?	5 8	+0 91
8 9	6	53 8	8	1 1	—0 (0		7	5 74	5	6 38	—0 61
10 11	5	5 0	8	54 36	+0 6(	6	)	56 8	2	56 7	+0 01
12	5	54 67	3	54 71	—0 01	7	13	56 70	4	5(41	+0 29
14	8	5 01		54 85	+0 16	8	4	1 2 4	2	1 3 39	—0 (
15	9	55 79		55 09	+0 70	9	9	2)9	4	2 08	+0)1
16 17	4	55 0	6	54 6	+0 19	10	10	2 48	3	1 59	+0 8)
18 19	4	54 95	7	55 30	—0 3	12	7	2 07	4	? 49	—0 42
21	4	4 99	3	55 09	—0 10	13	11	2 07	5	1 80	+0 27
23 30	4	4 38	6	54 42	—0 04	)4	10	2 55	4	3 15	—0 60
July 2	5	5 61	3	54 15	+1 46	1	10	4(	5	3 12	—0 67
3	6	5 78	3	54 96	+0 82	16	8	2 21	3	2 73	—0 (2
4	5	56 6	3	55 81	+0 7	22 3	16	1 42	7	1 78	—0 36
5	10	6 09	4	55 64	+0 15	24	11	0 59 91	3	59 27	+0 64
7	13	56 31	5	54 32	+1 99	2(	12	59 67	5	59 (5	+0 02
8	9	56 50	4	5 01	+1 49	27 8	10	58 99	8	59 43	—0 44
9	5	55 55	4	5 28	+0 27	29	10	57 86	4	57 46	+0 40
10 20	5	7 52	37	56 03	+1 49	30	9	57 21	5	57 43	—0 22
21 27	11	57 30	21	6 80	+0 50	31	8	59 19	3	58 81	+0 38
29 30	13	57 30	8	6 91	+0 39	November 2	10	57 60	5	57 30	+0 30
August 1	4	57 54	2	7 66	—0 12	3	11	5 87	4	57 21	+0 66
2 3	4	57 13	7	57 43	—0 30	4	8	56 89	4	56 36	+0 53
5	3	56 7	3	56 84	—0 27		7	57 68	4	57 07	+0 61
10	10	58 54	5	56 8	+1 72	6	9	56 85	4	56 99	—0 14
11	8	58 21		7 07	+1 14	7	4	55 53	3	56 34	—0 81

INDEX ERROR OF THE MURAL CIRCLE (Continued)

1846	N f b	I d Err by Sta	N f b	I d E by Refl t g C llm t	D ff	1847	N f b	I d I by St	N f b	I d L l R fl g C ll t	D fl
No mb 9	6	+0 54 46	4	+0 55 99	—1 53	F b y 17	12	+0 57 71	4	+0 56 66	+1 08
10	9	55 60	5	56 22	—0 62	18	14	57 57	4	56 77	+0 80
11	6	56 35	4	56 86	—0 51	19	11	7 77	4	58 11	—0 34
12	3	57 33	2	56 62	+0 71	2›	10	87	1	(31	—0 44
14	7	56 47	3	7 03	—0 56	3	14	56 16	4	5(11	+0 0
16	5	54 48	3	56 07	—1 59	21	15	5ƒ 9	4	5 77	+0 15
17	11	54 83	3	5 00	—0 17	2	16	6 0	1	5 8	+0 17
18	8	55 54	5	56 38	—0 84	26	13	5 28	4	5(30	—1 02
19	5	56 16	5	56 1	+0 01	27	13	54 87	3	1 83	—0 0
20	5	55 84	3	54 0	+1 34	M rch 1	17	5 73	1	b	+0 17
28 30	11	1 3 22	8	1 4 28	—1 06	2	(	56 69		5(8	—0 09
De mb 1	9	1 96	2	2 9›	—0 96	3	10	6 86	4	6 16	+0 70
2	4	1 34	4	1 81	—0 50	4	13	79	3	6 21	—0 42
7	9	6 24	4	4 72	+1 5	5	1	57 1	5	55 51	+1 64
8	10	6 75	4	7 39	—0 64	(	1	6 36	3	56 45	—0 09
9	8	6 45	4	6 15	+0 30	7 8	14	6 93	8	(54	+0 39
10 11	11	7 31	8	7 87	—0 56	9	16	6 37		6 12	+0 2
12	7	6 13	4	5 18	+0 95	10	11	6 39	1	› 91	+0 48
14 18	11	5 05	11	5 38	—0 33	11	18	55 13	5	18	—0 0
19 21	10	7 16	9	7 05	+0 11	1	13	ƒ 26		3 08	+1 28
22	10	7 48	2	6 91	+0 7	13	9	1 60	4	3 30	+1 30
1847						1 16	6	(28	9	1 82	+1 46
Jan ry 4	8	5 41	5	4 08	+1 33	17	7	56 3		14	+0 88
5	7	3 98	4	4 1	—0 44	18	12	5 73		3 96	+1 77
6	7	4 59	3	4 11	+0 18	19	J	55 8	4	1 38	+1 14
7	8	4 20	3	3 6ƒ	+0 4	20 22	10	5 0	11	1 (	+0 40
8	10	3 87	5	3 3	+0 2	23	14	54 83	ƒ	1 36	+0 47
9	7	3 56	3	3 3	+0 24	24	13	5 68	5	54 32	+1 36
10 11	9	2 27	7	2 11	+0 16	25	10	6 02		1 1	+1 90
12	12	2 11	5	0 88	+1 23	26	12	56 23		30	+0 93
13	12	1 28	4	0 2	+0 76	27	11	57 02	4	5 48	+1 4
14	12	1 40	4	0 29	+1 11	28 29	15	56 73	8	55 8	+0 88
15	12	0 57	4	0 36	+0 1	30	7	55 6	1	55 83	—0 18
16	11	1 26	3	0 08	+1 18	31	11	5 88	ƒ	55 60	+0 28
17 18	13	1 61	5	0 90	+0 61	Apr l 1	10	55 91	4	55 33	+0 58
19	12	1 80	5	0 29	+1 1	2	12	5 34	4	5 06	+0 88
20	15	0 80	5	0 9 82	+0 98	3	8	55 86	3	56 14	—0 28
21	14	0 08	5	59 48	+0 60	5	1	5 8	4	5 91	—0 13
22	7	0 9 62	4	58 42	+1 20	6	11	56 00	4	55 29	+0 71
23 24	11	1 0 17	0	59 24	+0 93	7	11	5 81	4	55 79	+0 02
2	19	0 59 59	5	59 28	+0 31	8	8	5ƒ 43	4	29	+0 14
26	13	0 58 99	4	58 96	+0 03	9	6	56 22	5	55 18	+0 74
27	13	0 59 66	5	58 03	+1 63	10	8	5 51	3	ƒ 45	+0 06
28	9	1 0 17	5	59 16	+1 01	11 12	6	5 98	5	55 70	+0 28
29	7	1 1 02	5	59 51	+1 51	13	8	5 77	4	56 03	—0 26
30 31	12	0 58 98	6	59 40	—0 42	14	7	5 65	4	56 00	—0 35
F bruary 1	12	0 58 64	5	57 91	+0 73	15 18	6	5 56	11	55 26	+0 30
2 3	8	1 0 05	7	58 83	+1 22	19	5	56 83	3	54 86	+1 97
4	13	0 59 28	5	59 10	+0 18	20 21	10	55 75	7	5 53	+0 22
5	6	1 0 12	3	59 78	+0 34	22	7	5 4	4	6 b	—1 10
6	5	0 59 41	2	57 93	+1 48	23	9	56 45	4	55 63	+0 82
9 11	7	59 32	9	59 35	—0 03	24 26	12	55 67	8	55 27	+0 40
12	10	58 83	4	58 83	0 00	27	9	54 9	4	5 7	—0 98
13	12	58 66	3	58 25	+0 41	28	6	54 22	4	54 4	—0 20
15	11	57 64	4	57 18	+0 46	29 30	9	55 78	7	55 64	+0 14
16	14	57 02	4	56 01	+1 01	M y 1	10	56 89	4	54 96	+1 86

INDEX ERROR OF THE MURAL CIRCLE (*Continued*)

1847	No of Obs	Index Error by Stars	No of Obs	Index Error by Reflecting Collimator	Diff
May 3	10	+0 6 04		+0 54 32	+1 72
4	9	6 53	4	5 19	+1 34
5 6	7	57 86	8	54 37	+3 49
7	9	56 36	5	54 3	+2 01
8	8	56 43	3	54 11	+2 32
10	7	55 98	3	5 78	+0 20
11 12	10	56 6	9	5 81	+0 81
13	7	56 54	4	55 92	+0 62
14	9	6 73	5	55 85	+0 91
15	8	55 75	4	5 85	—0 10
17	8	57 43	3	54 8	+2 8
18	7	55 7	5	55 58	—0 01
19	7	57 10	4	55 72	+1 38
20	11	56 63	5	56 67	—0 04
21	10	56 23	5	5 78	+0 45
22	10	5 28	3	55 9	—0 31
25	9	55 27		55 40	—0 13
26	11	4 9	5	16	—0 51
June 1 2	5	54 57	6	53 36	+1 1
3 9	4	4 92	15	54 40	+0 52
11	6	5 11	8	52 80	+2 31
12 15	7	5 62	9	53 30	+2 32
18	4	55 31	3	53 86	+1 45
19 29	4	54 65	2	2 98	+1 67
July 5 6	4	54 59	6	53 24	+1 35
7	10	5 8	5	53 21	+2 61
8	5	6 76	4	53 35	+3 41
9 13	7	56 4	16	1 08	+2 46
15	2	53 70	4	54 03	—0 33
19	12	55 09	5	53 72	+1 37
20	1	65	4	3 41	+2 24
21 22	3	5 24	7	4 13	+1 11
30 Aug 5	3	6 91	4	3 91	+3 03
9	10	3 99	4	53 7	+0 24
10	5	5 35	3	54 31	+1 04
13 16	5	5 18	3	3 74	+1 44
17	12	54 79	4	53 13	+1 66
19	13	54 97	4	53 83	+1 14
20	5	5 15	3	54 07	+1 08
21	13	5 08	2	54 97	+0 11
23 25	14	54 75	9	54 2	+0 53
26	11	54 97	4	53 78	+1 19
Sept 7 8	8	54 92	7	54 03	+0 89
9 11	11	55 10	9	54 03	+1 07
17	5	54 30	5	53 59	+0 71
18	9	55 17	2	53 40	+1 77
20	9	54 81	5	54 10	+0 71
21 22	8	56 04	6	53 80	+2 24
24	9	55 27	8	3 92	+1 3
25	4	54 45	2	53 21	+1 24
27 30	6	55 02	4	54 15	+0 87
October 4	12	55 41	2	53 81	+1 60
5	6	55 56	2	3 61	+1 95
6	7	55 08	3	53 31	+1 77
7	12	54 88	4	53 79	+1 09
8 9	5	53 52	4	54 52	—1 00
October 11	9	+0 54 42	3	+0 54 45	—0 03
15	8	55 84	4	54 58	+1 26
16	9	56 00	2	54 87	+1 13
18	4	57 13	2	55 02	+2 11
19	4	56 33	3	54 99	+1 34
20	6	5 73	4	54 85	+0 88
21	3	57 10	2	54 4	+2 36
22	5	58 38	2	56 13	+2 25
25	3	58 54	4	55 39	+3 15
26	7	57 06	4	55 24	+1 82
28	2	56 51	2	56 4	—0 03
29	4	58 16	2	57 9	+0 57
November 4	8	1 3 78	1	1 2 82	+0 96
5	7	4 52	5	3 9	+0 60
6	11	5 31	3	5 41	—0 10
7 8	7	5 12	4	4 81	+0 31
9	11	4 83	4	4 46	+0 37
10	8	4 65	3	4 69	—0 04
11	8	5 33	3	4 55	+0 78
13	4	4 38	3	5 12	—0 74
14	2	5 36	1	6 22	—0 86
15	11	3 95	5	4 8	—0 63
16	8	4 13	5	4 14	—0 01
18	2	4 89	3	5 3	—0 34
19	2	2 82	3	4 2	—1 43
20	8	3 49	3	3 64	—0 15
23	8	4 69	4	5 17	—0 48
24	4	4 60	2	4 60	0 00
27	10	5 40	4	4 16	+1 24

NOTES FROM THE MURAL CIRCLE OBSERVATION BOOKS

The followmg Memoıanda copied from the Mural Cııcle Observatıon Books will ın several ınstances explaın the causes of sudden alteratıon which have taken place ın the Index Erroıs thus—

1838 J nu y 23 d	Clean ed and adjust d the M c oscop s
1838 April 24th	T und all the wı es b ken without any cause to explain how tl ey me o p t n w s t
1838 S pt mb 10th	I took tl e Cı cle out cl aned the ax s and re adjusted the Micros pes
1838 S pt nl 16th ı d 23 d	With tl e assistance of J Cald tt Esq th Superıntendent of the T va drum Observatory I unclamped tl e Telesc pe from th C l and r xamıned tl er ors of d v sion on the Colli matıo p nc pl down to v ry 5 d gr es
1839 S pt mb 3 d—15th	I un lamped the T lescope f om th Circl with a view to the still f ther exam nat n f the e r rs of d vis on
1839 N nb 30tl 1840 Jı u y 14th	The Tel cope was aga n leased f om tl e Circle and the obser vatı ns su pend d or l r to contınu the examınation of the d vı on dow ı t ve y s gl l visioı—every 5 mı utes
1840 F b u ry 4th	Took tl Cı l ut t apply oil to th ax s as I was about to p oc d to Europ ı I rlough
1842 M y 4th	On my ıeturn fr m E ırop I fi d th ax s stiff n its mov m nts and th M croscop s v ry dirty —took out axıs and pplied fr h oil &c
1843 Mar h 22d	I ınd all the wır s b oken —put ın a new set
1843 Oct ber 19th	Dur n the la t two days I have had a suspı o that the fixe h ı ontal wire was not straıght removed ı and put ın another (a cobweb)

1844 January 30th	Adj t d nd l ed th M p
1844 O t b 3 d—4tl	I t k th C rcl x ut t l t d apply f h l &
1845 J u ry 3 d	I j ut n a n w v n al wı e d dju ted tl M p &
1845 Apnl 25th	Th Ind x E o h lt ed l s c d ı th ut y ppı e t
1845 May 8th—9th	Th I l x Err l ag alt d al e ds th ut y b g ble t xpl th p b bl s
1845 S ptember 1 t	T k ut tl Obj t Gl s t no e n bl k du t wl l l d s ttled o tl e d f t—p b bly f ll n f m th s d s f the tub
1846 Mar h 31 t	To k ut tl e Olj t Gl to ove om bl k dı st wl ı h had ttl d n the n s d
1845 November 25th	A severe IIurrı ane oc ur ed

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES

OF

THE SUN, MOON, AND PLANETS,

AS DEDUCED FROM

THE MADRAS OBSERVATIONS

COMPARED WITH THE TABLES

Right Ascensions and North Polar Distances of the Sun's Center

Month and Day	Mean Solar Time of Observation	A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	M H Semid
		m			/			/
1831								
Jan 8	0 13 11				108 21 59 07	2 00	+ 2 93	
29	0 13 22				108 6 16 07	15 00	— 1 07	
30	0 13 32				107 50 8 08	10 00	+ 1 92	
Feb 1	0 13 51				107 16 54 67	1 00	+ 6 33	
2	0 13 59				106 59 5[illegible] 75	58 00	+ 5 25	
3	0 14 6				106 42 34 83	38 00	+ 3 17	
4	0 14 12				106 24 59 42	0 00	+ 0 58	
5	0 14 18				106 7 0 82	5 00	+ 4 18	
6	0 14 22				105 48 50 61	53 00	+ 2 39	
7	0 14 26				105 30 23 00	25 00	+ 2 00	
8	0 14 30				105 11 36 63	41 00	+ 4 37	
11	0 14 34				104 13 56 24	59 00	+ 2 76	
12	0 14 34				103 54 10 89	16 00	+ 5 11	
13	0 14 33				103 31 16 60	19 00	+ 2 40	
14	0 14 32				103 14 8 29	9 00	+ 0 71	
15	0 14 29				102 53 42 83	47 00	+ 4 17	
16	0 14 27				102 33 9 40	12 00	+ 2 60	
17	0 14 23				102 12 20 59	25 00	+ 4 41	
18	0 14 19				101 1 22 11	26 00	+ 3 89	
19	0 14 13				101 30 11 97	16 00	+ 4 03	16 1 1
20	0 14 8 0	22 11 58 48	58 10	— 0 38	101 8 53 69	55 00	+ 1 31	
21	0 14 1 6	22 15 48 37	47 90	— 0 47	100 47 29 15	2[illegible] 00	— 4 1[illegible]	16 4 6
22	0 13 53 8	22 19 37 10	37 10	0 00				
23	0 13 45 9	22 23 25 62	25 70	+ 0 08	100 3 47 52	55 00	+ 7 48	16 4 2
24	0 13 37 5	22 27 13 78	13 70	— 0 08	99 41 53 60	55 00	+ 1 40	16 2 1
25	0 13 28 4	22 31 1 30	1 10	— 0 20	99 19 42 06	47 00	+ 4 94	15 59 0
26	0 13 18				98 57 29 45	31 00	+ 1 55	
27	0 13 8 9	22 38 34 89	34 00	— 0 89	98 35 3 27	7 00	+ 3 73	16 0 1
28	0 12 57				98 12 35 04	35 00	— 0 04	
Mar 2	0 12 34 2	22 49 49 81	49 40	— 0 41	97 27 1 66	10 00	+ 8 34	
3	0 12 21 0	22 53 33 04	33 40	+ 0 36	97 4 13 11	18 00	+ 4 89	16 3 6
4	0 12 8 3	22 57 16 86	17 00	+ 0 14	96 41 15 27	21 00	+ [illegible] 73	16 5 1
5	0 11 55 9	23 1 1 01	0 10	— 0 91	96 18 7 16	17 00	+ 9 84	16 4 4
6	0 11 41				95 55 1 04	8 00	+ 6 96	
7	0 11 27				95 31 46 65	54 00	+ 7 35	
8	0 11 12 8	23 12 7 40	7 10	— 0 30	95 8 30 54	35 00	+ 4 46	16 1
9	0 10 57 9	23 15 49 23	48 70	— 0 53	94 45 9 17	13 00	+ 3 83	
10	0 10 42 9	23 19 30 46	29 80	— 0 66	94 21 40 70	46 00	+ 5 30	16 2 1
11	0 10 27 3	23 23 11 53	10 70	— 0 83	93 58 14 22	16 00	+ 1 78	16 1 5
12	0 10 11 3	23 26 51 98	51 30	— 0 68	93 34 37 72	44 00	+ 6 28	16 1 3
13	0 9 55 0	23 30 32 11	31 50	— 0 61	93 11 4 19	8 00	+ 3 81	15 59 1
14	0 9 38 5	23 34 12 31	11 50	— 0 81	92 47 25 90	31 00	+ 5 10	16 2 6
15	0 9 21 9	23 37 52 15	51 20	— 0 95	92 23 47 53	51 00	+ 3 47	1[illegible] 59 4
16	0 9 4				92 0 8 32	10 00	+ 1 68	
17	0 8 46 8	23 45 10 01	9 80	— 0 21	91 36 27 61	29 00	+ 1 39	16 1 4
18	0 8 29							
19	0 8 12 1	23 52 28 23	27 50	— 0 73	90 48 56 85	4 00	+ 7 15	16 0 9
20	0 7 53 9	23 56 6 47	6 10	— 0 37	90 25 18 81	22 00	+ 3 19	16 1 6
21	0 7 35 6	23 59 44 70	44 50	— 0 20				
22	0 7 18 0	0 3 23 67	22 70	— 0 97	89 37 53 85	0 00	+ 6 15	16 1 9
23	0 6 59 9	0 7 2 15	0 90	— 1 25	89 14 19 24	21 00	+ 1 76	
24	0 6 41 2	0 10 39 89	38 90	— 0 99				16 6 7
25	0 6 22 1	0 14 17 28	16 90	— 0 38	88 27 6 92	8 00	+ 1 08	16 3 2
26	0 6 3 9	0 17 55 70	54 80	— 0 90				16 3 9
27	0 5 45 2	0 21 33 42	32 60	— 0 82	87 40 0 98	3 00	+ 2 02	16 0 7
28	0 5 26 4	0 25 11 25	10 50	— 0 75	87 16 27 71	35 00	+ 7 29	16 3 4
29	0 5 7				86 53 6 04	11 00	+ 4 96	

Right Ascensions and North Polar Distances of the Sun's Center (C nt nu d)

M S lar Tim f Ob tl	A. R fr m Ob tl	A R f m N A.	Erro f N A	N P D fr m Ob rv tl	N P D fr m N A	Err f N A	M an H Semid
1831					′		
M r 30 0 4 49 3	0 32 27 00	26 20	— 0 80	86 29 40 56	49 00	+ 8 44	16 3 2
31 0 4 30 9	0 36 5 06	4 20	— 0 86	86 6 31 74	32 00	+ 0 26	
Ap l 1 0 4 12 5	0 39 43 24	42 30	— 0 94	85 43 10 10	19 00	+ 8 90	16 2 8
2 0 3 53 8	0 43 21 00	20 40	— 0 60	85 20 6 02	11 00	+ 4 98	16 8 1
3 0 3 35				84 56 59 36	8 00	+ 8 64	16 8 6
5 0 2 59 8	0 54 16 60	15 80	— 0 80	84 11 13 95	16 00	+ 2 05	16 8 3
6 0 2 41 9	0 57 55 17	54 50	— 0 67	83 48 25 92	30 00	+ 4 08	16 3 3
7 0 2 24				83 25 46 97	50 00	+ 3 03	
8 0 2 7 3	1 5 13 61	12 70	— 0 91	83 3 10 60	16 00	+ 40	16 5 9
10 0 1 33 6	1 12 32 80	31 90	— 0 90	82 18 22 76	30 00	+ 7 24	16 1 1
11 0 1 16				81 56 17 37	18 00	+ 0 63	
12 0 1 0				81 34 5 61	13 00	+ 7 39	
13 0 0 44 5	1 23 33 51	33 00	— 0 51	81 12 18 59	18 00	— 0 59	16 4 2
14 0 0 28				80 50 30 54	32 00	+ 1 46	
15 0 0 13 6	1 30 55 73	55 10	— 0 63	80 28 52 10	55 27	+ 3 17	16 4 9
1 23 59 58 7	1 34 37 18	36 50	— 0 68	80 7 25 79	27 00	+ 1 21	16 3 9
16 23 59 44 4	1 38 19 17	18 30	— 0 87				1 56 3
17 23 59 29·3	1 42 0 58	0 50	— 0 08	79 24 59 19	1 00	+ 1 81	15 44 3
18 23 59 15 4	1 45 43 41	43 20	— 0 21	79 4 0 27	4 00	+ 3 73	16 3 1
19 23 59 1 9	1 49 26 35	26 20	— 0 15	78 43 14 08	17 00	+ 2 92	16 3 4
20 23 58 49				78 22 36 51	41 00	+ 4 49	
21 23 58 36				78 2 14 21	17 00	+ 2 79	
22 23 58 24 1	2 0 38 07	37 60	— 0 47	77 41 59 87	5 00	+ 5 13	15 58 5
23 23 58 12				77 22 1 47	5 00	+ 3 53	
24 23 58 0 5	2 8 7 57	7 30	— 0 27	77 2 16 37	18 00	+ 1 63	15 45 5
25 23 57 49				76 42 36 37	44 00	+ 7 63	15 40 7
26 23 57 39				76 23 22 09	23 00	+ 0 91	15 53 4
27 23 57 29·5	2 19 26 18	25 50	— 0 68	76 4 11 06	14 00	+ 2 94	15 53 2
28 23 57 20 3	2 23 13 55	12 60	— 0 95	75 45 16 09	19 00	+ 2 91	15 59 5
29 23 57 11 4	2 27 1 21	0 20	— 1 01	75 26 32 22	38 00	+ 5 78	15 59 9
30 23 57 3 0	2 30 49 14	48 20	— 0 94	75 8 5 04	11 00	+ 5 96	15 45 1
May 1 23 56 54 8	2 34 37 37	36 90	— 0 47				15 58 7
2 23 56 47				74 31 57 78	4 00	+ 6 22	
3 23 56 41 1	2 42 16 90	16 00	— 0 90	74 14 18 95	22 00	+ 3 05	
4 23 56 35 3	2 46 7 67	6 40	— 1 27	73 56 55 76	56 00	+ 0 24	16 2 9
5 23 56 29 6	2 49 58 55	57 30	— 1 25	73 39 47 32	45 00	— 2 32	15 52 6
6 23 56 24 5	2 53 49 87	48 90	— 0 97	73 22 53 2	52 00	— 1 52	16 4 5
8 23 56 15				72 49 49 07	53 00	+ 3 93	
9 23 56 12				72 33 50 48	49 00	— 1 48	
10 23 56 10 0	3 9 21 68	21 10	— 0 58	72 18 0 68	3 00	+ 2 32	16 4 8
11 23 56 7 9	3 13 15 96	15 60	— 0 36	72 2 38 27	34 00	— 4 27	15 50 7
12 23 56 6 2	3 17 10 91	10 60	— 0 31	71 47 21 43	23 00	+ 1 7	15 48 8
13 23 56 5 6	3 21 6 91	6 30	— 0 61	71 32 28 85	31 00	+ 2 15	15 58 5
14 23 56 5 5	3 25 3 37	2 50	— 0 87	71 17 55 1	58 00	+ 2 49	16 7 0
15 23 56 5 1	3 28 59 39	59 20	— 0 19	71 3 41 63	43 00	+ 1 37	
16 23 56 6 0	3 32 56 79	56 50	— 0 29	70 49 43 65	47 00	+ 3 35	16 6 6
17 23 56 7 3	3 36 54 70	54 30	— 0 40	70 36 10 41	11 00	+ 0 9	15 54 3
18 23 56 9 3	3 40 53 35	52 80	— 0 55	70 22 50 35	54 00	+ 3 65	16 0 5
19 23 56 11 8	3 44 52 38	51 70	— 0 68	70 10 0 19	58 00	— 2 19	16 0 5
20 23 56 14 8	3 48 51 86	51 20	— 0 66	69 57 23 86	23 00	— 0 86	15 59 8
21 23 56 17 9	3 52 51 67	51 30	— 0 37	69 45 7 85	8 00	+ 0 15	16 3 6
22 23 56 22 2	3 56 52 36	51 70	— 0 66	69 33 8 50	13 00	+ 4 50	16 0 8
23 23 56 26 6	4 0 53 47	52 80	— 0 67	69 21 41 71	39 00	— 2 71	16 3 6
24 23 56 31 5	4 4 54 99	54 30	— 0 69	69 10 24 72	26 00	+ 1 28	15 59 3
25 23 56 36 7	4 8 56 58	56 30	— 0 28	68 59 35 27	35 00	— 0 27	15 57 8
26 23 56 42 7	4 12 59·23	58 80	— 0 43	68 48 57 45	5 00	+ 7 55	16 2 7
28 23 56 56 2	4 21 5 88	5 30	— 0 58				15 56 7

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN S CENTER (C tnu d)

	M an S ar Tim f Ob ti	A. R fr m Ob rv ti	A R fr m N A	Err f N A	N P D fr m Ob ti n.	N P D from N A.	E f N A	M H S mid
1831		m			′		′	
M y 29	23 57 3 9	4 25 10 17	9 30	— 0 87	68 19 45 05	49 00	+ 3 95	16 2 7
30	23 57 11 8	4 29 14 68	13 80	— 0 88				15 59 6
31	23 57 19 9	4 33 19 27	18 60	— 0 67	68 2 14 66	10 00	— 4 66	15 59 0
June 1	23 57 28 6	4 37 24 71	24 10	— 0 61	67 53 53 18	55 00	+ 1 82	16 0 4
2	23 57 37				67 46 0 62	2 00	+ 1 38	15 58 ͜
3	23 57 47 4	4 45 36 71	36 00	— 0 71	67 38 30 65	33 00	+ 2 35	15 58 5
4	23 57 57 3	4 49 43 01	42 50	— 0 51	67 31 32 32	28 00	— 4 32	16 1 7
5	23 58 7 6	4 53 49 82	49 30	— 0 52	67 24 45 04	45 00	— 0 04	16 6 9
6	23 58 18 1	4 57 57 41	56 60	— 0 81	67 19 28 73	26 00	— 2 73	16 1 2
7	23 58 29 5	5 2 5 04	4 20	— 0 84	67 12 31 11	32 00	+ 0 89	15 59 5
8	23 58 41 0	5 6 13 05	12 10	— 0 95	67 7 4 33	1 00	— 3 33	15 ͜8 5
9	23 58 52 4	5 10 21 24	20 40	— 0 84	67 1 57 06	5 00	— 2 06	16 0 1
10	23 59 4 0	5 14 29 35	28 90	— 0 45	66 57 16 58	12 00	— 4 58	16 1 9
11	23 59 16 0	5 18 37 90	37 50	— 0 40	66 52 58 35	53 00	— 5 35	16 1 2
12	23 59 28 5	5 22 47 02	46 30	— 0 72	66 49 5 64	0 00	— 5 64	1 59 3
13	23 59 41 0	5 26 56 03	55 30	— 0 73				16 1 0
16	0 0 6 0	5 35 14 32	13 80	— 0 52	66 39 50 85	46 00	— 4 85	16 2 1
19	0 0 44 1	5 47 42 23	42 10	— 0 13	66 34 10 98	15 00	+ 4 02	15 58 8
21	0 1 10 6	5 56 1 77	1 10	— 0 67	66 32 40 27	38 00	— 2 27	15 56 0
22	0 1 23 2	6 0 11 02	10 60	— 0 42	66 32 32 61	26 00	— 6 61	16 3 5
23	0 1 36 1	6 4 20 67	20 10	— 0 57	66 32 39 46	40 00	+ 0 54	16 2 9
24	0 1 48				66 33 22 60	18 00	— 4 60	16 0 6
25	0 2 1 6	6 12 39 22	38 80	— 0 42	66 34 26 3͜	21 00	— ͜ 3͜	16 1 9
26	0 2 14 5	6 16 48 66	48 00	— 0 66	66 35 52 97	49 00	— 3 97	16 2 9
27	0 2 27 1	6 20 57 79	57 00	— 0 79	66 37 49 45	42 00	— 7 45	16 0 1
28	0 2 39 5	6 25 6 83	6 00	— 0 83	66 39 58 79	59 00	+ 0 21	16 4 0
29	0 2 51 6	6 29 15 57	14 90	— 0 67	66 42 42 25	40 00	— 2 25	16 3 4
30	0 3 3 9	6 33 24 45	23 50	— 0 95	66 45 45 06	47 00	+ 1 94	16 1 0
July 1	0 3 15 9	6 37 32 97	32 00	— 0 97	66 49 22 17	16 00	— 6 17	16 3 1
2	0 3 27 4	6 41 40 99	40 20	— 0 79	66 53 16 81	11 00	— 5 81	16 4 6
3	0 3 38 2	6 45 48 40	48 20	— 0 20	66 57 36 29	30 00	— 6 29	1 59 7
4	0 3 50 2	6 49 56 93	55 90	— 1 03				16 3 4
5	0 4 1 0	6 54 4 45	3 40	— 1 05				16 0 8
6	0 4 11 6	6 58 11 47	10 60	— 0 87	67 12 56 8͜	52 00	— 4 85	16 0 8
7	0 4 21 8	7 2 18 45	17 60	— 0 8͜	67 18 52 04	48 00	— 4 04	16 0 5
8	0 4 31 5	7 6 24 67	24 20	— 0 47	67 25 8 69	7 00	— 1 69	16 1 1
11	0 4 58 6	7 18 41 63	41 40	— 0 23	67 46 25 60	23 00	— 2 60	16 1 0
14	0 5 22 8	7 30 55 52	54 70	— 0 82	68 11 9 29	7 00	— 2 29	16 3 3
17	0 5 42 2	7 43 4 45	3 60	— 0 85	68 39 13 11	11 00	— 2 11	15 ͜9 8
21	0 6 0 4	7 59 8 92	7 90	— 1 02	69 21 47 94	41 00	— 6 94	15 56 5
25	0 6 9 1	8 15 3 90	3 20	— 0 70	70 4 45 75	42 00	— 3 75	15 58 9
27	0 6 10 2	8 22 58 16	57 30	— 0 86	70 35 49 82	43 00	— 6 82	15 59 5
29	0 6 9 1	8 31 50 44	49 20	— 1 24	71 3 7 06	1 00	— 6 06	16 0 9
30	0 6 7 3	8 35 45 24	44 30	— 0 94	71 17 13 27	8 00	— 5 27	16 1 1
31	0 6 5 3	8 39 39 65	38 70	— 0 95	71 31 35 87	34 00	— 1 87	
A g 3	0 5 55 5	8 50 19 49	18 50	— 0 99	72 16 44 66	40 00	— 4 66	
4	0 5 50 9	8 54 11 51	10 60	— 0 91	72 32 22 92	17 00	— 5 92	1͜ 5͜ 0
5	0 5 46 0	8 58 3 07	2 10	— 0 97	72 48 19 18	12 00	— 7 18	
6	0 5 40 7	9 1 54 25	53 10	— 1 15	73 4 28 79	24 00	— 4 79	15 9 9
7	0 5 34 3	9 5 44 19	43 40	— 0 79	73 20 52 40	52 00	— 0 40	16 1 0
8	0 5 27 8	9 9 34 29	33 20	— 1 09	73 37 43 53	36 00	— 7 53	16 1 3
11	0 5 3 6	9 20 59 70	59 00	— 0 70	74 29 24 69	21 00	— 3 69	1͜ 57 2
12	0 4 54 3	9 24 46 96	46 40	— 0 56	74 47 8 21	7 00	— 1 21	
13	0 4 44 9	9 28 34 14	33 20	— 0 94	75 5 8 65	7 00	— 1 65	1͜ ͜9 0
14	0 4 34 2	9 32 19 98	19 50	— 0 48	75 23 ——	21 00		16 1 4
18	0 3 48 0	9 47 20 03	19 00	— 1 03	76 38 32 52	34 00	+ 1 48	16 1 4

RIGHT ASCENSIONS AND NORTH POLAR D STANCES OF THE SUN S CENTER (C t d)

M an S l Tim f Ob		A. R f m Ob rv	A R fr m N A	Err f N A	N l D f m Ob rv ti	N P D f m N A	Err f N A	M H Semid.
1831								
A g	20 0 3 21 6	9 54 46 38	45 60	— 0 78	77 17 29 24	27 00	— 2 24	16 1 5
	22 0 2 52 8	10 2 10 65	10 10	— 0 55	77 57 9 68	10 00	+ 0 32	16 1 8
	23 0 2 37 6	10 5 52 00	51 70	— 0 30	78 17 18 83	18 00	— 0 83	16 0 6
	24 0 22 4	10 9 33 32	32 80	— 0 52	78 37 41 98	37 00	— 4 98	16 0 8
	25 0 2 6 4	10 13 13 87	13 60	— 0 27	78 58 5 48	7 00	+ 1 52	16 1 2
	27 0 1 33 7	10 20 34 08	33 80	— 0 28	79 39 43 86	39 00	— 4 86	16 2 7
	31 0 0 24 3	10 35 10 85	9 90	— 0 95	81 4 44 51	38 00	— 6 51	16 0 3
S pt	1 0 0 5 6	10 38 48 72	48 00	— 0 72	81 26 19 95	1[illegible] 00	— 4 95	16 1 1
	4 23 58 49 9	10 53 18 77	18 10	— 0 67	82 54 6 16	7 00	+ 0 84	15 59 3
	6 23 58 10 2	11 0 32 21	31 80	— 0 41	83 38 48 77	45 00	— 3 77	15 59 6
	7 23 57 50 6	11 4 9 12	8 30	— 0 82	84 1 15 35	14 00	— 1 35	16 0 0
	9 23 57 9 6	11 11 21 02	20 60	— 0 42	84 46 32 74	31 00	— 1 74	
	10 23 56 49 2	11 14 56 98	56 40	— 0 58	85 9 20 44	17 00	— 3 44	16 1 4
	11 23 56 28 7	11 18 33 17	32 40	— 0 77	8ᴗ 32 9 63	8 00	— 1 63	
	12 23 56 7 5	11 22 8 57	8 20	— 0 37	85 55 4 29	3 00	— 1 29	16 1 6
	13 23 55 46 8	11 25 44 29	43 70	— 0 59	86 18 8 03	2 00	— 6 03	16 0 3
	14 23 55 25 8	11 29 19 82	19 20	— 0 62	86 41 5 43	5 00	— 0 43	15 57 4
	15 23 ᴗ5 5 2	11 32 55 70	54 60	— 1 10	87 4 13 89	12 00	— 1 89	16 1 3
	16 23 54 43 8	11 36 30 82	29 90	— 0 92	87 27 25 97	23 00	— 2 97	15 58 6
	18 23 54 1 6				88 13 55 62	51 00	— 4 62	16 0 8
	20 23 53 19 2	11 50 52 24	41 30	— 0 94	89 0 34 72	29 00	— 5 72	16 0 1
	21 23 52 58 4	11 ᴗ4 27 86	26 80	— 1 06	89 23 55 00	51 00	— 4 00	16 1 4
	23 3 52 16 7	12 1 39 09	38 00	— 1 09	90 10 39 99	38 00	— 1 99	1ᴗ 58 1
	24 23 51 55 5	12 5 14 41	13 80	— 0 61	90 34 3 28	2 00	— 1 28	16 0 4
	25 23 51 35 3	12 8 50 68	49 70	— 0 98	90 ᴗ7 28 15	27 00	— 1 1ᴗ	15 59 1
	26 23 51 15 0	12 12 26 9ᴗ	25 80	— 1 1ᴗ	91 20 57 57	52 00	— 5 57	16 2 3
	27 23 50 54 9	12 16 3 20	2 30	— 0 90	91 44 17 49	16 00	— 1 49	1ᴗ 58 4
	28 23 50 34 8	12 18 39 83	39 00	— 0 83	92 7 43 30	40 00	— 3 30	16 2 6
O t	3 23 48 ᴗ9 9	12 37 47 36	46 20	— 1 16	94 4 21 26	20 00	— 1 ?6	16 1 9
	4 23 48 41 9	12 41 25 86	24 70	— 1 16	94 27 33 50	33 00	— 0 50	16 0 7
	5 23 48 24 2	12 45 4 57	3 40	— 1 17	94 50 43 42	42 00	— 1 42	16 3 1
	6 23 48 6 5	12 48 43 48	42 60	— 0 88	95 13 54 66	48 00	— 6 66	16 2 0
	7 23 47 49 2	12 52 22 75	22 20	— 0 55	95 36 50 29	50 00	— 0 29	16 3 2
	11 23 46 46 2	13 7 5 70	4 60	— 1 10	97 8 10 67	12 00	+ 1 33	
	12 23 46 31 6	13 10 47 47	46 30	— 1 17	97 30 50 17	48 00	— 2 17	16 1 2
	13 23 46 17 3	13 14 29 80	28 60	— 1 20	97 ᴗ3 17 82	17 00	— 0 82	16 0 5
	14 23 46 3 2	13 18 12 33	11 40	— 0 93	98 15 42 76	40 00	— 2 76	16 4 0
	16 23 4ᴗ 37 5	13 25 39 52	38 50	— 1 02	99 0 6 78	7 00	+ 0 22	16 1 4
	20 23 44 52 5	13 40 40 70	39 70	— 1 00	100 27 21 02	19 00	— 2 02	
	21 23 44 42 8	13 44 27 55	26 50	— 1 05	100 48 48 87	46 00	— 2 87	16 1 6
	22 23 44 33 9	13 48 15 10	14 10	— 1 00	101 10 1 84	2 00	+ 0 16	15 58 6
	24 23 44 18 2	13 55 52 39	51 30	— 1 09	101 52 7 12	4 00	— 3 12	
	29 23 43 51 0	14 15 7 99	7 50	— 0 49	103 33 59 94	ᴗ6 00	— 3 94	
	30 23 43 47 8	14 19 1 42	1 00	— 0 42	103 53 42 42	43 00	+ 0 58	16 2 0
	31 23 43 46 2	14 22 56 61	55 40	— 1 21	104 13 15 29	15 00	— 0 29	15 59 0
Nov	1 23 43 44 8	14 26 51 44	50 50	— 0 94	104 32 33 84	34 00	+ 0 16	16 3 8
	2 23 43 44 3	14 30 47 49	46 40	— 1 09	104 51 38 50	38 00	— 0 50	16 0 3
	7 23 43 54 0	14 50 39 43	38 70	— 0 73	106 23 10 47	16 00	+ ᴗ 53	15 54 6
	8 23 43 57 5	14 54 40 09	39 60	— 0 49	106 40 49 73	47 00	— 2 73	16 0 0
	9 23 44 2 9	14 58 42 11	41 40	— 0 71	106 58 3 46	1 00	— 2 46	16 1 7
	11 23 44 15 8	15 6 48 06	47 30	— 0 76	107 31 40 45	38 00	— 2 45	16 1 1
	12 23 44 23 1	1ᴗ 10 51 95	51 60	— 0 35	107 48 3 81	59 00	— 4 81	15 59 2
	17 23 45 14 2	15 31 26 05	25 40	— 0 65	109 4 55 46	55 00	— 0 46	16 0 4
	18 23 45 26 2	15 35 34 74	34 60	— 0 14	109 19 19 47	19 00	— 0 47	
	19 23 45 40 5	15 39 45 55	44 60	— 0 95	109 33 19 82	21 00	+ 1 18	
	20 23 45 54 7	15 43 56 45	ᴗ5 40	— 1 05	109 47 0 65	1 00	+ 0 35	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN CENTER (C nt ud)

M S lar Tim f Ob rv ti		A R from Ob ti n.	A R fr m N A	Er f N A.	N P D f m Ob rv ti	N P D from N A	Err f N A	M an H S mid
1831						′		
N v 21	23 46 9 8	15 48 8 07	7 20	— 0 87	110 0 19 63	21 00	+ 1 37	
26	23 47 36 9	16 9 18 20	17 60	— 0 60	111 1 18 65	22 00	+ 3 35	16 0 8
28	23 48 17 8	16 17 52 19	51 20	— 0 99	111 23 3 64	2 00	— 1 64	
30	23 49 0 5	16 26 28 15	27 70	— 0 45	111 43 6 91	7 00	+ 0 09	16 1 7
De 1	23 49 23 4	16 30 47 72	47 00	— 0 72	111 52 30 54	32 00	+ 1 46	16 2 9
2	23 49 46 4	16 35 7 18	6 80	— 0 38	112 1 31 84	32 00	+ 0 16	
3	23 50 10 3	16 39 27 74	27 30	— 0 44	112 10 4 91	6 00	+ 1 09	
4	23 50 35 2	16 43 49 14	48 40	— 0 74	112 18 12 08	15 00	+ 2 92	
5	23 51 0 0	16 48 10 47	10 10	— 0 37				
6	23 51 25 7	16 52 33 00	32 30	— 0 70	112 33 12 29	12 00	— 0 29	15 59 7
7	23 51 51 5	16 56 55 51	55 10	— 0 41	112 40 3 71	2 00	— 1 71	
9	23 52 45 0	17 5 42 17	41 90	— 0 27	112 52 22 62	21 00	— 1 62	16 2 7
11	23 53 40 8	17 14 31 14	30 20	— 0 94	113 2 48 84	50 00	+ 1 16	16 1 4
12	23 54 9 1	17 18 56 06	55 00	— 1 06	113 7 24 84	23 00	— 1 84	16 1 5
13	23 54 37 5	17 23 21 06	20 10	— 0 96	113 11 28 25	30 00	+ 1 75	16 1 9
14	23 55 5 7	17 27 46 13	45 50	— 0 63	113 15 9 54	9 00	— 0 54	
15	23 55 35 2	17 32 12 26	11 10	— 1 16	113 18 21 04	20 00	— 1 04	
16	23 56 4 4	17 36 37 94	36 80	— 1 14	113 21 1 34	2 00	+ 0 66	16 1 7
18	23 57 3 6	17 45 30 27	29 00	— 1 27	113 25 0 83	3 00	+ 2 17	
19	23 57 32 7	17 49 56 22	55 40	— 0 82	113 26 21 58	21 00	— 0 58	16 0 1
20	23 58 3 0	17 54 23 11	21 90	— 1 21	113 27 11 44	11 00	— 0 44	16 0 0
21	23 58 32 8	17 58 49 56	48 50	— 1 06	113 27 34 70	33 00	— 1 70	16 3 0
22	23 59 2 9	18 3 16 20	14 90	— 1 30	113 27 25 74	27 00	+ 1 26	
23	23 59 32 6	18 7 42 62	41 50	— 1 12	113 26 44 74	52 00	+ 7 26	
26	0 0 31				113 24 13 46	17 00	+ 3 54	16 1 3
29	0 2 1 6	18 29 54 80	53 80	— 1 00	113 16 50 25	53 00	+ 2 75	15 59 5
31	0 3 0 3	18 38 46 41	45 30	— 1 11	113 9 34 04	36 00	+ 1 96	
1832								
Jan. 1	0 3 28 0	18 43 11 27	11 40	+ 0 13	113 5 13 50	16 00	+ 2 50	15 58 02
2	0 3 57				113 0 28 00	30 00	+ 2 00	
3	0 4 25 5	18 52 1 81	1 50	— 0 31	112 55 13 09	14 00	+ 0 91	16 1 44
4	0 4 53				112 49 28 29	31 00	+ 2 71	
6	0 5 48 4	19 5 14 50	13 90	— 0 60	112 36 46 40	44 00	— 2 40	16 1 64
7	0 6 15 4	19 9 38 17	37 20	— 0 97	112 29 39 73	41 00	+ 1 27	15 58 00
8	0 6 41 6	19 14 0 85	0 00	— 0 85	112 22 6 73	12 00	+ 5 27	
9	0 7 6 7	19 18 22 72	22 30	— 0 42	112 14 12 00	17 00	+ 5 00	16 0 80
10	0 7 32 0	19 22 44 67	44 10	— 0 57	112 5 47 00	54 00	+ 7 00	16 0 18
11	0 7 56 9	19 27 6 35	5 30	— 1 05	111 56 58 75	3 00	+ 4 25	
12	0 8 20 8	19 31 26 78	25 80	— 0 98	111 47 48 03	46 00	— 2 03	16 2 34
13	0 8 43 9	19 35 46 46	45 70	— 0 76	111 38 3 00	4 00	+ 1 00	
14	0 9 6 3	19 40 5 78	5 10	— 0 68	111 28 2 29	0 00	— 2 29	16 2 33
15	0 9 28 8	19 44 24 63	23 50	— 1 13	111 17 30 82	32 00	+ 1 18	16 3 18
18	0 10 30				110 43 36 03	38 00	+ 1 97	
19	0 10 49				110 31 28 74	32 00	+ 3 26	16 3 28
21	0 11 25				110 6 7 91	10 00	+ 2 09	
22	0 11 42				109 52 54 16	55 00	+ 0 84	
24	0 12 14 7	20 22 39 78	38 80	— 0 98	109 25 13 70	20 00	+ 6 30	16 1 10
25	0 12 28 9	20 26 50 94	50 30	— 0 64	109 11 1 35	0 00	— 1 35	16 0 67
26	0 12 42 7	20 31 1 29	0 90	— 0 39	108 56 13 41	18 00	+ 4 59	16 1 24
27	0 12 56 0	20 35 11 14	10 60	— 0 54	108 41 18 42	16 00	— 2 42	16 0 84
28	0 13 9 0	20 39 20 59	19 50	— 1 09	108 25 47 84	53 00	+ 5 16	16 1 66
29	0 13 20 3	20 43 28 47	27 60	— 0 87	108 10 11 75	11 00	— 0 75	15 59 03
30	0 13 30 6	20 47 35 45	35 20	— 0 25	107 54 2 13	7 00	+ 4 87	16 4 63
31	0 13 40 8	20 51 42 22	41 70	— 0 52	107 37 51 78	46 00	— 5 78	16 2 74
F b 1	0 13 50 9	20 55 48 07	47 40	— 0 67	107 21 3 62	7 00	+ 3 38	16 3 37
2	0 13 58 2	20 59 52 78	5 30	— 0 48	107 4 11 87	8 00	— 3 87	16 4 05
3	0 14 5 8	21 3 56 99	56 30	— 0 69	106 46 49 19	50 00	+ 0 81	16 3 10

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

	M S l Tim f Obs rv d	A R fr m Obs	A R f m N A	Err f N A	N P D fr m Ob d	N P D fr m N A	E f N A	M H S mid
1832		m			° ′ ″			′
Feb	4 0 14 11 9	21 7 59 76	59 60	— 0 16	106 29 23 02	17 00	— 6 02	16 4 16
	5 0 14 17 8	21 12 2 13	1 90	— 0 23	106 11 22 23	24 00	+ 1 77	16 1 55
	6 0 14 22 9	21 16 3 93	3 60	— 0 33	105 53 21 20	16 00	— 5 20	16 4 32
	7 0 14 27 1	21 20 4 60	4 30	— 0 30	105 34 57 46	52 00	— 5 46	16 2 45
	8 0 14 30 4	21 24 4 44	4 10	— 0 34	105 16 9 87	13 00	+ 3 13	16 1 80
	9 0 14 33 1	21 28 3 63	3 20	— 0 43	104 7 19 28	17 00	— 2 28	16 2 37
	10 0 14 34 7	21 32 1 90	1 60	— 0 30	104 38 1 91	6 00	+ 4 09	16 1 40
	11 0 14 35 8	21 35 59 42	58 90	— 0 52	104 18 38 79	40 00	+ 1 21	16 1 57
	12 0 14 35 6	21 39 56 67	55 50	— 1 17	103 59 1 87	2 00	+ 0 13	16 1 40
	14 0 14 33 1	21 47 46 51	46 50	— 0 01	103 19 3 44	4 00	+ 0 56	16 0 83
	15 0 14 31 4	21 51 41 44	40 80	— 0 64	102 58 42 29	45 00	+ 2 71	16 0 48
	17 0 14 24 7	21 59 27 62	27 20	— 0 42	102 17 25 80	30 00	+ 4 20	
	18 0 14 20 3	22 3 19 98	19 40	— 0 58	101 56 30 07	36 00	+ 5 93	16 2 02
	19 0 14 15 2	22 7 11 26	10 80	— 0 46				16 2 28
	20 0 14 9 5	22 11 2 05	1 60	— 0 45	101 14 7 80	11 00	+ 3 20	16 2 30
	21 0 14 3 0	22 14 52 05	51 60	— 0 45	100 52 35 06	43 00	+ 7 94	16 3 57
	22 0 13 55 7	22 18 41 41	41 10	— 0 31	100 30 58 97	5 00	+ 6 03	16 3 16
	23 0 13 48 4	22 22 30 61	29 90	— 0 71	100 9 10 34	16 00	+ 5 66	16 2 48
	24 0 13 40 0	22 26 18 67	18 20	— 0 47	99 47 12 8	19 00	+ 6 15	16 1 67
	25 0 13 30 8	22 30 6 02	5 70	— 0 32	99 25 2 70	12 00	+ 9 30	16 2 57
	26 0 13 21 9	22 33 53 64	52 70	— 0 94	99 2 50 11	57 00	+ 6 89	16 2 34
	28 0 13 0				98 17 56 78	3 00	+ 6 22	
M	1 0 12 37 8	22 48 55 93	55 70	— 0 23	97 32 35 81	39 00	+ 3 19	16 2 77
	2 0 12 25 8	22 52 40 20	39 90	— 0 30	97 9 41 14	47 00	+ 5 86	16 2 85
	3 0 12 13 3	2 56 24 18	23 70	— 0 48	96 46 47 11	50 00	+ 2 89	16 2 25
	4 0 11 59 8	23 0 7 21	7 10	— 0 11	96 23 43 49	47 00	+ 3 51	16 1 80
	5 0 11 46 4	23 3 50 45	50 10	— 0 35	96 0 36 63	38 00	+ 1 37	16 3 16
	6 0 11 32 7	23 7 53 06	52 60	— 0 46	95 37 16 68	25 00	+ 8 32	16 1 80
	7 0 11 18 1	23 11 15 11	14 70	— 0 41	95 14 4 53	7 00	+ 2 47	16 2 88
	8 0 11 3 3	23 14 56 67	56 30	— 0 37	94 50 43 90	45 00	+ 1 10	16 1 81
	9 0 10 48 0	23 18 37 99	37 60	— 0 39	94 27 17 77	20 00	+ 2 23	16 1 10
	10 0 10 32 4	23 22 18 97	18 50	— 0 47	94 3 45 52	0 00	+ 4 48	16 2 16
	11 0 10 17 0	23 26 0 07	59 10	— 0 97	93 40 18 46	19 00	+ 0 54	16 6 45
	12 0 10 0 0	23 29 39 62	39 30	— 0 32	93 16 37 50	44 00	+ 6 50	16 2 34
	13 0 9 43 3	23 33 19 43	9 10	— 0 33	92 53 4 73	9 00	+ 4 27	16 1 20
	14 0 9 26 5	23 36 59·13	58 70	— 0 43	92 29 26 70	31 00	+ 4 30	16 1 67
	15 0 9 9 2	23 40 38 44	38 10	— 0 34	92 5 49 53	52 00	+ 2 47	16 1 82
	16 0 8 51 9	23 44 17 49	17 10	— 0 39	91 42 5 08	11 00	+ 5 92	16 0 66
	17 0 8 34 5	23 47 56 47	55 90	— 0 57	91 18 25 78	31 00	+ 5 22	15 56 92
	18 0 8 16 4	23 51 35 02	34 60	— 0 42	90 54 47 00	48 00	+ 1 00	16 0 60
	19 0 7 58 5	23 55 13 50	13 10	— 0 40	90 31 3 73	6 00	+ 2 27	
	20 0 7 40 5	23 58 52 11	51 50	— 0 61	90 7 21 77	2 00	+ 3 23	
	21 0 7 22 1	0 2 30 28	29 80	— 0 48	89 43 41 32	45 00	+ 3 68	16 1 07
	22 0 7 3 7	0 6 8 27	7 90	— 0 37	89 20 3 16	5 00	+ 1 84	16 2 16
	23 0 6 45 2	0 9 46 31	45 90	— 0 41	88 56 26 49	26 00	— 0 49	16 2 65
	24 0 6 26 8	0 13 24 39	23 90	— 0 49	88 32 42 71	50 00	+ 7 29	16 2 20
	25 0 6 8 2	0 17 2 32	1 90	— 0 42	88 9 13 08	16 00	+ 2 92	16 0 64
	26 0 5 49 6	0 20 40 24	39 90	— 0 34	87 45 39 67	43 00	+ 3 33	16 2 52
	27 0 5 31 1	0 24 18 21	17 90	— 0 31	87 22 9 40	14 00	+ 4 60	16 0 72
	28 0 5 12 5	0 27 56 14	55 90	— 0 24	86 58 49 37	47 00	— 2 37	16 3 68
	30 0 4 35 9	0 35 12 60	12 20	— 0 40	86 12 0 62	4 00	+ 3 38	
	31 0 4 17 5	0 38 50 74	50 40	— 0 34	85 48 49 76	49 00	— 0 76	16 1 68
April	1 0 3 59 7	0 42 29 22	28 60	— 0 62	85 25 33 66	39 00	+ 5 34	16 1 72
	2 0 3 41 5	0 46 7 69	7 10	— 0 59	85 2 35 00	33 00	— 2 00	16 0 84
	3 0 3 23 5	0 49 46 12	45 60	— 0 52	84 39 30 95	32 00	+ 1 05	16 1 32
	4 0 3 5 4	0 53 24 51	24 30	— 0 21	84 16 32 93	38 00	+ 5 07	16 2 34
	5 0 2 47 7	0 57 3 39	3 10	— 0 29	83 53 48 29	50 00	+ 1 71	15 59 34

Right Ascensions and North Polar Distances of the Sun s Center (Co t ued)

	M S ar Ti f Ob rv ion	A R from Ob rv l	A R fr m N A	Erro f N A	N P D fr m Ob rv ti	N P D from N A	E f N A	M H S m d
1832								′
April 6	0 2 30 3	1 0 42 48	42 10	— 0 38	83 31 3 77	7 00	+ 3 23	16 1 60
7	0 2 13 2	1 4 21 89	21 30	— 0 59	83 8 25 81	32 00	+ 6 19	16 1 46
8	0 1 56				82 45 59 26	3 00	+ 3 74	16 2 08
9	0 1 39				82 23 39 47	43 00	+ 3 53	15 58 77
10	0 1 22				82 1 31 89	31 00	— 0 89	16 2 52
11	0 1 5				81 39 17 69	25 00	+ 7 31	
12	0 0 48				81 17 25 18	28 00	+ 2 82	15 59 72
14	0 0 18				80 33 55 87	3 00	+ 7 13	16 0 28
15	0 0 2 4	1 33 43 40	43 30	— 0 10	80 12 29 51	33 00	+ 3 49	16 1 02
15	23 59 48 5	1 37 25 75	24 90	— 0 85	79 51 8 31	13 00	+ 4 69	15 59 60
16	23 59 33				79 30 1 02	3 00	+ 1 98	16 1 18
17	23 59 19				79 9 0 65	3 00	+ 2 35	16 3 60
18	23 59 5							15 59 9
19	23 58 52				78 27 6 59	37 00	+ 0 41	16 1 98
20	23 58 39				78 7 10 31	11 00	+ 0 69	16 1 07
21	23 58 27				77 46 52 26	56 00	+ 3 74	15 59 8
22	23 58 15				77 26 50 17	52 00	+ 1 83	16 1 67
23	23 58 4				77 7 0 22	1 00	+ 0 78	16 1 42
24	23 57 53				76 47 21 81	24 00	+ 2 19	16 0 02
25	23 57 42				76 27 57 79	58 00	+ 0 21	16 3 71
26	23 57 32				76 8 44 27	45 00	+ 0 73	
27	23 57 23				75 49 49 52	47 00	— 2 52	16 4 10
28	23 57 14				75 31 0 29	2 00	+ 1 71	16 2 72
29	23 57 6				75 12 29 78	31 00	+ 1 22	16 1 63
30	23 56 58				74 54 16 82	16 00	— 0 82	16 5 17
M y 1	23 56 50				74 36 13 68	15 00	+ 1 32	16 4 90
2	23 56 44				74 18 21 86	28 00	+ 6 14	16 4 45
3	23 56 38				74 0 57 87	59 00	+ 1 13	16 3 76
4	23 56 32				73 43 39 40	46 00	+ 6 60	16 3 54
5	23 56 27				73 26 41 84	47 00	+ 5 16	16 1 44
6	23 56 22				73 10 2 48	5 00	+ 2 52	15 58 54
7	23 56 18				72 53 36 66	40 00	+ 3 34	
8	23 56 15				72 37 31 59	34 00	+ 2 41	16 0 04
10	23 56 9							16 2 54
11	23 56 8				71 50 53 72	56 00	+ 2 28	16 1 20
12	23 56 6 1	3 20 10 46	10 20	— 0 26	71 35 59 09	0 00	+ 0 91	16 0 60
13	23 56 6							16 1 26
14	23 56 6				71 7 2 57	5 00	+ 2 43	16 7 02
15	23 56 6				70 53 6 55	4 00	— 2 55	16 3 36
16	23 56 7				70 39 19 40	24 00	+ 4 60	15 57 90
17	23 56 9				70 26 0 19	3 00	+ 2 81	16 6 48
18	23 56 11				70 13 0 93	2 00	+ 1 07	15 57 80
19	23 56 14							16 2 00
20	23 56 17 5	3 51 53 69	53 10	— 0 9				16 2 45
21	23 56 21 3	3 55 54 12	53 50	— 0 62	69 36 1 03	1 00	— 0 03	16 2 33
22	23 56 25 9	3 59 55 17	54 50	— 0 67	69 21 22 56	23 00	+ 0 44	16 1 96
23	23 56 30 9	4 3 56 77	55 90	— 0 87	69 13 1 59	5 00	+ 3 41	
24	23 56 36				69 2 8 43	8 00	— 0 43	16 1 26
25	23 56 42				68 51 26 20	32 00	+ 5 80	16 6 14
26	23 56 49 0	4 16 4 58	3 70	— 0 88	68 41 22 97	19 00	— 3 97	16 0 14
28	23 57 3 0	4 24 11 64	11 40	— 0 24				
29	23 57 11 7	4 28 16 87	15 90	— 0 97	68 12 52 68	52 00	— 0 68	16 1 72
30	23 57 19 6	4 32 21 49	20 90	— 0 59	68 4 5 71	7 00	+ 1 29	16 2 03
31	23 57 28 4	4 36 27 01	26 20	— 0 81	67 55 47 73	47 00	— 0 73	16 1 42
June 1	23 57 37 0	4 40 32 24	31 90	— 0 34	67 47 47 03	47 00	— 0 03	16 2 96
	23 57 47 3	4 44 38 78	38 00	— 0 78	67 40 17 36	14 00	— 3 36	16 2 52
3	23 57 57 1	4 48 45 34	44 50	— 0 84	67 33 1 76	5 00	+ 3 24	15 59 30

Right Ascensions and North Polar Distances of the Sun's Centre (Continued)

	M S Time of Obs	A R from Obs	A R from N A	Error of N A	N P D from Observ	N P D from N A	Error of N A	M S Semid.
1832	m	m						′
June 4	23 58 6 6	4 52 51 52	51 40	— 0 12	67 26 17 01	16 00	— 1 01	15 59 04
5	23 58 17 6	4 56 58 89	58 40	— 0 49	67 19 51 54	51 00	— 0 54	16 3 98
6	23 58 28 5	5 1 6 37	5 80	— 0 57	67 13 51 43	51 00	— 0 43	
7	23 58 39 4	5 5 13 86	13 40	— 0 46	67 8 11 98	15 00	+ 3 02	
8	23 58 50 7	5 9 21 89	21 40	— 0 49	67 3 5 95	3 00	— 2 95	16 2 30
9	23 59 2 4	5 13 30 16	29 60	— 0 56	66 58 8 87	15 00	+ 6 13	16 1 33
10	23 59 14 6	5 17 38 91	38 00	— 0 91	66 53 50 92	51 00	+ 0 08	16 2 05
11	23 59 26 3	5 21 47 19	46 60	— 0 59	66 49 50 50	52 00	+ 1 50	16 3 05
12	23 59 38 6	5 25 56 03	55 20	— 0 83	66 46 16 60	18 00	+ 1 40	16 2 30
13	23 59 50 8	5 30 4 78	4 20	— 0 58	66 43 6 64	7 00	+ 0 36	15 59 60
15	0 0 3 4	5 34 14 08	13 40	— 0 68	66 40 21 56	20 00	— 1 56	16 0 46
16	0 0 16 2	5 38 23 34	22 50	— 0 84	66 37 57 28	1 00	+ 3 72	16 1 72
17	0 0 28				66 36 3 32	4 00	+ 0 68	15 59 93
18	0 0 41 2	5 46 41 46	41 20	— 0 26	66 34 28 95	33 00	+ 4 05	16 1 61
22	0 1 33				66 32 31 80	32 00	+ 0 20	16 2 00
23	0 1 46				66 33 3 90	4 00	+ 0 10	
24	0 1 58				66 34 7 67	2 00	— 5 67	16 1 72
26	0 2 24				66 37 14 23	10 00	— 4 23	15 58 30
27	0 2 37				66 39 19 22	23 00	+ 3 78	16 1 24
28	0 2 49				66 41 59 55	7 00	— 2 55	
30	0 3 13				66 48 21 13	23 00	+ 1 87	16 2 10
July 2	0 3 37				66 56 27 87	25 00	— 2 87	16 1 68
3	0 3 48				67 1 4 07	3 00	— 1 07	16 0 10
4	0 3 59				67 6 9 65	5 00	— 4 65	16 3 56
5	0 4 10				67 11 29 48	30 00	+ 0 52	16 2 11
6	0 4 20				67 17 19 07	20 00	+ 0 93	15 57 86
7	0 4 30				67 3 30 53	32 00	+ 1 47	15 54 90
16	0 5 39				68 36 47 99	43 00	— 4 99	15 58 07
20	0 5 58				69 18 51 29	53 00	+ 1 71	15 58 04
24	0 6 8 6	8 14 5 86	5 10	— 0 76	70 6 37 26	35 00	— 2 26	
25	0 6 9 4	8 18 3 34	2 80	— 0 54	70 19 23 60	21 00	— 2 60	16 0 60
26	0 6 9 8	8 22 0 19	59 80	— 0 39	70 32 32 86	28 00	— 4 86	16 1 02
28	0 6 9 2	8 29 52 89	52 50	— 0 39	70 59 40 30	37 00	— 3 30	16 1 86
30	0 6 5				71 28 4 53	3 00	— 1 53	16 3 48
31	0 6 3				71 42 45 29	42 00	— 3 29	16 0 58
Aug 1	0 6 0				71 57 42 93	42 00	— 0 93	16 2 13
2	0 5 56				72 13 0 16	57 00	— 3 16	
3	0 5 52				72 28 27 49	29 00	+ 1 51	16 2 34
5	0 5 42				73 0 33 55	28 00	— 5 55	16 0 18
6	0 5 35				73 16 52 41	51 00	— 1 41	16 3 90
7	0 5 29				73 33 31 60	29 00	— 2 60	16 2 42
8	0 5 21				73 50 26 71	24 00	— 2 71	16 2 65
11	0 4 55				74 42 48 04	42 00	— 6 04	15 58 94
12	0 4 46				75 0 43 73	38 00	— 5 73	16 0 58
13	0 4 35 9	9 31 23 86	23 50	— 0 36	75 18 53 38	48 00	— 5 38	16 2 92
14	0 4 25 5	9 35 9 95	9 10	— 0 85	75 37 15 82	13 00	— 2 82	15 58 14
17	0 3 50 1	9 46 24 37	23 40	— 0 97	76 33 1 50	47 00	— 4 50	16 0 48
18	0 3 37 0	9 50 7 78	7 00	— 0 78	76 53 6 69	4 00	— 2 69	16 0 20
19	0 3 23 6	9 53 50 86	50 20	— 0 66	77 12 35 6	34 00	— 1 65	
20	0 3 10 0	9 57 33 69	32 90	— 0 79	77 32 18 79	17 00	— 1 79	16 1 50
21	0 2 55 2	10 1 15 59	15 30	— 0 29	77 52 11 32	11 00	— 0 32	16 2 80
22	0 2 40 8	10 4 57 57	57 10	— 0 47	78 12 20 54	18 00	— 2 54	16 2 01
23	0 2 25 5	10 8 38 75	38 50	— 0 25	78 32 36 47	35 00	— 1 47	15 59 88
25	0 1 54 5	10 16 0 87	0 20	— 0 67	79 13 48 29	43 00	— 5 29	
27	0 1 21 2	10 23 20 62	20 00	— 0 62	79 55 32 71	31 00	— 1 71	16 3 90
28	0 1 4 4	10 27 0 20	59 30	— 0 90	80 16 38 77	40 00	+ 1 23	16 0 60
29	0 0 46 7	10 30 39 24	38 40	— 0 84	80 38 3 50	59 00	— 4 50	

RIGHT ASCEN I N AND NORTH P LAR DISTANCES OF THE SUN S CENTER *(Cont nu d)*

M S lar Tim f Ob		A R f m Ob rv ti	A R fr m N A	E f N A	N P D f m Ob rv ti	N l D f m N A	Erro f N A	M II S mid
1832		m			/ /	/		
Aug	30 0 0 28 9	10 34 17 75	17 00	— 0 75	80 59 27 11	26 00	— 1 11	
	31 0 0 10 8	10 37 56 23	55 30	— 0 93	81 21 0 61	1 00	+ 0 39	16 1 68
S pt	1 23 59 33				82 4 35 19	38 00	+ 2 81	15 59 20
	3 23 58 54 4	10 52 25 74	25 30	— 0 44	82 48 43 61	43 00	— 0 61	16 0 82
	5 23 58 14 8	10 59 39 23	38 80	— 0 43	83 33 18 32	17 00	— 1 32	15 9 30
	6 23 57 54 9	11 3 15 93	15 20	— 0 73	83 55 45 76	44 00	— 1 76	16 2 54
	8 23 57 14 0	11 10 27 91	27 30	— 0 61	84 40 57 82	54 00	— 3 82	16 0 12
	9 23 56 53 7	11 14 4 16	3 10	— 1 06	85 3 43 06	38 00	— 5 06	16 3 8
	13 23 55 29				86 35 23 36	20 00	— 3 36	
	14 23 55 8 2	11 32 1 05	0 70	— 0 35	86 58 30 03	26 00	— 4 03	16 4 16
	15 23 54 46 9	11 35 36 33	36 10	— 0 23	87 21 39 03	35 00	— 4 03	16 0 18
	19 23 53 22 9	11 49 58 33	57 90	— 0 43	88 51 44 59	42 00	— 2 59	16 0 22
	20 23 53 2 1	11 53 34 02	33 50	— 0 52	89 18 5 79	5 00	— 0 79	16 0 95
	21 23 52 41	11 57 12 62	9 10					
	22 23 2 20 9	12 0 45 77	45 00	— 0 77	90 4 57 51	53 00	— 4 51	1 9 74
	23 23 52 0 1	12 4 21 46	21 00	— 0 46	90 28 19 96	19 00	— 0 96	16 1 70
	24 23 51 39 7	12 7 57 55	57 20	— 0 35	90 51 46 32	45 00	— 1 32	16 2 28
	25 23 51 19 1	12 11 33 26	33 30	+ 0 04	91 15 14 09	11 00	— 3 09	16 3 98
	26 23 50 59 8	12 15 10 66	9 80	— 0 86	91 38 35 05	36 00	+ 0 95	16 1 61
	27 23 50 39 6	12 18 46 92	46 40	— 0 52	92 2 2 56	1 00	— 1 56	
	29 23 50 0 7	12 26 0 94	0 20	— 0 74	92 48 49 59	48 00	— 1 59	16 2 07
	30 23 49 41 0	12 29 37 70	37 60	— 0 10	93 12 4 92	8 00	+ 3 08	15 59 43
Oct	1 23 49 23 2	12 33 16 41	15 20	— 1 21	93 35 30 26	2' 00	— 3 26	16 4 17
	3 23 48 45 6	12 40 32 07	31 50	— 0 57	94 21 56 45	5 00	— 1 45	
	4 23 48 27				94 45 10 03	5 00	— 5 03	16 1 3
	5 23 48 9				95 8 11 71	10 00	— 1 71	16 1 7
	6 23 47 52 5	12 51 28 31	28 10	— 0 21	9 31 14 57	12 00	— 2 57	16 0 84
	7 23 47 36 9	12 55 9 28	7 90	— 1 38	95 54 12 78	10 00	— 2 78	16 1 5
	8 23 47 20 1	12 58 48 97	48 00	— 0 97	96 17 8 63	3 00	— 5 63	16 3 85
	10 23 46 48 6	13 6 10 42	9 50	— 0 92	97 2 36 08	35 00	— 1 08	16 3 10
	11 23 46 3 6	13 9 52 25	51 30	— 0 95	97 25 17 32	12 00	— 5 32	16 4 56
	12 23 46 19 3	13 13 34 20	33 20	— 1 00	97 47 44 82	43 00	— 1 82	16 1 51
	13 23 46 5 3	13 17 16 69	15 80	— 0 89	98 10 12 19	8 00	— 4 19	
	14 23 45 51 6	13 20 9 66	59 00	— 0 66	98 32 31 19	26 00	— 5 19	16 0 72
	18 23 45 4				100 0 23 44	23 00	— 0 44	16 3 72
	19 23 44 54 0	13 39 44 51	43 70	— 0 81				
	20 23 44 45 0	13 43 31 90	30 60	— 1 30	100 43 37 05	32 00	— 5 05	15 59 82
	21 23 44 35 8	13 47 19 30	18 20	— 1 10	101 4 52 00	52 00	0 00	16 1 20
	22 23 44 27 3	13 51 7 33	6 40	— 0 93	101 26 0 08	2 00	+ 1 92	16 2 9[illegible]
	23 23 44 19 7	13 54 56 51	55 60	— 0 91	101 47 3 71	2 00	— 1 71	16 1 90
	24 23 44 12 6	13 58 45 82	45 20	— 0 62	102 7 52 65	51 00	— 1 65	16 2 83
	25 23 44 6 7	14 2 36 37	35 50	— 0 87	102 28 32 49	8 00	— 4 49	16 3 22
	26 23 44 1 4	14 6 27 71	26 70	— 1 01	102 48 56 42	54 00	— 2 42	16 2 58
	27 23 43 56 6	14 10 19 51	18 60	— 0 91	103 9 9 24	8 00	— 1 24	16 1 10
	28 23 43 52 4	14 14 12 06	11 40	— 0 66	103 29 11 62	10 00	— 1 62	16 2 36
	29 23 43 49 4	14 18 5 38	4 50	— 0 88	103 49 1 81	59 00	— 2 81	16 1 04
	30 23 43 46 6	14 21 59 27	58 70	— 0 57	104 8 32 58	34 00	+ 1 42	16 2 56
	31 23 43 45 0	14 25 54 19	53 50	— 0 69	104 27 58 80	56 00	— 2 80	16 0 35
Nov	1 23 43 45 0	14 29 50 66	49 20	— 1 46	104 47 3 45	3 00	— 0 45	16 1 42
	2 23 43 44 4	14 33 46 46	45 70	— 0 76	105 5 58 6	56 00	— 2 62	16 1 44
	3 23 43 44				105 24 35 73	35 00	— 0 73	16 2 50
	4 23 43 46 9	14 41 42 01	40 90	— 1 14	105 42 58 75	58 00	— 0 75	16 1 52
	5 23 43 48				106 1 6 80	3 00	— 3 80	15 57 63
	8 23 44 0				106 53 51 51	49 00	— 2 51	16 0 54
	9 23 44 6 8	15 1 44 68	43 70	— 0 98	107 10 52 20	50 00	— 2 20	
	11 23 44 20 6	15 9 51 60	50 70	— 0 90	107 43 0 35	58 00	— 2 35	16 1 96

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

	Mean Solar Time of Observation	A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Measured Horizontal Semidiameter
1832	h m s				° ′ ″			′ ″
Nov 13	23 44 37							16 3 82
14	23 44 47 9	15 22 8 81	8 00	— 0 81				16 0 70
15	23 44 58 8	15 26 16 15	15 40	— 0 75	108 46 32 40	29 00	— 3 40	
16	23 45 9 9	15 30 24 83	23 70	— 1 13	109 1 24 0	19 00	— 5 05	15 59 30
17	23 45 23 4	15 34 34 01	33 00	— 1 01	109 15 48 02	47 00	— 1 02	15 59 00
18	23 45 36 7	15 38 43 98	43 10	— 0 88	109 29 57 25	55 00	— 2 25	16 1 34
20	23 46 6 7	15 47 6 94	5 40	— 1 54	109 57 8 73	8 00	— 0 73	16 1 77
21	23 46 22 0	15 51 19 09	18 10	— 0 99	110 10 12 45	12 00	— 0 45	15 59 66
22	23 46 38 7	15 55 32 45	31 40	— 1 05	110 22 2 08	53 00	+ 0 92	15 59 30
23	23 46 5				110 3 13 67	11 00	— 2 67	16 0 57
24	23 47 14 2	16 4 1 14	0 40	— 0 74	110 47 4 79	7 00	+ 2 21	16 0 40
25	23 47 33 2	16 8 16 62	15 80	— 0 82	110 58 40 34	39 00	— 1 34	16 0 92
26	23 47 53 0	16 12 33 13	32 20	— 0 93	111 9 49 85	48 00	— 1 85	16 1 50
29	23 48 56 2	16 25 26 01	25 20	— 0 81	111 40 52 8	48 00	— 4 58	16 1 47
30	23 49 17 9	16 29 44 55	44 40	— 0 15	111 50 24 21	20 00	— 4 21	1 59 62
Dec 3	23 50 29 4	16 42 45 73	44 80	— 0 93				16 3 16
4	23 50 54 2	16 47 7 07	6 10	— 0 97				
5	23 51 19				112 31 26 68	28 00	+ 1 32	
6	23 51 45 2	16 55 51 35	50 40	— 0 95	112 38 27 77	24 00	— 3 77	16 0 87
7	23 52 11 7	17 0 14 32	13 00	— 1 32	112 44 2 63	3 00	+ 0 37	15 59 22
8	23 52 37							16 1 60
9	23 53 0 4							16 1 04
10	23 53 32							16 0 90
11	23 54 0 6	17 17 50 02	49 20	— 0 82				
12	23 54 28				113 10 32 80	32 00	— 0 80	16 1 10
13	23 54 57 9	17 26 40 45	39 40	— 1 0				15 59 25
14	23 55 27 0	17 31 6 17	5 00	— 1 17				16 1 98
15	23 55 56 4	17 35 32 15	31 00	— 1 15	113 20 21 32	25 00	+ 3 68	16 1 23
16	23 56 25 5	17 39 57 95	57 10	— 0 85	113 22 46 88	46 00	— 0 88	16 5 34
17	23 56 54 9	17 44 24 04	23 50	— 0 54	113 24 38 25	39 00	+ 0 75	16 0 87
18	23 57 25 2	17 48 51 02	50 00	— 1 02	113 26 9 46	4 00	— 5 46	1 59 12
19	23 57 54							16 1 37
20	23 58 25 4	17 57 44 54	43 40	— 1 14	113 27 31 66	31 00	— 0 66	16 1 40
21	23 58 55				113 27 34 01	31 00	— 3 01	15 59 72
22	23 59 25				113 27 2 43	3 00	+ 0 57	15 59 62
23	23 59 55				113 26 12 53	8 00	— 4 53	15 59 94
25	0 0 25				113 24 0 05	46 00	— 4 05	16 0 72
26	0 0 55 4	18 19 57 80	57 00	— 0 80				16 0 23
27	0 1 25							16 0 72
28	0 1 5 0	18 28 50 51	49 60	— 0 91				15 9 95
29	0 2 24				113 14 22 72	21 00	— 1 72	15 59 46
1833								
Jan 2	0 4 19 1	18 50 58 28	57 50	— 0 78	112 56 30 03	36 00	+ 5 97	16 2 60
3	0 4 46 7	18 55 22 41	21 90	— 0 51	112 50 59 68	0 00	+ 0 32	16 0 28
4	0 5 14 1	18 59 46 38	45 90	— 0 48	112 44 51 45	57 00	+ 5 55	16 0 20
5	0 5 40 7	19 4 9 89	9 70	— 0 19	112 38 30 08	27 00	— 3 08	16 1 88
6	0 6 7 3	19 8 33 05	32 90	— 0 15	112 31 27 22	30 00	+ 2 78	16 4 65
7	0 6 33 5	19 12 55 94	55 70	— 0 24	112 24 7 42	7 00	— 0 42	16 2 72
8	0 6 59 4	19 17 18 38	17 90	— 0 48	112 16 10 31	16 00	+ 5 69	15 59 34
9	0 7 24 2	19 21 39 77	39 60	— 0 17	112 7 55 55	0 00	+ 4 45	16 1 24
10	0 7 49 0	19 26 1 17	0 70	— 0 47	111 59 15 77	17 00	+ 1 23	16 0 44
11	0 8 13				111 50 5 85	9 00	+ 3 15	16 1 73
12	0 8 36 3	19 34 41 72	41 40	— 0 32	111 40 32 78	36 00	+ 3 22	16 2 70
14	0 9 21 6	19 43 20 34	19 70	— 0 64	111 20 13 38	13 00	— 0 38	16 2 13
15	0 9 43				111 9 22 81	24 00	+ 1 19	16 0 0
16	0 10 3 9	19 51 55 79	55 50	— 0 29	110 58 8 22	11 00	+ 2 78	16 2 80
17	0 10 24				110 46 31 72	34 00	+ 2 28	16 2 40
18	0 10 43				110 34 30 56	33 00	+ 2 44	16 1 85

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

Date	Mean Solar Time of Observation	A.R. from Observation	A.R. from N.A.	Error of N.A.	N. P. D. from Observation	N.P.D. from N.A.	Error of N.A.	Mean Hor. Semid.
1833	m						″	
Jan 19	0 11 2				110 22 6 51	9 00	+ 2 49	16 2 40
20	0 11 20 8	20 8 59 05	58 60	— 0 45	110 9 24 89	22 00	— 2 89	15 59 73
21	0 11 37 9	20 13 12 76	12 50	— 0 26	109 56 10 23	13 00	+ 2 77	15 59 76
22	0 11 54 4	20 17 26 00	25 70	— 0 30	109 42 38 61	41 00	+ 2 39	16 1 20
23	0 12 10 2	20 21 38 37	38 20	— 0 17	109 28 44 80	47 00	+ 2 20	16 0 58
24	0 12 24 7	20 25 49 63	49 80	+ 0 17	109 14 30 38	32 00	+ 1 62	
25	0 12 39 5	20 30 0 85	0 50	— 0 35	108 59 55 09	54 00	— 1 09	
26	0 12 52 7	20 34 10 76	10 50	— 0 26	108 45 1 72	58 00	— 3 72	16 2 42
27	0 13 5				108 29 37 72	39 00	+ 1 28	16 3 10
28	0 13 17 2	20 42 28 16	27 70	— 0 46				16 1 75
29	0 13 27 9	20 46 35 63	35 30	— 0 33	107 58 1 31	4 00	+ 2 69	16 3 48
30	0 13 37 8	20 50 42 06	41 90	— 0 16	107 41 46 67	49 00	+ 2 33	15 59 90
31	0 13 47				107 25 9 27	13 00	+ 3 73	16 0 10
Feb 1	0 13 55 5	20 58 52 88	52 60	— 0 28	107 8 21 70	20 00	— 1 70	16 3 13
2	0 14 3 1	21 2 56 99	56 60	— 0 39	106 51 5 09	8 00	+ 2 91	16 3 47
3	0 14 9				106 33 38 21	38 00	— 0 21	15 59 25
4	0 14 15 8	21 11 2 83	2 20	— 0 63				16 0 58
5	0 14 20 5	21 15 4 13	3 80	— 0 33	105 57 44 88	49 00	+ 4 12	16 2 36
6	0 14 24 6	21 19 4 94	4 70	— 0 24	105 39 28 44	29 00	+ 0 56	16 2 07
7	0 14 28 0	21 23 4 89	4 70	— 0 19	105 20 56 26	52 00	— 4 26	16 2 23
8	0 14 30 7	21 27 4 06	3 80	— 0 26	105 2 1 19	2 00	+ 0 81	16 1 72
9	0 14 32 7	21 31 2 59	2 20	— 0 39	104 42 54 71	54 00	— 0 71	15 57 88
10	0 14 33 0	21 34 59 51	59 80	+ 0 29	104 23 31 56	35 00	+ 3 44	15 58 49
11	0 14 33				104 4 0 41	58 00	— 2 41	16 0 83
12	0 14 33 5	21 42 53 15	52 70	— 0 45	103 44 7 04	10 00	+ 2 96	16 0 60
13	0 14 32 5	21 46 48 61	48 10	— 0 51	103 24 4 52	6 00	+ 1 48	
14	0 14 30 1	21 50 43 04	42 90	— 0 14				16 1 65
15	0 14 27 4	21 54 36 82	36 80	— 0 02	102 43 16 69	20 00	+ 3 31	15 58 72
16	0 14 24 2	21 58 30 01	29 90	— 0 11	102 22 40 18	39 00	— 1 18	16 0 64
17	0 14 20 2	22 2 22 58	22 30	— 0 28	102 1 44 71	46 00	+ 1 29	16 0 52
18	0 14 15 5	22 6 14 37	14 00	— 0 37	101 40 39 03	41 00	+ 1 97	16 2 54
19	0 14 9 8	22 10 5 21	5 00	— 0 21	101 19 23 09	26 00	+ 2 91	15 59 37
20	0 14 3				100 57 55 34	59 00	+ 3 66	16 1 62
21	0 13 57 1	22 17 45 75	45 20	— 0 55	100 36 21 04	22 00	+ 0 96	16 1 84
22	0 13 49				100 14 31 74	37 00	+ 2 26	16 0 43
23	0 13 41				99 52 40 44	40 00	— 0 44	16 1 28
24	0 13 32				99 30 34 44	36 00	+ 1 56	16 2 80
25	0 13 23 5	22 32 58 11	57 70	— 0 41	99 8 22 81	24 00	+ 1 19	15 58 95
26	0 13 13 5	22 36 44 77	44 40	— 0 37	98 46 0 24	2 00	+ 1 76	16 2 16
27	0 13 3 8	22 40 30 64	30 30	— 0 34	98 23 33 31	33 00	— 0 31	16 0 20
28	0 12 52 0	22 44 16 18	15 70	— 0 48	98 0 54 39	57 00	+ 2 61	16 0 82
Mar 1	0 12 40 1	22 48 1 02	0 70	— 0 32	97 38 13 19	14 00	+ 0 81	16 0 98
2	0 12 28 1	22 51 45 46	45 00	— 0 46	97 15 22 28	26 00	+ 3 72	15 59 90
3	0 12 15 4	22 55 29 32	28 80	— 0 52	96 52 31 25	30 00	— 1 25	16 1 06
4	0 12 2 0	22 59 1 55	12 20	— 0 35	96 29 27 17	30 00	+ 2 83	16 2 24
5	0 11 48 1	23 2 55 14	55 10	— 0 04	96 6 21 71	23 00	+ 1 29	16 0 84
6	0 11 34 4	23 6 37 87	37 50	— 0 37	95 43 10 08	12 00	+ 1 92	16 1 18
7	0 11 19 9	23 10 19 71	19 40	— 0 31	95 19 54 56	56 00	+ 1 44	16 0 90
8	0 11 5				94 56 35 08	35 00	— 0 08	15 59 96
9	0 10 49 8	23 17 42 63	42 20	— 0 43	94 33 13 39	11 00	— 2 39	16 1 02
10	0 10 34 2	23 21 23 59	23 10	— 0 49	94 9 44 02	44 00	— 0 02	16 0 70
11	0 10 18 3	23 25 4 17	3 70	— 0 47	93 46 9 28	13 00	+ 3 72	16 1 94
12	0 10 2 0	23 28 44 54	44 10	— 0 44				16 0 06
13	0 9 45 2	23 32 24 34	24 10	— 0 24	92 59 1 56	4 00	+ 2 44	15 59 82
14	0 9 28				92 35 24 93	26 00	+ 1 07	16 0 95
15	0 9 11 5	23 39 43 47	43 30	— 0 17	92 11 47 31	47 00	— 0 31	16 1 30
16	0 8 54				91 48 3 53	6 00	+ 2 47	

RIGHT AS ENSIONS AND NORTH POLAR D STANCES OF TH SUN S CENTER (C tn d)

M S l Tim f Ob tl		A R f m Ob rv t	A R f m N A	E f N A	N P D f m Ob tl	N P D f m N A	E f N A	M H Sem d
1833								
Mar 18	0 8 19				91 0 38 75	41 00	+ 2 25	16 2 05
19	0 8 1 2	23 54 19 30	19 20	— 0 10	90 36 55 36	58 00	+ 2 64	16 0 15
20	0 7 43				90 13 14 74	16 00	+ 1 26	16 0 90
21	0 7 25 5	0 1 36 46	36 10	— 0 36	89 49 32 45	34 00	+ 1 55	16 1 6
22	0 7 7 1	0 5 14 68	14 40	— 0 28	89 25 51 51	53 00	+ 1 49	16 0 23
23	0 6 48 9	0 8 52 94	52 60	— 0 34	89 2 14 65	13 00	— 1 65	15 59 08
24	0 6 30				88 38 34 48	35 00	+ 0 52	16 2 40
25	0 6 12 0	0 16 9 05	8 80	— 0 25	88 14 59 88	0 00	+ 0 12	15 59 95
26	0 5 53 3	0 19 46 96	46 90	— 0 06	87 51 23 45	27 00	+ 3 55	16 2 2
27	0 5 35 1	0 23 25 21	24 90	— 0 31	87 27 54 41	56 00	+ 1 59	16 0 04
28	0 5 16				87 4 28 08	29 00	+ 0 92	16 0 10
29	0 4 57 9	0 30 41 03	40 80	— 0 23	86 41 6 17	5 00	— 1 17	16 0 00
30	0 4 39 4	0 34 18 96	18 80	— 0 16	86 17 41 3	46 00	+ 4 47	15 9 83
31	0 4 21				85 54 31 78	30 00	— 1 78	15 59 95
April 1	0 4 2 4	0 41 34 99	35 00	+ 0 01	85 31 17 41	19 00	+ 1 59	16 0 64
2	0 3 44 2	0 45 13 33	13 20	— 0 13	85 8 15 60	14 00	— 1 60	16 0 50
3	0 3 26 9	0 48 51 63	51 50	— 0 13	84 45 12 20	13 00	+ 0 80	16 1 10
4	0 3 8 0	0 52 30 08	30 00	— 0 08	84 22 15 96	17 00	+ 1 04	16 2 10
	0 2 50 0	0 56 8 63	8 60	— 0 03	83 59 24 90	29 00	+ 4 10	15 59 62
6	0 2 32 9	0 59 47 96	47 40	— 0 56	83 36 43 45	46 00	+ 2 55	16 1 26
7	0 2 15 1	1 3 26 81	26 50	— 0 31	83 14 7 55	9 00	+ 1 4	16 2 22
8	0 1 58 0	1 7 6 06	5 70	— 0 36	82 51 37 13	40 00	+ 2 87	15 59 86
9	0 1 40 7	1 10 45 34	45 10	— 0 24	82 29 15 35	18 00	+ 2 6	16 2 18
10	0 1 24				82 7 3 80	2 00	— 1 80	16 0 08
11	0 1 7				81 44 52 38	55 00	+ 2 62	
14	0 0 19 8	1 29 7 01	6 90	— 0 11	80 39 24 93	24 00	— 0 93	16 1 77
15	0 0 4				80 17 53 49	51 00	— 2 49	16 0 26
15	23 59 50				79 56 29 62	28 00	— 1 62	15 59 64
16	23 59 35 7	1 40 12 38	12 00	— 0 38	79 35 18 17	15 00	— 3 17	16 0 50
17	23 59 21				79 14 15 09	12 00	— 3 09	16 1 00
18	23 59 7 7	1 47 37 39	37 40	+ 0 01	78 53 19 14	19 00	— 0 14	16 1 84
19	23 58 54 6	1 1 20 78	20 60	— 0 18	78 32 37 64	39 00	+ 1 36	15 59 64
20	23 58 41				78 12 6 77	8 00	+ 1 23	16 0 64
21	23 58 29 4	1 58 48 71	48 50	— 0 21	77 51 47 17	50 00	+ 2 83	16 0 10
22	23 58 17 6	2 2 33 45	33 10	— 0 35	77 31 39 38	43 00	+ 3 62	16 0 73
23	23 58 6				77 11 47 17	49 00	+ 1 83	16 4 57
24	23 57 55 1	2 10 3 98	3 60	— 0 38	76 52 5 33	8 00	+ 2 67	16 0 00
26	23 57 34 2	2 17 36 10	36 00	— 0 10	76 13 24 70	23 00	— 1 70	16 1 26
27	23 57 24 5	2 21 22 97	22 90	— 0 07	75 54 19 93	22 00	+ 2 07	16 0 68
28	23 57 15				75 35 34 79	34 00	— 0 79	16 0 90
29	23 57 6 5	2 28 57 94	8 10	+ 0 16	75 16 57 18	0 00	+ 2 82	16 0 84
30	23 56 58 7	2 32 46 59	46 40	— 0 19	74 58 42 24	43 00	+ 0 76	15 57 78
May 1	23 56 51 1	2 36 35 61	35 50	— 0 11	74 40 37 51	39 00	+ 1 49	16 4 40
2	23 56 44				74 22 51 93	50 00	— 1 93	15 58 97
3	23 56 37 5	2 44 15 21	15 10	— 0 11				16 0 04
4	23 56 31 5	2 48 5 83	5 70	— 0 13				16 0 75
5	23 56 26				73 30 59 20	57 00	— 2 20	15 9 73
6	23 56 21				73 14 11 38	13 00	+ 1 62	15 59 70
7	23 56 17				72 57 42 44	43 00	+ 0 56	16 0 28
8	23 56 13 2	3 3 33 74	33 90	+ 0 16	72 41 31 94	32 00	+ 0 06	15 59 83
9	23 56 10 4	3 7 27 45	27 50	+ 0 05	72 25 37 10	38 00	+ 0 90	16 1 43
10	23 56 7 9	3 11 21 58	21 50	— 0 08	72 10 6 40	0 00	— 6 40	16 4 13
11	23 56 6 5	3 15 16 76	16 20	— 0 56				16 0 55
12	23 56 5 0	3 19 11 48	11 30	— 0 18	71 39 37 28	39 00	+ 1 72	15 59 53
13	23 56 4				71 24 6 05	58 00	+ 1 95	16 0 67
15	23 56 5				70 56 28 29	28 00	— 0 29	16 1 17
16	23 56 6				70 42 45 20	43 00	— 2 20	16 3 80

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

Date	Mean Solar Time of Observation	A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	M H S mid
1833		m						
May 17	23 56 7				70 29 13 94	16 00	+ 2 06	16 2 94
18	23 56 9				70 16 10 34	10 00	— 0 34	16 0 40
21	23 56 19				69 38 48 59	52 00	+ 3 41	16 0 86
22	23 56 24 0	3 58 56 24	55 90	— 0 34	69 27 11 61	8 00	— 3 61	16 1 48
23	23 56 29				69 15 42 45	45 00	+ 2 55	16 0 84
24	23 56 34				69 4 43 31	42 00	— 1 31	
25	23 56 40				68 53 59 92	2 00	+ 2 08	16 1 2
27	23 56 53				68 33 47 26	47 00	— 0 25	16 1 08
28	23 57 0				68 24 8 08	13 00	+ 4 92	
29	23 57 7 7	4 27 15 94	15 90	— 0 04	68 14 59 70	1 00	+ 1 30	16 2 23
30	23 57 16 2	4 31 21 02	20 60	— 0 42	68 6 13 22	12 00	— 1 22	16 3 11
31	23 57 24 9	4 35 26 35	25 80	— 0 55	67 57 47 10	46 00	1 10	16 1 24
June 1	23 57 33 4	4 39 31 27	31 20	— 0 07	67 49 42 45	43 00	+ 0 55	16 4 14
2	23 57 42 6	4 43 37 14	37 10	— 0 04	67 42 3 00	3 00	0 00	16 2 53
3	23 57 52 2				67 34 47 46	46 00	— 1 46	16 2 52
4	23 58 2 2				67 27 52 25	52 00	— 0 25	16 2 58
5	23 58 12 6				67 21 23 33	23 00	— 0 33	16 1 64
6	23 58 23 3				67 15 16 98	16 00	— 0 98	16 2 40
7	23 58 34 3				67 9 37 12	34 00	— 3 12	16 1 92
8	23 58 46 5	5 8 19 65	19 60	— 0 05	67 4 16 07	16 00	— 0 07	16 2 90
10	23 59 9 3	5 16 36 61	36 30	— 0 31	66 54 52 88	52 00	— 0 88	
11	23 59 21 3	5 20 45 15	44 90	— 0 25	66 50 48 85	46 00	— 2 85	16 3 18
12	23 59 33 8	5 24 54 22	53 80	— 0 42	66 47 7 98	6 00	— 1 98	16 1 94
13	23 59 46 2	5 29 3 14	2 90	— 0 24	66 43 51 40	49 00	— 2 40	16 3 16
19	0 0 50				66 33 39 01	35 00	— 4 01	16 0 72
20	0 1 3				66 32 47 11	47 00	— 0 11	16 3 48
21	0 1 16				66 32 25 57	24 00	— 1 57	16 2 37
22	0 1 29				66 32 30 32	26 00	— 4 32	16 1 60
23	0 1 42 9	6 6 29 4	28 80	— 0 41	66 32 53 92	52 00	— 1 92	15 59 34
25	0 2 8				66 35 1 88	58 00	— 3 88	
26	0 2 21				66 36 41 14	38 00	— 3 14	16 2 25
27	0 2 33				66 38 47 24	43 00	— 4 24	16 2 16
28	0 2 46				66 41 16 30	14 00	— 2 30	16 3 58
29	0 2 58 3	6 31 4 20	23 60	— 0 60	66 44 13 08	8 00	— 5 08	16 1 66
30	0 3 10				66 47 31 30	27 00	— 4 30	
July 1	0 3 21				66 1 14 28	9 00	— 5 28	16 1 6
2	0 3 33	6 43 48 73	48 40	0 33	66 55 20 78	17 00	— 3 78	16 0 94
3	0 3 43 9	6 47 56 14	56 20	+ 0 06	66 59 54 00	49 00	5 00	16 2 36
5	0 4 5 7	6 56 10 97	10 80	— 0 17	67 10 4 08	4 00	— 0 08	16 1 24
7	0 4 26				67 22 1 72	55 00	— 6 72	16 1 25
8	0 4 35 6	7 8 30 58	30 40	0 18	67 28 28 12	25 00	— 3 12	
9	0 4 45				67 35 22 03	20 00	— 2 03	16 0 26
12	0 5 10 1	7 24 51 43	51 40	— 0 03	67 58 19 46	21 00	+ 1 54	
13	0 5 17 9	7 28 55 82	55 60	— 0 22	68 6 50 74	47 00	— 3 4	
15	0 5 32				68 24 45 85	46 00	+ 0 15	16 0 02
16	0 5 38				68 34 24 11	19 00	— 5 11	16 3 98
17	0 5 43				68 44 15 83	14 00	— 1 83	16 1 92
18	0 5 48				68 54 36 16	31 00	— 5 16	16 3 70
19	0 5 53				69 5 8 59	8 00	— 0 59	16 4 40
20	0 5 57				69 16 11 76	8 00	— 3 76	16 1 26
21	0 6 1				69 27 26 97	28 00	+ 1 03	15 58 18
23	0 6 6				69 51 15 68	11 00	— 4 68	
25	0 6 9 6	8 17 6 4[illegible]	90	0 52				
27	0 6 10 0	8 24 59 8[illegible]	59 50	— 0 35	0 42 37 34	37 00	— 0 34	16 1 94
28	0 6 9 1	8 28 55 62	55 40	0 22	70 56 19 34	15 00	— 4 34	16 2 67
29	0 6 8				71 10 17 95	12 00	— 5 95	16 1 94
30	0 6 6				71 24 28 26	29 00	+ 0 74	15 59 98

RIGHT ASCENSIONS AND N RTH POLAR DI TANCES OF THE SUN S CENTER (C t ued)

M S lar Tim f Ob i		A R fr m Ob ti	A R f m N A	E f N A	N P D fr m Ob ti	N P D f m N A	E ro f N A	M H S mid
1833	m							
A g 1	0 6 0				71 54 4 69	59 00	—5 69	16 1 58
2	0 5 57				72 9 8 61	10 00	+ 1 39	16 3 65
3	0 5 52				72 24 38 73	37 00	—1 73	16 2 23
4	0 5 48 4	8 56 9 79	9 70	— 0 09	72 40 23 49	24 00	+ 0 51	16 3 16
5	0 5 42 4	9 0 1 20	0 80	— 0 40	72 56 27 58	26 00	—1 58	16 1 40
6	0 5 36 1	9 3 51 52	51 30	– 0 22	73 12 43 74	45 00	+ 1 26	15 59 18
7	0 5 29				73 29 27 19	21 00	—6 19	
8	0 5 22				73 46 15 05	12 00	—3 05	
9	0 5 14				74 3 24 07	19 00	—5 07	16 1 68
10	0 5 6 2	9 19 60	7 40	— 0 20	1 20 44 28	42 00	—2 28	16 3 20
11	0 4 57 4	9 22 55 33	55 10	— 0 23	74 38 25 73	20 00	—5 73	16 1 24
12	0 4 47 8	9 26 42 71	42 30	— 0 41	74 56 12 95	13 00	+ 0 05	15 59 95
13	0 4 38 7	9 30 29 74	28 90	— 0 84				
14	0 4 27				5 32 41 00	44 00	+ 3 00	16 0 00
15	0 4 16 7	9 38 0 76	0 30	– 0 46	75 51 19 58	19 00	—0 58	16 2 51
16	0 4 5				76 10 7 05	7 00	—0 05	16 1 40
17	0 3 53 2	9 45 30 26	29 80	– 0 46	76 19 15 30	11 00	—4 30	16 0 04
18	0 3 40				76 48 24 97	26 00	+ 1 03	16 1 20
21	0 2 59 5	10 0 22 75	22 30	— 0 45	77 47 27 10	25 00	—2 10	
23	0 2 30 0	10 7 46 30	45 70	— 0 60	78 27 39 70	43 00	+ 3 30	16 0 80
24	0 2 14				78 48 10 03	8 00	—2 03	16 1 28
27	0 1 25				79 50 27 44	27 00	—0 44	16 1 63
28	0 1 8				80 11 32 05	32 00	—0 05	
30	0 0 32				80 54 12 63	11 00	—1 63	16 1 90
31	0 0 14				81 15 45 80	44 00	—1 80	16 2 67
31	23 59 56				81 37 21 01	25 00	+ 3 99	16 0 68
S pt 1	23 59 37				81 59 19 58	15 00	—4 58	
2	23 59 17				82 21 13 04	12 00	—1 04	16 0 68
4	23 58 38				83 30 26	29 00	—1 26	16 0 43
5	23 58 18 6	10 58 46 0,	46 00	– 0 05	83 27 51 60	49 00	—2 60	16 0 41
6	23 57 58 7	11 2 22 65	22 60	0 05	83 50 8 47	14 00	+ 5 53	
7	23 57 38 8	11 5 59 18	58 80	— 0 38	84 12 42 23	43 00	+ 0 77	16 0 84
8	23 57 18 1	11 9 35 03	35 00	— 0 03	84 35 19 10	24 00	+ 4 90	16 1 43
9	23 56 57 6	11 13 11 05	11 00	— 0 05	84 58 6 17	7 00	+ 0 83	16 1 15
10	23 56 36 ,	11 16 47 28	46 90	— 0 38	85 20 55 64	6 00	+ 0 36	16 0 83
11	23 56 16 2	11 20 22 87	22 70	— 0 17	85 43 49 41	51 00	+ 1 59	16 0 46
12	23 55 56 1	11 23 59 07	58 40	— 0 67	86 6 42 78	48 00	+ 5 22	
13	23 55 35 2	11 27 34 41	33 90	0 51	86 29 49 71	50 00	+ 0 29	16 0 80
14	23 55 14 2	11 31 10 00	9 50	0 50	86 52 54 52	56 00	+ 1 48	16 1 53
15	23 54 53 0	11 34 45 32	45 00	— 0 32	87 16 5 26	6 00	+ 0 74	16 2 52
17	23 54 11 1	11 41 56 45	56 00	— 0 45	88 2 30 57	34 00	+ 3 43	15 59 74
18	23 53 50				88 25 51 98	51 00	—0 98	16 0 28
24	23 51 45 0	12 7 5 77	5 50	0 27				
25	23 51 24 2	12 10 41 70	41 70	0 00	91 9 34 75	36 00	+ 1 25	
26	23 51 4				91 33 0 56	59 00	—1 56	
27	23 50 44				91 56 27 23	23 00	—4 23	
28	23 50 24				92 19 50 17	47 00	—3 17	15 59 75
29	23 50 4				92 43 10 92	8 00	—2 92	16 0 40
O t 1	23 49 26 6	12 32 22 92	22 50	0 42	93 29 49 62	48 00	— 1 62	15 59 30
2	23 49 7 6	12 36 0 40	0 30	– 0 10	93 53 5 26	5 00	—0 26	16 0 70
3	23 48 49 3	12 39 38 55	38 50	0 05	94 16 19 70	18 00	—1 70	16 1 68
	23 48 12 8	12 46 56 12	55 80	— 0 32	95 2 36 60	36 00	—0 60	16 1 88
10	23 46 52 3	13 5 17 20	16 70	— 0 50	96 57 10 90	11 00	+ 0 10	16 0 20
11	23 46 37				97 19 47 72	51 00	+ 3 28	1C 1 64
12	23 46 22 8	13 12 40 71	40 40	— 0 31	97 42 22 32	20 00	—2 32	16 3 05
13	23 46 9 1	13 16 23 46	23 00	— 0 46	98 4 50 87	52 00	+ 1 13	16 1 20
14	23 45 55 4	13 20 6 35	6 30	– 0 05	98 27 12 13	12 00	—0 13	

RIGHT ASCENS ONS AND NORTH POLAR DISTANCES OF THE SUN S CENTER (Cont d)

M S l Tim f Ob tl		A R f m Ob ts	A R from N A	E ro f N A	N l D f m Ob tl	N P D f m N A	Err f N A	M H S mid
1833								
O t	15 23 45 42 8	13 23 50 19	49 90	— 0 29	98 49 25 17	26 00	+ 0 83	16 1 55
	17 23 45 19 0	13 31 19 47	19 10	— 0 37	99 33 32 39	30 00	— 2 39	16 1 38
	18 23 45 8 0	13 35 5 13	4 60	— 0 53	99 55 16 37	20 00	+ 3 63	16 1 50
	20 23 44 47				100 38 33 05	31 00	— 2 05	
	21 23 44 38 2	13 46 25 03	24 80	— 0 23	100 59 48 45	53 00	+ 4 55	1 59 54
	22 23 44 29 4	13 50 12 57	12 60	+ 0 03	101 21 4 99	5 00	+ 0 01	16 1 68
	23 23 44 21 7	13 54 1 50	1 30	— 0 20	101 42 5 81	6 00	+ 0 19	16 2 63
	30 23 43 46 8	14 21 2 28	2 20	— 0 08	104 3 55 94	55 00	— 0 94	16 1 10
	31 23 43 45				104 23 17 43	20 00	+ 2 57	16 1 52
Nov	2 23 43 43				105 1 25 72	26 00	+ 0 28	
	3 23 43 44				105 20 6 10	9 00	+ 2 90	16 0 97
	4 23 43 46 0	14 40 44 19	43 60	— 0 59				16 1 98
	23 43 48 1	14 44 42 88	42 30	— 0 58	105 56 46 83	48 00	+ 1 17	16 2 43
	13 23 44 36				108 12 13 08	15 00	+ 1 92	16 3 08
	15 3 44 57				108 42 59 20	2 00	+ 2 80	
	16 23 45 8 7	15 29 25 78	2 60	— 0 18				16 1 70
	17 23 45 21 5	15 33 35 32	34 70	— 0 62	109 12 24 95	29 00	+ 4 05	16 0 6(
	18 ?3 45 34 1	15 37 44 48	44 40	— 0 08	109 26 40 04	43 00	+ 2 96	16 1 1
	19 23 4 48				109 40 34 71	35 00	+ 0 29	
	21 23 46 18 9	15 50 19 06	18 60	— 0 46	110 7 13 72	13 00	— 0 72	
	22 23 46 34 8	15 54 31 45	31 40	— 0·05	110 19 57 28	59 00	+ 1 72	16 2 3
	23 23 46 52				110 32 22 87	23 00	+ 0 13	
	24 23 47 10				110 44 21 50	23 00	+ 1 50	
	27 23 48 8				111 18 4 19	4 00	— 0 19	16 0 44
	28 23 48 29				111 28 28 37	31 00	+ 2 63	16 1 75
	30 23 49 12				111 48 5 66	8 00	+ 2 34	16 3 22
D c	1 23 49 35				111 57 19 73	20 00	+ 0 27	16 0 77
	2 23 49 59 0	16 37 21 84	21 30	— 0 54	112 6 5 82	6 00	+ 0 18	16 2 31
	4 23 50 47				112 22 20 10	22 00	+ 1 90	15 57 60
	5 23 51 13 5	16 50 25 67	25 30	— 0 37	112 29 48 95	50 00	+ 1 05	15 59 68
	6 23 51 38 8	16 54 48 07	47 70	— 0 37	112 36 50 74	50 00	— 0 74	15 57 90
	7 23 52 4 8	16 59 10 94	10 70	— 0 24	112 43 24 22	29 00	+ 4 78	16 3 36
	8 23 52 31				112 49 33 58	37 00	+ 3 42	16 2 58
	9 23 52 59				112 55 16 74	19 00	+ 2 26	16 2 33
	10 23 53 26 8	17 12 22 42	22 20	— 0 22	113 0 31 83	34 00	+ 2 17	16 3 23
	11 23 53 55 0	17 16 47 39	46 90	— 0 49	113 5 17 56	21 00	+ 3 44	16 2 60
	13 23 54 52				113 13 29 82	33 00	+ 3 18	
	14 23 55 21				113 16 54 81	57 00	+ 2 19	16 0 15
	17 23 56 50				113 24 21 25	23 00	+ 1 75	
	18 23 57 19 1	17 47 48 04	47 50	0 54	113 25 54 08	53 00	— 1 08	
	19 23 57 49 6	17 52 14 70	14 10	— 0 60	113 26 57 18	56 00	— 1 18	16 0 15
	21 23 58 48				113 27 35 93	39 00	+ 3 07	16 0 00
	22 23 59 18 6	18 5 33 90	33 60	— 0 30	113 27 17 24	19 00	+ 1 76	16 2 32
	23 23 59 48				113 26 23 88	28 00	+ 4 12	16 1 84
	26 0 0 48 2	18 18 53 37	53 20	— 0 17	113 23 22 03	24 00	+ 1 97	16 1 75
	27 0 1 18 0	18 23 19 90	19 50	— 0 40	113 21 8 70	10 00	+ 1 30	16 3 6
	29 0 2 17 0	18 32 12 21	11 60	— 0 61	113 15 12 64	17 00	+ 4 36	16 3 14
	30 0 2 45 8	18 36 37 59	37 30	— 0 29	113 11 35 59	39 00	+ 3 41	16 1 08
	31 0 3 14 7	18 41 3 31	3 00	— 0 31	113 7 30 15	32 00	+ 1 85	16 0 46
1834								
J n	2 0 4 11 3	18 49 52 97	53 37	+ 0 40	112 57 51 95	52 70	+ 0 75	16 4 10
	4 0 5 7 2	18 58 42 19	42 26	+ 0 07	112 46 26 82	26 70	— 0 12	
	5 0 5 34 8	19 3 6 28	6 14	— 0 14	112 40 1 80	3 10	+ 1 30	16 1 30
	6 0 6 1 5	19 7 29 71	29 60	— 0 11	112 33 14 52	12 30	— 2 22	16 3 28
	7 0 6 27 8	19 11 52 62	52 58	— 0 04	112 25 53 88	54 90	+ 1 02	16 4 90
	8 0 6 53 3	19 16 14 68	15 12	+ 0 44	112 18 11 17	10 90	— 0 27	16 5 08
	10 0 7 43 6	19 24 58 71	58 59	— 0 12	112 1 25 19	24 20	— 0 99	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN S CENTER *(C nt nu d)*

M S lar Tim f Ob rv ti		A R f m Ob tion	A R fr m N A	Er f N A	N P D f m Ob i	N P D fr m N A	Err f N A	M H Semid
1834						/	/	
Jan 11	0 8 8 3	19 29 19 75	19 51	— 0 24	111 52 20 03	22 00	+ 1 97	15 59 14
12	0 8 31 4	19 33 39 53	39 81	+ 0 28	111 42 54 49	54 20	— 0 29	15 59 56
14	0 9 17 6	19 42 18 81	18 52	— 0 29	111 22 44 19	43 20	— 0 99	16 3 22
15	0 9 38 8	19 46 36 55	36 88	+ 0 33	111 11 58 97	0 50	+ 1 53	15 58 94
16	0 10 0 4	19 50 54 92	54 55	— 0 37	111 0 54 28	53 50	— 0 78	15 59 80
17	0 10 20 5	19 55 11 47	11 50	+ 0 03	110 49 19 85	22 40	+ 2 55	16 0 14
18	0 10 40 0	19 59 27 58	27 73	+ 0 15	110 37 28 35	27 60	— 0 75	16 1 34
19	0 10 58 8	20 3 43 11	43 21	+ 0 10	110 25 6 51	9 40	+ 2 89	16 3 54
20	0 11 17 2	20 7 57 99	57 94	— 0 05	110 12 28 24	28 30	+ 0 06	16 1 00
21	0 11 34 7	20 12 12 10	11 90	— 0 20	109 59 20 38	24 30	+ 3 92	16 2 70
22	0 11 51 0	20 16 25 08	25 07	— 0 01	109 45 57 83	58 10	+ 0 27	
23	0 12 6 5	20 20 37 24	37 45	+ 0 21	109 32 9 32	10 00	+ 0 68	16 3 98
24	0 12 21 6	20 24 49 04	49 03	— 0 01	109 18 1 56	0 10	— 1 46	16 2 28
25	0 12 35 8	20 28 59 79	59 83	+ 0 04	109 3 28 70	29 10	+ 0 40	16 4 93
26	0 12 49 0	20 33 9 76	9 91	+ 0 15	108 48 38 24	38 20	— 0 04	15 59 50
27	0 13 1 6	20 37 18 86	19 00	+ 0 14	108 33 25 41	25 00	— 0 41	16 1 90
28	0 13 13 4	20 41 27 28	27 38	+ 0 10				16 2 50
29	0 13 24 7	20 45 35 13	34 95	— 0 18	108 2 0 96	0 10	— 0 86	
31	0 13 43 7	20 53 47 25	47 67	+ 0 42	107 29 20 35	17 70	— 2 65	
Feb 1	0 13 53				107 12 27 99	28 60	+ 0 61	16 1 27
2	0 14 0 4	21 1 57 15	57 15	0 00	106 5[illegible] 22 15	21 30	— 0 8[illegible]	16 1 26
3	0 14 7 0	21 6 0 65	0 69	+ 0 04	106 37 58 03	[illegible]6 10	— 1 93	16 3 75
4	0 14 13 3	21 10 3 18	3 40	+ 0 22	106 20 12 89	13 50	+ 0 61	16 2 12
5	0 14 18 8	21 14 5 22	5 33	+ 0 11	106 2 12 64	13 90	+ 1 26	
7	0 14 27 4	21 22 7 04	6 74	— 0 30	10[illegible] 25 22 19	26 60	+ 4 41	
8	0 14 30				10[illegible] 6 40 04	37 60	— 2 44	16 1 77
9	0 14 32 0	21 30 4 75	4 97	+ 0 22	104 47 33 42	34 40	+ 0 98	16 2 72
11	0 14 34 4	21 38 0 16	59 99	— 0 17	104 8 45 66	43 70	— 1 96	16 2 88
12	0 14 34				103 48 56 68	57 20	+ 0 [illegible]2	16 1 86
14	0 14 31				103 8 42 18	43 80	+ 1 62	
15	0 14 28 6	21 53 40 58	40 67	+ 0 09	102 48 17 9[illegible]	17 80	— 0 15	16 3 07
16	0 14 2[illegible] 7	21 57 34 11	33 92	— 0 19	102 27 37 88	39 50	+ 1 62	16 2 40
17	0 14 21				10[illegible] 6 49 41	49 50	+ 0 09	16 0 97
18	0 14 16 5	22 5 18 00	18 24	+ 0 24	101 45 47 14	48 10	+ 0 96	16 1 62
19	0 14 11 4	22 9 9 46	9 31	— 0 15	101 24 33 84	3[illegible] 50	+ 1 66	16 2 75
20	0 14 5 2	22 12 59 74	59 69	— 0 05	101 3 9 72	12 40	+ 2 68	16 2 77
21	0 13 58 2	22 16 49 27	49 42	+ 0 15	100 41 42 13	39 10	— 3 03	16 0 86
22	0 13 50				100 19 52 74	56 00	+ 3 26	16 2 65
23	0 13 42 4	22 24 26 70	26 88	+ 0 18	99 58 3 57	3 50	— 0 07	16 2 37
24	0 13 33 7	22 28 14 50	14 68	+ 0 18	99 36 1 21	1 90	+ 0 69	16 3 36
25	0 13 24 8	22 32 2 18	1 86	— 0 32	99 13 50 73	51 80	+ 1 07	16 1 62
26	0 13 14 4	22 35 48 15	48 47	+ 0 32	98 51 32 39	33 40	+ 1 01	16 1 62
27	0 13 4 3	22 39 34 83	34 50	— 0 33	98 29 11 11	7 10	— 4 01	16 2 43
28	0 12 53 0	22 43 20 02	20 00	— 0 02	98 6 32 29	33 30	+ 1 01	16 2 27
Mar 1	0 12 41 5	22 47 5 11	4 98	— 0 13	97 43 50 64	52 40	+ 1 76	16 2 77
2	0 12 29				97 21 4 88	4 80	— 0 08	16 0 29
3	0 12 17 0	22 54 33 54	33 46	— 0 08	96 58 10 04	10 90	+ 0 86	16 4 01
4	0 12 3 8	22 7 16 90	17 00	+ 0 10	96 35 9 45	11 10	+ 1 65	16 2 82
5	0 11 50 7	23 2 0 30	0 07	— 0 23	96 12 6 33	5 60	— 0 73	16 3 95
7	0 11 22				95 25 38 30	39 40	+ 1 10	
9	0 10 53				94 38 55 82	55 70	— 0 12	
11	0 10 22				93 51 58 48	57 70	— 0 78	
12	0 10 5				93 28 23 45	24 30	+ 0 85	
13	0 9 49				93 4 47 91	48 40	+ 0 49	
14	0 9 32				92 41 9 02	10 60	+ 1 58	
15	0 9 15				92 17 29 79	31 00	+ 1 21	
16	0 8 58				91 [illegible]3 48 52	50 40	+ 1 88	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN S CEN ER, (C t u d)

M S la Time f Ob tt	A R fr m Ob tt	A R from N A	Err f N A	N P D f m Ob t	N P D fr N A	Err f N A	M an H S mid
1834 m							'
M 17 0 8 41				91 30 7 51	8 80	+ 1 29	
18 0 8 22				91 6 22 31	26 80	+ 4 49	
19 0 8 5				90 43 43 66	44 70	+ 1 04	
20 0 7 47				90 19 2 20	3 00	+ 0 80	
21 0 7 29				89 5 21 22	21 70	+ 0 48	
24 0 6 34				88 44 20 75	25 20	+ 4 45	
2 0 6 15				88 20 45 75	49 90	+ 4 15	
26 0 5 56				87 57 14 44	17 10	+ 2 66	
28 0 5 20				87 10 17 16	19 50	+ 2 34	
29 0 5 1				86 46 54 62	55 40	+ 0 78	
30 0 4 42				86 23 3 54	35 10	+ 2 56	
31 0 4 24				86 0 16 19	18 70	+ 2 51	
Ap l 1 0 4 5	Th Transit I trum nt was sent t Cal tta f repairs			85 37 3 78	6 70	+ 2 92	
5 0 2 53				84 5 8 83	8 30	— 0 53	
6 0 2 35				83 42 24 91	23 00	— 1 91	
7 0 2 18				83 19 44 41	44 00	— 0 41	
8 0 2 1				82 57 11 19	11 80	+ 0 61	
9 0 1 44				82 34 45 35	46 30	+ 0 95	
10 0 1 27				82 12 28 18	29 00	+ 0 82	
12 0 0 55				81 28 22 24	17 70	— 4 54	
14 0 0 23				80 44 39 21	40 50	+ 1 29	
15 0 0 8				80 23 3 78	5 0	+ 1 92	
15 23 59 53				80 1 39 84	40 50	+ 0 66	
18 23 59 10				78 58 23 35	26 00	+ 2 65	
19 23 58 57				78 37 47 44	42 60	— 4 84	
20 23 58 44				78 17 8 55	10 40	+ 1 85	
21 23 58 31				77 56 53 37	50 00	— 3 37	
22 23 58 19				77 36 38 98	41 20	+ 2 22	
23 23 58 7				77 16 42 40	44 60	+ 2 20	
24 23 57 56				76 56 58 70	0 60	+ 1 90	
25 23 57 45				76 37 26 63	29 30	+ 2 67	
26 23 57 35				76 18 11 25	11 20	— 0 05	
27 23 57 25				75 59 0 7	6 50	+ 5 93	
28 23 57 15				75 40 11 21	15 0	+ 4 29	
29 23 57 6				75 21 34 96	38 40	+ 3 44	
30 23 56 58				7 3 18 01	1 80	— 2 21	
M y 3 23 56 37				74 9 36 23	36 90	+ 0 67	
4 23 6 31				73 52 15 16	14 70	— 0 46	
5 23 56 26				73 35 8 83	8 40	— 0 43	
7 23 56 17				73 1 44 79	44 90	+ 0 11	
8 23 56 13				72 4 28 59	28 30	— 0 29	
9 23 56 10				72 28 29 87	29 00	— 0 87	
11 23 56 6				71 9 17 75	23 30	+ 5 55	
12 23 56 5				71 43 14 41	17 40	+ 2 99	
16 23 56 5				70 45 57 19	1 50	+ 4 31	
18 23 56 8				70 18 16 13	19 80	+ 3 67	
20 23 56 14				69 53 55 94	58 70	+ 2 76	
22 23 56 21				69 30 0 81	59 70	— 1 11	
23 23 56 26				69 18 31 27	31 80	+ 0 53	
25 23 56 36				68 56 36 10	39 50	+ 3 40	
26 23 56 42				68 46 14 90	15 80	+ 0 90	
J ne 1 23 57 29				67 51 39 01	40 40	+ 1 39	
2 23 57 39				67 43 51 51	54 00	+ 2 49	
3 23 57 48				67 36 29 47	30 90	+ 1 43	
5 23 58 9				67 22 52 33	5 30	+ 2 97	
8 23 58 42				67 5 26 03	30 10	+ 4 07	

RIGHT ASCEN ON AND NORTH POLAR DISTANCES OF THE SUN S CENTER (C nt ued)

	M S l Tim f Obs rv ti	A R fr m Ob tl	A R f m N A	Err f N A	N P D f m Ob l	N P D fr m N A	Err f N A	M an H Semld
1834								′
J	9 23 58 57				67 0 26 58	30 00	+ 3 42	
	10 23 59 6				66 55 52 92	54 00	+ 1 08	
	12 23 59 31				66 47 56 63	55 30	— 1 33	
	16 0 0 8				66 39 0 02	1 60	+ 1 58	
	17 0 0 21				66 36 51 07	53 10	+ 2 03	
	18 0 0 34				66 35 6 20	9 30	+ 3 10	
	22 0 1 25				66 32 19 9	22 70	+ 2 75	
	23 0 1 38				66 32 4 25	42 50	— 2 75	
	24 0 1 51				66 33 27 85	27 60	— 0 25	
	25 0 2 3				66 34 36 29	37 20	+ 0 91	
	26 0 2 16				66 36 12 30	11 80	— 0 50	
	27 0 2 29				66 38 7 17	10 80	+ 3 63	
	28 0 2 41				66 40 35 55	34 70	— 0 85	
	29 0 2 53				66 43 25 80	22 90	— 2 90	
J ly	2 0 3 29				66 54 13 90	14 30	+ 0 40	
	4 0 3 51				67 3 29 89	30 00	+ 0 11	
	6 0 4 13				67 14 18 93	21 60	+ 2 67	
	7 0 4 23				67 20 21 70	23 10	+ 1 40	
	10 0 4 52				67 40 50 30	48 60	— 1 70	
	12 0 5 8				67 56 21 16	21 30	+ 0 14	
	13 0 5 16				68 4 43 97	42 10	— 1 87	
	14 0 5 23				68 13 24 09	25 30	+ 1 21	
	15 0 5 30				68 22 29 85	30 80	+ 0 95	
	19 0 5 52				69 2 30 78	31 70	+ 0 92	
	20 0 5 56				69 13 27 29	25 60	— 1 69	
Aug	2 0 5 57				72 5 23 00	26 00	+ 3 00	
	4 0 5 49				72 36 32 22	32 90	+ 0 68	
	5 0 5 43				72 52 2 85	32 00	— 0 85	
	7 0 5 31				73 25 18 06	20 00	+ 1 94	
	8 0 5 24				73 42 7 29	8 30	+ 1 01	
	12 0 4 51				74 51 5 41	55 70	+ 0 29	
	13 0 4 41				75 9 58 66	59 50	+ 0 84	
	14 0 4 30				75 28 14 26	17 40	+ 3 14	
	19 0 3 30				77 3 5 83	8 50	+ 2 67	
S pt	10 23 56 43				85 15 25 80	27 60	+ 1 80	
	14 23 55 19				86 48 22 81	20 70	— 2 11	
	16 23 54 36				87 34 40 00	39 50	— 0 50	
	17 23 54 15				87 56 55 40	53 40	— 2 00	
	19 23 3 33				88 43 27 44	28 10	+ 0 96	
	21 23 52 51				89 30 7 7	11 40	+ 3 83	
	22 23 52 30				89 53 37 22	34 80	— 2 42	
	23 23 52 9				90 17 0 81	59 30	— 1 51	
	24 23 51 49				90 39 23 49	24 50	+ 1 01	
	25 23 51 28				91 2 49 69	50 00	+ 0 31	
	28 23 50 28				92 14 5 29	4 80	— 0 49	
Oct	4 23 48 36				94 33 57 12	5 00	— 2 12	
	6 23 48 1				95 20 10 99	8 90	— 2 09	
	7 23 47 44				95 43 10 13	9 80	— 0 33	
	8 23 47 28				96 6 1 04	6 30	+ 5 26	
	15 23 45 45				98 44 4 92	3 00	— 1 92	
	16 23 45 32				99 6 9 13	10 00	+ 0 87	
	17 23 45 21				99 28 8 79	8 90	+ 0 11	
	19 23 44 58				100 11 42 33	41 70	— 0 63	
	21 23 44 39				100 54 39 52	38 80	— 0 72	
	23 23 44 22				101 36 53 97	57 10	+ 3 13	

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

Mean Solar Time of Observation			A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Mean Semidiameter: Horizontal	Mean Semidiameter: Vertical
		m				′ ″	″		′ ″	′ ″
1834										
Oct	24	23 44 15				101 57 47 90	50 70	+ 2 80		
	25	23 44 8				102 18 31 50	33 50	+ 2 00		
	26	23 44 2				102 39 4 34	5 00	+ 0 66		
	27	23 43 57				102 51 31 19	24 80	— 6 39		
	28	23 43 52				103 19 30 41	32 60	+ 2 19		
	30	23 43 47				103 59 12 00	10 10	— 1 90		
Dec	15	23 55 42				113 19 13 63	12 60	— 1 03		
	16	23 56 11				113 21 46 04	47 50	+ 1 46		
	17	23 56 40				113 23 57 29	54 40	— 2 89		
	18	23 57 10				113 25 32 58	33 10	+ 0 52		
	19	23 57 40				113 26 45 42	43 50	— 1 92		
	22	23 59 10				113 27 26 93	25 60	— 1 33		
	23	23 59 39				113 26 42 88	42 90	+ 0 02		
	25	0 0 10				113 25 31 81	32 10	+ 0 29		
	26	0 0 40				113 23 5 26	52 90	— 2 36		
	27	0 1 9				113 21 47 59	45 50	— 2 09		
	28	0 1 39				113 19 8 62	10 00	+ 1 38		
	31	0 3 7				113 8 34 14	34 70	+ 0 56		
1835										
Jan	3	0 4 33				112 53 49 90	49 40	— 0 50		
	5	0 5 28				112 41 39 80	4 00	+ 2 20		
	6	0 5 55				112 34 58 60	57 70	— 0 90		
	7	0 6 21				112 27 45 66	46 50	+ 0 84		
	9	0 7 13				112 12 6 03	4 70	— 1 33		
	15	0 9 33				111 14 44 71	42 20	— 2 51		16 1 79
	16	0 9 54				111 3 42 97	41 40	— 1 57		16 0 13
	17	0 10 14				110 52 14 33	16 60	+ 2 27		16 3 12
	18	0 10 34				110 40 27 21	27 70	+ 0 49		16 1 11
	19	0 10 52				110 28 19 64	15 40	— 4 24		16 1 62
	20	0 11 11				110 15 39 48	39 80	+ 0 32		16 1 31
	21	0 11 29				110 2 40 14	41 40	+ 1 26		16 2 24
	22	0 11 46				109 49 21 40	20 60	— 0 80		16 1 26
	24	0 12 17				109 21 3 90	32 80	— 3 10		
	26	0 12 45				108 52 19 28	19 50	+ 0 22		16 2 31
	30	0 13 32				107 48 48 13	48 20	+ 0 07		16 3 27
	31	0 13 42				107 33 23 67	21 50	— 2 17		
Feb	1	0 13 51				107 16 39 11	36 30	— 2 81		16 2 17
	2	0 13 58 8	21 0 58 54	58 53	— 0 01	106 59 31 00	32 70	+ 1 70		16 3 05
	3	0 14 6 3	21 5 1 58	1 28	— 0 30	106 42 6 89	11 50	+ 4 61		16 0 40
	4	0 14 12				106 24 31 66	32 80	+ 1 14		16 3 04
	5	0 14 18 1	21 13 7 46	7 27	— 0 19	106 6 32 01	37 30	+ 5 29	16 2 33	
	6	0 14 22 5	21 17 8 42	8 51	+ 0 09	105 48 24 55	25 30	+ 0 75	16 4 09	15 57 87
	7	0 14 26				105 29 53 37	56 90	+ 3 53		
	8	0 14 29 8	21 25 8 84	8 53	— 0 31	105 11 8 53	12 80	+ 4 27		
	10	0 14 33				104 32 55 33	59 60	+ 4 27	16 2 37	15 59 31
	11	0 14 34				104 13 31 28	30 90	— 0 38		
	12	0 14 34 1	21 40 59 24	58 82	— 0 42	103 53 46 25	48 30	+ 2 05	16 0 28	16 3 34
	13	0 14 32 8	21 44 54 50	54 44	— 0 06	103 33 51 65	51 80	+ 0 15	16 1 40	16 1 15
	14	0 14 31 4	21 48 49 56	49 27	— 0 29	103 13 40 44	42 40	+ 1 96	16 3 01	16 3 54
	15	0 14 29 2	21 52 43 92	43 36	— 0 56	102 53 22 03	20 10	— 1 93	16 1 93	
	16	0 14 25 9	21 56 37 22	36 75	— 0 47	102 32 41 95	45 40	+ 3 45	16 1 71	16 2 49
	17	0 14 21 9	22 0 29 86	29 41	— 0 45	102 11 54 50	58 60	+ 4 10	16 1 59	
	18	0 14 17 4	22 4 21 65	21 37	— 0 28	101 50 59 33	0 10	+ 0 77	16 1 31	
	19	0 14 12 0	22 8 13 07	12 66	— 0 41	101 29 49 69	50 30	+ 0 61	16 2 10	16 1 26
	20	0 14 5 8	22 12 3 51	3 28	— 0 23	101 8 27 80	29 50	+ 1 70	16 1 71	
	21	0 13 59 5	22 15 53 67	53 24	— 0 43	100 46 56 72	58 20	+ 1 48	15 59 52	
	22	0 13 52 3	22 19 42 79	42 58	— 0 21	100 25 14 43	16 90	+ 2 47	15 59 71	16 0 79

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

Month	Day	Mean Solar Time of Observation	A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Mean Semidiameter Horizontal	Mean Semidiameter Vertical
183										
Feb	23	0 13 44 4	22 23 31 71	31 29	- 0 42	100 3 23 83	26 00	+ 2 17	16 1 93	16 1 56
	24	0 13 35 8	22 27 19 82	19 38	- 0 44	99 41 25 77	25 90	+ 0 13	16 2 49	16 1 55
	25	0 13 27 5	22 31 7 90	6 88	- 1 02	99 19 16 35	17 00	+ 0 65	16 0 32	
	26	0 13 18 0	22 34 54 91	53 78	- 1 13	98 56 57 71	59 90	+ 2 19	16 2 29	16 1 99
	27	0 13 7 4	22 38 40 80	40 10	- 0 70	98 34 30 48	34 70	+ 4 22	16 1 89	
	28	0 12 56 7	22 42 26 45	25 86	- 0 59	98 11 58 99	1 90	+ 2 91	16 0 70	16 1 83
Mar	1	0 12 45 2	22 46 11 55	11 10	- 0 4				16 1 53	
	2	0 1 33 4	22 49 56 41	55 80	- 0 61	97 26 34 61	34 60	- 0 01	16 2 04	15 59 29
	3	0 12 20 7	22 53 40 18	39 98	- 0 20	97 3 40 31	41 50	+ 1 19	16 2 35	16 2 96
	4	0 12 8 6	22 57 24 58	23 66	- 0 92	96 40 40 64	42 60	+ 1 96	16 1 53	15 59 38
		0 11 55 1	23 1 7 71	6 87	- 0 84	96 17 3 60	38 00	+ 2 40	16 0 95	16 1 97
	6	0 11 41 4	23 4 50 37	49 61	- 0 76	9 4 27 83	28 0	+ 0 37	16 1 50	16 1 65
		0 11 27 1	23 8 32 72	31 91	- 0 81	95 31 11 94	13 80	+ 1 86	15 59 38	16 3 4
	8	0 11 12 3	23 12 14 28	13 78	- 0 50	95 7 53 45	55 10	+ 1 65	16 0 41	16 0 96
	9	0 10 57 3	23 15 55 77	55 25	- 0 52	94 44 32 87	32 70	- 0 17	16 1 72	
	10	0 10 42 0	23 19 37 06	36 35	- 0 71	94 21 7 26	6 50	- 0 76	16 2 94	
	11	0 10 26 2	23 23 17 72	17 07	- 0 6					
	12	0 10 10 2	23 26 8 33	7 45	- 0 88	93 34 3 95	5 10	+ 1 15	16 1 55	16 3 26
	13	0 9 53 4	23 30 37 94	37 52	- 0 42	93 10 30 28	30 70	+ 0 42	16 3 54	16 0 34
	14	0 9 36 7	23 34 17 84	17 27	- 0 57	92 46 53 22	54 20	+ 0 98	16 1 02	16 3 58
	15	0 9 19 6	23 37 57 21	56 78	- 0 43	92 23 15 99	15 80	- 0 19	16 1 88	16 1 17
	16	0 9 2 8	23 41 36 88	36 04	- 0 84	91 59 33 83	36 10	+ 2 27	16 1 67	16 1 67
	17	0 8 45 1	23 45 16 07	1 06	- 1 01	91 35 55 48	55 30	- 0 18	16 2 14	16 2 40
	18	0 8 27 3	23 48 54 44	53 89	- 0 55	91 12 10 11	13 80	+ 3 69	16 2 87	16 2 24
	19	0 8 10 0	23 52 33 73	32 56	- 1 17	90 48 31 35	31 90	+ 0 55	16 0 58	15 59 82
	20	0 7 51 9	23 56 12 11	11 06	- 1 05	90 24 48 05	50 10	+ 2 05	16 0 85	16 3 77
	21	0 7 33 7	23 59 50 40	49 45	- 0 9	90 1 8 59	8 70	+ 0 11	16 1 68	16 2 16
	22	0 7 15 6	0 3 28 67	27 73	- 0 94				16 0 74	
	23	0 6 57 1	0 7 6 72	5 91	- 0 81	89 13 47 40	48 00	+ 0 60	16 2 12	16 1 46
	24	0 6 38 5	0 10 44 71	44 04	- 0 67	88 50 9 29	9 50	+ 0 21	16 3 78	15 58 53
	25	0 6 20 2	0 14 22 94	22 11	- 0 83	88 26 30 45	33 00	+ 2 55	16 2 00	16 3 78
	26	0 6 1 5	0 18 0 64	0 13	- 0 51	88 2 57 30	58 60	+ 1 30	16 1 92	15 59 86
	27	0 5 42 8	0 21 38 36	38 15	- 0 21	87 39 23 60	26 60	+ 3 00	16 0 60	
	28	0 5 24 4	0 25 16 68	16 16	- 0 52	87 15 54 54	57 50	+ 2 96	16 0 44	16 2 80
	29	0 5 6 0	0 28 54 59	54 20	- 0 39	86 52 30 97	31 70	+ 0 73	16 3 23	16 1 63
	30	0 4 48 1	0 32 33 17	32 25	- 0 92	86 29 6 86	9 30	+ 2 44	16 0 73	16 2 05
	31	0 4 29 0	0 36 10 65	10 39	- 0 26	86 5 50 71	0 80	+ 0 09	16 1 63	16 0 55
April	4	0 3 16				84 33 22 49	24 60	+ 2 11	16 2 73	16 1 69
	5	0 2 58				81 10 29 66	31 50	+ 1 84	16 0 25	
	6	0 2 40 7	0 58 1 44	1 22	- 0 22	83 47 47 56	44 70	- 2 86	16 1 33	
	7	0 2 23 6	1 1 40 78	40 19	- 0 59	83 25 9 44	4 50	- 4 94	16 1 49	
	8	0 2 6				83 2 31 31	31 20	- 0 11	15 59 97	16 0 91
	9	0 1 49				82 40 2 47	5 10	+ 2 63	16 2 44	16 2 13
	10	0 1 32				82 17 45 04	46 30	+ 1 26	16 4 11	16 0 16
	11	0 1 15				81 55 35 62	35 50	- 0 12	16 0 99	16 2 85
	12	0 0 59 0	1 19 58 74	58 31	- 0 43	81 33 32 10	32 80	+ 0 70	16 2 45	
	13	0 0 43 1	1 23 39 30	38 73	- 0 57	81 11 37 34	38 50	+ 1 16	16 0 83	
	14	0 0 27 5	1 27 20 14	19 46	- 0 68	80 49 52 85	53 30	+ 0 45	16 0 14	
	1	0 0 11 6	1 31 0 74	0 52	- 0 22	80 28 19 00	16 80	- 2 20	16 3 12	15 57 51
	1	23 59 56 7	1 34 42 48	41 95	- 0 53	80 6 49 41	49 80	+ 0 39	16 1 17	16 3 27
	16	23 59 42				79 45 32 36	32 50	+ 0 14	16 0 24	16 1 45
	17	23 59 27 2	1 42 5 88	5 94	+ 0 06	79 24 27 58	25 20	- 2 38	16 0 91	16 2 47
	18	23 59 13 6	1 45 48 77	48 51	- 0 26	79 3 28 04	28 30	+ 0 26	15 59 62	16 0 27
	19	23 59 0 0	1 49 31 65	31 52	- 0 13	78 42 41 42	42 10	+ 0 68	15 59 19	16 3 28
	20	23 58 47				78 22 7 14	6 80	- 0 34	16 2 87	16 0 63
	21	23 58 34				78 2 42 89	42 60	- 0 29	16 1 05	16 1 06
	22	23 58 22				77 41 31 55	30 30	- 1 25		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN S CENTER *(Cont nu d)*

M Sol Tim f Ob rv ti	A R f Ob l	A R fr m N A	Err f N A	N P D f m Ob rv ti	N P D from N A	Err f N A	M S midi m H l f l	M S midi m V ti al
1835 m	m				/			
April 23 23 58 11				77 21 31 15	29 90	— 1 25	16 1 72	16 3 00
24 23 57 59 5	2 8 13 77	13 24	— 0 53	77 1 41 23	41 80	+ 0 ᴗ7	16 1 9ᴗ	16 1 86
25 23 57 48 9	2 11 59 65	59 01	— 0 64	76 42 4 34	6 50	+ 2 16	16 0 92	
26 23 57 38 7	2 15 45 96	45 27	— 0 69	76 22 45 15	44 20	— 0 95	16 1 78	16 0 2
27 23 57 28 6	2 19 32 50	32 03	— 0 47	76 3 36 65	35 30	— 1 35	16 1 73	16 1 69
28 23 57 19 9	2 23 20 33	19 32	— 1 01	75 44 37 80	40 30	+ 2 50	16 2 86	16 4 68
29 23 57 10 9	2 27 7 80	7 11	— 0 69	75 26 59 15	58 90	— 0 25	16 0 27	
30 23 57 2				75 7 29 83	31 30	+ 1 47	16 3 33	16 3 5
M y 1 23 56 55 1	2 34 45 16	44 26	— 0 90	74 49 18 48	20 20	+ 1 72	16 3 80	16 1 81
2 23 56 47 7	2 38 34 30	33 62	— 0 68	74 31 21 45	23 20	+ 1 75	15 59 89	1 59 00
3 23 56 41 1	2 42 24 32	23 62	— 0 70					
4 23 56 34 7	2 46 14 39	13 97	— 0 42	73 56 15 13	1ᴐ 70	+ 0 ᴗ7	16 4 62	16 2 16
5 23 56 29 0	2 50 5 21	4 93	— 0 28	73 39 4 54	5 90	+ 1 36	16 2 6ᴗ	16 1 29
6 23 56 24 2	2 53 56 93	56 46	— 0 47	73 22 16 50	12 20	— 4 30	16 1 69	
7 23 56 19 8	2 57 49 11	48 54	— 0 57	73 5 35 28	35 50	+ 0 22	16 1 52	1Ϲ 1 26
8 23 56 16 3	3 1 42 07	41 17	— 0 90	72 49 14 84	15 70	+ 0 86	16 3 22	1ᴗ 59 76
10 23 56 9 8	3 9 28 76	28 13	— 0 63	72 17 27 73	27 80	+ 0 07	16 1 29	
11 23 ᴗ6 7 1	3 13 22 39	22 48	+ 0 09	72 1 57 91	0 20	+ 2 26	16 4 68	
13 23 56 5 1	3 21 13 69	12 90	— 0 79	71 32 0 71	59 80	— 0 94	16 0 27	
14 23 56 4 3	3 25 9 36	9 00	— 0 36	71 17 28 12	27 00	— 1 12	16 1 98	
15 23 56 4 1	3 29 5 93	5 65	— 0 28	71 3 13 91	13 30	— 0 61	16 0 2ᴗ	
16 23 56 5 1	3 33 3 47	2 90	— 0 57	70 49 9 70	18 40		15 59 96	
17 23 56 6 5	3 37 1 33	0 73	— 0 60	70 35 39 17	43 00	+ 3 83	16 2 13	
18 23 56 8 1	3 40 59 46	59 15	— 0 31	70 22 26 45	27 30	+ 0 8ᴗ	16 2 72	16 1 0
19 23 56 10 6	3 44 58 63	58 13	— 0 50	70 9 32 20	31 30	— 0 90	16 2 19	16 1 22
20 23 56 14 1	3 48 58 47	57 68	— 0 79	69 56 56 76	ᴗ5 60	— 1 16	16 2 66	16 2 37
21 23 56 17							16 3 1	
22 23 56 21 1	3 56 58 72	58 46	— 0 26	69 32 46 90	45 50	— 1 40	16 2 ᴗ2	
23 23 56 25 7	4 0 59 93	59 67	— 0 26	69 21 15 87	11 80	— 4 07	16 1 62	
24 23 56 31 4	4 5 2 19	1 41	— 0 78	69 9 1 5ᴗ	59 30	— 2 25	16 2 38	
25 23 56 37 0	4 9 4 30	3 68	— 0 62	68 ᴗ9 ᴗ 93	8 20	+ 2 27	16 3 58	16 1 0
26 23 56 43 2	4 13 7 12	6 45	— 0 67	68 48 37 05	38 70	+ 1 6ᴗ	16 4 81	16 2 14
27 23 56 49 6	4 17 10 09	9 72	— 0 37	68 38 29 77	31 20	+ 1 43	16 3 ᴗ8	
28 23 56 56				68 28 43 67	4 70	+ 2 03	16 2 06	16 3 72
29 23 57 4				68 19 24 ᴗ1	23 50	— 1 01	16 0 63	
30 23 57 12				68 10 22 Ϲ3	21 80	— 0 83	16 0 02	16 0 9
31 23 57 21				68 1 41 64	44 00	+ 2 36	16 1 7ᴗ	
June 1 23 ᴗ7 29				67 53 30 40	29 10	— 1 30	16 2 22	16 0 88
2 23 57 39				67 45 35 43	37 30	+ 1 87	1ᴗ 59 19	16 1 98
3 23 57 48				67 38 8 83	8 90	+ 0 07	16 1 13	16 0 02
4 23 57 58 5	4 49 51 66	51 26	— 0 40	67 31 4 00	4 20	+ 0 20	16 2 40	16 2 72
6 23 58 19				67 18 5 49	5 50	+ 0 01		
7 23 58 30 6	5 2 12 62	11 77	— 0 85	67 12 13 60	11 80	— 1 80		
9 23 58 52 8	5 10 29 01	28 53	— 0 48	67 1 37 45	36 60	— 0 85		
12 23 59 28				66 48 45 49	45 60	+ 0 11	16 1 46	16 0 89
13 23 59 40				66 45 18 39	17 20	— 1 19	15 59 73	16 0 81
18 0 0 31 1	5 43 39 64	39 88	+ 0 24					
19 0 0 44 2	5 47 49 65	49 40	— 0 25	66 34 4 21	4 90	+ 0 69	16 3 25	16 1 16
20 0 0 57 4	5 51 59 35	59 01	— 0 34	66 33 2 53	4 50	+ 1 97	16 4 17	16 1 74
21 0 1 10 2	5 56 8 67	8 65	— 0 02	66 32 29 87	29 10	— 0 77	16 2 63	
23 0 1 36 5	6 4 28 34	27 96	— 0 38	66 32 32 50	32 60	+ 0 10		
25 0 2 2				66 34 11 88	15 20	+ 3 32	16 16 2	
26 0 2 15				66 35 44 18	44 70	+ 0 52	16 1 55	
29 0 2 52 9	6 29 24 45	21 04	— 0 41	66 43 35 40	37 40	+ 2 00	16 1 19	16 1 15
30 0 3 4 9	6 33 32 98	32 82	— 0 16	66 45 44 73	44 60	— 0 13		16 1 98
J ly 1 0 3 17 1	6 37 41 66	41 36	— 0 30	66 49 16 95	16 20	— 0 75	16 4 60	16 1 89

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

Mean Solar Time of Observation		A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Mean Semidiameter Horizontal	Mean Semidiameter Vertical
183	m								
July	2 0 3 28				66 53 14 45	12 00	— 2 45	16 1 77	16 3 26
	3 0 3 40 1	6 45 57 88	57 68	— 0 20	66 57 32 93	32 10	— 0 83	16 5 12	16 1 82
	4 0 3 51 2	6 50 5 52	5 39	— 0 13	67 2 16 71	16 40	— 0 31		
	6 0 4 12							15 59 92	
	7 0 4 22				67 18 56 01	53 20	— 2 81	16 1 01	
	8 0 4 32				67 25 14 23	12 90	— 1 33	16 4 47	16 1 08
	9 0 4 42 1	7 10 39 37	38 90	— 0 47	67 31 55 94	55 80	— 0 14	16 1 91	16 3 10
	11 0 4 59				67 46 33 65	31 40	— 2 25		16 1 14
	12 0 5 7 9	7 22 54 87	54 32	— 0 55	67 54 25 09	23 40	— 1 69	15 59 59	
	13 0 5 15 1	7 26 58 6	58 61	— 0 04	68 2 38 20	38 50	+ 0 30	16 0 77	16 1 99
	15 0 5 29							16 2 08	
	16 0 5 3				68 29 40 34	38 10	— 2 24	16 1 48	
	17 0 5 41 3	7 43 11 18	11 07	— 0 11	68 39 23 23	22 30	— 0 93	16 1 02	16 3 89
	20 0 5 5[illegible] 8	7 55 15 40	15 29	— 0 11	69 10 43 83	44 80	+ 0 97	15 59 78	
	21 0 5 59				69 21 56 91	54 90	— 2 01	16 1 75	16 0 10
	23 0 6 5 7	8 7 15 47	14 74	— 0 73	69 45 19 52	17 30	— 2 22	16 0 52	
	24 0 6 7 4	8 11 13 67	13 43	— 0 24				16 0 46	
	25 0 6 8 3	8 15 11 72	11 54	— 0 18	70 10 3 21	1 20	— 2 01		16 3 16
	26 0 6 9 6	8 19 9 24	9 10	— 0 14	70 22 51 97	53 20	+ 1 23		16 1 93
	27 0 6 9 8	8 23 6 16	6 03	— 0 13	70 36 6 18	4 70	— 1 48	16 1 01	16 3 35
	28 0 6 10 7	8 27 2 44	2 36	— 0 08	70 49 35 36	35 60	+ 0 24	15 59 92	16 2 70
	29 0 6 10				71 3 27 14	25 40	— 1 74	16 0 08	16 0 29
	30 0 6 8				71 17 34 80	34 10	— 0 70	16 1 09	16 1 07
	31 0 6 6				71 32 4 30	1 10	— 3 20	16 0 42	16 0 88
Aug	1 0 6 4				71 46 47 13	46 10	— 1 03	15 59 74	16 1 57
	2 0 6 0 1	8 46 3[illegible] 13	34 75	— 0 38	72 1 49 52	49 30	— 0 22	16 1 45	
	3 0 5 [illegible]6				72 17 11 54	10 00	— 1 54	16 2 55	
	4 0 5 51				72 32 49 38	47 90	— 1 48	15 59 84	16 1 29
	5 0 5 46 4	8 58 10 94	10 73	— 0 21	72 48 43 28	42 60	— 0 68	16 3 73	
	6 0 5 40 9	9 2 1 86	1 48	— 0 38	73 4 58 56	34 10	— 4 46	16 3 30	16 1 48
	7 0 5 34 7	9 5 52 28	51 65	— 0 63	73 21 23 47	21 90	— 1 57	16 4 03	16 3 26
	8 0 5 27							16 3 08	
	9 0 5 20 2	9 13 30 85	30 19	— 0 66	73 55 4 40	5 40	+ 1 00	16 1 02	
	13 0 4 43				75 5 36 98	36 00	— 0 98	16 3 92	16 1 84
	14 0 4 33				75 23 48 47	50 20	+ 1 73	16 1 72	16 1 84
	20 0 3 20				77 18 0 10	0 00	— 0 10	16 1 60	16 1 21
	26 0 1 50				79 19 26 51	27 80	+ 1 29		
	27 0 1 31 0	10 20 42 02	41 77	— 0 25	79 40 21 05	22 20	+ 1 15	16 1 35	16 2 43
	28 0 1 16 4	10 24 21 88	21 37	— 0 51	80 1 24 25	21 80	— 2 45	16 0 98	
	29 0 0 59				80 22 34 67	33 40	— 1 27	15 59 98	16 2 71
	30 0 0 42				80 43 53 57	54 10	+ 0 53	16 1 78	
	31 0 0 24 7	10 35 18 77	17 97	— 0 80	81 5 23 57	23 60	+ 0 03	16 0 42	
Sept	1 0 0 5 6	10 38 56 05	56 11	+ 0 06	81 27 1 55	1 50	— 0 05	16 1 19	16 0 48
	1 23 59 47				81 48 46 13	47 50	+ 1 37	16 0 20	16 1 75
	2 23 59 28				82 10 40 04	41 40	+ 1 36	16 3 21	16 2 25
	3 23 59 8 6	10 49 48 63	48 61	— 0 02					
	4 23 58 49				82 54 55 74	51 30	— 4 44		
	5 23 58 29				83 17 7 72	6 60	— 1 12	16 3 95	
	6 23 58 9				83 32 30 61	28 50	— 2 11	16 1 72	
	7 23 57 49 4	11 4 15 29	15 17	— 0 12	84 2 55 21	56 80	+ 1 59	16 2 18	
	8 23 57 29 5	11 7 52 04	51 27	— 0 77	84 24 30 19	30 90	+ 0 71	16 0 67	16 1 11
	12 23 56 6 5	11 22 14 96	14 30	— 0 66					
	14 23 55 24 2	11 29 25 66	25 29	— 0 37				16 0 03	
	15 23 55 3 3	11 33 1 33	0 74	— 0 59	87 4 50 99	51 40	+ 0 41	15 59 52	
	16 23 54 42 3	11 36 36 82	36 18	— 0 64	87 28 2 90	2 40	— 0 50	16 0 32	
	17 23 54 21 0	11 40 12 01	11 60	— 0 41	87 51 17 48	16 20	— 1 28	16 0 63	
	19 23 53 38 7	11 47 22 73	22 53	— 0 20	88 37 49 84	51 70	+ 1 86	16 0 50	15 59 61

RIGHT ASCENSION AND NORTH POLAR DISTANCES OF THE SUN s C NTER (C ıt nued)

M an Solar Tim f Ob ti			A R fr m Ob rv ti	A R fr m N A	Er f N A	N P D f m Ob rv ti	N P D f m N A	Γ f N A	M S midi m: H l t	M S midi m: V
1835		m	m							
Sept	21	23 52 56 8	11 54 33 79	33 70	— 0 09	89 24 34 67	35 70	+ 1 03	16 0 90	
	23	23 52 15 4	12 1 45 40	45 21	— 0 19	90 11 26 81	25 00	— 1 81	16 2 29	16 1 66
	24	23 51 55 1	12 5 21 57	21 15	— 0 42	90 34 50 34	50 50	+ 0 16	16 ? 53	
	25	23 51 34 2	12 8 57 22	57 25	+ 0 03	90 58 16 12	16 70	+ 0 58	16 2 31	
	26	23 51 14 4	12 12 33 93	33 50	— 0 43	91 21 42 25	42 70	+ 0 45	16 1 30	
	27	23 50 54 0	12 16 9 91	9 90	— 0 01	91 45 5 33	7 90	+ 2 57	16 3 39	
	29	23 50 14 4	12 23 23 50	23 40	— 0 10	92 31 56 45	55 50	— 0 95	16 1 58	
Oct	2	23 49 17 4	12 34 15 84	15 48	— 0 36	93 41 54 62	54 80	+ 0 18		
	7	23 47 48 0	12 52 28 83	28 65	— 0 18	95 37 36 57	35 70	— 0 87	16 0 95	
	8	23 47 31 4	12 56 8 68	8 47	— 0 21	96 0 31 0	32 30	+ 0 80		
	9	23 47 15 0	12 59 48 86	48 70	— 0 16	96 23 21 77	24 00	+ 2 23	16 2 18	
	10	23 46 59 1	13 3 29 19	29 43	— 0 06	96 46 10 57	11 10	┤ 0 53	16 3 55	
	11	23 46 44 0	13 7 10 87	10 64	— 0 23	97 8 49 74	52 80	+ 3 06		
	12	23 46 29 0	13 10 52 55	52 38	— 0 17	97 31 28 01	28 70	+ 0 69	16 1 44	
	13	23 46 14 6	13 14 34 54	34 63	+ 0 09	97 53 55 73	8 40	+ 2 67	16 1 96	16 1 3)
	14	23 46 1 3	13 18 17 78	17 42	— 0 36	98 16 22 14	?1 70	— 0 44	16 1 49	
	15	23 45 47 8	13 22 0 83	0 79	— 0 04	98 38 35 70	38 40	+ 2 70	16 32	16 1 40
	16	23 45 35 3	13 25 44 81	44 72	— 0 09	99 0 45 82	47 80	+ 1 98	16 57	
	17	23 45 23 3	13 29 29 40	29 25	— 0 15	99 22 48 27	49 40	+ 1 13		
	18	23 45 12 0	13 33 14 64	14 41	— 0 23	99 44 41 48	43 00	+ 1 52	16 3 39	16 1 2
	19	23 45 1 3	13 87 0 36	0 19	— 0 17	100 6 23 55	28 10	+ 4 55	16 3 08	
	22	23 44 32 7	13 48 21 51	21 41	— 0 10	101 10 45 96	49 10	+ 3 14		
	23	23 44 24 8	13 52 10 03	9 84	— 0 19	101 31 54 55	56 30	+ 1 75	16 2 12	
	25	23 44 10 5	13 59 49 00	48 77	— 0 23	102 13 36 07	38 90	+ 2 83	16 3 01	
	26	23 44 4 6	14 3 39 63	39 31	— 0 32	102 34 12 64	13 50	+ 0 86	16 2 06	
Nov	1	23 43 44				104 33 19 96	18 70	— 1 26		
	4	23 43 44				105 29 42 14	44 0	+ 2 36	16 1 09	
	5	23 43 46 4	14 42 46 37	46 27	— 0 10	105 48 2 03	3 20	+ 1 17	16 1 01	16 0 94
	6	23 43 48 2	14 46 45 58	45 37	— 0 21	106 6 5 95	5 90	— 0 05	16 0 74	
	7	23 43 52 0	14 50 45 81	45 33	— 0 48	106 23 50 41	52 70	+ 2 29	16 1 06	
	8	23 43 56 1	14 54 46 40	46 14	— 0 26	106 41 20 73	22 80	+ 2 07	16 1 59	
	9	23 44 1 3	14 58 48 01	47 80	— 0 21	106 58 36 52	36 10	— 0 42		
	10	23 44 7 8	15 2 50 91	50 34	— 0 57					
	11	23 44 14 5	15 6 54 24	53 75	— 0 49	107 32 7 27	10 70	+ 3 43		
	12	23 44 22				107 48 34 09	31 10	— 2 99		
	15	23 44 50				108 35 42 04	39 10	— 2 94		
	17	23 45 13 2	15 31 32 47	32 31	— 0 16	109 5 29 94	6 90	— 3 04		
	18	23 45 2ᴗ 8	15 35 41 78	41 75	— 0 03	109 19 51 11	50 20	— 0 91	16 0 87	
	20	23 45 54 1	15 44 3 30	3 11	— 0 19					
	21	23 46 9 4	15 48 15 25	15 01	— 0 24	110 0 54 08	53 50	— 0 58	16 0 43	
	22	23 46 25 4	15 52 27 84	27 70	— 0 14	110 13 50 49	51 00	+ 0 51	16 3 77	16 1 73
	23	23 46 42 0	15 56 41 19	41 17	— 0 02	110 26 24 60	26 00	+ 1 40		16 2 06
	24	23 46 59 9	16 0 55 32	55 40	+ 0 08	110 38 37 67	38 40	+ 0 73		16 1 92
	25	23 47 17 9	16 ᴗ 10 21	10 39	+ 0 18	110 50 23 54	27 70	+ 4 16	16 2 17	
	26	23 47 37 4	16 9 26 17	26 09	— 0 08	111 1 53 04	53 40	+ 0 36	16 1 05	16 3 01
	27	23 47 56 6	16 13 42 23	42 53	+ 0 30	111 12 56 40	55 30	— 1 10	16 2 31	16 1 97
	30	23 49 1				111 43 33 09	35 00	+ 1 91		
Dec	1	23 49 23 1	16 30 55 13	55 02	— 0 11	111 52 58 72	58 60	— 0 12	16 1 45	
	2	23 49 46 6	16 35 15 07	14 76	— 0 31	112 1 56 34	56 90	+ 0 56	16 2 21	16 86
	3	23 50 9 9	16 39 35 24	35 11	— 0 13	112 10 31 98	29 60	— 2 38	16 3 15	
	7	23 51 51				112 40 18 65	21 10	+ 2 45	16 1 80	
	8	23 52 17 2	17 1 25 53	25 19	— 0 34	112 46 45 07	43 00	— 2 07	16 1 62	
	9	23 52 44 1	17 5 48 91	48 73	— 0 18	112 52 40 31	37 50	— 2 81	16 2 51	
	10	23 53 11 5	17 10 12 98	12 72	— 0 26	112 58 5 18	5 70	+ 0 52	16 0 41	
	12	23 54 7 1	17 19 1 68	1 88	+ 0 20	113 7 38 45	39 50	+ 1 05	16 2 75	
	14	23 55 4 7	17 27 52 58	52 48	— 0 10	113 15 22 59	23 10	+ 0 51	16 0 53	16 1 75

Right Ascensions and North Polar Distance of the Sun's Center (Continued)

Mean Solar Time of Ob		A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Semidiameter Horizontal	Semidiameter Vertical
1835	m	m				′			
De	15 23 55 33 9	17 32 18 50	18 23	— 0 27	113 18 35 25	33 20	— 2 0	16 0 02	
	17 23 56 32 5	17 42 10 28	10 47	+ 0 19	113 23 28 61	29 40	+ 0 79	16 4 28	
	18 23 57 2 8	17 45 37 16	36 89	— 0 27	113 25 15 68	15 20	— 0 48	16 2 82	16 0 52
	19 23 57 32 6	17 50 3 58	3 44	— 0 14	113 26 32 60	32 50	— 0 10	16 2 60	
	20 23 58 3 2	17 54 30 76	30 12	— 0 64	113 27 22 86	21 90	— 0 96		16 0 39
	21 23 58 32 8	17 58 57 11	56 84	— 0·27	113 27 43 06	42 90	— 0 16	16 0 98	16 0 03
	22 23 59 2 8	18 3 23 72	23 60	— 0 12	113 27 35 45	35 60	+ 0 15	16 3 11	16 0 07
	23 23 59 32 9	18 7 50 50	50 32	— 0 18	113 27 1 01	59 90	— 1 11	16 0 59	
	25 0 0 3 2	18 12 17 36	17 01	— 0 35	113 25 55 81	5 70	— 0 11	16 0 67	
	26 0 0 33 0	18 16 43 97	43 59	— 0 38	113 24 21 42	23 20	+ 1 78	16 0 46	
	27 0 1 2				113 22 21 57	23 40	+ 1 83		
	29 0 2 2 4	18 30 3 20	2 52	— 0 68	113 16 54 39	56 30	+ 1 81	16 2 62	
	30 0 2 31 2	18 34 28 66	28 43	— 0 23	113 13 35 93	31 20	— 4 73	16 1 24	
	31 0 3 0				113 9 37 12	38 20	+ 1 08		
1836									
J	2 0 3 57 5	18 47 45 02	44 57	— 0 45	113 0 27 49	28 60	+ 1 11		
	3 0 4 25 7	18 52 9 79	9 28	— 0 51	112 55 10 80	12 50	+ 1 70	16 2 01	
	4 0 4 53 5	18 56 34 21	33 65	— 0 56	112 49 30 90	29 00	— 1 90	16 0 27	
	6 0 5 47 6	19 5 21 47	21 15	— 0 32	112 36 37 97	41 00	+ 3 03	16 1 96	
	7 0 6 14 2	19 9 44 65	44 25	— 0 40	112 29 35 97	36 70	+ 0 73	16 1 87	
	8 0 6 39 8	19 14 7 04	6 89	— 0 15	112 22 5 78	5 70	— 0 08	16 3 72	
	9 0 7 5 1	19 18 28 92	29 04	+ 0 12	112 14 7 56	8 50	+ 0 94	16 3 68	
	10 0 7 30 4	19 22 50 95	50 69	— 0 26	112 5 46 28	44 90	— 1 38	16 2 68	
	11 0 7 55 1	19 27 12 31	11 80	— 0 51	111 56 54 15	55 40	+ 1 25	15 59 90	
	13 0 8 42 5	19 35 52 80	52 28	— 0 52	111 37 58 78	59 60	+ 0 82	15 59 80	
	14 0 9 4 8	19 40 11 93	11 63	— 0 30	111 27 50 91	53 70	+ 2 79	15 55 96	
	15 0 9 27				111 17 22 99	23 00	+ 0 01	16 3 58	
	16 0 9 48 5	19 48 48 91	48 44	— 0 47	111 6 26 34	27 80	+ 1 46	16 2 32	
	17 0 10 9·2	19 53 6 12	5 83	— 0 29	110 55 8 31	8 20	— 0 11	15 59 66	
	18 0 10 29 2	19 57 22 85	22 55	— 0 30	110 43 23 29	24 70	+ 1 41	15 58 27	
	19 0 10 48 7	20 1 39 05	38 54	— 0 51	110 31 15 44	17 70	+ 2 26	16 1 18	
	20 0 11 7 4	20 5 54 20	53 78	— 0 42					
	21 0 11 25 5	20 10 8 85	8 26	— 0 59	110 5 52 69	54 10	+ 1 41	16 1 67	
	22 0 11 42 3	20 14 22 30	21 97	— 0 33	109 52 35 08	38 30	+ 3 22	16 0 47	
	23 0 11 58 9	20 18 35 36	34 88	— 0 48	109 39 0 85	0 30	— 0 55	15 58 70	
	24 0 12 14 1	20 22 47 23	47 00	— 0 23				16 2 14	
	25 0 12 28 9	20 26 58 56	58 32	— 0 24	109 10 36 25	39 20	+ 2 95	16 1 10	
	26 0 12 42 8	20 31 9 09	8 80	— 0 29				16 0 80	
	27 0 12 56				108 40 57 20	53 90	— 3 30	16 1 96	
	28 0 13 8 0	20 39 27 64	27 32	— 0 32	108 25 29 31	30 70	+ 1 39	16 1 82	
	29 0 13 19 6	20 43 35 76	35 30	— 0 46	108 9 47 01	47 60	+ 0 59	16 0 90	
	30 0 13 30 3	20 47 43 14	42 46	— 0 68	107 53 44 30	45 00	+ 0 70	15 59 93	
	31 0 13 39 7	20 51 49 04	48 79	— 0 25				16 2 30	
Feb	1 0 13 48 9	20 55 54 70	54 28	— 0 42				16 2 48	
	2 0 13 57 0	20 59 59 35	58 93	— 0 42	107 3 46 61	44 70	— 1 91	16 2 16	
	3 0 14 4 5	21 4 3 31	2 78	— 0 53	106 46 27 11	28 20	+ 1 09	16 1 50	
	4 0 14 10 9	21 8 6 38	5 80	— 0 58	106 28 55 03	54 30	— 0 73	16 0 30	
	5 0 14 16 8	21 12 8 81	8 00	— 0 81	106 11 1 76	3 40	+ 1 64		
	6 0 14 21 6	21 16 10 27	9 38	— 0 89	105 52 55 30	55 70	+ 0 40	16 1 66	
	7 0 14 24 9	21 20 10 04	9 97	— 0 07	105 34 32 48	31 60	— 0 88	16 4 30	
	8 0 14 28 5	21 24 10 32	9 77	— 0 55	105 15 53 22	51 60	— 1 62	16 1 20	
	9 0 14 31 0	21 28 9 47	8 78	— 0 69	104 56 54 54	56 10	+ 1 56	16 0 68	
	10 0 14 32 7	21 32 7 77	7 03	— 0 74				16 0 47	
	11 0 14 33 1	21 36 4 72	4 50	— 0 22	104 18 17 81	19 90	+ 2 09		
	12 0 14 33 4	21 40 1 54	1 21	— 0 33	103 58 38 24	40 10	+ 1 86	15 58 98	
	13 0 14 32 8	21 43 57 52	57 16	— 0 36	103 38 43 55	46 50	+ 2 95	15 59 86	
	14 0 14 31 3	21 47 52 40	52 38	— 0 02	103 18 40 46	39 50	— 0 96	16 2 28	
	15 0 14 29 5	21 51 47 18	46 84	— 0 34	102 58 16 62	19 40	+ 2 78	16 1 15	

Right Ascensions and North Polar Distances of the Sun's Centre (Continued)

Month and Day 1836		Sidereal Time of Mean Noon	A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Meridian Semidiameter: Horizontal	Meridian Semidiameter: Vertical
		h m s	h m s	s	s	° ′ ″	″	″	′ ″	′ ″
Feb	16	0 14 27 0	21 55 41 20	40 7	—0 63	102 37 42 83	46 60	+ 3 77	16 0 06	
	17	0 14 23 4	21 59 34 09	33 7	—0 52	102 17 0 18	1 70	+ 1 52	15 59 75	
	18	0 14 19 1	22 3 26 24	25 85	—0 39	101 56 1 70	5 10	+ 3 40	16 2 17	
	19	0 14 13 9	22 7 17 63	17 40	—0 23	101 34 5 15	57 20	+ 2 05	16 1 10	
	20	0 14 8 4	22 11 8 67	8 27	—0 40	101 13 37 0	38 20	+ 0 50	16 0 75	
	21	0 14 1 6	22 14 58 47	58 41	—0 03	100 52 45	8 90	+ 3 4	16 3 18	
	22	0 13 55 0	22 18 48 41	47 94	—0 47				16 1 06	
	23	0 13 47 2	22 22 36 87	36 79	—0 08					
	24	0 13 39 0	22 26 2 28	21 99	—0 29	99 46 37 84	42 60	+ 4 76	16 2 90	
	25	0 13 30 6	22 30 13 4	12	—0 87	99 24 31 61	35 80	+ 4 19	16 0 24	
	26	0 13 20 5	22 33 9 81	59 50	—0 31	99 2 19 04	20 70	+ 1 66	16 1 48	
	27	0 13 10 4	22 37 46 16	4 88	—0 28	98 39 9 62	7 60	—2 02	16 1 38	
	28	0 12 59 6	22 41 32 06	31 65	—0 41	98 17 27 14	27 20	+ 0 06	16 1 2	
	29	0 12 48 1	22 45 17 22	16 88	—0 34	97 54 0 23	49 40	—0 89	16 1 42	
Mar	1	0 12 36 2	22 49 2 1	1 7	—0 58	97 32 4 69	5 00	+ 0 31	16 2 30	
	2	0 12 23 6	22 52 46 02	4 71	—0 28	97 9 12 61	14 20	+ 1 9		
	3	0 12 10 8	22 56 29 69	29 41	—0 28	96 46 16 78	17 30	+ 0 2	16 1 16	
	4	0 11 57 5	23 0 13 02	12 61	—0 41	96 23 11 13	1 10	+ 3 07	16 1 32	
	5	0 11 43 8	23 3 55 67	5 36	—0 31	96 0 1 27	7 30	+ 3 03	16 2 48	
	6	0 11 29 1	23 7 37 60	37 70	+ 0 10	95 36 4 73	54 70	— 0 03	16 3 38	
	7	0 11 1 3	23 11 20 16	19 64	—0 52	95 13 35 73	37 0	+ 1 77	16 1 12	
	8	0 11 0 5	23 15 1 91	1 19	—0 72	94 50 13 98	16 10	+ 2 12	16 2 78	
	9	0 10 41 6	23 18 42 63	42 39	—0 24	94 26 49 86	50 90	+ 1 04	16 0 62	
	10	0 10 29 1	23 22 23 56	23 26	—0 30	94 3 21 59	22 20	+ 0 61	16 0 67	
	11	0 10 12 8	23 26 3 86	3 80	—0 06	93 39 51 35	50 30	—1 0		
	12	0 9 56 9	23 29 44 36	44 06	—0 30	93 16 1 08	1 70	+ 0 62	16 2 72	
	13	0 9 40 3	23 33 24 33	24 02	—0 31	92 52 40 9	38 90	—1 69	16 2 45	
	14	0 9 23 9	23 37 4 12	3 72	—0 40	92 28 58 81	0 00	+ 1 19	16 1 70	1 8
	15	0 9 6 4	23 40 43 49	43 19	—0 30				16 1 68	16 2 12
	16	0 8 49 2	23 44 22 73	22 43	—0 30	91 41 5 58	37 90	+ 2 32	16 0 70	16 2
	17	0 8 31 8	23 48 1 66	1 4	—0 21	91 17 53 01	0	+ 2 46	16 4 14	16 2 33
	18	0 8 14 3	23 51 40 74	40 27	0 47	90 54 10 49	12 70	+ 2 21	16 2 14	16 1 69
	19	0 7 56 4	23 55 19 27	18 93	—0 34	90 30 28 34	29 80	+ 1 46	16 2 56	16 1 76
	20	0 7 37 5	23 58 57 41	7 42	+ 0 01	90 6 42 1	47 40	+ 52		16 2 99
	21	0 7 19 9	0 2 35 87	35 80	—0 07				16 1 42	
	22	0 7 1 8	0 6 14 33	14 03	—0 30	89 19 21 83	25 00	+ 0 17	16 0 86	
	23	0 6 43 5	0 9 52 53	52 18	—0 35	88 55 47 90	45 90	— 2 00	16 1 80	
	24	0 6 24 7	0 13 30 13	30 23	+ 0 10	88 32 8 93	8 70	—0 29	16 1 92	
	25	0 6 6 7	0 17 8 63	8 20	—0 43	88 8 32 6	33 70	+ 1 14	16 1 86	16 1 7
	26	0 5 47 9	0 20 46 28	46 14	—0 14	87 44 0 85	1 40	+ 0 55	16 2 34	16 68
	27	0 5 29								
	28	0 5 11 2	0 28 2 61	1 98	—0 63	86 58 4 38	6 00	+ 1 62	16 2 28	16 1 3
	29	0 4 52 2	0 31 40 04	39 92	—0 12	86 34 41 81	43 70	+ 1 89	16 3 65	
	30	0 4 33 8	0 3 18 07	17 89	—0 18	86 11 23 69	25 40	+ 1 71	16 2 05	
	31	0 4 15 2	0 38 56 02	55 90	—0 12	8 48 9 66	11 40	+ 1 71	16 2 17	
April	1	0 3 6 8	0 42 34 32	34 02	—0 30	8 25 0 42	2 10	+ 1 68	16 1 32	
	2	0 3 38 5	0 46 12 53	12 2	—0 28	85 1 52 58	57 70	+ 5 12	16 1 06	
	3	0 3 20 4	0 49 50 90	50 60	—0 30	84 39 58 57	58 70	+ 0 13	16 1 37	
	4	0 3 2				84 16 6 91	5 20	—1 71	16 3 42	
	5	0 2 44 0	0 57 7 57	7 82	+ 0 25	83 53 15 71	17 60	+ 1 89	16 0 82	
	6	0 2 27 0	1 0 47 01	46 70	—0 31	83 30 33 10	36 00	+ 2 90	16 3 54	
	7	0 2 9 2	1 4 25 77	25 83	+ 0 06	83 7 59 74	1 10	+ 1 36	15 59 34	
	8	0 1 52 6	1 8 5 59	5 20	—0 39	82 45 29 68	32 90	+ 3 22		
	9	0 1 35 3	1 11 45 03	44 78	—0 25	82 23 8 08	12 10	+ 4 02	16 1 92	
	10	0 1 18 8	1 15 24 87	24 67	—0 20	82 0 54 97	58 80	+ 3 83		
	11	0 1 2 7	1 19 5 31	4 84	—0 47	81 38 51 88	53 50	+ 1 62	16 1 44	
	12	0 0 46 6	1 22 45 55	45 31	—0 24	81 16 56 06	56 30	+ 0 24	16 2 14	16 2 70

RIGHT ASCENSION AND NORTH POLAR DISTANCES OF THE SUN S CENTER (C tinu d)

	M S la Tim f Ob t	A R fr m Ob rv t	A R fr m N A	Err f N A	N P D fr m Ob ti	N P D from N A	Err f N A	M an S midiam ter H tal	V ti al
1836		m						′	′ ′
Ap l	13 0 0 30 8	1 26 26 35	26 10	— 0 25	80 55 8 38	7 70	— 0 68	16 0 90	
	14 0 0 15 4	1 30 7 41	7 22	— 0 19				16 3 52	
	15 0 0 0 1	1 33 49 00	48 70	— 0 30	80 12 57 56	57 70	+ 0 14	16 3 82	
	15 23 59 45 6	1 36 30 48	30 52	+ 0 04	79 50 36 48	37 00	+ 0 52	16 1 24	
	16 23 59 31 8	1 41 13 38	12 73	— 0 65	79 29 24 64	26 30	+ 1 66	16 2 88	
	17 23 59 17 4	1 44 55 39	5 29	— 0 10	79 8 23 52	26 10	+ 2 58	16 3 14	
	18 23 59 3 9	1 48 38 52	38 30	— 0 22	78 47 35 51	36 40	+ 0 89	16 1 62	
	19 23 58 51 0	1 52 22 09	21 67	— 0 42				16 1 20	
	20 23 58 38 2	1 56 5 86	5 47	— 0 39	78 6 30 33	31 10	+ 0 77	16 0 64	
	21 23 58 25 7	1 59 49 95	49 70	— 0 25	77 46 17 08	15 50	— 1 58	16 2 94	
	22 23 58 14 0	2 3 34 84	34 34	— 0 50	77 26 10 34	12 50	+ 2 16	16 0 18	
	23 23 58 2 2	2 7 19 45	19 44	— 0 01	77 6 19 96	21 90	+ 1 94	15 58 60	
	24 23 57 51 8	2 11 5 65	5 00	— 0 65	76 46 42 74	44 10	+ 1 36	16 3 72	
	25 23 57 41 2	2 14 51 63	51 02	— 0 61	76 27 18 73	19 20	+ 0 47	16 1 46	16 0 26
	26 23 57 31 3	2 18 38 01	37 50	— 0 51	76 8 7 49	8 00	+ 0 51	16 0 84	
	27 23 57 22 0	2 22 25 29	24 50	— 0 79	75 49 10 65	10 40	— 0 25	16 1 64	16 4 14
	28 23 57 13 0	2 26 12 51	11 99	— 0 52	75 30 23 63	26 80	+ 3 17	16 1 52	
	29 23 57 3 8	2 30 0 48	0 01	— 0 47	75 12 56 37	57 70	+ 1 33		
	30 23 56 55 6	2 33 48 65	48 55	— 0 10	74 53 40 98	43 00	+ 2 02	16 2 10	
M y	1 23 6 48 6	2 37 38 19	37 61	— 0 55	74 35 41 06	43 30	+ 2 24	16 1 40	
	2 23 56 42 1	2 41 27 13	27 30	+ 0 17	74 17 55 35	58 70	+ 3 35		
	4 23 56 29 0	2 49 8 16	8 30	+ 0 14	73 43 12 45	16 10	+ 3 65		
	5 23 56 23 6	2 52 9 43	59 66	+ 0 23	73 26 17 53	18 80	+ 1 27		15 59 66
	6 23 56 19 5	2 6 1 77	51 60	— 0 17	73 9 35 97	37 70	+ 1 73	16 2 64	15 57 16
	7 23 56 15 5	3 0 44 32	44 13	— 0 19	72 53 14 31	13 10	— 1 21	16 2 88	
	8 23 6 12				72 37 3 30	6 10	+ 2 80	16 3 28	16 0 50
	9 23 56 9				72 21 15 88	16 00	+ 0 12	16 2 21	
	10 23 6 7 0	3 12 25 48	25 30	— 0 18	72 5 41 34	43 60	+ 2 26		
	12 23 56 5				71 35 31 90	32 40	+ 0 50	16 0 70	
	13 23 56 4				71 20 56 66	54 50	— 2 16	16 0 86	
	14 23 6 4 2	3 28 8 42	8 45	+ 0 03				16 0 52	
	15 23 56 4 5	3 32 6 23	5 69	— 0 54	70 52 32 48	35 20	+ 2 72	16 5 40	16 2 66
	17 23 56 7 6	3 40 1 9	1 90	— 0 07				16 3 56	
	18 23 56 9 8	3 44 0 87	0 81	— 0 06	70 12 30 47	32 50	+ 2 03	16 6 78	
	19 23 56 12 6	3 48 0 18	0 27	+ 0 09	69 59 53 85	51 70	— 2 15	16 5 96	
	20 23 56 16 1	3 52 0 10	0 28	+ 0 18	69 47 30 07	31 40	+ 1 33	16 5 96	
	21 23 56 20 2	3 56 0 84	0 78	— 0 06	69 35 34 40	31 80	— 2 60	16 3 74	16 1 26
	2 23 56 24 5	4 0 1 66	1 80	+ 0 14	69 23 51 92	53 20	+ 1 28	16 4 62	16 0 66
	3 23 56 29 4	4 4 3 51	3 31	— 0 20	69 12 35 93	35 90	— 0 03	16 5 76	15 58 73
	4 3 56 35 2	4 8 5 52	5 32	— 0 20	69 1 38 15	39 90	+ 1 75	16 5 58	16 0 67
	25 23 56 41 4	4 12 8 12	7 85	— 0 27	68 1 5 58	5 80	+ 0 22	16 1 18	
	27 23 56 4 6	4 20 14 56	14 23	— 0 33	68 30 1 56	3 40	+ 1 84	16 1 40	
	8 23 57 1 9	4 24 18 42	18 13	— 0 29				16 2 82	
	29 23 57 9 8	4 28 22 89	22 46	— 0 43	68 12 28 74	30 10	+ 1 36	16 2 45	16 0 15
	30 23 57 17 9	4 32 27 57	27 23	— 0 34	68 3 47 18	47 20	+ 0 02	16 2 70	
	31 23 57 26 5	4 36 33 17	32 43	— 0 74	67 55 26 72	27 20	+ 0 48	16 1 46	
J	3 23 57 54 8	4 48 50 84	50 48	— 0 36				16 3 78	
	4 23 8 4 6	4 52 57 64	57 69	+ 0 05				16 1 94	
	5 23 58 15 4	4 57 4 6	4 34	— 0 31	67 19 34 50	34 80	+ 0 30	16 1 35	
	6 23 58 26 1	5 1 11 92	11 79	— 0 13	67 13 34 92	35 10	+ 0 18	16 1 46	
	7 23 58 37 2	5 5 19 69	19 55	— 0 14	67 7 55 33	59 20	+ 3 87	16 2 38	16 1 00
	8 23 58 48 8	5 9 27 86	27 61	— 0 25	67 2 47 30	47 30	0 00	15 59 40	15 57 70
	9 23 59 0 6	5 13 36 23	35 95	— 0 28	66 58 2 08	59 70	— 2 38	16 1 28	
	10 23 59 12 4	5 17 44 68	44 53	— 0 15	66 53 37 50	36 30	— 1 20		
	11 23 59 25 3	5 21 54 05	53 34	— 0 71	66 49 35 29	37 20	+ 1 91	16 2 10	16 1 55
	12 23 59 37 8	5 26 3 19	2 34	— 0 85	66 46 3 96	2 70	— 1 26	16 2 82	
	15 0 0 2 5	5 34 21 04	20 84	— 0 20	66 40 3 73	7 50	+ 3 77	16 2 82	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN S CENTER (*Continued*)

Month	Mean Solar Time of Observation	A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Mean Semidiameter Horizontal	Mean Semidiameter Vertical
1836	m				° ′				
June	16 0 0 15 4	5 38 30 55	30 29	— 0 26	66 37 46 98	46 80	— 0 18	16 3 60	
	17 0 0 28 4	5 42 40 08	39 81	— 0 27	66 35 50 50	51 00	+ 0 50	16 2 76	16 1 57
	18 0 0 41 4	5 46 49 66	49 41	— 0 25	66 34 20 78	19 80	— 0 98	16 2 60	
	19 0 0 54 1	5 50 58 99	59 03	+ 0 04	66 33 12 87	13 60	+ 0 73	16 2 02	
	20 0 1 7 7	5 55 9 29	8 65	— 0 64	66 32 34 27	32 20	— 2 07	16 2 28	
	21 0 1 20				66 32 14 40	15 70	+ 1 30	16 0 38	16 3 66
	22 0 1 33				66 32 23 82	24 00	+ 0 18	16 2 22	
	28 0 2 49 5	6 28 23 74	23 06	— 0 68	66 41 55 38	53 90	— 1 48		
	30 0 3 13				66 48 21 54	20 60	— 0 94		16 3 02
July	1 0 3 24				66 52 11 70	10 40	— 1 30	16 1 98	
	2 0 3 36 2	6 44 56 82	56 42	— 0 40	66 56 24 87	24 50	— 0 37	16 1 98	16 1 08
	3 0 3 47 3	6 49 4 49	4 15	— 0 34				16 4 45	
	5 0 4 8				67 11 30 09	31 00	+ 0 91	16 0 44	
	6 0 4 19				67 17 22 00	20 90	— 1 10	16 0 47	
	7 0 4 29				67 23 32 49	34 50	+ 2 01	16 1 62	
	9 0 4 48 1	7 13 44 69	44 06	— 0 63	67 37 14 32	12 30	— 2 02	16 0 92	16 0 7
	10 0 4 56 7	7 17 49 94	49 48	— 0 46	67 44 36 82	36 10	— 0 72	15 59·88	1⌄ 8 74
	11 0 5 4				67 52 24 72	22 90	— 1 82	16 2 18	16 1 6
	12 0 5 12				68 0 30 07	32 60	+ 2 ⌄3	16 0 78	
	13 0 5 20				68 9 6 60	5 00	— 1 60	16 3 31	
	14 0 5 27 9	7 34 7 47	6 83	— 0 64	68 17 58 60	59 90	+ 1 30	16 1 40	
	15 0 5 34 0	7 38 10 26	9 95	— 0 31	68 27 17 24	17 00	— 0 24	16 2 52	
	16 0 5 40 2	7 42 13 09	12 61	— 0 48	68 36 57 81	56 20	— 1 61	16 1 90	
	17 0 5 45 7	7 46 15 22	14 71	— 0 51	68 46 56 35	57 20	+ 0 85	16 2 02	
	18 0 5 50				68 57 17 87	19 70	+ 1 83		
	19 0 5 55 4	7 54 17 89	17 32	— 0 57	69 8 6 17	3 80	— 2 37	16 0 70	
	20 0 5 59 2	7 58 18 25	17 80	— 0 45	69 19 11 38	8 90	— 2 48	16 1 68	
	23 0 6 7				69 54 28 09	28 50	+ 0 41	16 1 26	16 0 32
	26 0 6 8 9	8 22 8 48	8 25	— 0 23	70 32 48 02	48 80	+ 0 78	16 0 72	
	27 0 6 10 4	8 26 4 95	4 57	— 0 38	70 46 17 03	14 50	— 2 53	15 57 72	
	28 0 6 9 4	8 30 0 50	0 28	— 0 22	71 0 0 88	59 20	— 1 68	16 1 86	1ᑦ 0 03
	30 0 6 5				71 28 25 13	24 50	— 0 63	16 2 18	
Aug	2 0 5 55				72 13 22 91	18 80	— 4 11	16 1 70	
	9 0 5 13				74 8 5 85	3 20	— 2 65	16 1 30	1⌄ 9 14
	10 0 5 4				74 25 32 17	30 0	— 1 67	16 0 86	
	14 0 4 25				75 37 49 58	47 50	— 2 08		
	15 0 4 14				75 56 27 70	26 90	— 0 80	16 1 40	1, ⌄9 42
	16 0 4 2				76 15 19 35	19 70	+ 0 35	16 2 40	
	17 0 3 50 0	9 46 32 10	32 06	— 0 04	76 34 22 43	25 70	+ 3 27	16 0 62	
	18 0 3 37 1	9 50 15 95	15 67	— 0 28	76 53 42 78	44 40	+ 1 62	16 1 92	16 0 11
	19 0 3 24				77 13 18 72	15 40	— 3 32	16 2 64	
	21 0 2 55 8	10 1 24 21	23 90	— 0 31				16 3 68	
	22 0 2 41				78 12 58 74	59 90	+ 1 16	16 2 42	
	23 0 2 25 5	10 8 47 00	46 90	— 0 10	78 33 ᖗ1 15	17 30	— 3 85	16 2 05	
	25 0 1 54				79 14 23 97	24 20	+ 0 23	16 1 80	
	27 0 1 20 2	10 23 27 74	27 66	— 0 08	79 56 13 57	11 90	— 1 67	16 2 30	
S pt	6 23 57 53 5	11 3 22 55	22 45	— 0 10				16 1 28	
	7 23 57 33 7	11 6 58 69	58 76	+ 0 07				16 2 25	
	8 23 57 12 7	11 10 34 77	34 91	+ 0 14	84 41 42 10	38 90	— 3 20	16 1 26	
	10 23 56 31 9	11 17 46 79	46 73	— 0 06	85 27 12 69	14 20	+ 1 51	16 2 00	
	11 23 56 10 8	11 21 22 28	22 47	+ 0 19	85 50 9 92	9 10	— 0 82	16 1 62	16 0 79
	15 23 54 47 2	11 35 44 70	44 61	— 0 09	87 22 30 87	29 20	— 1 67	16 1 64	15 ⌄3 91
	16 23 54 26				87 45 43 10	42 60	— 0 50		16 1 84
	17 23 54 5				88 8 56 27	58 50	+ 23	16 1 02	
	18 23 53 43 9	11 46 30 82	30 85	+ 0 03				15 58 00	
	19 23 53 23 0	11 50 6 42	6 30	— 0 12	88 55 38 20	37 10	— 1 10	15 59 72	16 0 85

Right Ascensions and North Polar Distan es of the Sun s Center, *(Continu d)*

	M an S lar Tim f Ob rv ti	A R. fr m Ob rv ti n.	A R fr m N A	Erro f N A	N P D from Ob erv ti	N P D from N A.	Err f N A	M an Semidiamet H iz tal.	V rtical
1836					′				
S pt	20 23 53 2 1	11 53 42 03	41 80	—0 23	89 18 0 58	58 70	—1 88	16 1 38	
	21 23 52 41 0	11 57 17 44	17 35	—0 09	89 42 21 63	21 80	+ 0 17	16 0 98	16 1 44
	22 23 52 20 3	12 0 53 26	53 00	—0 26				16 3 52	
	23 23 51 59 3	12 4 28 85	28 78	—0 07				15 58 60	
	24 23 51 39 1	12 8 4 59	4 68	+ 0 09	90 52 31 99	35 30	+ 3 31	15 58 20	
	25 23 51 18 2	12 11 40 99	40 77	—0 22	91 16 2 91	0 10	—2 81	16 0 32	
	26 23 50 58				91 39 24 80	24 70	—0 10	15 57 96	
	27 23 50 38				92 2 51 71	48 70	—3 01	16 1 98	
	28 23 50 18 8	12 22 30 75	30 31	—0 44	92 26 11 92	11 80	—0 12	16 0 84	
	29 23 49 58 9	12 26 7 30	7 31	+ 0 01				15 59 20	
	30 23 49 40 2	12 29 45 01	44 61	—0 40					
Oct	3 23 48 44 0	12 40 38 40	38 43	+ 0 03	94 22 42 55	41 20	—1 35	16 1 30	
	4 23 48 26				94 45 47 46	51 40	+ 3 94	16 3 16	
	5 23 48 8 7	12 47 56 08	56 10	+ 0 02	95 9 56 75	58 20	+ 1 45	16 1 84	
	6 23 47 51 6	12 51 35 55	35 53	—0 02				16 0 88	
	7 23 47 34 7	12 55 15 20	15 40	+ 0 20	95 55 3 04	0 10	—2 94	16 0 80	
	8 23 47 18 8	12 58 55 83	55 69	—0 14	96 17 55 34	54 50	—0 84	16 3 32	
	9 23 47 3 1	13 2 36 57	36 54	—0 03	96 40 45 75	43 90	—1 85	16 2 92	
	10 23 46 47 9	13 6 17 78	17 66	—0 12	97 3 23 40	27 90	+ 4 50	16 0 70	
	11 23 46 33 2	13 9 59 67	59 37	—0 30	97 26 3 05	6 10	+ 3 05	16 1 40	
	12 23 46 18 9	13 13 41 89	41 58	—0 31	97 48 36 25	38 10	+ 1 85	16 2 16	
	13 23 46 4 8	13 17 24 40	24 32	—0 08	98 10 0 74	3 80	+ 3 06	16 1 70	
	14 23 45 51 8	13 21 7 60	7 59	—0 01				16 3 67	
	15 23 45 39 1	13 24 51 73	51 42	—0 31				16 3 84	
	17 23 45 15 1	13 32 20 80	20 76	—0 04	99 39 29 96	32 50	+ 2 54	16 4 72	
	18 23 45 4 2	13 36 6 33	6 31	—0 02	100 1 16 29	19 40	+ 3 11		
	19 23 44 54 0	13 39 52 70	52 47	—0 23	100 23 57 45	57 20	—0 25	16 3 57	
	20 23 44 44 2	13 43 39 34	39 27	—0 07	100 44 23 20	25 80	+ 2 60	16 2 50	
	21 23 44 35 3	13 47 27 01	26 69	—0 32	101 5 44 07	44 50	+ 0 43	16 1 92	
	22 23 44 26 9	13 51 15 15	14 82	—0 33				15 58 50	
	23 23 44 19				101 47 49 84	51 50	+ 1 66	16 0 58	
	24 23 44 12 4	13 58 53 74	53 14	—0 60	102 8 38 74	39 20	+ 0 46	16 2 82	15 59 83
	25 23 43 6				102 29 14 79	15 50	+ 0 71	16 0 82	
	27 23 43 55 4	14 10 26 42	26 09	—0 33					
Nov	1 23 43 43				104 47 41 76	45 60	+ 3 84		
	4 23 43 46				105 43 36 44	40 30	+ 3 86		
	5 23 43 47 5	14 45 47 82	47 83	+ 0 01	106 1 46 83	47 90	+ 1 07	16 4 10	
	6 23 43 51 8	14 49 48 28	47 74	—0 54	106 19 37 38	39 40	+ 2 02	16 6 34	
	7 23 43 55 7	14 53 48 66	48 50	—0 16				16 6 50	
	8 23 44 0 7	14 57 50 36	50 11	—0 25	106 54 34 85	32 90	—1 95	16 4 77	16 1 16
	9 23 44 6 6	1ט 1 52 81	52 59	—0 22	107 11 35 49	34 00	—1 49	16 3 94	16 1 48
	10 23 44 13 7	15 5 56 57	55 91	—0 66				16 4 66	
	11 23 44 21 1	15 10 0 52	0 07	—0 45	107 44 40 68	42 40	+ 1 72	16 4 45	
	12 23 44 29				108 0 47 82	49 00	+ 1 18	16 3 40	
	21 23 46 22				110 10 44 68	47 70	+ 3 02	16 5 62	
	22 23 46 38 8	15 55 40 60	40 21	—0 39	110 23 24 68	27 40	+ 2 72	16 5 54	
	24 23 47 14 0	16 4 9 13	8 79	—0 34				15 58 70	
	25 23 47 33 0	16 8 24 66	24 25	—0 41	110 59 6 67	9 80	+ 3 13	16 3 48	
	26 23 47 52 6	16 12 40 86	40 43	—0 43	111 10 15 30	17 30	+ 2 00	16 4 77	
	27 23 48 12 8	16 16 57 68	57 37	—0 31	111 21 2 19	0 80	—1 39		
	28 23 48 34 0	16 21 15 53	15 00	—0 53	111 31 22 20	20 30	—1 90	16 2 12	
	30 23 49 18				111 50 46 01	45 00	—1 01	16 2 56	
Dec	1 23 49 41 1	16 34 12 48	12 03	—0 45	111 59 48 47	50 00	+ 1 53	16 8 86	16 0 22
	3 23 50 28 8	16 42 53 42	53 28	—0 14	112 16 44 32	43 30	—1 02	16 4 00	
	4 23 50 53 9	16 47 15 18	14 77	—0 41	112 24 31 25	31 30	+ 0·05	16 5 02	16 1 05
	5 23 51 19 2	16 51 37 10	36 87	—0 23	112 31 51 73	52 90	+ 1 17	16 4 76	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN S CENTER *(Cont nu d)*

		M an S la Tim f Obs ati	A R fr m Ob ti	A R fr m N A	Erro f N A	N P D from Obs rv ti	N P D f m N A	Err f N A	M S midiam H ri tal	
1836			m			/				
De	6	23 51 45 3	16 55 59 75	59 47	— 0 28	112 38 50 59	48 20	— 2 39	16 2 43	
	10	23 53 34 0	17 13 34 99	34 66	— 0 33	113 1 0 98	0 20	— 0 78	16 5 14	
	11	23 54 2 2	17 17 59 84	59 43	— 0 41	113 6 41 07	40 00	— 1 07	16 5 12	
	15	23 55 57				113 20 42 84	41 50	— 1 34	16 5 56	
	16	23 56 27 0	17 40 7 85	7 60	— 0 25	113 22 0 79	1 90	+ 1 11	16 4 85	
	18	23 57 26 7	17 49 0 82	0 23	— 0 59	113 26 19 72	18 10	— 1 62	16 3 14	
	19	23 57 56 2	17 53 27 01	26 71	— 0 30					
	22	23 59 26 1	18 6 46 87	46 42	— 0 45	113 27 14 26	11 30	— 2 96	16 4 00	16 2 35
	23	23 59 55 9	18 11 13 29	12 98	— 0 31	113 26 16 77	14 00	— 2 77	16 4 07	16 0 18
	27	0 1 25				113 20 35 19	32 60	— 2 59	16 4 40	15 59 14
	28	0 1 54				113 17 44 80	42 50	— 2 30	16 4 60	15 59 98
	29	0 2 24				113 14 28 80	24 40	— 4 40	16 2 17	
	31	0 3 21 7	18 42 15 54	15 64	+ 0 10	113 6 23 35	23 40	+ 0 05	16 3 14	16 2 70
1837										
Jan	2	0 4 19				112 56 32 85	33 10	+ 0 25	16 5 17	16 0 13
	3	0 4 46 8	18 55 30 60	30 46	— 0 14	112 50 58 56	56 33	— 2 23	16 8 18	16 1 07
	5	0 5 42 0	19 4 18 87	18 53	— 0 34	112 38 20 63	20 80	+ 0 17	16 7 34	15 58 76
	6	0 6 8 9	19 8 42 53	41 93	— 0 60	112 31 24 00	22 60	— 1 40	16 6 85	15 59 41
	7	0 6 35 3	19 13 5 30	4 87	— 0 43	112 24 1 17	57 60	— 3 57	16 5 85	
	8	0 7 0 6	19 17 27 68	27 29	— 0 39	112 16 8 71	6 20	— 2 51	16 6 13	
	9	0 7 26 0	19 21 49 45	49 19	— 0 26	112 7 46 91	48 50	+ 1 59	16 3 82	16 1 77
	10	0 7 51 0	19 26 11 03	10 54	— 0 49	111 59 5 00	4 80	— 0 20	16 3 37	15 59 14
	11	0 8 14 8	19 30 31 52	31 27	— 0 25	111 49 56 94	56 40	— 0 54	16 3 4	16 0 32
	12	0 8 38 3	19 34 51 76	51 40	— 0 36	111 40 20 84	20 40	— 0 44	16 2 82	15 59 07
	13	0 9 1 0	19 39 10 99	10 88	— 0 11				15 57 40	
	15	0 9 45				111 9 4 19	5 70	+ 1 51	16 0 52	
	16	0 10 5				110 57 51 44	51 90	+ 0 46	16 2 16	15 58 20
	17	0 10 25				110 46 11 84	14 20	+ 2 36		
	18	0 10 45				110 34 12 11	12 90	+ 0 79	16 3 34	
	19	0 11 4 0	20 4 53 53	53 15	— 0 38	110 21 46 98	48 30	+ 1 32	16 2 47	
	20	0 11 21 2	20 9 7 82	7 73	— 0 09	110 8 59 47	0 90	+ 1 43	15 59 93	15 59 53
	21	0 11 38 5	20 13 21 38	21 49	+ 0 11	109 55 50 94	50 79	— 0 15	1 59 37	15 56 89
	22	0 11 55 1	20 17 34 63	34 46	— 0 17	109 42 18 60	18 55	— 0 05	16 1 52	15 58 23
	23	0 12 10 7	20 21 46 83	46 63	— 0 20	109 28 23 85	24 45	+ 0 60	16 1 80	15 59 34
	24	0 12 25 7	20 25 58 45	58 03	— 0 42	109 14 6 31	8 80	+ 2 49	16 2 74	16 0 62
	25	0 12 39 5	20 30 8 79	8 64	— 0 15	108 59 28 62	32 00	+ 3 38	16 2 92	
	26	0 12 52 5	20 34 18 46	18 45	— 0 01	108 44 31 66	34 40	+ 2 74	15 59 00	15 57 49
	27	0 13 5 3	20 38 27 78	27 48	— 0 30	108 29 14 65	16 50	+ 1 85	16 2 28	15 59 23
	28	0 13 17 1	20 42 36 22	35 70	— 0 52	108 13 37 18	38 30	+ 1 12	16 2 05	16 1 22
	29	0 13 28 1	20 46 43 54	43 13	— 0 41	107 57 38 06	40 40	+ 2 34	16 5 32	
	30	0 13 38 0	20 50 50 31	49 75	— 0 56	107 41 23 06	23 20	+ 0 14	16 2 02	15 58 90
Feb	1	0 13 55 4	20 59 0 80	0 59	— 0 21	107 7 50 23	52 30	+ 2 07	16 2 08	
	2	0 14 7	21 3 4 66	4 78	+ 0 12	106 50 36 26	39 50	+ 3 24	16 5 02	15 58 97
	3	0 14 10 1	21 7 8 55	8 17	— 0 38	106 33 7 05	9 00	+ 1 95	16 2 52	
	4	0 14 15 7	21 11 10 75	10 74	— 0 01	106 15 17 70	21 20	+ 3 50	16 1 62	
	5	0 14 21 2	21 15 12 96	12 49	— 0 47	105 57 17 12	16 60	— 0 52	16 2 14	
	6	0 14 25 6	21 19 13 84	13 40	— 0 44	105 38 55 55	55 60	+ 0 05	16 1 00	
	7	0 14 28 8	21 23 13 43	13 52	+ 0 09	105 20 20 77	18 50	— 2 27	16 1 98	
	8	0 14 31 5	21 27 12 69	12 82	+ 0 13	105 1 28 11	25 90	— 2 21	16 3 30	16 3 91
	9	0 14 33				104 42 18 25	18 20	— 0 05		16 0 21
	10	0 14 34 5	21 35 8 67	8 98	+ 0 31	104 22 53 53	55 70	+ 2 17	16 2 40	
	11	0 14 34 8	21 39 5 92	5 86	— 0 06	104 3 17 60	18 90	+ 1 30	16 1 27	16 1 48
	12	0 14 34				103 43 28 46	28 40	— 0 06		15 59 47
	13	0 14 33 5	21 46 57 52	57 23	— 0 29	103 23 22 64	24 50	+ 1 86	16 2 02	16 2 49
	14	0 14 31 5	21 50 52 04	51 80	— 0 24	103 3 5 24	7 70	+ 2 46	16 1 70	15 59 78
	15	0 14 28 7	21 54 4 65	45 57	— 0 08	102 42 35 09	38 30	+ 3 21	16 1 70	16 4 62
	16	0 14 25 5	21 58 39 21	38 60	— 0 61	102 21 57 10	56 80	— 0 30	16 1 44	16 0 21
	17	0 14 21 3	22 2 31 69	30 90	— 0 79	102 1 3 02	3 60	+ 0 58	16 2 90	16 0 85

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

Mean Solar Time of Observation			AR from Observation	AR from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Mean Semidiameter	
									Horizontal	Vertical
1837										
Feb	18	0 14 16 5	22 6 23 08	22 47	— 0 61	101 39 58 38	59 20	+ 0 82	16 0 86	16 1 72
	19	0 14 10 4	22 10 13 54	13 35	— 0 19	101 18 43 88	43 90	+ 0 02	16 2 58	16 4 46
	20	0 14 4 2	22 14 3 94	3 54	— 0 40	100 57			16 1 52	
	21	0 13 56 9	22 17 53 19	53 06	— 0 13	100 35 39 07	42 00	+ 2 93	16 3 00	16 2 02
	26	0 13 12 3	22 36 51 43	51 41	— 0 02	98 45 21 33	23 50	+ 2 17	16 4 76	
	27	0 13 1 7	22 40 37 41	37 37	— 0 04	98 22 52 56	54 60	+ 2 04	16 1 40	16 1 28
	28	0 12 50 8	22 44 22 94	22 78	— 0 16	98 0 16 91	18 30	+ 1 39	16 1 70	16 0 45
Mar	1	0 12 39 1	22 48 7 99	7 70	— 0 29	97 37 34 48	35 10	+ 0 62	15 55 37	16 1 47
	2	0 12 26 7	22 51 52 19	52 11	— 0 08	97 14 44 90	45 00	+ 0 10	15 57 38	15 58 17
	3	0 12 13 1	22 55 36 17	36 05	— 0 12	96 51 51 52	48 70	— 2 82	15 59 08	16 2 93
	4	0 12 1 0	22 59 19 70	19 52	— 0 18	96 28 47 08	46 70	— 0 38	16 0 99	16 2 61
	5	0 11 47 6	23 3 2 83	2 54	— 0 29	96 5 38 85	39 10	+ 0 25	16 1 20	
	6	0 11 33 9	23 6 45 61	45 11	— 0 50	95 42 25 19	26 50	+ 1 31	15 58 74	16 2 27
	7	0 11 19 3	23 10 27 32	27 27	— 0 05	95 19 8 97	9 30	+ 0 33	16 1 90	15 58 81
	8	0 11 4 6	23 14 9 22	9 01	— 0 21	94 55 49 93	47 90	— 2 03	16 0 04	16 0 79
	9	0 10 49 4	23 17 50 52	50 37	— 0 15	94 32 22 38	22 70	+ 0 32	16 2 34	16 0 74
	10	0 10 33 9	23 21 31 50	31 39	— 0 11	94 8 56 79	54 00	— 2 79	16 1 80	16 3 34
	11	0 10 18 4	23 25 12 64	12 03	— 0 61	93 45 22 62	22 30	— 0 32	16 1 58	15 59 39
	12	0 10 1 6	23 28 52 29	52 35	+ 0·06	93 21 45 58	48 00	+ 2 42	16 2 58	16 1 12
	13	0 9 45 6	23 32 32 85	32 37	— 0 48	92 58 11 69	11 50	— 0 19	16 2 47	15 58 59
	14	0 9 29				92 34 33 37	33 20	— 0 17	16 0 50	16 0 85
	15	0 9 12				92 10 53 93	53 50	— 0 43	16 3 37	15 59 77
	16	0 8 54				91 47 11 05	12 70	+ 1 65	16 2 05	16 1 40
	17	0 8 36 2	23 47 9 65	9 63	— 0 02	91 23 28 95	31 20	+ 2 25	16 0 98	16 1 11
	18	0 8 19				90 59 47 36	49 40	+ 2 04	15 59 45	
	19	0 8 1				90 36 12 08	7 70	— 4 38	16 1 48	16 1 04
	20	0 7 43				90 12 25 98	26 30	+ 0 32	16 2 82	16 2 33
	21	0 7 25				89 48 40 88	45 40	+ 4 52	15 55 82	
	22	0 7 6				89 25 4 43	5 90	+ 1 47	16 1 88	15 59 32
	23	0 6 47 7	0 8 59 74	59 67	— 0 07	89 1 25 55	27 50	+ 1 95	16 1 40	15 58 81
	24	0 6 29 2	0 12 37 77	37 61	— 0 16	88 37 48 99	50 80	+ 1 81	15 59 34	15 59 66
	25	0 6 10				88 14 14 26	16 10	+ 1 84	16 0 68	
	26	0 5 52				87 50 44 05	43 70	— 0 35	16 1 44	
	27	0 5 33 6	0 23 31 73	31 32	— 0 41	87 27 12 47	13 90	+ 1 43	16 0 87	16 2 65
	28	0 5 14				87 3 44 41	47 20	+ 2 79	16 0 84	16 2 76
	29	0 4 56				86 40 21 39	23 60	+ 2 21	16 0 48	16 0 78
	30	0 4 37 9	0 34 25 55	25 25	— 0 30	86 17 4 11	3 80	— 0 31	16 1 25	15 59 61
	31	0 4 19 1	0 38 3 24	3 36	+ 0 12	85 53 46 03	48 10	+ 2 07	16 1 97	16 0 91
April	1	0 4 1 4	0 41 41 90	41 57	— 0 33					
	2	0 3 42 0	0 45 19 99	19 89	— 0 10	85 7 28 56	30 10	+ 1 54	16 0 64	
	3	0 3 24 9	0 48 58 45	58 36	— 0 09	84 44 30 92	28 60	— 2 32	16 0 35	15 59 74
	4	0 3 7				84 21 36 63	32 60	— 4 03	16 0 77	15 59 77
	5	0 2 49				83 58 43 34	42 40	— 0 94	15 59 50	16 2 88
	6	0 2 32				83 36 1 88	58 50	— 3 38	15 59 20	16 3 81
	7	0 2 14 2	1 3 33 78	33 86	+ 0 08	83 13 23 89	21 00	— 2 89	15 59 80	
	8	0 1 57 4	1 7 13 40	13 23	— 0 17	82 50 50 89	50 60	— 0 29	16 0 37	16 3 98
	9	0 1 40 5	1 10 52 96	52 82	— 0 14	82 28 27 41	27 50	+ 0 09	16 1 96	
	11	0 1 7 4	1 18 12 83	12 75	— 0 08	81 44 5 73	4 60	— 1 13	16 1 43	15 58 53
	12	0 0 51 0	1 21 52 92	53 10	+ 0 18	81 22 6 46	5 60	— 0 86	16 2 00	16 1 03
	13	0 0 35 3	1 25 33 83	33 75	— 0 08	81 0 17 12	1 40	— 1 72	16 0 60	15 59 21
	14	0 0 20 0	1 29 15 06	14 71	— 0 35	80 38 36 07	34 10	— 1 97	16 0 90	15 59 92
	15	0 0 4 5	1 32 55 94	5 96	+ 0 02	80 17 1 40	2 30	+ 0 90	16 1 62	15 58 85
	15	23 59 50				79 55 40 48	40 30	— 0 18	16 0 28	16 0 86
	16	23 59 34 7	1 40 19 31	19 50	+ 0 19	79 34 31 52	28 40	— 3 12	15 59 84	16 0 73
	17	23 59 20 9	1 44 2 02	1 83	— 0 19	79 13 25 64	26 70	+ 1 06	16 1 57	15 59 28
	18	23 59 6 8	1 47 44 38	44 53	+ 0 15	78 52 30 84	35 80	+ 4 96	16 4 45	15 57 19
	19	23 58 53 8	1 51 27 87	27 65	— 0 22	78 31 55 91	55 80	— 0 11	16 2 18	16 1 60

Right Ascension and North Polar Distances of the Sun's Center. *(Continued.)*

Mean Solar Time of Observation		A. R. from Observation	A. R. from N. A.	Error of N. A.	N. P. D. from Observation	N. P. D. from N. A.	Error of N. A.	Mean Semidiameter: Horizontal	Mean Semidiameter: Vertical
1837							″		
April	20 23 58 40 5	1 55 11 20	11 20	0 00	78 11 29 29	27 00	—2 29	16 0 15	15 59 70
	21 23 58 28 2	1 58 55 42	55 17	—0 25	77 52 8 47	9 90	+ 1 43	16 1 42	16 1 25
	22 23 58 15 8	2 2 39 60	39 60	0 00	77 32 5 97	4 50	—1 47	16 2 07	16 0 27
	23 23 58 4 3	2 6 24 63	24 51	—0 12	77 11 12 08	11 40	—0 68	16 0 90	16 1 54
	24 23 57 53 4	2 10 10 23	9 91	—0 32	76 51 32 49	30 70	—1 79	16 1 26	15 58 90
	25 23 57 42 7	2 13 55 95	55 80	—0 15	76 32 2 34	2 80	+ 0 46	16 1 70	16 0 06
	26 23 57 32 7	2 17 42 43	42 22	—0 21	76 12 48 81	48 00	—0 81	16 0 97	16 2 09
	27 23 57 23 2	2 21 29 50	29 13	—0 37	75 53 45 40	46 60	+ 1 20	16 1 30	16 1 25
	28 23 57 13 7	2 25 16 56	16 59	+ 0 03	75 35 58 69	59 00	+ 0 31	16 0 24	16 0 99
	29 23 57 5 3	2 29 4 70	4 59	—0 11	75 16 22 99	25 50	+ 2 51	16 2 32	16 0 05
	30 23 56 57 5	2 32 53 35	53 11	—0 24	74 58 7 99	6 50	—1 49	16 2 18	15 59 72
May	1 23 56 50 0	2 36 42 35	42 20	—0 15	74 39 59 40	2 10	+ 2 70	16 0 92	15 59 75
	2 23 56 43 3	2 40 32 24	31 86	—0 38	74 22 10 42	13 00	+ 2 58	16 0 92	15 59 77
	3 23 56 36 7	2 44 22 34	22 06	—0 28	74 4 36 31	39 20	+ 2 89	16 0 95	15 59 52
	4 23 56 31				73 47 19 58	21 20	+ 1 62	16 1 40	15 59 09
	5 23 56 26				73 30 17 88	19 30	+ 1 42	15 59 54	16 1 33
	7 23 56 17				72 57 2 74	4 90	+ 2 16	16 1 10	15 57 69
	8 23 56 13				72 40 50 86	53 30	+ 2 44	16 0 60	16 1 76
	9 23 56 10 4	3 7 35 42	35 22	—0 20	72 24 57 39	58 80	+ 1 41	16 1 98	
	10 23 56 8 3	3 11 29 69	29 36	—0 33	72 9 21 29	22 30	+ 1 01	16 1 37	16 0 35
	11 23 56 6 6	3 15 24 40	24 07	—0 33	71 54 3 02	3 70	+ 0 68	16 0 46	16 1 14
	12 23 56 5				71 39 3 37	3 30	—0 07	16 1 90	
	13 23 56 5				71 24 20 59	21 50	+ 0 91		
	14 23 56 5				71 9 58 07	58 60	+ 0 53	16 2 05	
	15 23 56 5				70 55 52 81	54 70	+ 1 89	16 0 64	
	16 23 56 6				70 42 7 53	10 20	+ 2 67		
	17 23 56 8				70 28 49 76	45 30	—4 46	15 59 62	
	22 23 56 22				69 26 45 98	43 00	—2 98		
	23 23 56 27 6	4 3 4 28	3 87	—0 41	69 15 22 71	20 50	—2 21	16 2 56	
	24 23 56 33 0	4 7 6 37	5 72	—0 65	69 4 21 81	19 40	—2 41	16 1 82	16 2 23
	27 23 56 51				68 33 25 65	25 50	—0 15	16 0 48	
	29 23 57 6 8	4 27 23 03	22 62	—0 41				16 2 47	
	30 23 57 15 0	4 31 27 76	27 43	—0 33	68 5 47 62	51 30	+ 3 68		
	31 23 57 23				67 57 25 16	25 20	+ 0 04	16 1 04	
June	1 23 57 32 5	4 39 38 21	38 37	+ 0 16	67 49 21 42	22 00	+ 0 58	16 0 82	
	2 23 57 42				67 41 43 80	42 00	—1 80	16 1 02	
	3 23 57 52				67 34 24 65	25 30	+ 0 65	16 1 37	
	4 23 58 2 0	4 51 57 48	57 70	+ 0 22	67 27 31 8[illegible]	32 20	+ 0 35	16 1 06	15 59 98
	5 23 58 13 7	4 56 4 75	4 85	+ 0 10	67 20 2 31	2 70	+ 0 39	16 2 22	
	6 23 58 23 7	5 0 12 30	12 31	+ 0 01	67 14 57 27	57 00	—0 27	16 1 35	
	7 23 58 35 2	5 4 20 40	20 02	—0 38	67 9 15 50	15 40	—0 10	16 1 66	15 58 [illegible]9
	8 23 58 46 6	5 8 28 32	28 02	—0 30	67 3 57 93	57 90	—0 03	16 4 40	
	9 23 58 58 3	5 12 36 58	36 26	—0 32	66 59 5 85	4 60	—1 25	16 1 66	
	10 23 59 10 2	5 16 45 11	44 68	—0 43	66 54 36 35	35 60	—0 75	16 3 54	
	11 23 59 21 8	5 20 53 30	53 34	+ 0 04	66 50 34 57	31 00	—3 57	16 2 82	
	12 23 59 34 0	5 25 2 12	2 16	+ 0 04	66 46 45 44	50 90	+ 5 46	16 1 75	
	13 23 59 46 4	5 29 10 98	11 12	+ 0 14	66 43 37 82	35 40	—2 42	16 0 86	
	14 23 59 59 3	5 33 20·60	20 22	— 0 38	66 40 45 82	44 40	—1 42	16 0 57	
	16 0 0 11 9	5 37 29 79	29 43	—0 36	66 38 16 84	18 10	+ 1 26	16 0 02	
	17 0 0 24 1	5 41 38 61	38 76	+ 0 15	66 36 16 26	16 50	+ 0 24	16 0 72	
	18 0 0 37				66 34 35 64	39 50	+ 3 86	15 59 84	
	19 0 0 50				66 33 27 60	27 40	—0 20	16 3 54	
	22 0 1 28 0	6 2 25 94	26 05	+ 0 11	66 32 19 02	19·20	+ 0 18	16 2 52	
	23 0 1 41 2	6 6 35 60	35 54	—0 06	66 32 45 77	46 10	+ 0 33	16 0 75	
	24 0 1 53 8	6 10 44 76	44 98	+ 0 22				15 59 50	
	25 0 2 6 7	6 14 54 20	54 33	+ 0 13	66 34 57 42	54 00	—3 42	16 1 22	
	26 0 2 19 3	6 19 3 92	3 60	—0 32	66 36 33 33	35 10	+ 1 77	16 0 75	

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN S CENTER (*C ntinued*)

M S l Tim f Ob rr t	A. R fr m Ob rr ti n.	A R f m N A	Err f N A	N P D from Ob rr ti	N P D fr m N A.	Erro f N A	Mea H Semid
1837 m					′	″	′
Ju e 27 0 2 31 7	6 23 12 43	12 76	+ 0 33	66 38 42 16	40 80	— 1 36	16 0 88
29 0 2 56 7	6 31 30 61	30 65	+ 0 04	66 44 4 27	6 30	+ 2 03	15 59 95
30 0 3 8 8	6 35 39 58	39 33	— 0 25	66 47 26 61	25 70	— 0 91	15 57 82
July 1 0 3 21				66 51 12 11	9 70	— 2 41	15 59 20
2 0 3 32				66 55 21 91	18 00	— 3 91	15 59 95
3 0 3 43 0	6 48 4 92	4 01	— 0 91				15 58 58
4 0 3 55				67 4 47 50	47 00	— 0 50	16 0 12
5 0 4 6				67 10 8 81	7 70	— 1 11	16 0 70
6 0 4 16				67 15 56 07	52 10	— 3 97	15 59 95
7 0 4 26				67 22 2 17	0 10	— 2 07	16 0 92
8 0 4 35 6	7 8 39 58	39 01	— 0 57	67 28 26 54	32 00	+ 5 46	16 0 86
9 0 4 45 3	7 12 44 99	44 88	— 0 11	67 35 27 89	27 10	— 0 79	16 1 35
10 0 4 54 0	7 16 50 15	50 33	+ 0 18	67 42 43 61	45 40	+ 1 79	16 1 77
11 0 5 2 5	7 20 55 43	55 34	— 0 09	67 50 31 38	26 80	— 4 58	16 1 30
12 0 5 10 5	7 24 59 84	59 88	+ 0 04	67 58 28 44	31 00	+ 2 56	16 2 45
13 0 5 18 7	7 29 4 62	3 98	— 0 64	68 6 56 67	57 80	+ 1 13	
14 0 5 25 6	7 33 8 11	7 57	— 0 57	68 15 41 48	47 20	+ 5 72	15 59 34
15 0 5 32 3	7 37 11 38	10 66	— 0 72	68 24 0 91	58 70	— 2 21	16 1 44
16 0 5 37 6	7 41 13 36	13 26	— 0 10	68 34 30 68	32 20	+ 1 52	16 1 12
17 0 5 43				68 44 28 58	27 50	— 1 08	
18 0 5 48 5	7 49 17 40	16 88	— 0 52				15 59 50
19 0 5 52 9	7 53 18 52	17 91	— 0 61	69 5 26 15	22 60	— 3 55	16 2 30
20 0 5 56 4	7 57 18 51	18 41	— 0 10				
23 0 6 4 8	8 9 16 77	16 55	— 0 22	69 51 25 20	25 10	— 0 10	16 1 06
24 0 6 6				70 3 46 31	47 00	+ 0 69	16 0 08
27 0 6 8				70 42 52 73	51 80	— 0 93	
28 0 6 8 1	8 29 3 04	2 32	— 0 72	70 56 30 35	32 30	+ 1 95	16 0 37
29 0 6 7				71 10 35 46	31 60	— 3 86	16 1 62
30 0 6 5				71 24 49 13	49 70	+ 0 57	16 2 14
31 0 6 3				71 39 28 02	26 30	— 1 72	16 2 27
Aug 2 0 5 56 6	8 48 34 21	33 50	— 0 71	72 9 31 97	33 10	+ 1 13	15 59 56
5 0 5 42				72 56 55 26	54 10	— 1 16	16 0 70
7 0 5 29 6	9 7 49 62	49 46	— 0 16	73 29 52 83	51 30	— 1 53	16 0 82
9 0 5 14 7	9 15 27 73	27 60	— 0 13	74 3 53 08	52 20	— 0 88	16 1 50
10 0 5 6 5	9 19 16 00	15 76	— 0 24	74 21 15 14	15 70	+ 0 56	16 1 24
11 0 4 57 6	9 23 3 65	3 33	— 0 32	74 38 51 64	54 20	+ 2 56	16 0 96
1 0 4 48 1	9 26 50 67	50 32	— 0 35	74 56 47 94	47 40	— 0 54	16 1 06
13 0 4 37 7	9 30 36 80	36 74	— 0 06	75 15 56 81	54 90	— 1 91	16 0 20
20 0 3 12				77 28 3 15	3 90	+ 0 75	15 58 74
21 0 2 57 9	10 0 29 38	28 96	— 0 42				
22 0 2 42 8	10 4 10 69	10 80	+ 0 11	78 7 56 94	58 90	+ 1 96	16 0 64
23 0 2 28 1	10 7 52 48	52 21	— 0 27	78 28 12 19	13 60	+ 1 41	16 0 24
24 0 2 12 3	10 11 33 31	33 22	— 0 09	78 48 41 66	39 50	— 2 16	15 59 84
25 0 1 56				79 9 12 36	16 10	+ 3 74	15 59 12
28 0 1 6 4	10 26 13 48	13 31	— 0 17				16 0 64
29 0 0 48 9	10 29 52 51	52 41	— 0 10	80 33 21 37	23 90	+ 2 53	16 1 44
30 0 0 31				80 54 54 10	49 50	— 4 60	16 0 28
31 0 0 13				81 16 21 43	23 90	+ 2 47	16 0 55
31 23 59 55				81 38 8 01	6 60	— 1 41	15 59 92
Sept 1 23 59 36				81 59 54 89	57 60	+ 2 71	
3 23 58 58				82 44 1 19	2 20	+ 1 01	16 1 10
4 23 58 38				83 6 13 55	15 30	+ 1 75	16 2 98
6 23 57 58				83 50 58 56	1 10	+ 2 54	16 1 80
7 23 57 38				84 13 33 86	33 20	— 0 66	15 59 64
8 23 57 18 2	11 9 43 18	42 73	— 0 45	84 36 6 76	10 90	+ 4 14	15 59 70
9 23 56 57				84 58 54 08	54 10	+ 0 02	16 2 20

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

M. Sol. Time of Observation	A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	M. H. Semid.
1837 m							
Sept 10 23 56 36				85 21 41 68	42 20	+ 0 52	1[illegible] 59 82
11 23 56 15 6	11 20 30 11	30 04	— 0 07	85 44 37 23	35 00	— 2 23	16 0 86
12 23 55 54 7	11 24 5 72	5 56	— 0 16	86 7 32 10	32 20	+ 0 10	16 0 60
13 23 55 33 7	11 27 41 20	41 00	— 0 20	86 30 35 56	33 50	— 2 06	16 1 17
14 23 55 12 6	11 31 16 69	16 37	— 0 32	86 53 35 88	38 50	+ 2 62	16 0 52
15 23 54 51 3	11 34 51 78	51 71	— 0 07	87 16 47 79	47 00	— 0 79	16 0 37
16 23 54 30 6	11 38 27 60	27 03	— 0 57	87 39 57 27	58 70	+ 1 43	16 1 15
17 23 54 9 1	11 42 2 70	2 36	— 0 34	88 3 13 08	13 40	+ 0 32	16 0 66
18 23 53 47 7	11 45 37 76	37 74	— 0 02	88 26 33 45	30 70	— 2 75	16 1 37
19 23 53 27 0	11 49 13 46	13 17	— 0 29	88 49 53 09	50 30	— 2 79	16 0 20
20 23 53 5 6	11 52 48 59	48 65	+ 0 06	89 13 13 19	11 70	— 1 49	16 0 22
21 23 52 45 1	11 56 24 38	24 26	— 0 12	89 36 39 24	34 70	— 4 54	16 0 77
22 23 52 24 1	12 0 0 02	0 00	— 0 02	89 59 58 08	59 20	+ 1 12	15 59 77
23 23 52 3 2	12 3 35 65	35 86	+ 0 21	90 23 25 55	24 50	— 1 05	16 1 44
24 23 51 43 2	12 7 12 08	11 87	— 0 21	90 46 51 11	50 40	— 0 71	16 0 [illegible]5
25 23 51 22 8	12 10 48 25	48 05	— 0 20	91 10 16 81	16 40	— 0 41	1[illegible] 5[illegible] 97
26 23 51 2 7	12 14 24 73	24 43	— 0 30	91 33 42 12	42 30	+ 0 18	16 1 06
27 23 50 42 6	12 18 1 04	1 04	0 00	91 57 11 92	7 80	— 4 12	
Oct 4 23 48 31				94 40 17 18	19 70	+ 2 52	16 0 22
5 23 48 13				95 3 28 0[illegible]	27 40	— 0 65	16 0 48
6 23 47 56				95 25 32 67	31 10	— 1 57	16 0 [illegible]7
8 23 47 23							16 1 12
9 23 47 7 2	13 1 43 52	43 17	— 0 35	96 3[illegible] 18 55	15 10	— 3 45	1[illegible] 0 28
10 23 46 51				96 57 57 89	59 40	+ 1 51	1[illegible] 59 68
11 23 46 37				97 20 41 16	38 00	— 3 16	16 1 90
12 23 46 22 0	13 12 47 81	47 53	— 0 28	97 43 8 43	10 40	+ 1 97	16 0 92
13 23 46 8 1	13 16 30 42	29 98	— 0 44	98 5 36 28	36 50	+ 0 22	16 0 22
15 23 45 41 4	13 23 56 83	56 56	— 0 27	98 50 5 67	8 10	+ 2 43	
16 23 45 29				99 12 9 36	12 80	+ 3 44	15 [illegible]9 12
17 23 45 17				99 34 6 64	9 60	+ 2 96	1[illegible] 59 42
20 23 44 45				100 39 11 34	9 60	— 1 74	16 0 92
21 23 44 36				101 0 34 33	31 40	— 29 3	16 1 15
22 23 44 28				101 21 39 78	43 30	+ 3 52	15 59 84
23 23 44 20				101 42 49 17	45 20	— 3 97	15 59 42
24 23 44 13				102 3 35 49	36 50	+ 1 01	16 0 60
Nov 5 23 43 47				105 57 34 32	30 80	— 3 52	15 58 18
12 23 44 27				107 56 54 56	55 50	+ 0 94	1[illegible] 59 58
18 23 45 33							16 2 56
20 23 46 1 8	15 46 13 36	13 24	— 0 12				
23 23 46 51				110 32 50 94	49 10	— 1 84	16 0 30
24 23 47 9				110 44 51 83	49 60	— 2 23	
25 23 47 28				110 56 25 51	26 90	+ 1 39	15 59 56
26 23 47 48 3	16 11 39 41	38 71	— 0 70	111 7 42 82	40 70	— 2 12	
28 23 48 29				111 28 57 31	56 10	— 1 21	16 0 48
29 23 48 51				111 39 0 00	57 10	— 2 90	15 59 75
30 23 49 13				111 48 35 82	33 30	— 2 52	
Dec 1 23 49 36				111 57 48 25	44 20	— 4 05	16 0 84
9 23 52 59				112 55 39 31	35 00	— 4 31	15 58 98
10 23 53 27							16 0 00
13 23 54 52				113 13 45 44	44 20	— 1 24	15 59 92
14 23 55 20				113 17 10 04	7 60	— 2 44	16 1 75
15 23 55 50				113 19 2 73	3 00	+ 0 23	16 1 08
18 23 57 18 3	17 47 55 27	55 06	— 0 21	113 28 2 59	1 00	— 1 59	15 58 90
19 23 57 48 0	17 52 21 83	21 58	— 0 25	113 27 8 38	4 00	— 4 38	15 59 38
20 23 58 17 8	17 56 48 22	48 20	— 0 02	113 27 38 80	38 70	— 0 10	
22 23 59 18				113 27 27 62	[illegible]2 90	— 4 72	

RIGHT ASCENSIONS AND N RTH POLAR DISTANCE OF THE SUN S CENTER *(C tnu d)*

	M S lar T m f Ob tl	A R f m Ob rv tl	A R fr m N A	E f N A	N P D f m Ob rv tl	N P D fr m N A	E f N A	M H S mid
1837								
D	23 23 59 48 3	18 10 8 56	8 35	— 0 21	113 26 36 89	32 50	— 4 39	
	25 0 0 18 3	18 14 35 43	35 05	— 0 38				
	26 0 0 48 4	18 19 2 04	1 67	— 0 37	113 23 30 36	26 70	— 3 66	
	27 0 1 18 6	18 23 28 67	28 18	— 0·49	113 21 12 25	11 40	— 0 85	
	28 0 1 48 6	18 27 54 89	54 54	— 0 35				
	29 0 2 17 8	18 32 21 35	20 69	— 0 66	113 15 19 31	16 30	— 3 01	
	30 0 2 47				113 11 37 34	36 60	— 0 74	
1838								
J	4 0 5 8 4	18 58 51 74	51 53	— 0 21	112 46 21 22	22 40	+ 1 18	15 58 60
	5 0 5 35 6	19 3 15 57	15 34	— 0 23	112 39 59 09	57 60	— 1 49	
	6 0 6 2 3	19 7 38 90	38 69	— 0 21	112 33 6 00	5 90	— 0 10	16 1 66
	7 0 6 28 5	19 12 1 79	1 57	— 0 22	112 25 51 04	47 30	— 3 74	16 1 17
	8 0 6 54 9	19 16 24 36	23 94	— 0 42	112 18 1 99	2 40	+ 0 41	16 0 29
	9 0 7 19 4	19 20 45 98	45 77	— 0 21	112 9 50 92	51 50	+ 0 58	16 1 23
	10 0 7 44 2	19 25 7 49	7 07	— 0 42	112 1 12 93	14 20	+ 1 27	16 0 70
	11 0 8 8 1	19 29 27 95	27 80	— 0 15	111 52 11 93	11 30	— 0 63	16 0 65
	13 0 8 54 5	19 38 7 61	7 43	— 0 18	111 32 47 43	49 40	+ 1 97	
	15 0 9 38 5	19 46 44 85	44 54	— 0 31	111 11 46 22	48 10	+ 1 88	16 1 48
	16 0 9 59 6	19 51 2 55	2 12	— 0 43	111 0 41 09	40 60	— 0 49	16 0 4[illegible]
	17 0 10 19 8	19 55 19 41	19 01	— 0 40	110 49 6 60	9 00	+ 2 40	16 0 57
	18 0 10 39 3	19 59 35 52	35 21	— 0 31	110 37 14 87	13 70	— 1 17	16 0 94
	19 0 10 58 3	20 3 51 15	50 74	— 0 41	110 24 54 42	54 80	+ 0 38	16 1 21
	20 0 11 16 6	20 8 5 97	5 51	— 0 46	110 12 14 44	12 70	— 1 74	16 1 10
	23 0 12 6 2	20 20 45 47	45 42	— 0 05	109 31 54 91	51 10	— 3 81	16 1 61
	24 0 12 21 5	20 24 57 37	57 18	— 0 19	109 17 41 00	40 10	— 0 90	16 1 21
	26 0 12 49 7	20 33 18 72	18 30	— 0 42	108 48 12 13	14 50	+ 2 37	16 1 2
	27 0 13 2 4	20 37 28 02	27 65	— 0 37	108 33 4 14	0 80	— 3 34	16 1 27
	28 0 13 14 0	20 41 36 19	36 17	— 0 02	108 17 24 38	26 80	+ 2 42	16 1 17
	29 0 13 25 2	20 45 43 98	43 85	— 0 13	108 1 35 11	33 10	— 2 01	16 1 46
	30 0 13 35 4	20 49 50 81	50 69	— 0 12	107 45 18 97	20 20	+ 1 23	16 0 68
	31 0 13 45 2	20 53 57 15	56 71	— 0 44	107 28 49 43	48 30	— 1 13	
Feb	1 0 13 53 9	20 58 2 51	1 88	— 0 63	107 11 54 36	57 80	+ 3 44	16 0 97
	2 0 14 1 7	21 2 6 82	6 20	— 0 62	106 54 49 98	49 40	— 0 58	16 0 85
	3 0 14 8 2	21 6 9 85	9 68	— 0 17	106 37 23 74	23 40	— 0 34	16 1 52
	4 0 14 14 6	21 10 12 87	12 31	— 0 56	106 19 38 25	40 00	+ 1 75	16 1 72
	5 0 14 19·3	21 14 14 24	14 12	— 0 12	106 1 43 38	40 00	— 3 38	16 0 99
	6 0 14 23 9	21 18 15 38	15 07	— 0 31	105 43 21 68	23 50	+ 1 82	16 0 84
	7 0 14 27 6	21 22 15 62	15 21	— 0 41	105 24 51 40	51 10	— 0 30	16 0 88
	8 0 14 30 3	21 26 14 97	14 54	— 0 43	105 6 6 73	3 20	— 3 53	16 0 48
	9 0 14 32 2	21 30 13 42	13 06	— 0 36	104 47 59 35	0 10	+ 0 75	16 0 25
	10 0 14 33 7	21 34 11 43	10 79	— 0 64	104 27 45 74	42 10	— 3 64	
	11 0 14 33 7	21 38 7 91	7 72	— 0 19	104 8 9 22	9 70	+ 0 48	16 1 83
	12 0 14 33 8	21 42 4 34	3 89	— 0 45	103 48 24 27	23 50	— 0 77	
	13 0 14 32 6	21 45 59 73	59 30	— 0 43	103 28 20 19	23 60	+ 3 41	16 0 66
	14 0 14 30 8	21 49 54 49	53 99	— 0 50	103 8 11 22	10 40	— 0 82	16 0 85
	15 0 14 28 0	21 53 48 21	47 93	— 0 28	102 47 42 69	44 40	+ 1 71	16 1 07
	16 0 14 24 8	21 57 41 44	41 16	— 0 28	102 27 4 60	6 00	+ 1 40	16 1 46
	17 0 14 20 7	22 1 34 05	33 67	— 0 38	102 6 12 49	15 50	+ 3 01	16 1 17
	18 0 14 15 8	22 5 25 82	25 51	— 0 31	101 45 14 31	13 40	— 0 91	16 1 79
	19 0 14 10 5	22 9 17 08	16 67	— 0 41	101 23 59 34	0 10	+ 0 76	16 1 63
	20 0 14 4 6	22 13 7 71	7 16	— 0 55	101 2 38 28	36 00	— 2 28	16 1 36
	21 0 13 57				100 41 4 79	1 60	— 3 19	16 0 04
	22 0 13 50 6	22 20 46 86	46 21	— 0 65	100 19 12 56	17 10	+ 4 54	16 0 36
	23 0 13 42 0				99 57 24 04	23 30	— 0 74	16 2 31
	24 0 13 33 7	22 28 23 02	22 70	— 0 32	99 35 17 83	20 30	+ 2 47	16 1 83
	25 0 13 24 3	22 32 10 18	10 04	— 0 14	99 13 10 40	8 60	— 1 80	16 1 23
	26 0 13 15 1	22 35 57 42	56 78	— 0 64	98 40 46 01	48 80	+ 2 79	16 1 70
	27 0 13 4 8	22 39 43 61	42 92	— 0 69	98 28 21 58	21 00	— 0 58	16 0 39

RIGHT ASCENSION AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*Continued*)

Mean Solar Time of Observation	R. A. from Observation	R. A. from N. A.	Error of N. A.	N. P. D. from Observation	N. P. D. from N. A.	Error of N. A.	M. H. Semid.
1838	m			″	″		
Feb 28 0 12 53				98 5 43 01	46 00	+ 2 99	16 0 10
Mar 4 0 12 4 6	22 58 25 95	25 61	— 0 34	96 34 17 91	20 20	+ 2 29	16 1 10
5 0 11 51 1	23 2 8 97	8 64	— 0 33	96 11 13 21	14 40	+ 1 19	16 1 19
6 0 11 37 2	23 5 51 63	51 22	— 0 41	95 48 2 89	3 80	+ 0 91	15 58 70
8 0 11 8 2	23 13 15 63	15 06	— 0 57	95 1 25 32	29 10	+ 3 78	15 59 73
9 0 10 52 6	23 16 56 57	56 36	— 0 21	94 38 6 87	5 90	— 0 97	16 1 25
10 0 10 37 0	23 20 37 47	37 29	— 0 18	94 14 36 72	39 30	+ 2 58	16 1 67
11 0 10 21 1	23 24 18 08	17 88	— 0 20	93 51 7 81	9 50	+ 1 69	
12 0 10 5 2	23 27 58 65	58 16	— 0 49	93 27 35 51	37 10	+ 1 59	16 0 88
13 0 9 48 6	23 31 38 58	38 13	— 0 45	93 4 3 34	2 00	— 1 34	16 0 63
14 0 9 31 7	23 35 18 23	17 82	— 0 41	92 40 23 83	24 80	+ 0 97	15 59 17
16 0 8 57 5	23 42 36 97	36 48	— 0 49	91 53 6 34	5 80	— 0 54	16 2 15
17 0 8 39 8	23 46 15 82	15 49	— 0 33	91 29 21 49	24 60	+ 3 11	16 1 55
18 0 8 22 2	23 49 54 68	54 32	— 0 36	91 5 43 09	42 60	— 0 49	15 59 17
19 0 8 4 5	23 53 33 49	33 00	— 0 49	90 42 59 90	0 30	+ 0 40	15 59 59
20 0 7 46 0	23 57 11 45	11 50	+ 0 05	90 18 18 06	18 00	— 0 06	16 1 70
21 0 7 28 0	0 0 49 98	49 90	— 0 08	89 54 35 21	36 00	+ 0 79	
22 0 7 10 3	0 4 28 83	28 18	— 0 65	89 30 52 87	55 00	+ 2 13	16 1 12
23 0 6 51 9	0 8 6 84	6 38	— 0 46	89 7 10 49	15 00	+ 4 51	
24 0 6 33 6	0 11 45 07	44 [illegible]1	— 0 6	88 43 37 02	36 70	— 0 32	
25 0 6 14 8	0 15 22 77	22 58	— 0 19	88 19 0 33	0 20	— 0 13	16 1 41
26 0 5 56 5	0 19 1 00	0 62	— 0 38	87 56 23 78	26 00	+ 2 22	16 1 55
27 0 5 38 0	0 22 38 99	38 63	— 0 36	87 32 57 07	54 50	— 2 57	15 59 75
28 0 5 19 4	0 26 16 98	16 66	— 0 32	87 9 24 11	26 00	+ 1 89	16 0 08
30 0 4 42 5	0 33 33 06	32 75	— 0 31	86 22 39 16	39 70	+ 0 54	16 0 74
31 0 4 24				85 59 20 23	22 70	+ 2 47	15 59 24
April 1 0 4 5 7	0 40 49 28	49 06	— 0 22	85 36 7 68	10 30	+ 2 62	16 1 03
2 0 3 47 6	0 44 27 62	27 30	— 0 35	85 13 1 95	2 60	+ 0 65	16 1 76
3 0 3 29 7	0 48 6 29	5 68	— 0 61	84 49 54 40	0 40	+ 6 00	15 59 24
4 0 3 11 6	0 51 44 62	44 16	— 0 46	84 27 1 84	3 60	+ 1 76	16 0 92
5 0 2 53 5	0 55 23 10	22 78	— 0 32	84 4 9 10	12 90	+ 3 80	16 0 76
6 0 2 36 0	0 59 2 11	1 55	— 0 56	83 41 28 18	28 40	+ 0 22	16 1 23
7 0 2 18 3	1 2 40 93	40 52	— 0 41	83 18 49 61	50 0	+ 0 89	16 0 39
9 0 1 43 8	1 9 59 43	59 09	— 0 34	82 33 53 58	55 70	+ 2 12	16 0 21
10 0 1 27 0	1 13 39 08	38 73	— 0 35	82 11 38 00	39 40	+ 1 40	15 59 94
11 0 1 10 4	1 17 19 07	18 65	— 0 42	81 44 30 42	30 90	+ 0 48	15 59 38
12 0 0 54 3	1 20 59 42	58 84	— 0 58				15 59 79
15 23 59 52				80 0 59 45	56 50	— 2 95	16 2 98
18 23 59 9 4	1 46 50 16	49 94	— 0 22	78 57 39 36	42 00	+ 2 64	16 0 97
19 23 58 56 3	1 50 33 39	33 11	— 0 28	78 36 59 44	58 20	— 1 24	16 1 46
20 23 58 43 3	1 54 17 00	16 69	— 0 31	78 16 23 57	25 50	+ 1 93	16 0 83
21 23 58 31				77 56 5 38	4 30	— 1 08	16 0 19
22 23 58 18 5	2 1 45 28	45 21	— 0 07	77 35 50 76	54 90	+ 4 14	15 59 50
23 23 58 7 1	2 5 30 35	30 16	— 0 19	77 15 58 34	57 80	— 0 54	15 59 73
24 23 57 56				76 56 7 34	13 20	+ 5 86	15 59 86
26 23 57 35 4	2 16 48 32	47 90	— 0 42				16 0 97
27 23 57 26 0	2 20 35 35	34 79	— 0 56	75 58 12 04	17 30	+ 5 26	16 3 30
28 23 57 16				75 39 24 94	26 20	+ 1 26	16 1 90
29 23 57 8 1	2 28 10 71	10 16	— 0 55	75 20 51 28	49 20	— 2 08	16 0 79
May 1 23 56 52				74 44 16 26	19 30	+ 3 04	16 1 86
3 23 56 38 8	2 43 27 39	26 81	— 0 58	74 8 52 70	50 10	— 2 60	16 1 56
5 23 56 27 0	2 51 8 73	8 41	— 0 32	73 34 22 34	24 00	+ 1 66	16 1 43
6 23 56 22 2	2 55 0 42	0 01	— 0 41	73 17 37 41	35 50	— 1 91	16 1 53
8 23 56 14 4	3 2 45 73	44 95	— 0 78	72 44 44 85	48 40	+ 3 55	16 2 36
9 23 56 11 0	3 6 38 87	38 28	— 0 59	72 28 50 84	50 50	— 0 34	16 2 21
10 23 56 8 1	3 10 32 79	32 19	— 0 60	72 13 4 56	11 00	+ 6 44	16 2 32

Right Ascensions and North Polar Distances f the Sun Center (C t ed)

M an S lar Tim f Ob rv ti	A R from Ob rv ti	A R from N A	E f N A	N P D f m Ob tl	N P D fr m N A	E f N A	M H S id
1838							
M y 11 23 56 6 2	3 14 27 23	26 69	—0 54	71 57 48 23	47 0	—0 73	16 2 40
12 23 56 5 0	3 18 22 58	21 78	—0 80	71 42 39 45	42 80	+ 3 35	16 3 53
13 23 56 3 9	3 22 17 96	17 45	—0 51	71 27 59 25	56 30	—2 95	16 1 83
14 23 56 3 6	3 26 14 20	13 72	—0 48	71 13 25 36	28 50	+ 3 14	16 1 38
17 23 56 6 1	3 38 6 58	6 07	—0 51	70 32 2 88	59 20	—3 68	16 0 17
18 23 56 8 3	3 42 5 26	4 69	—0 57	70 18 44 32	48 50	+ 4 18	16 0 6
19 23 56 10 7	3 46 4 21	3 88	—0 33	71 6 1 91	57 90	—4 01	16 1 57
20 23 56 14 1	3 50 4 15	3 61	—0 54	69 53 24 32	27 40	+ 3 08	16 0 35
21 23 56 18 0	3 54 4 25	3 92	—0 33	69 41 18 19	17 50	—0 69	16 1 11
22 23 56 22				69 29 26 66	28 40	+ 1 74	16 1 91
23 23 56 27 0	4 2 6 64	6 17	—0 47	69 18 1 72	0 30	—1 42	16 2 39
24 23 56 32 3	4 6 8 46	8 08	—0 38	69 6 48 65	53 60	+ 4 95	16 1 96
25 23 56 38 2	4 10 11 01	10 51	—0 50	68 56 9 09	8 30	—0 79	16 1 23
26 23 56 44 6	4 14 14 02	13 41	—0 61	68 45 41 72	44 90	+ 3 18	16 1 55
30 23 57 14				68 7 5 24	53 60	—1 64	16 2 46
31 23 57 22 5	4 34 34 80	34 60	—0 20	67 9 18 54	22 50	+ 3 96	16 2 59
Ju e 1 23 57 31 5	4 38 40 37	40 07	—0 30	67 51 17 54	14 30	—3 24	16 2 23
2 23 57 40 9	4 42 46 30	45 93	—0 37	67 43 27 03	29 20	+ 2 17	16 0 81
3 23 57 50 5	4 46 52 57	52 15	—0 42	67 36 10 13	7 50	—2 63	16 2 48
7 23 58 32 3	5 3 20 62	20 35	—0 27	67 10 33 28	36 50	+ 3 22	16 1 32
8 23 58 43 4	5 7 28 48	28 16	—0 32	67 5 16 33	13 40	—2 93	16 1
9 23 58 55				67 0 13 51	14 20	+ 0 69	
11 23 59 18				66 51 32 04	28 60	—3 44	16 2 96
12 23 59 30 5	5 24 1 95	1 91	—0 04	66 47 43 23	42 30	—0 93	16 2 35
14 23 59 43 1	5 28 11 14	10 88	—0 26	66 44 23 56	20 40	—3 16	16 3 07
18 0 0 34 1	5 44 48 42	48 29	—0 13	66 35 2 82	59 50	—3 32	16 0 06
20 0 1 0				66 32 45 21	47 80	+ 2 59	16 1 74
21 0 1 13				66 32 22 51	19 10	—3 41	15 59 94
22 0 1 26				66 32 11 81	15 30	+ 3 49	15 59 37
23 0 1 39				66 32 37 72	36 40	—1 32	
24 0 1 52				66 33 19 94	22 20	+ 2 26	15 59 22
25 0 2 5				66 34 37 57	32 90	—4 67	16 0 24
26 0 2 18 5	6 18 5 57	5 14	—0 43	66 36 3 87	8 40	+ 4 53	16 0 32
27 0 2 31 3	6 22 14 85	14 39	—0 46	66 38 11 01	8 60	—2 41	15 59 99
28 0 2 43 6	6 26 23 75	23 49	—0 26	66 40 32 58	33 30	+ 0 72	16 1 29
J ly 1 0 3 19 6	6 38 49 65	49 45	—0 20	66 50 17 87	15 10	—2 77	16 1 78
2 0 3 31 2	6 42 57 71	57 61	—0 10	66 54 15 47	17 80	+ 2 33	16 0 86
3 0 3 42 2	6 47 5 43	5 58	+ 0 15	66 58 49 30	44 60	—4 70	16 0 26
4 0 3 53				67 3 35 02	35 40	+ 0 38	16 0 54
6 0 4 14 5	6 59 27 45	27 28	—0 17	67 14 26 48	28 90	+ 2 42	16 0 25
7 0 4 24 4	7 3 33 97	33 87	—0 10	67 20 36 97	31 20	—5 77	16 2 63
8 0 4 34 1	7 7 40 23	40 10	—0 13	67 26 53 52	57 00	+ 3 48	16 0 97
9 0 4 43 4	7 11 46 16	45 96	—0 20	67 33 50 17	46 10	—4 07	16 0 75
10 0 4 52 0	7 15 51 29	51 41	+ 0 12	67 40 56 70	58 50	+ 1 80	16 4 63
11 0 5 0 5	7 19 56 43	56 47	+ 0 04	67 48 36 15	33 90	—2 25	16 2 25
12 0 5 9 1	7 24 1 61	1 11	—0 50	67 56 28 65	32 30	+ 3 65	16 0 56
13 0 5 16 8	7 28 5 78	5 31	—0 47	68 4 54 29	53 40	—0 89	16 1 06
15 0 5 30				68 22 44 73	43 30	—1 43	16 1 12
16 0 5 36				68 32 16 04	11 70	—4 34	16 1 42
17 0 5 42				68 42 1 27	2 10	+ 0 83	15 59 43
18 0 5 48				68 52 16 04	14 30	—1 74	16 0 48
20 0 5 56				69 13 43 55	42 90	—0 65	16 0 65
21 0 6 0				69 25 0 88	59 00	—1 88	16 1 63
23 0 6 6 0	8 8 20 99	20 63	—0 36	69 48 36 17	33 30	—2 87	16 0 83
24 0 6 8 1	8 12 19 79	19 17	—0 62	70 0 49 08	51 00	+ 1 92	16 0 36
25 0 6 9 3	8 16 17 67	17 13	—0 54	70 13 27 33	28 80	+ 1 47	15 59 08
26 0 6 9				70 26 29 34	26 20	—3 14	16 1 16

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN S CENTER (C t nu d)

	M S la Tim f Ob rv ti	A R fr m Ob rv ti	A R fr m N A	Erro f N A	N P D fr m Ob rv ti n.	N P D fr m N A	Err f N A	M H Semid
1838								
J ly	27 0 6 10 0	8 24 11 76	11 21	—0 55	70 39 41 28	43 20	+ 1 92	16 1 35
	29 0 6 9 6	8 32 3 30	2 83	—0 56	71 7 18 39	14 40	—3 99	15 58 45
	30 0 6 7 7	8 35 58 24	57 72	—0 52	71 21 30 03	28 10	—1 93	16 2 99
A g	2 0 5 58				72 5 59 62	57 70	—1 92	16 0 79
	3 0 5 54 6	8 51 31 50	31 07	—0 43				15 59 36
	4 0 5 49 7	8 55 23 17	22 86	—0 31	72 37 4 75	5 10	+ 0 35	16 2 23
	5 0 5 44				72 53 8 69	4 30	—4 39	15 59 23
	7 0 5 31 8	9 6 54 81	54 59	—0 22	73 25 51 64	52 20	+ 0 56	15 59 82
	9 0 5 17 3	9 14 33 46	32 88	—0 58	73 59 46 20	44 10	—2 10	16 0 32
	11 0 5 0 2	9 22 9 39	8 82	—0 57	74 34 34 86	38 30	+ 3 44	16 0 99
	13 0 4 40				75 10 33 22	32 20	—1 02	16 2 37
	14 0 4 30				75 28 46 74	50 70	+ 3 96	15 59 55
	15 0 4 19				75 47 24 10	23 30	—0 80	16 0 71
	16 0 4 7				76 6 6 26	9 50	+ 3 24	16 0 08
	19 0 3 30				77 3 47 24	47 30	+ 0 06	
	20 0 3 16				77 23 22 15	25 10	+ 2 95	
	25 0 2 2				79 4 29 53	27 80	—1 73	15 58 42
	27 0 1 29				79 46 11 75	7 40	—4 3	15 58 99
	29 0 0 55				80 28 28 35	25 80	—2 55	15 9 83
	30 0 0 37				80 49 48 87	48 60	—0 27	16 1 21
	31 0 0 18				81 11 23 85	20 10	—3 75	16 1 43
Sept	1 0 0 0				81 32 59 20	0 00	+ 0 80	16 1 68
	1 23 59 42				81 54 44 04	47 90	+ 3 86	16 1 89
	2 23 59 22 4	10 47 11 56	11 49	—0 07	82 16 46 64	43 10	—3 24	16 1 83
	3 23 59 3 3	10 50 48 95	48 63	—0 32				
	4 23 58 43				83 0 54 79	57 00	+ 2 21	16 0 35
	5 23 58 23 7	10 58 2 51	2 19	—0 32	83 23 17 04	14 20	—2 84	16 2 7[illegible]
	6 23 58 3 9	11 1 39 04	38 63	—0 41	83 45 36 81	38 00	+ 1 19	16 0 55
	7 23 57 43				84 8 11 41	8 00	—3 41	15 59 61
	9 23 57 2				84 53 22 66	25 80	+ 3 14	15 59 7[illegible]
	10 23 56 42 2	11 16 3 15	2 79	—0 36	85 16 14 22	12 90	—1 32	16 0 88
	11 23 56 21 4	11 19 38 92	38 52	—0 40				16 1 19
	14 23 55 18 2	11 30 25 17	25 26	+ 0 09	86 48 6 26	8 40	+ 2 14	
	25 23 51 29 3	12 9 57 82	57 60	—0 22	91 4 44 80	49 30	+ 4 50	1 59 90
	27 23 50 49 1	12 17 10 61	10 33	—0 28	91 51 44 11	39 70	—4 41	16 0 81
	28 23 50 29 3	12 20 47 29	47 00	—0 29	92 15 3 16	3 50	+ 0 34	16 1 16
	29 23 50 9 7	12 24 24 18	23 88	—0 30	92 38 29 66	26 10	—3 56	16 1 21
	30 23 49 50 3	12 28 1 27	1 00	—0 27	93 1 46 14	46 90	+ 0 76	16 0 33
O t	1 23 49 31 2	12 31 38 68	38 39	—0 29	93 25 9 07	5 70	—3 37	16 1 03
	2 23 49 12				93 48 19 39	22 20	+ 2 81	16 1 08
	4 23 48 35				94 34 49 87	47 10	—2 77	
	5 23 48 18 0	12 46 11 57	11 20	—0 37				15 59 98
	6 23 48 0 6	12 49 50 52	50 33	—0 19	95 21 58 80	58 80	0 00	16 2 23
	7 23 47 42 5	12 53 30 07	29 87	—0 20	95 44 1 62	58 90	—2 72	16 0 44
	8 23 47 26 9	12 57 10 18	9 85	—0 33	96 7 0 59	54 70	—5 89	16 0 85
	9 23 47 11 1	13 0 50 72	50 27	—0 45	96 29 44 14	45 80	+ 1 66	16 0 81
	10 23 46 55 7	13 4 31 80	31 19	—0 61	96 52 34 00	31 90	—2 10	16 0 32
	11 23 46 40 7	13 8 13 29	12 60	—0 69	97 15 13 19	12 60	—0 59	15 59 27
	12 23 46 26 0	13 11 55 13	54 51	—0 62	97 37 51 00	47 40	—3 60	16 1 08
	17 23 45 21				99 29 0 39	0 60	+ 0 21	15 58 51
	18 23 45 9 9	13 34 18 10	17 81	—0 29	99 50 52 95	52 30	—0 65	16 0 15
	19 23 44 59 6	13 38 4 31	3 79	—0 52	100 12 33 70	35 20	+ 1 50	16 0 28
	20 23 44 49 6	13 41 50 76	50 40	—0 36	100 34 9 81	9 00	—0 81	16 0 96
	21 23 44 40 3	13 45 38 06	37 70	—0 36	100 55 31 83	33 50	+ 1 67	1 59 08
	22 23 44 31 9	13 49 26 20	25 63	—0 57	101 16 50 14	48 00	—2 14	16 1 17
	23 23 44 23 9	13 53 14 74	14 23	—0 51	101 37 51 47	52 20	+ 0 73	15 59 84

Right Ascensions and North Polar Distances of the Sun's Center *(Continued)*

Month	Day	Mean Solar Time of Observation	A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Mean H Semidiameter
1838						′ ′	′	″	
Oct	24	23 44 16 5	13 57 3 92	3 50	—0 42				16 1 72
	25	23 44 9				102 19 33 96	28 10	—5 86	15 58 44
	0	23 43 48				103 59 57 92	59 20	+1 28	16 0 08
	31	23 43 46 3	14 24 9 27	8 74	—0 53				
N	1	23 43 45 5	14 28 4 66	3 97	—0 69	104 38 45 15	40 20	—4 95	15 59 11
	2	23 43 45 1	14 32 0 54	0 03	—0 51	104 57 39 16	39 60	+0 44	
	7	23 43 53 3	14 51 52 78	52 75	—0 03	106 28 51 90	49 90	—2 00	
	12	23 44 25 3	15 12 7 20	6 92	—0 28	107 53 3 43	5 60	+2 17	15 59 83
	13	23 44 34 0	15 16 12 56	12 35	—0 23	108 9 4 23	2 60	—1 63	16 0 01
	15	23 44 54 5	15 24 26 19	25 82	—0 37	108 39 56 20	58 60	+2 40	15 59 08
	16	23 45 5				108 54 59 52	57 10	—2 42	16 0 77
	17	23 45 18 1	15 32 43 04	42 67	—0 37	109 9 34 65	35 30	+0 65	
	24	23 47 6 6	16 2 7 70	7 15	—0 55	110 42 3 28	2 10	—1 18	16 1 86
	26	23 47 44				111 4 59 95	3 40	+3 45	16 2 52
Dec	4	23 50 42 4	16 4 9 62	9 21	—0 41	112 20 53 93	50 00	—3 93	15 59 48
	8	23 52 25 6	17 2 39 37	39 04	—0 33	112 48 27 18	27 70	+0 52	16 1 92
	9	23 52 52 6	17 7 2 99	2 75	—0 24	112 54 14 88	15 20	+0 32	16 1 65
	12	23 54 16 5	17 20 16 57	16 40	—0 17	113 8 52 21	54 30	+2 09	16 1 27
	13	23 54 4 1	17 24 41 95	41 69	—0 26	113 12 51 83	52 10	+0 27	16 0 96
	14	23 55 14 3	17 29 7 73	7 27	—0 46	113 16 20 18	22 20	+2 02	16 0 35
	15	23 55 43 4	17 33 33 24	33 13	—0 11	113 19 24 07	24 40	+0 33	16 1 19
	16	23 56 12 7	17 37 59 43	59 21	—0 22	113 21 55 70	58 40	+2 70	16 0 88
	17	23 56 42 2	17 42 25 63	25 53	—0 10	113 24 7 28	4 60	—2 68	16 0 64
	18	23 57 12 2	17 46 52 25	51 99	—0 26	113 25 39 38	42 30	+2 92	16 0 55
	19	23 57 42 0	17 51 18 79	18 55	—0 24	113 26 53 34	51 80	1 54	16 1 81
	20	23 58 11 9	17 55 45 37	45 19	—0 18	113 27 33 91	33 00	—0 91	16 1 55
	21	23 58 41 4	18 0 12 11	11 86	—0 25	113 27 44 50	45 80	+1 30	16 1 48
	22	23 59 12 4	18 4 39 05	38 54	—0 51	113 27 32 49	30 20	—2 29	16 0 48
	23	23 59 42				113 26 44 78	46 30	+1 52	16 1 12
	25	0 0 12 3	18 13 32 21	31 78	—0 43	113 25 33 06	34 10	+1 04	16 1 58
	28	0 1 41 2	18 26 51 12	50 83	—0 29				16 2 41
	29	0 2 10 6	18 31 17 20	16 84	—0 36				16 0 43
1839									
Jan	2	0 4 5				112 59 3 57	5 50	+1 93	16 2 18
	3	0 4 33 6	18 53 23 43	22 98	—0 45	112 53 38 69	42 10	+3 41	16 1 43
	5	0 5 28 7	19 2 11 66	11 09	—0 57	112 41 31 19	33 50	+2 31	16 1 94
	6	0 5 55 3	19 6 34 97	34 53	—0 44	112 34 48 88	48 60	—0 28	16 0 94
	7	0 6 21 7	19 10 57 94	57 56	—0 38	112 27 36 11	37 00	+0 89	16 1 39
	8	0 6 47 3	19 15 20 15	20 09	—0 06	112 20 1 84	58 50	—3 34	16 1 57
	9	0 7 13 1	19 19 42 67	42 15	—0 52	112 11 48 85	53 70	+4 85	16 1 41
	10	0 7 37 9	19 24 4 12	3 69	—0 43	112 3 22 76	22 90	+0 14	16 1 35
	11	0 8 2 1	19 28 25 00	24 70	—0 30	111 54 23 78	26 00	+2 22	16 2 83
	14	0 9 11 9	19 41 24 61	24 16	—0 45	111 25 7 15	2 50	—4 65	16 1 04
	15	0 9 33				111 14 24 12	24 80	+0 68	16 0 24
	16	0 9 55 3	19 50 1 24	0 59	—0 65	111 3 24 11	22 50	—1 61	16 0 65
	17	0 10 15 6	19 54 18 17	17 77	—0 40	110 51 53 58	56 10	+2 52	16 0 70
	18	0 10 35 5	19 58 34 67	34 23	—0 44	110 40 7 27	6 00	—1 27	16 1 37
	19	0 10 54 3	20 2 50 17	49 94	—0 23	110 27 51 05	52 30	+1 25	16 1 72
	21	0 11 30 5	20 11 19 56	19 11	—0 44	110 2 16 85	16 00	—0 85	16 0 83
	22	0 11 47 4	20 15 33 11	32 53	—0 58	109 48 50 79	54 10	+3 31	16 2 39
	23	0 12 3 4	20 19 45 70	45 15	—0 55	109 35 10 80	10 00	—0 80	15 59 92
	25	0 12 33				109 6 34 59	37 50	+2 91	
	27	0 12 59 2	20 36 27 86	27 53	—0 33	108 36 37 32	41 60	+4 28	
	28	0 13 11 3	20 40 36 62	36 09	—0 53	108 21 11 39	13 20	+1 81	16 2 67
	29	0 13 22 5	20 44 44 28	43 81	—0 47	108 5 19 67	25 00	+5 33	16 2 81
	30	0 13 32 9	20 48 51 32	50 71	—0 61	107 49 17 38	17 60	+0 22	16 0 28
	31	0 13 42 5	20 52 57 48	56 79	—0 69	107 32 47 84	51 10	+3 26	16 1 41

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

	Mean Solar Time of Observation	R. A. from Observation	R. A. from N. A.	Error of N. A.	N. P. D. from Observation	N. P. D. from N. A.	Error of N. A.	M. H. Semid.
1839								
Feb 1	0 13 51 1	20 57 2 63	2 03	−0 60	107 16 5 54	6 00	+0 46	16 0 06
2	0 13 58 6	21 1 6 95	6 65	−0 30	106 59 0 37	2 60	+2 23	16 1 56
3	0 14 5 8	21 5 10 68	10 28	−0 40	106 41 41 42	41 40	−0 02	16 1 41
4	0 14 12 0	21 9 13 52	13 07	−0 45	106 23 57 66	2 70	+5 04	16 1 28
5	0 14 17 3	21 13 15 38	15 08	−0 30				15 59 30
6	0 14 22				105 47 53 88	54 30	+0 42	15 59 43
7	0 14 26				105 29 19 37	25 50	+6 13	15 59 61
8	0 14 29 0	21 25 16 53	16 17	−0 36	105 9 40 44	40 80	+0 36	15 59 37
9	0 14 31				104 51 37 99	40 70	+2 71	16 2 21
10	0 14 32				104 32 24 71	25 50	+0 79	16 2 10
11	0 14 33 5	21 37 10 9	10 36	−0 43	104 12 52 36	55 70	+3 34	16 2 18
12	0 14 33 7	21 41 7 22	6 89	−0 33	103 53 10 54	11 70	+1 16	16 2 48
13	0 14 32 9	21 45 2 94	2 64	−0 30	103 33 10 10	14 40	+4 30	16 1 76
14	0 14 31 1	21 48 57 83	57 64	−0 19	103 12 58 37	3 10	+4 73	16 0 98
15	0 14 29 0	21 52 52 22	51 87	−0 35	102 52 36 09	39 30	+3 21	
16	0 14 25 8	21 56 45 69	45 37	−0 32	102 32 0 50	3 10	+2 60	16 1 61
17	0 14 21 9	22 0 38 32	38 13	−0 19	102 11 12 63	14 90	+2 27	16 0 70
18	0 14 17 7	22 4 30 68	30 17	−0 51	101 50 14 53	15 10	+0 57	16 0 15
19	0 14 12 1	22 8 21 66	21 49	−0 17	101 29 1 05	4 20	+3 15	16 1 56
20	0 14 6 6	22 12 12 75	12 12	−0 63				15 59 75
21	0 13 59 5	22 16 2 68	2 06	−0 62	100 46 8 65	10 80	+2 15	16 1 32
22	0 13 52 1	22 19 51 25	51 32	+0 07	100 24 29 64	29 20	−0 44	16 0 68
23	0 13 44 7	22 23 40 53	39 91	−0 62	100 2 42 44	38 10	−4 34	15 57 82
24	0 13 36 1	22 27 28 34	27 88	−0 46	99 40 34 76	38 10	+3 34	16 3 05
25	0 13 26 5	22 31 15 30	15 25	−0 05	99 18 30 60	29 40	−1 20	16 1 11
26	0 13 17 3	22 35 2 65	1 98	−0 67	98 56 12 24	12 60	+0 36	16 0 30
27	0 13 7 0	22 38 48 94	48 13	−0 81	98 33 44 14	47 90	+3 76	16 1 15
28	0 12 55 7	22 42 34 08	33 72	−0 36	98 11 13 12	15 70	+2 58	16 1 19
Mar 1	0 12 44 5	22 46 19 23	18 76	−0 47	97 48 30 97	36 50	+5 53	15 59 81
2	0 12 32 7	22 50 4 10	3 29	−0 81	97 25 48 83	50 40	+1 57	15 59 44
3	0 12 20 2	22 53 48 16	47 33	−0 83	97 2 54 18	58 00	+3 82	16 0 50
6	0 11 40				95 53 46 62	46 20	−0 42	16 0 59
7	0 11 25 8	23 8 39 82	38 94	−0 88	95 30 29 23	31 80	+2 57	16 0 12
8	0 11 11 2	23 12 21 66	20 82	−0 84	95 7 12 14	13 00	+0 86	16 0 83
9	0 10 56 1	23 16 3 06	2 32	−0 74	94 43 46 50	50 00	+3 50	15 59 90
10	0 10 40				94 20 24 56	23 20	−1 36	16 2 92
11	0 10 24 6	23 23 24 61	24 29	−0 32	93 56 56 54	53 00	−3 54	16 0 08
12	0 10 9 0	23 27 5 51	4 79	−0 72	93 33 17 42	19 90	+2 48	16 1 67
13	0 9 52 7	23 30 45 70	45 00	−0 70	93 9 40 13	44 30	+4 17	16 0 68
14	0 9 35 8	23 34 25 34	24 90	−0 44	92 46 4 61	6 40	+1 79	16 0 68
15	0 9 18 7	23 38 4 99	4 54	−0 45	92 22 22 81	26 80	+3 99	16 1 11
16	0 9 2 0	23 41 44 55	43 95	−0 60	91 58 44 84	45 90	+1 06	16 1 04
17	0 8 44 8	23 45 23 85	23 12	−0 73	91 34 57 37	3 90	+6 53	16 1 03
18	0 8 27 3	23 49 2 86	2 07	−0 79	91 10 18 71	21 30	+2 59	16 0 30
19	0 8 9				90 47 32 98	38 40	+5 42	16 0 81
20	0 7 51				90 23 53 64	55 90	+2 26	16 0 85
21	0 7 33				90 0 7 47	13 70	+6 23	16 1 15
22	0 7 15				89 36 30 24	32 50	+2 26	16 1 08
23	0 6 56 8	0 7 14 95	14 30	−0 65	89 12 47 08	52 70	+5 62	16 0 69
24	0 6 38 4	0 10 52 98	52 36	−0 62	88 49 12 40	14 60	+2 20	16 2 03
25	0 6 19 9	0 14 31 08	30 36	−0 72	88 25 32 72	38 40	+5 68	16 1 00
26	0 6 1 3	0 18 8 86	8 28	−0 58	88 2 3 88	4 60	+0 72	16 1 03
27	0 5 42 6	0 21 46 74	46 27	−0 47	87 38 27 97	33 60	+5 63	15 59 10
28	0 5 23 9	0 25 24 54	24 05	−0 49	87 15 3 34	5 50	+2 16	16 0 30
29	0 5 5 3	0 29 2 43	1 94	−0 49	86 51 35 91	40 90	+4 99	16 1 88
30	0 4 46 9	0 32 40 44	39 86	−0 58	86 28 20 32	19 80	−0 52	16 0 72
31	0 4 28 5	0 36 18 58	17 84	−0 74	86 5 1 40	2 60	+1 20	16 0 37

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN S CENTER (C nt nu d)

	M an S lar Tim f Ob rv t	A R f m Ob ti	A R f m N A	Err f N A.	N P D f m Ob ti	N P D f m N A	E f N A	M H S mid
1839		m						
Apr l 1	0 4 9				86 13 49 20	49 90	+ 0 70	15 58 02
2	0 3 51				85 18 39 51	41 80	+ 2 29	15 58 57
3	0 3 33 2	0 47 12 96	12 34	— 0 62	84 55 36 03	38 60	+ 2 57	16 0 35
4	0 3 15 3	0 50 51 45	50 78	— 0 67				16 0 56
5	0 2 57 2	0 54 29 94	29 41	— 0 53	84 9 45 17	48 10	+ 2 93	16 0 13
6	0 2 39 7	0 58 8 87	8 20	— 0 67	83 46 58 67	1 60	+ 2 93	16 0 79
7	0 2 21 9	1 1 47 63	47 22	— 0 41	83 24 18 05	21 40	+ 3 35	16 1 86
8	0 2 4 9	1 5 27 07	26 45	— 0 62	83 1 45 44	47 70	+ 2 26	16 0 61
9	0 1 47				82 39 18 76	21 10	+ 2 34	16 0 41
13	0 0 42				81 10 50 79	51 40	+ 0 61	15 58 60
14	0 0 27 1	1 27 28 21	27 41	— 0 80				16 0 11
15	0 0 11 6	1 31 9 21	8 65	— 0 56	80 27 25 68	27 90	+ 2 22	16 1 19
15	23 59 56 8	1 34 50 89	50 24	— 0 65	80 5 56 44	0 10	+ 3 66	16 0 70
16	23 59 42 0	1 38 32 79	32 17	— 0 62	79 44 41 33	42 20	+ 0 87	16 1 54
17	23 59 26 8	1 42 15 04	14 47	— 0 57	79 23 30 00	34 50	+ 4 50	15 58 80
18	23 59 13 5	1 45 57 56	57 13	— 0 43	79 2 35 33	37 40	+ 2 07	16 0 75
19	23 59 0 3	1 49 40 68	40 20	— 0 48	78 41 46 89	51 10	+ 4 21	15 59 56
22	23 58 22				77 40 40 37	41 20	+ 0 83	16 0 75
24	23 57 59 1	2 8 22 02	21 72	— 0 30	77 0 56 24	55 20	— 1 04	16 0 71
25	23 57 48 5	2 12 8 00	7 35	— 0 65	76 41 20 70	21 30	+ 0 60	16 0 56
27	23 57 26 1	2 19 40 62	40 09	— 0 53	76 2 51 76	53 10	+ 1 34	16 3 52
28	23 57 18				75 44 0 42	59 40	— 1 02	16 0 21
29	23 57 9				75 25 16 91	19 70	+ 2 79	16 1 30
30	23 57 1 4	2 31 3 50	3 05	— 0 45	75 6 53 79	54 20	+ 0 41	16 1 26
M y 1	23 56 53 7	2 34 52 25	51 79	— 0 46	74 48 39 51	43 30	+ 3 79	16 2 12
2	23 56 46 4	2 38 41 55	41 07	— 0 48	74 30 47 66	47 40	— 0 26	16 0 56
3	23 56 40 0	2 42 31 71	30 93	— 0 78	74 13 4 48	6 60	+ 2 12	16 0 70
4	23 56 33				73 55 40 24	41 30	+ 1 06	16 2 19
5	23 56 28				73 38 27 87	31 80	+ 3 93	16 1 15
6	23 56 23 3	2 54 4 64	3 92	— 0 72	73 21 35 26	38 50	+ 3 24	16 2 48
7	23 56 18 6	2 57 56 50	56 08	— 0 42	73 5 3 50	1 60	— 1 90	16 1 96
8	23 56 14 7	3 1 49 11	48 84	— 0 27	72 48 36 78	41 60	+ 4 82	16 1 56
9	23 56 11 7	3 5 42 55	42 19	— 0 36	72 32 38 06	38 70	+ 0 64	16 1 15
10	23 56 9 0	3 9 36 56	36 12	— 0 44	72 16 50 80	53 20	+ 2 40	16 1 47
11	23 56 7 2	3 13 31 29	30 64	— 0 65	72 1 21 79	25 40	+ 3 61	16 1 65
12	23 56 5				71 46 18 10	15 70	— 2 40	16 0 24
15	23 56 5 0	3 29 15 18	14 56	— 0 62	71 2 34 21	37 70	+ 3 49	
16	23 56 5 7	3 33 12 45	11 96	— 0 49	70 48 43 26	43 20	— 0 06	16 1 81
17	23 56 7				70 35 6 41	8 20	+ 1 79	
18	23 56 8				70 21 50 74	53 00	+ 2 26	16 1 61
19	23 56 11				70 8 56 00	57 80	+ 1 80	16 1 08
20	23 56 14 2	3 49 7 34	7 01	— 0 33	69 56 21 96	23 00	— 1 96	16 1 23
21	23 56 17 9	3 53 7 60	7 08	— 0 52	69 44 4 38	8 80	+ 4 42	16 1 88
2	23 56 22 0	3 57 8 22	7 67	— 0 55	69 32 16 86	15 40	— 1 46	16 0 37
23	23 56 26 6	4 1 9 41	8 77	— 0 64	69 20 39 58	42 90	+ 3 32	16 1 48
24	23 56 31 3	4 5 10 61	10 40	— 0 21				16 1 96
29	23 57 4				68 18 57 99	1 80	+ 3 81	16 0 54
June 12	23 59 28 8	5 23 3 15	2 99	— 0 16	66 48 36 83	33 40	— 3 43	16 1 17
13	23 59 41 3	5 27 12 30	12 04	— 0 26	66 45 2 93	5 80	+ 2 87	16 1 41
14	23 59 54				66 42 4 42	2 90	— 1 52	16 0 12
16	0 0 6				66 30 22 72	24 70	+ 1 98	16 0 56
18	0 0 32				66 35 23 35	22 40	— 0 95	16 1 55
19	0 0 45				66 33 59 08	58 40	— 0 68	16 0 70
20	0 0 58 0	5 52 8 49	8 57	+ 0 08	66 32 57 69	59 30	+ 1 61	16 1 88
21	0 1 11 0	5 56 18 12	18 12	0 00	66 32 22 66	25 00	+ 2 34	16 0 28
22	0 1 24 4	6 0 28 14	27 65	— 0 49	66 31 14 40	15 50	+ 1 10	16 0 48
23	0 1 37 0	6 4 37 32	37 15	— 0 17	66 32 32 34	30 60	— 1 74	16 2 10

Right Ascensions and North Polar Distances of the Sun s C nter (C t d)

M S l Tim f Ob ti		A R fr m Ob ti	A R f m N A	E f N A	N P D fr m Ob ti	N P D f m N A	Err f N A	M H S m d
1839								
Jun	24 0 4 50 2	6 8 47 13	46 58	— 0 55	66 33 13 68	10 70	— 2 98	16 1 23
	27 0 2 28 0	6 21 14 72	14 29	— 0 43	66 37 37 98	38 90	+ 0 92	16 2 01
	28 0 2 40				66 39 55 39	57 50	+ 2 11	15 59 64
	29 0 2 52				66 42 44 08	40 80	— 3 28	16 0 21
	30 0 3 4				66 45 48 04	48 40	+ 0 36	16 1 83
J ly	4 0 3 50 6	6 50 13 29	13 04	— 0 25	67 2 24 78	22 50	— 2 28	15 59 28
	5 0 4 1 4	6 54 20 80	20 47	— 0 33	67 7 28 00	31 50	+ 3 50	15 9 79
	6 0 4 12 2	6 58 28 10	27 59	— 0 51	67 13 7 22	4 40	— 2 82	16 1 70
	10 0 4 50				67 39 11 44	1 70	+ 1 26	16 0 43
	11 0 4 59				67 46 41 72	43 10	— 1 62	15 59 86
	13 0 5 15 0	7 27 7 16	7 42	+ 0 26	68 2 51 14	52 80	+ 1 66	16 2 59
	14 0 5 22 8	7 31 11 46	11 38	— 0 08	68 12 31 78	31 60	— 0 18	15 59 97
	15 0 5 30				68 20 31 74	32 80	+ 1 06	15 9 90
	16 0 5 36				68 29 59 24	56 30	— 2 94	16 0 61
	17 0 5 42				68 39 40 42	41 60	+ 1 18	16 1 83
	20 0 5 56				69 11 9 43	7 00	— 2 43	16 1 23
	22 0 6				69 33 46 40	49 30	+ 2 90	16 1 16
	23 0 6 5				69 45 43 82	41 30	— 2 52	16 0 56
	24 0 6 7				69 57 48 01	53 50	+ 5 49	16 0 59
	25 0 6 9				70 10 27 98	25 70	— 2 28	16 1 36
	26 0 6 11				70 23 21 70	17 70	— 4 00	16 1 95
	27 0 6 10				70 36 30 93	29 20	— 1 73	16 0 16
	28 0 6 10				70 50 1 68	0 00	— 1 68	16 0 79
	29 0 6 8 7	8 31 5 93	5 55	— 0 38	71 3 53 76	49 80	— 3 96	16 0 88
	30 0 6 7 2	8 35 0 92	0 51	— 0 41	71 17 56 86	58 30	+ 1 44	16 1 68
	31 0 6 5 0	8 38 55 31	54 88	— 0 43	71 32 27 98	25 40	— 2 58	16 1 05
A g	2 0 5 59 1	8 46 42 44	41 88	— 0 56	72 2 11 24	14 20	+ 2 96	16 0 63
	3 0 5 55				72 17 39 09	35 20	— 4 49	15 58 40
	5 0 5 45				72 49 5 26	9 50	+ 4 24	15 58 97
	6 0 5 39 9	9 2 9 9	8 88	— 0 51	73 5 25 75	22 00	— 3 75	16 1 17
	7 0 5 33 5	9 5 59 58	59 16	— 0 42	73 21 50 35	50 90	+ 0 55	16 0 16
	8 0 5 26 9	9 9 49 47	48 88	— 0 59				
	11 0 5 2				74 30 28 42	25 50	— 2 92	15 59 80
	12 0 4 53				74 48 10 40	12 30	+ 1 90	16 0 19
	13 0 4 43 6	9 28 48 91	48 68	— 0 23	75 6 16 58	13 60	— 2 98	16 0 48
	14 0 4 33				75 24 25 28	29 20	+ 3 92	16 0 48
	17 0 3 59 5	9 43 50 98	50 32	— 0 66	76 20 39 71	37 90	— 1 81	15 59 28
	22 0 2 51				77 57 26 42	26 60	+ 0 18	16 0 51
	27 0 1 32				79 41 0 14	59 30	— 0 84	16 0 85
	29 0 0 58				80 23 13 12	12 00	— 1 12	15 59 04
S pt	1 23 59 45				81 49 26 51	26 50	— 0 01	16 1 63
	4 23 58 48				82 55 32 74	33 00	+ 0 26	15 58 93
	5 23 58 28				83 17 49 04	49 70	+ 0 66	15 59 30
	6 23 58 8				83 40 17 65	13 00	— 4 65	16 0 83
	11 23 56 26				85 33 38 74	37 60	— 1 14	16 0 90
	20 23 53 17 3	11 51 6 41	6 01	— 0 40	89 2 2 90	4 30	+ 1 40	16 0 30
	21 23 52 56 5	11 54 42 06	41 48	— 0 58	89 25 28 28	26 20	— 2 08	15 59 53
	22 23 52 35 5	11 58 17 57	17 05	— 0 52	89 48 47 24	49 20	+ 1 96	16 0 19
	23 23 52 14 5	12 1 53 21	52 73	— 0 48	90 12 13 65	13 20	— 0 45	16 1 88
	24 23 51 53 9	12 5 29 09	28 55	— 0 54				16 1 10
	25 23 51 33 3	12 9 4 90	4 51	— 0 39	90 59 2 04	2 90	+ 0 86	16 0 59
	26 23 51 13 0	12 12 41 11	40 67	— 0 44	91 22 22 80	28 00	+ 5 20	
	27 23 50 53				91 45 51 48	52 70	+ 1 22	16 0 50
	28 23 50 33				92 9 16 02	16 90	+ 0 88	16 1 19
	29 23 50 13 2	12 23 30 97	30 52	— 0 45	92 32 39 81	40 20	+ 0 39	16 2 74
	30 23 49 54 1	12 27 8 14	7 65	— 0 49				16 0 52

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

	Mean Solar Time of Observation	A.R. from Observation	A.R. from N.A.	Error of N.A.	N.P.D. from Observation	N.P.D. from N.A.	Error of N.A.	Mean Semid.
1839		m						
Oct 1	23 49 35				93 42 18 41	22 0	+ 3 89	16 0 63
3	23 48 57 5	12 38 1 07	0 89	— 0 18	94 5 51 64	56 00	+ 4 36	16 1 35
4	23 48 39 5	12 41 39 59	39 29	— 0 30	94 29 7 35	8 90	+ 1 55	16 1 79
5	23 48 21 9	12 45 18 55	18 07	— 0 48	94 52 17 13	18 60	+ 1 17	16 0 97
6	23 48 4 3	12 48 57 49	57 25	— 0 24	95 14 27 61	24 60	— 3 01	16 1 92
7	23 47 47				95 37 25 63	6 80	+ 1 17	16 1 74
8	3 47 31				96 1 22 03	24 50	+ 2 47	
9	23 47 15 0	12 59 57 65	57 22	— 0 43	96 24 20 49	17 40	— 3 09	16 0 59
12	23 46 29				97 32 23 60	23 80	+ 0 20	
13	23 46 15				97 51 1 69	53 70	+ 2 01	16 0 41
14	23 46 1 5	13 18 26 79	26 44	— 0 35	98 17 13 07	17 00	+ 3 93	16 0 92
15	23 45 48 2	13 22 10 06	9 82	— 0 24	98 39 29 89	33 20	+ 3 31	16 0 28
17	23 45 23 8	13 29 38 66	38 22	— 0 44	99 23 42 26	42 50	+ 0 24	16 1 45
18	23 45 12				99 45 32 18	35 20	+ 3 02	16 0 2
20	23 44 51 4	13 40 55 75	55 27	— 0 48	100 28 54 97	54 10	— 0 87	16 0 08
22	23 44 32 7	13 48 30 13	9 83	— 0 30	101 11 34 57	35 70	+ 1 13	15 59 75
2	23 44 10 1	13 59 57 08	56 88	— 0 20	102 14 21 67	21 90	+ 0 23	16 0 73
26	23 44 3 8	14 3 47 37	47 36	— 0 01				16 1 15
27	23 43 58 9	14 6 38 95	38 59	— 0 36				16 1 11
Nov 13	23 44 1 8	15 15 13 48	13 55	+ 0 07				15 59 16
15	23 44 52 1	15 23 26 86	26 40	— 0 46	108 36 18 57	18 0	— 0 07	16 0 83
17	23 45 14 5	15 31 42 49	42 56	+ 0 07	109 6 4 74	3 50	— 1 24	16 2 63
18	23 45 27 6	15 3 52 14	1 88	— 0 26	109 20 29 6	25 30	— 4 26	16 1 88
19	23 45 40 8	1 40 1 94	2 00	+ 0 06	109 34 24 19	26 20	+ 2 01	
20	23 45 55				109 48 4 84	5 70	+ 0 86	
21	23 46 10 3	1 48 24 65	24 72	+ 0 07	110 1 22 92	23 70	+ 0 78	
22	23 46 26 4	15 52 37 23	37 28	+ 0 05	110 14 24 02	19 80	— 4 22	15 57 91
23	23 46 43 1	15 56 50 68	50 64	— 0 04	110 26 18	54 60	+ 2 71	16 2 4
24	23 47 1				110 39 6 86	4 70	— 2 16	
25	23 47 19 0	16 5 19 77	19 72	— 0 05	110 51 58 4	2 90	— 5 55	
26	23 47 38 3	16 9 35 65	35 41	— 0 24	111 2 11 70	17 70	+ 6 00	16 2 30
27	23 47 58 4	16 13 52 40	51 86	— 0 54	111 13 20 30	18 90	— 1 40	
28	23 48 19 0	16 18 9 54	9 03	— 0 51				16 1 16
29	23 48 40				111 34 12 72	8 80	— 3 92	
Dec 1	23 49 24 6	16 31 4 93	4 78	— 0 15				16 0 48
2	23 49 48 0	16 35 25 02	24 71	— 0 31				
6	23 51 27 1	16 52 50 54	50 37	— 0 17				
7	23 51 53 2	16 57 13 35	13 13	— 0 22				16 1 59
8	23 52 19 9	17 1 36 73	36 39	— 0 34				16 2 39
11	23 53 4 6	17 14 49 22	48 66	— 0 56				16 1 90
17	23 56 35 7	17 41 2 12	21 67	— 0 45				16 0 21
18	23 57 5 2	17 45 48 30	47 92	— 0 38				16 1 30
19	23 57 34 9	17 50 14 70	14 31	— 0 39				16 2 72
22	23 59 4 7	18 3 34 52	33 93	— 0 59				16 1 10
23	23 59 34 5	18 8 0 87	0 53	— 0 34				16 0 43
26	0 0 34 6	18 16 54 19	53 61	— 0 58				16 0 72
27	0 1 4 4	18 21 20 54	20 06	— 0 48				16 1 30
28	0 1 33 7	18 25 46 57	46 39	— 0 18				16 1 63
29	0 2 3 6	18 30 13 04	12 55	— 0 49				16 1 01
30	0 2 32 6	18 34 38 74	38 54	— 0 20				
31	0 3 1 9	18 39 4 70	4 31	— 0 39				16 3 41
1840								
Jan 2	0 3 59 4	18 47 55 48	55 09	— 0 39				16 1 96
3	0 4 27 8	18 52 20 51	20 01	— 0 50				16 1 32
4	0 4 55 7	18 56 45 08	44 57	— 0 51				16 1 92
6	0 5 50 3	19 5 32 92	32 42	— 0 50				16 2 55
7	0 6 16 7	19 9 55 87	55 56	— 0 31				16 1 30

The observations were suspended from 1st December 1839 to 12th January 1840 during an Examination of the Divisions

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER, (Continued)

Mean Sol. Time of Observation	A. R. from Observation	A. R. from N. A.	Error of N. A.	N. P. D. from Observation	N. P. D. from N. A.	Error of N. A.	Mean Hor. Semid.
1840 m				° ′ ″	″	″	
J 8 0 6 42 7	19 14 18 67	18 44	—0 23				16 3 35
9 0 7 8 3	19 18 40 86	40 67	—0 19				16 0 81
11 0 7 57 9	19 27 23 75	23 49	—0 26				
12 0 8 22				111 47 11 99	15 70	+ 3 71	16 1 12
14 0 9 7 8	19 40 23 50	23 11	—0 39				16 2 56
15 0 9 29 8	19 44 42 10	41 71	—0 39				16 0 90
16 0 9 51 1	19 49 0 03	59 61	—0 42	111 5 54 69	59 10	+ 4 41	16 1 47
17 0 10 11 5	19 53 17 03	16 81	—0 22	110 54 36 77	39 00	+ 2 23	16 0 25
18 0 10 31 6	19 57 33 85	33 29	—0 56	110 42 53 86	54 90	+ 1 04	16 1 72
19 0 10 50				110 30 44 09	47 40	+ 3 31	16 2 66
20 0 11 9				110 18 12 48	16 70	+ 4 22	16 0 94
22 0 11 43 7	20 14 32 46	31 90	—0 56	109 52 9 12	7 10	—2 02	16 0 48
23 0 11 59				109 38 30 76	28 90	—1 86	
24 0 12 15 4	20 22 57 18	56 67	—0 51	109 24 26 78	28 70	+ 1 92	16 1 67
25 0 12 29 9	20 27 8 33	7 89	—0 44	109 10 6 92	7 00	+ 0 08	16 1 38
26 0 12 43 8	20 31 18 82	18 33	—0 49	108 55 22 20	24 20	+ 2 00	16 1 70
27 0 12 56 9	20 35 28 49	27 99	—0 50	108 40 19 98	20 50	+ 0 52	16 1 30
29 0 13 20 7	20 43 45 53	44 93	—0 60	108 9 9 21	12 50	3 29	16 1 36
30 0 13 31 5	20 47 52 88	52 19	—0 69	107 53 6 64	8 80	+ 2 16	16 2 41
31 0 13 41 2	20 51 59 09	58 63	—0 46	107 36 42 22	45 80	+ 3 58	16 4 23
Feb 1 0 13 50				107 20 3 06	4 10	+ 1 04	16 2 3
2 0 13 58 3	21 0 9 33	9 08	—0 25	107 3 2 56	4 00	+ 1 44	16 2 35
3 0 14 5 8	21 4 13 54	13 09	—0 45	106 45 44 51	45 90	+ 1 39	16 1 95
4 0 14 12				106 28 8 24	10 40	+ 2 16	16 1 92
5 0 14 18 3	21 12 19 21	18 57	—0 64	106 10 17 69	17 70	+ 0 01	16 1 72
6 0 14 23 1	21 16 20 56	20 05	—0 51	105 52 6 75	8 40	+ 1 65	16 2 47
7 0 14 27 2	21 20 21 29	20 73	—0 56	105 33 41 39	42 90	+ 1 51	16 0 79
8 0 14 30 7	21 24 21 28	20 58	—0 70	105 15 1 70	1 60	—0 10	16 2 73
9 0 14 33							16 0 76
10 0 14 34 5	21 32 18 19	17 82	—0 37				16 1 99
11 0 14 35 5	21 36 15 73	15 24	—0 49	104 17 26 38	27 00	+ 0 62	16 1 10
12 0 14 36				103 57 47 98	46 70	—1 28	16 2 12
13 0 14 35 0	21 44 8 10	7 66	—0 44	103 37 49 95	52 80	+ 2 85	16 1 01
14 0 14 33 4	21 48 3 09	2 73	—0 36	103 17 45 37	45 70	+ 0 33	16 0 52
15 0 14 31 2	21 51 57 49	57 02	—0 47	102 57 23 49	25 60	+ 2 11	16 1 23
16 0 14 27 7	21 55 50 56	50 55	—0 01	102 36 51 89	53 40	+ 1 51	
17 0 14 24 4	21 59 43 86	43 36	—0 50	102 16 7 18	9 00	+ 1 82	16 1 90
18 0 14 19 9	22 3 35 91	35 42	—0 49	101 53 10 55	13 00	+ 2 45	16 1 50
19 0 14 14 7	22 7 27 31	26 79	—0 52	101 31 7 86	5 60	—2 26	16 1 90
20 0 14 8 9	22 11 18 13	17 48	—0 65	101 12 47 40	47 40	0 00	16 1 85
21 0 14 2 4	22 15 8 13	7 51	—0 62	100 51 13 14	18 60	+ 5 46	16 1 83
22 0 13 55 2	22 18 57 37	56 88	—0 49	100 29 39 44	39 70	+ 0 26	16 0 68
23 0 13 47 4	22 22 46 16	45 63	—0 53	100 7 49 92	51 00	+ 1 08	16 1 15
24 0 13 39 0	22 26 34 27	33 79	—0 48	99 45 56 32	52 90	—3 42	16 2 01
25 0 13 30 0	22 30 21 87	21 33	—0 54	99 23 43 59	46 00	+ 2 41	16 1 70
26 0 13 20 6	22 34 9 06	8 30	—0 76				16 1 35
27 0 13 10 4	22 37 55 37	54 72	—0 65	98 39 5 43	6 70	+ 1 27	16 0 95
28 0 12 59 8	22 41 41 19	40 57	—0 62	98 16 29 76	35 30	+ 5 54	16 1 12
29 0 12 48 5	22 45 26 40	25 91	—0 49	97 53 55 24	56 40	+ 1 16	16 1 81
Mar 1 0 12 36 6	22 49 10 98	10 72	—0 26	97 31 6 79	10 70	+ 3 91	16 1 59
2 0 12 24 5	22 52 55 48	55 05	—0 43	97 8 18 66	18 40	—0 26	15 59 70
3 0 12 12				96 45 18 92	20 10	+ 1 18	15 59 88
4 0 11 58 5	23 0 22 53	22 23	—0 30	96 22 14 74	16 30	+ 1 56	
5 0 11 45				95 59 7 43	7 10	—0 33	16 0 76
6 0 11 31 0	23 7 48 06	47 59	—0 47	95 35 53 27	53 10	—0 17	16 2 00
7 0 11 16 5	23 11 30 13	29 62	—0 51	95 12 35 46	34 70	—0 76	16 0 92
8 0 11 1 6	23 15 11 65	11 25	—0 40	94 49 12 97	12 30	—0 67	16 1 75

Right Ascensions and North Polar Distances of the Sun Center (C nt nu d)

M S l Tim f Ob t		A R f m Ob tl	A R f m N A.	Er f N A	N P D f m Ob rv tl	N P D f m N A	E f N A	M H Semid
1840						″		″
Mar 9	0 10 46 1	23 18 52 73	52 49	—0 24				16 1 92
10	0 10 30 9	23 22 33 99	33 37	—0 62	94 2 14 83	17 00	+ 2 17	16 1 50
11	0 10 14 9	23 26 14 51	13 90	—0 61	93 38 45 82	45 00	—0 82	16 0 70
12	0 9 58 6	23 29 54 71	54 11	—0 60	93 15 12 56	10 50	—2 06	16 2 56
13	0 9 42 0	23 33 34 59	33 99	—0 60	92 51 31 87	34 00	+ 2 13	16 1 23
14	0 9 25				92 27 57 63	55 80	—1 83	16 0 19
15	0 9 7 4	23 40 53 01	52 92	—0 09	92 4 15 40	16 10	+ 0 70	16 2 48
16	0 8 50 3	23 44 32 55	32 00	—0 55	91 40 38 18	35 50	—2 68	16 0 15
17	0 8 32 6	23 48 11 28	10 87	—0 41	91 16 53 69	54 20	+ 0 51	16 0 46
18	0 8 14 9	23 51 50 01	49 54	—0 47	90 53 12 42	12 60	+ 0 18	16 0 85
19	0 7 56 9	23 55 28 52	28 01	—0 51	90 29 27 57	31 10	+ 3 53	16 0 12
20	0 7 38 6	23 59 6 79	6 35	—0 44	90 5 52 38	49 90	—2 48	16 1 36
21	0 7 20 5	0 2 45 11	44 57	—0 54	89 42 7 81	9 20	+ 1 39	16 1 01
22	0 7 2 2	0 6 23 25	22 69	—0 56				16 0 06
23	0 6 13 6	0 10 1 30	0 76	—0 54	88 54 52 14	51 30	—0 84	16 0 83
24	0 6 25 1	0 13 39 29	38 75	—0 54	88 31 12 72	14 50	+ 1 78	16 1 23
25	0 6 6 6	0 17 17 22	16 73	—0 49	88 7 41 67	39 90	—1 77	16 0 28
26	0 5 48 1	0 20 55 25	54 68	—0 57	87 44 5 37	7 60	+ 2 23	15 59 88
27	0 5 29 5	0 24 33 17	32 65	—0 52	87 20 38 88	38 00	—0 88	16 1 83
28	0 5 11 0	0 28 11 18	10 65	—0 53	86 57 10 40	11 50	+ 1 10	16 0 30
29	0 4 52 4	0 31 49 11	48 69	—0 12	86 33 47 83	48 50	+ 0 67	16 1 98
30	0 4 34 0	0 35 27 16	26 80	—0 36	86 10 28 16	29 20	+ 1 04	16 0 91
31	0 4 15 8	0 39 5 37	4 99	—0 38	85 47 15 90	14 20	—1 70	16 1 39
Apr l 1	0 3 57				85 24 3 08	3 80	+ 0 72	16 3 12
2	0 3 39	0 46 21 88	21 67	—0 21	85 0 59 89	58 30	—1 59	16 0 16
3	0 3 21	0 50 0 44	0 20	—0 21	84 37 55 79	58 20	+ 2 41	15 59 10
4	0 3 3				84 15 9 00	3 70	—5 30	16 0 55
5	0 2 46				83 52 13 36	15 20	+ 1 84	16 1 65
6	0 2 28				83 29 36 99	33 30	—3 69	16 0 15
7	0 2 10 7	1 4 35 95	35 95	0 00	83 6 53 51	58 10	+ 4 59	15 58 81
8	0 1 54 0	1 8 15 66	15 36	—0 30	82 44 31 23	30 00	—1 93	16 1 43
9	0 1 37 1	1 11 55 30	54 99	—0 31	82 22 8 03	9 30	+ 1 27	15 59 26
10	0 1 20 6	1 15 35 30	34 88	—0 42	81 59 55 24	56 50	+ 1 26	16 0 45
11	0 1 4				81 37 50 96	51 90	+ 0 94	16 0 12
12	0 0 48				81 15 52 69	55 70	+ 3 01	16 0 79
13	0 0 32 2	1 26 36 43	36 09	—0 34	80 54 8 52	8 40	—0 12	15 59 63
14	0 0 16				80 32 30 56	30 30	—0 26	15 59 81
15	0 0 1				80 11 3 35	1 40	—1 95	16 1 12
15	23 59 46 5	1 37 40 33	40 10	—0 23	79 49 43 10	42 40	—0·70	16 0 37
20	23 58 38				78 5 46 96	43 60	—3 36	16 0 43
21	23 58 26				77 45 31 51	29 40	—2 11	16 2 01
23	23 58 2 9	2 7 28 80	28 31	—0 49	77 5 38 80	36 60	—2 20	15 59 00
24	23 57 52 0	2 11 14 35	13 90	—0 45	76 45 55 70	59 00	+ 3 30	15 59 59
26	23 57 31				76 7 24 51	22 70	—1 81	16 0 28
30	23 56 57				74 52 56 45	56 30	—0 15	16 0 92
M y 1	23 56 50 2	2 37 48 26	47 65	—0 61	74 34 59 84	56 30	—3 54	16 2 03
2	23 56 43				74 17 10 23	11 40	+ 1 17	16 3 03
3	23 56 37				73 59 43 73	42 10	—1 63	
5	23 56 26				73 25 30 99	31 70	+ 0 71	16 4 52
6	23 56 21				73 8 47 73	51 20	+ 3 47	
7	23 56 18				72 52 25 91	27 70	+ 1 79	16 1 05
8	23 56 14				72 36 18 12	21 20	+ 3 08	16 3 75
9	23 56 11				72 20 35 10	32 30	—2 80	16 2 65
10	23 56 9				72 4 56 56	1 20	+ 4 64	16 2 52
12	23 56 6				71 34 51 42	53 10	+ 1 68	16 2 23
13	23 56 6				71 20 17 40	16 90	—0 50	16 1 12
14	23 56 6 2	3 28 19 49	18 73	—0 76	71 5 54 39	59 40	+ 5 01	16 2 03

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

Mean Solar Time of Observation		R. A. from Observation	R. A. from N. A.	Error of N. A.	N. P. D. from Observation	N. P. D. from N. A.	Error of N. A.	Mean Hor. Semid.
1840	h m s	h m s	s	s	° ′ ″	″	″	′ ″
May 15	23 56 6 6	3 32 16 32	1 8?	— 0 50	70 52 2 51	1 00	— 1 51	16 1 8
18	23 56 11 1	3 44 10 55	10 48	— 0 07	70 12 0 2?	2 90	+ 2 68	16 1 9
19	23 56 13 9	3 48 9 92	9 81	— 0 11	69 59 25 75	23 40	— 2 35	16 2 3
20	23 56 17				69 47 1 88	4 10	+ 2 22	16 1 0
21	23 56 21				69 35 8 16	5 50	— 2 66	16 0 23
22	23 56 25 5	4 0 11 19	11 18	— 0 01	69 23 27 29	27 70	+ 0 41	16 1 3(
23	23 56 30 4	4 4 12 77	12 73	— 0 04	69 12 9 58	11 00	+ 1 42	16 1 83
24	23 56 36 8	4 8 14 75	14 81	+ 0 06	69 1 13 24	15 60	+ 2 36	16 98
25	23 56 42 0	4 12 17 42	17 40	— 0 02	68 50 39 84	41 90	+ 2 06	1(3 1
26	23 56 48 4	4 16 20 39	20 51	+ 0 12	68 40 26 02	30 00	+ 3 98	1C 3 13
27	23 56 56				68 30 41 03	40 10	— 0 93	16 0 J
28	23 57 3 3	4 24 28 47	28 17	— 0 30	68 21 12 14	12 60	+ 0 46	16 1 23
29	23 57 11 3	4 28 32 99	32 70	— 0 ?9	68 12 9 83	7 70	— 2 13	16 1 37
30	23 57 19				68 3 20 92	25 30	+ 1 38	16 1 30
31	23 57 28				67 55 7 86	5 80	— 2 06	15 58 73
June 1	23 57 38 0	4 40 49 41	48 88	— 0 53	67 47 7 74	9 40	+ 1 66	16 0 90
2	23 57 47				67 39 35 42	36 30	+ 0 88	16 0 81
3	23 57 7 0	4 49 1 68	1 58	— 0 10	67 32 21 98	26 60	+ 4 62	16 0 50
5	23 58 18 0	4 57 15 85	15 62	— 0 23	67 19 17 66	18 10	+ 0 44	16 1 96
6	23 58 29 0	5 1 23 36	23 09	— 0 27	67 13 19 91	19 60	— 0 31	16 2 88
7	23 58 40				67 7 43 72	45 00	+ 1 28	16 1 41
8	23 58 51				67 2 36 55	34 50	— 2 05	1 59 26
9	23 59 3				66 57 47 25	48 30	+ 1 05	16 1 0
10	23 59 15				66 53 23 01	26 40	+ 3 39	16 0 1
18	0 0 42				66 34 15 53	18 0	+ 2 97	16 1 23
20	0 1 8				66 32 34 03	32 50	— 1 53	1C 1 3
22	0 1 34				66 32 25 20	25 60	+ 0 40	16 1 08
23	0 1 47				66 32 58 37	59 60	+ 1 23	16 10
24	0 1 59 7	6 11 56 16	56 02	— 0 14	66 33 6 76	58 40	+ 1 64	1C 1 23
25	0 2 12				66 35 20 43	21 80	+ 1 37	16 0 08
26	0 2 25				66 37 11 61	10 00	— 1 61	16 2 23
27	0 2 37 9	6 24 24 14	23 88	— 0 26	66 39 22 31	23 00	+ 0 69	1C 3 0
28	0 2 50				66 42 0 03	0 50	+ 0 47	1C 1 27
30	0 3 14				66 48 29 47	29 40	— 0 07	16 1 00
July 2	0 3 37 4	6 45 6 73	6 90	+ 0 17	66 56 37 10	3 80	— 1 30	1C 1 13
3	0 3 49 3	6 49 15 16	14 73	— 0 43	67 1 12 48	15 20	+ 2 72	16 1 (1
4	0 4 0				67 6 22 80	18 80	— 4 00	1C 0 83
6	0 4 21				67 17 38 00	37 50	— 0 50	16 1 1(
8	0 4 40				67 30 27 76	30 70	+ 2 94	16 1 10
14	0 5 28				68 18 23 94	22 80	— 1 14	15 59 2
16	0 5 40				68 37 22 03	19 70	— 2 33	15 59 17
17	0 5 45				68 47 18 25	20 90	+ 2 65	16 4 11
18	0 5 50				68 57 46 12	43 70	— 2 42	16 0 10
19	0 5 55				69 8 23 58	27 90	+ 4 32	16 0 3)
21	0 6 2				69 30 59 34	9 50	+ 0 16	16 1 ?8
23	0 6 7				69 54 57 33	54 20	— 3 13	16 0 83
24	0 6 8				70 7 21 93	21 90	— 0 03	1 59 J2
26	0 6 10				70 33 19 41	17 30	— 2 11	16 0 9
27	0 6 9				70 46 44 18	44 20	+ 0 02	15 57 ?6
28	0 6 9 1	8 0 9 46	9 02	— 0 44	71 0 35 23	30 20	— 5 03	1C 0 /2
29	0 6 7				71 14 32 68	35 00	+ 2 32	16 0 (
30	0 6 6				71 28 59 88	58 40	— 1 48	16 0 41
31	0 6 J				71 43 38 55	40 10	+ 1 55	16 0 9
Aug 1	0 6 0				71 58 43 09	39 70	— 3 39	16 1 1C
2	0 5 56				72 13 54 46	56 90	+ 2 44	16 1 12
5	0 5 41				73 1 8 63	31 30	+ 2 67	16 1 55

R GHT ASCENS ONS AND NORTH P LAR DISTANCES OF THE SUN S CENTER (Co tı d)

M	S ar T m f Ob i	A R f m Ob	A R f m N A	E f N A	N P D f m Ob rv	N P D f N A	E f N A	M II S ıd
1840								
A g	9 0 5 13				74 8 4 37	4ט 10	⊦ 0 03	16 0 3
	10 0 5 4 8	9 20 20 07	19 ט0	— 0 57	74 26 14 27	12 60	— 1 77	16 0 01
	13 0 4 35				75 19 58 8	2 30	⊦ 3 4כ	16 1 36
	14 0 4 24				75 38 30 17	27 10	— 3 07	16 0 9?
	15 0 4 13				7ט 7 1 23	6 30	+ 5 07	1(1 90
	19 0 3 22				77 13 ט4 18	63 10	— 1 8	1 58 61
	20 0 3 8				77 33 34 82	30 30	⊣ 1 48	16 0
	21 0 2 54				77 3 30 17	31 60	+ 1 43	1ט 59 91
	2 0 2 39				78 13 34 84	38 ט0	⊣ 3 6(	1(0 7J
	23 0 2 24				78 33 9 31	6 70	— 2 61	16 0 39
	24 0 2 8				78 54 22 09	25 90	⊦ 3 81	16 1 06
	25 0 1 52				79 15 7 40	70	— 1 70	1 9 36
	27 0 1 19				79 6 54 04	6(00	+ 1 96	
	28 0 1 2				80 18 10 4	5 80	– 4 64	1 9 26
	29 0 0 44				80 39 21 61	24 70	⊣ 0 06	1ט 9 68
S pt	4 23 8 32 9	10 56 1, 67	17 43	— 0 24	83 12 31 49	28 70	– 2 79	16 2 01
	23 ט8 13				83 34 46 51	4J 40	⊦ 86	16 0 48
	6 23 57 53				83 57 19 17	16 60	— 2 7	16 1 2
	7 23 57 32				84 19 47 99	49 40	⊣ 1 41	16 0 46
	11 23 6 9				85 0 ט6 40	54 90	— 1 60	16 41
	13 23 27				86 36 55 61	66 20	— 0 44	15) 08
	14 23 5 6				87 0 2 35	1 30	— 1 05	1 6 40
	15 23 1 4				87 23 8 1(	11 00	⊦ 2 84	
	16 23 51 24				87 46 21 08	23 80	— 0 28	1 58 88
	20 23 3 0				89 19 40 21	40 60	+ 0 39	16 0 8
	21 23 52 39				89 43 3 92	4 40	⊣ 0 48	1 8
	3 23 51 57 9	12 4 36 00	35 71	— 0 29	90 29 (20	ט 10	— 1 10	1, 8 38
	2 23 51 17				91 1(42 98	47 30	⊣ 4 32	1ט ט9
	26 23 50 57				)1 10 13 12	13 00	– 0 1	16 1 68
	27 23 50 37				)2 3 35 01	38 00	+ 2 99	1) 88
	28 23 50 17 7	1? 22 38 28	37 98	— 0 30	92 27 2 J7	2 00	— 0 J7	16 0 21
	29 23 49 58	12 26 15 54	1ט 10	— 0 41	J2 0 22 1	24 60	⊣ 2 06	15 58 61
O t	1 23 49 20 6	12 33 30 70	30 17	— 0 53	93 37 2 23	3 70	+ 1 17	1(0 44
	2 23 49 2 0	12 37 8 56	8 12	— 0 41	J4 0 18 01	1J (0	+ 1 9	16 0
	23 48 8 4	12 48 4 40	3 93	— 0 47	9 9 49 86	48 20	— 1 66	16 0 43
	7 23 47 34 1	12 5ט 23 22	23 05	— 0 17				16 0 J9
	8 23 47 18 1	12 59 3 73	3 20	— 0 ט3	96 18 38 91	40 ,0	+ 1 79	15 9 88
	9 23 47 2 2	13 2 44 36	43 81	– 0 5ט	96 11 29 19	28 70	— 0 49	1(1 11
	10 23 46 46				)7 4 7 16	11 20	+ 4 04	16 1 88
	11 23 46 31				J7 26 48 43	48 10	— 0 33	1(0 46
	12 23 46 17 2	13 13 48 89	48 56	— 0 33	97 49 16 46	18 90	| 2 41	1 9 97
	14 23 45 50				98 34 1 24	1 00	— 0 24	1ט 9 10
	15 23 4 37				98 ט6 9 26	11 50	⊣ 2 24	1, 59 0(
	16 23 45 2ט 0	13 28 42 77	42 43	— 0 34	99 18 13 77	14 10	+ 0 63	16 0 61
	17 23 4ט 13 3	13 32 27 62	27 40	— 0 22	99 40 9 88	9 40	— 0 18	16 1 5?
	18 23 45 2 6	13 36 13 35	12 J9	— 0 36	100 1 9 01	56 20	— 2 81	16 0 5
	19 23 44 52 3	13 39 59 66	59 24	– 0 32	100 23 35 06	34 30	— 0 76	16 0 76
	20 23 44 12 7	13 43 4(48	46 16	— 0 32	100 45 7 66	3 30	— 4 3(	16 0 22
	21 23 44 33 9	13 47 34 8	33 73	— 0 55	101 6 23 01	22 70	— 0 31	16 1 8
	29 23 43 48				103 50 2ט 31	21 0	— 0 81	16 0 10
	30 23 43 45				104 9 54 21	59 10	+ 4 89	16 0 (
	31 23 43 44				104 29 18 0	20 10	+ 2 08	16 0 J
No	1 23 43 43				104 48 29 34	27 00	— 2 34	1(1 (1
	3 23 43 44				105 25 54 21	56 60	+ 2 39	16 0 21
	14 23 44 47				108 32 29 62	30 20	+ 0 8	1 59 99
	16 23 45 10				109 2 22 49	26 10	+ 3 61	16 0 26

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN CENTER *(C t nued)*

	M an S l Tim f Ob rv i	A R f m Ol rv tl	A R fr m N A	Err f N A	N P D fr m Ob ti	N P D fr m N A	Err f N A	M an H S m d
1840							/	
N 18	23 45 36				109 30 58 83	0 30	+ 1 47	16 0 99
19	23 45 51				109 44 50 35	45 80	— 4 55	16 1 03
20	23 46 6				109 58 10 12	9 70	— 0 42	16 0 70
21	23 46 21				110 11 16 59	11 80	— 4 79	16 3 40
22	23 46 38 7	15 55 49 28	48 73	— 0 55	110 23 49 73	51 50	+ 1 77	16 0 30
23	23 46 56 3	16 0 3 28	2 88	— 0 40	110 36 11 67	8 50	— 3 17	15 59 12
25	23 47 33				110 59 32 63	33 30	+ 0 67	
Dec 2	23 50 6				112 8 47 60	46 60	— 1 00	16 0 83
3	23 50 30 6	16 43 3 75	3 11	— 0 64	112 16 59 57	59 00	— 0 7	16 2 81
4	23 50 55				112 24 43 49	45 60	+ 2 11	16 0 12
5	23 51 20				112 32 9 19	5 90	— 3 29	15 58 70
8	23 52 39				112 51 22 85	27 20	+ 4 35	15 59 37
9	23 53 6				112 57 0 97	0 60	— 0 37	15 59 48
11	23 54 2				113 6 41 59	45 60	+ 4 01	16 0 01
12	23 54 30				113 10 58 76	56 90	— 1 86	16 0 06
13	23 54 59				113 14 37 60	40 50	+ 2 90	16 1 17
14	23 55 28				113 17 59 46	56 40	— 3 06	16 1 10
15	23 55 57 8	17 35 50 66	49 99	— 0 67	113 20 42 16	44 10	+ 1 94	16 1 76
16	23 56 27 1	17 40 16 52	16 13	— 0 39	113 23 4 19	3 80	— 0 39	16 0 88
17	23 56 56 9	17 44 43 00	42 46	— 0 54	113 24 51 08	55 30	+ 4 22	16 0 92
20	23 58 26				113 27 44 12	40 20	— 3 92	16 0 85
21	23 58 56				113 27 36 64	38 50	+ 1 86	16 0 61
22	23 59 27				113 27 11 58	8 30	— 3 28	16 1 03
1841								
J 2	0 4 21 0	18 51 16 74	16 26	— 0 48	112 56 14 40	17 20	+ 2 80	16 1 03
3	0 4 48 4	18 55 40 76	40 76	0 00	112 50 39 19	39 20	+ 0 01	16 2 30
4	0 5 16 5	19 0 5 46	4 84	— 0 62	112 44 34 76	34 10	— 0 66	16 1 69
5	0 5 43 5	19 4 29 10	28 51	— 0 59	112 38 1 68	1 90	+ 0 22	16 0 79
6	0 6 10 0	19 8 52 24	51 72	— 0 52	112 31 6 09	3 00	— 3 09	16 0 12
9	0 7 26				112 7 23 95	27 30	+ 3 35	16 2 23
10	0 7 51				111 58 45 55	43 20	— 2 35	16 0 90
11	0 8 15				111 49 30 76	33 30	+ 2 54	16 3 10
15	0 9 45 2	19 47 57 06	56 45	— 0 61				16 1 68
16	0 10 6 0	19 52 14 52	13 93	— 0·59				
17	0 10 26				110 45 46 49	48 40	+ 1 91	16 1 56
18	0 10 45				110 33 43 63	46 00	+ 2 37	16 2 65
19	0 11 4 4	20 5 2 78	2 19	— 0 59	110 21 20 35	20 30	— 0 05	16 0 24
20	0 11 22 6	20 9 17 50	16 83	— 0 67	110 8 28 63	31 50	+ 2 87	16 3 90
21	0 11 39				109 58 20 99	20 00	— 0 99	16 1 03
22	0 11 56 2	20 17 44 48	43 86	— 0 62	109 41 48 73	46 20	— 2 53	16 1 90
23	0 12 11				109 27 53 38	50 50	— 2 88	16 1 30
24	0 12 26				109 13 32 23	33 20	+ 0 97	16 1 89
25	0 12 41				108 58 55 44	54 80	— 0 64	16 0 95
26	0 12 54				108 43 51 85	55 60	+ 3 75	16 1 10
28	0 13 18				108 12 58 00	56 70	— 1 30	16 5 04
29	0 13 29				107 56 56 23	57 70	+ 1 47	16 1 15
30	0 13 39 3	20 51 0 17	59 81	— 0 36	107 40 42 72	39 60	— 3 12	16 2 01
31	0 13 48				107 24 0 98	2 80	+ 1 82	16 2 95
Feb 1	0 13 56 9	20 59 10 89	10 32	— 0 57	107 7 7 66	7 70	+ 0 04	16 2 12
2	0 14 4 4	21 3 15 09	14 51	— 0 58	106 49 52 12	54 70	+ 2 58	16 1 25
3	0 14 10 8	21 7 18 13	17 71	— 0 42				
4	0 14 16 5	21 11 20 40	20 10	— 0 30	106 14 34 20	36 40	+ 2 20	16 1 86
5	0 14 21 6	21 15 22 00	21 64	— 0 36	105 56 30 75	32 00	+ 1 25	16 0 63
6	0 14 25 7	21 19 22 62	22 37	— 0 25	105 38 10 29	11 30	+ 1 01	16 0 11
7	0 14 29				105 19 32 19	34 70	+ 2 51	16 1 06
8	0 14 31 9	21 27 21 99	21 41	— 0 58	105 0 43 35	42 50	— 0 85	16 0 72
9	0 14 33 5	21 31 20 24	19 74	— 0 50	104 41 32 67	35 10	+ 2 43	16 0 48

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*Continued*)

	Mean Solar Time of Observation	AR from Observation	AR from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Mean Hor Semid
1841	h m s	h m s	s	s	° ′ ″	″	″	′ ″
Feb 10	0 14 34				104 22 14 76	12 80	— 1 96	16 1 96
11	0 14 35 0	21 39 14 72	14 06	— 0 66	104 2 34 02	36 30	+ 2 28	16 0 92
12	0 14 34 8	21 43 10 86	10 07	— 0 79	103 42 45 94	45 80	— 0 14	16 0 77
13	0 14 33 1	21 47 5 75	5 35	— 0 40	103 22 38 39	41 70	+ 3 31	15 59 46
16	0 14 24				102 21 11 47	11 90	+ 0 43	16 0 43
17	0 14 20				102 0 14 46	17 70	+ 3 24	15 59 88
18	0 14 15				101 39 10 06	11 90	+ 1 84	
19	0 14 10 0	22 10 22 14	21 93	— 0 21	101 17 52 87	55 10	+ 2 23	16 0 57
20	0 14 4				100 56 25 55	27 70	+ 2 15	16 0 79
21	0 13 57				100 34 46 29	50 10	+ 3 81	16 0 21
22	0 13 49				100 13 2 61	2 70	+ 0 09	16 0 75
23	0 13 41				99 51 4 81	6 20	+ 1 39	16 2 21
24	0 13 32 9	22 29 27 80	27 16	— 0 64	99 29 2 96	0 80	— 2 16	16 1 28
25	0 13 23				99 6 42 16	46 80	+ 4 64	16 1 23
26	0 13 13				98 44 27 00	24 90	— 2 10	16 0 10
27	0 13 2				98 21 53 60	55 40	+ 1 80	16 2 59
28	0 12 51 4	22 44 32 36	32 28	— 0 08	97 59 19 28	18 70	— 0 58	16 3 61
Mar 1	0 12 40				97 36 36 22	35 30	— 0 92	16 0 42
2	0 12 28				97 13 43 07	45 40	+ 2 33	
3	0 12 15				96 50 49 69	49 60	— 0 09	15 58 02
4	0 12 2 3	22 59 29 31	28 63	— 0 68	96 27 45 31	48 10	+ 2 79	16 0 72
5	0 11 48 5	23 3 12 09	11 49	— 0 60	96 4 42 12	41 40	— 0 72	16 2 41
6	0 11 34				95 41 30 15	29 70	— 0 45	15 59 81
8	0 11 4				94 54 53 45	53 20	— 0 25	16 1 23
9	0 10 49				94 31 27 39	29 10	+ 1 71	16 1 01
10	0 10 34				94 8 2 44	1 40	— 1 04	
11	0 10 18 0	23 25 20 58	20 08	— 0 50	93 44 28 95	30 70	+ 1 75	16 1 90
12	0 10 1 7	23 29 0 78	0 31	— 0 47	93 20 58 59	57 00	— 1 59	16 1 08
13	0 9 45				92 57 19 09	21 00	+ 1 91	16 0 81
14	0 9 28				92 33 43 25	43 00	— 0 25	16 2 05
15	0 9 11 3	23 39 59 94	59 37	— 0 57	92 10 2 30	3 30	+ 1 00	15 59 88
16	0 8 53				91 46 21 35	22 20	+ 0 85	16 0 81
18	0 8 18				90 58 56 34	57 60	+ 1 26	16 3 36
19	0 8 0				90 35 17 01	14 90	— 2 11	
20	0 7 43				90 11 31 63	32 40	+ 0 77	
23	0 6 48				89 0 25 25	29 80	+ 4 55	
24	0 6 30				88 36 52 10	51 90	— 0 20	
25	0 6 11				88 13 12 55	16 20	+ 3 65	
26	0 5 53				87 49 43 05	43 00	— 0 05	
27	0 5 34				87 26 8 93	12 80	+ 3 87	
28	0 5 16				87 2 44 72	45 70	+ 0 98	
29	0 4 57				86 39 18 75	22 10	+ 3 35	
30	0 4 39				86 6 2 27	2 70	+ 0 43	
31	0 4 20				85 52 44 45	47 50	+ 3 05	
April 1	0 4 2				85 29 36 82	36 90	+ 0 08	
2	0 3 44				85 6 28 05	31 30	+ 3 25	16 1 45
3	0 3 25 7	0 49 7 84	7 54	— 0 30	84 43 32 86	31 10	— 1 76	16 1 17
4	0 3 7 6	0 52 46 34	46 02	— 0 32	84 20 36 39	36 50	+ 0 11	16 0 43
5	0 2 50				83 57 46 18	47 80	+ 1 62	16 0 96
6	0 2 32				83 35 5 14	5 30	+ 0 16	16 0 52
7	0 2 14 8	1 3 43 03	42 48	— 0 55	83 12 26 24	29 30	+ 3 06	15 59 64
8	0 1 57 5	1 7 22 23	21 71	— 0 52	82 50 3 38	0 30	— 3 08	16 0 32
13	0 0 35				80 59 29 46	29 50	+ 0 04	15 59 64
14	0 0 19				80 37 46 57	48 50	+ 1 93	16 1 08
15	0 0 4				80 16 11 98	16 50	+ 4 52	16 0 95
15	23 59 49				79 54 55 09	54 20	— 0 89	16 0 76
17	23 59 21				79 12 38 22	39 50	+ 1 28	16 0 60

Right Ascensions and North Polar Distances of the Sun's Center (C nt u d)

M S lar Tim f Ob rv ti		A R f m Ob rv ti	A R from N A	Err f N A	N P D fr m Ob rv ti	N P D fr m N A	Err f N A	M H S mid
1841	h m s	h m s	s	s	° ′ ″	″	″	′ ″
April 18	23 59 7 4	1 47 53 67	53 39	—0 28	78 51 51 04	47 80	—3 24	15 59 59
19	23 58 54				78 31 5 46	7 20	+1 74	15 59 86
20	23 58 41 4	1 55 20 68	20 43	—0 25	78 10 38 68	37 80	—0 88	15 59 55
21	23 58 29				77 50 17 93	20 00	+2 07	16 0 63
22	23 58 17 3	2 2 49 69	49 24	—0 45	77 30 17 15	14 20	—2 95	15 58 95
23	23 58 5 9	2 6 34 77	34 31	—0 46	77 10 18 59	20 80	+2 21	15 59 84
25	23 57 44				76 31 15 75	12 50	—3 25	16 1 02
26	23 57 34 2	2 17 52 72	52 31	—0 41	76 11 55 98	58 20	+2 22	16 0 68
27	23 57 24 8	2 21 39 74	39 28	—0 46	75 52 57 21	57 60	+0 39	16 1 21
May 4	23 56 32 1	2 48 22 80	22 45	—0 35	73 46 38 56	41 70	+3 14	16 1 03
5	23 56 26				73 29 43 68	41 40	—2 28	16 0 72
7	23 56 17				72 56 29 56	30 10	+0 54	16 2 15
8	23 56 14				72 40 22 75	19 60	—3 15	15 59 97
9	23 56 11 0	3 7 44 47	44 15	—0 32	72 24 21 85	26 40	+4 55	16 2 10
10	23 56 8				72 8 52 70	50 70	—2 00	16 2 03
11	23 56 6				71 53 30 03	32 80	+2 77	16 3 19
13	23 56 4				71 23 52 98	51 70	—1 28	16 1 90
17	23 56 8				70 28 12 72	16 00	+3 28	16 2 3[illegible]
18	23 56 10				70 15 15 78	10 90	—4 88	15 59 50
19	23 56 12 8	3 47 11 81	11 77	—0 04	70 2 22 08	26 10	+4 02	16 3 07
21	23 56 20				69 37 59 09	57 90	—1 19	
22	23 56 25				69 26 13 39	15 00	+1 61	16 1 50
23	23 56 30				69 14 54 79	53 30	—1 49	16 0 16
24	23 56 35				69 3 49 19	52 90	+3 71	16 0 99
25	23 56 40 7	4 11 19 19	19 15	—0 04	68 53 14 99	14 20	—0 79	16 2 85
26	23 56 47				68 42 53 70	57 40	+3 70	16 2 30
27	23 56 54 1	4 19 25 67	25 53	—0 14	68 33 3 15	2 60	—0 55	15 59 00
28	23 57 1 7	4 23 29 75	29 39	—0 36	68 23 27 75	30 10	+2 35	16 2 59
29	23 57 9 1	4 27 33 76	33 69	—0 07	68 14 20 34	20 00	—0 34	16 0 56
30	23 57 17 0	4 31 38 34	38 40	+0 06	68 5 39 11	32 60	—6 51	15 59 08
June 1	23 57 34 5	4 39 48 99	49 05	+0 06	67 49 5 63	6 20	+0 57	16 3 16
2	23 57 44 1	4 43 54 79	54 94	+0 15	67 41 24 34	27 70	+3 36	16 2 72
3	23 57 53 4	4 48 1 05	1 21	+0 16	67 34 13 78	12 50	—1 28	16 4 01
4	23 58 3 4	4 52 7 55	7 83	+0 28	67 27 18 04	20 70	+2 66	16 1 90
5	23 58 14				67 20 54 98	52 40	—2 58	16 2 39
6	23 58 25				67 14 45 44	47 90	+2 46	15 58 99
7	23 58 36 1	5 4 29 89	29 59	—0 30	67 9 7 75	7 40	—0 35	15 59 55
8	23 58 46 9	5 8 37 63	37 69	+0 06	67 3 47 23	50 80	+3 57	15 59 59
9	23 58 58 5	5 12 45 68	45 78	+0 10	66 59 0 62	58 30	—2 32	16 2 90
10	23 59 10 3	5 16 54 08	54 19	+0 11	66 54 26 17	30 10	+3 93	16 1 3
11	23 59 22 7	5 21 3 12	2 89	—0 23	66 50 26 15	26 20	+0 05	
13	23 59 47 8	5 29 21 38	20 83	—0 55	66 43 34 00	32 00	—2 00	15 59 02
15	0 0 0 5	5 33 30 53	30 07	—0 46	66 40 37 77	41 80	+4 03	16 3 16
16	0 0 13 2	5 37 39 91	39 45	—0 46	66 38 17 97	16 10	—1 87	16 4 64
17	0 0 25 9	5 41 49 15	48 95	—0 20	66 36 12 27	15 30	+3 03	16 5 55
18	0 0 39				66 34 43 12	39 30	—3 82	16 2 06
19	0 0 51 9	5 50 8 41	8 18	—0 23	66 33 26 49	28 10	+1 61	16 1 96
24	0 1 57				66 33 43 50	44 90	+1 40	15 59 85
25	0 2 9 8	6 15 5 88	5 70	—0 18	66 35 3 26	2 60	—0 66	16 1 01
26	0 2 22 2	6 19 14 86	14 99	+0 14				16 4 9
27	0 2 34 8	6 23 24 15	24 11	—0 04				15 58 37
29	0 2 59 5	6 31 41 97	41 79	—0 18				
July 5	0 4 7				67 10 28 63	26 20	—2 43	15 56 89
6	0 4 17				67 16 5 66	11 10	+5 44	15 56 56
7	0 4 27				67 22 23 16	19 80	—3 36	15 58 52
10	0 4 55				67 43 53	6 60	+1 07	15 58 13

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTRE (Cont nu d)

		M S l Tim f Ob rv ti	A R f m Ob ti	A R fr m N A	E f N A	N P D f m Ob rv ti	N P D f m N A	Erro f N A	M an H S mid
1841			m						′
July	13	0 5 19				68 7 26 88	21 20	—5 68	15 58 46
	14	0 5 26				68 16 9 50	11 40	+ 1 90	15 59 06
	15	0 5 33				68 25 27 27	24 10	—3 17	15 57 25
	16	0 5 39				68 34 55 72	58 80	+ 3 08	15 57 37
	17	0 5 44				68 44 56 17	55 50	—0 67	15 57 25
	18	0 5 49				68 55 13 92	13 90	—0 02	15 56 56
	19	0 5 54				69 5 57 31	53 60	—3 71	16 0 65
	20	0 5 58				69 16 54 36	54 50	+ 0 14	15 58 30
	22	0 6 4				69 40 2 32	59 10	—3 22	16 4 55
	26	0 6 10				70 30 9 88	10 0	+ 0 82	
	27	0 6 10				70 43 32 17	32 60	+ 0 43	16 1 32
	28	0 6 9				70 57 12 41	13 70	+ 1 29	16 2 35
	29	0 6 8				71 11 18 19	13 30	—4 89	16 1 39
	30	0 6 6				71 25 30 21	31 60	+ 1 39	
	31	0 6 4				71 40 12 03	8 00	—4 03	16 1 25
Aug	1	0 6 1				71 54 59 44	2 40	+ 2 96	16 1 35
	2	0 5 56 7	8 48 42 67	42 78	+ 0 11	72 10 19 77	14 60	—5 17	16 1 25
	3	0 5 52				72 25 45 33	44 20	—1 13	16 0 92
	4	0 5 48				72 41 33 79	30 90	—2 89	15 58 61
	6	0 5 36				73 13 53 60	54 70	+ 1 10	15 59 17
	7	0 5 29				73 30 34 06	31 40	—2 66	15 57 18
	10	0 5 6				74 21 59 63	56 40	—3 23	15 58 44
	16	0 4 4				76 11 25 53	27 40	+ 1 87	
	21	0 2 58 1	10 0 38 14	38 24	+ 0 10	77 48 51 11	49 40	—1 71	15 57 78
	24	0 2 12 7	10 11 42 31	42 54	+ 0 23	78 49 33 97	35 30	+ 1 33	16 2 15
	27	0 1 24				79 51 52 17	56 00	+ 3 83	16 2 21
	28	0 1 7				80 13 8 66	2 40	—6 26	16 3 19
	30	0 0 30 9	10 33 39 55	39 67	+ 0 12	80 55 40 89	42 80	+ 1 91	16 0 08
	31	0 0 13				81 17 20 35	16 10	—4 25	16 3 16
Sept	2	23 59 16				82 22 49 06	45 40	—3 66	16 0 65
	3	23 58 56 9	10 51 48 08	47 82	—0 26	82 44 55 00	50 50	—4 50	16 0 50
	5	23 58 17 1	10 59 1 23	1 27	+ 0 04	83 29 23 09	22 00	—1 09	16 0 30
	6	23 57 57				83 51 47 52	47 80	+ 0 28	16 0 20
	7	23 57 36 8	11 6 13 96	13 93	—0 03	84 14 20 03	19 90	—0 13	16 1 30
	8	23 57 16 3	11 9 49 93	50 05	+ 0 12	84 36 56 27	57 90	+ 1 63	16 0 5
	9	23 56 55 9	11 13 26 00	25 99	—0 01	84 59 44 62	41 40	—3 22	16 2 72
	12	23 55 53 6	11 24 13 16	13 19	+ 0 03	86 8 23 66	22 20	—1 46	16 3 16
	14	23 55 11 7	11 31 24 27	24 30	+ 0 03	86 54 36 11	31 00	—5 11	16 0 42
	15	23 54 50 9	11 34 59 97	59 80	—0 17	87 17 39 72	40 90	+ 1 18	16 2 45
	16	23 54 29 8	11 38 35 37	35 27	—0 10	87 40 56 73	53 70	—3 03	16 1 99
	19	23 53 26 7	11 49 21 83	21 71	—0 12	88 50 53 67	47 60	—6 07	15 58 45
	23	23 52 3 4	12 3 44 46	44 40	—0 06	90 24 26 68	21 30	—5 38	16 1 43
	24	23 51 42 0	12 7 20 53	20 35	—0 18	90 47 47 68	46 40	—1 28	16 1 15
	25	23 51 22				91 11 14 37	11 50	—2 87	16 2 21
	26	23 51 2				91 34 36 36	36 20	—0 16	16 0 12
	27	23 50 42				91 58 2 99	0 30	—2 69	16 1 12
	28	23 50 22				92 21 28 13	23 40	—4 73	16 0 90
	30	23 49 43				93 8 5 73	5 40	—0 33	16 1 22
O t	1	23 49 24				93 31 26 59	23 50	—3 09	16 1 17
	7	23 47 37				95 50 11 70	12 70	+ 1 00	16 0 81
	8	23 47 21				96 13 10 93	7 60	—3 33	16 1 08
	13	23 46 7				98 6 20 58	22 30	+ 1 72	16 0 03
	15	23 45 40 5	13 24 4 80	4 70	—0 10	98 51 0 18	55 40	—4 78	16 3 08
	26	23 44 1				102 45 28 03	27 20	—0 83	16 1 56
	29	23 43 48				103 45 35 52	36 10	+ 0 58	
	31	23 43 44				104 24 40 26	37 30	—2 96	16 1 43

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN S CENTER (C nt nued)

M an Solar Tim f Ob rv ti	A R f m Ob rv ti	A R fr m N A.	E f N A	N P D from Ob rv ti	N P D fr m N A	Er f N A	M an H S mid
	m			′	′		
1841							
Nov 3 23 43 43				105 21 21 76	24 10	+ 2 34	16 2 21
4 23 43 44				105 39 46 09	50 10	+ 4 01	16 1 83
7 23 43 54				106 33 30 21	33 50	+ 3 29	16 2 81
9 23 44 4				107 8 0 19	59 70	— 0 49	
10 23 44 11				107 24 51 04	46 60	— 4 44	16 1 98
11 23 44 18				107 41 14 31	15 40	+ 1 09	
12 23 44 27				107 57 29 60	25 80	— 3 80	16 2 35
14 23 44 46				108 28 48 30	49 80	+ 1 50	16 4 59
15 23 44 56				108 44 5 08	2 50	— 2 58	15 59 75
16 23 45 8				108 58 56 12	55 20	— 0 92	16 3 8
17 23 45 21							16 0 75
18 23 45 34				109 27 39 97	38 90	— 1 07	16 2 70
19 23 45 48 2	15 42 11 78	11 55	— 0 23	109 41 26 04	29 10	+ 3 06	16 2 05
21 23 46 18 9	15 50 35 62	35 31	— 0 31	110 8 7 22	4 70	— 2 52	16 1 58
22 23 46 35 3	15 54 48 63	48 35	— 0 28	110 20 49 43	49 30	— 0 13	16 1 01
23 23 46 52				110 33 16 16	11 30	— 4 86	16 0 03
26 23 47 48				111 7 56 31	58 50	+ 2 19	16 1 12
30 23 49 13				111 48 51 22	45 90	— 5 32	15 59 32
Dec 1 23 49 35				111 57 55 41	54 90	— 0 51	16 2 23
3 23 50 23				112 15 1 11	59 50	— 1 61	16 0 01
4 23 50 48 5	16 46 21 24	20 82	— 0 42	112 22 53 76	52 60	— 1 16	16 1 55
6 23 51 39 6	16 55 5 52	5 15	— 0 37				16 3 72
7 23 52 5 8	16 59 28 29	28 12	— 0 17	112 43 53 12	54 00	+ 0 88	16 3 36
9 23 53 0				112 55 41 12	41 30	+ 0 18	16 1 75
10 23 53 27				113 0 54 30	54 10	— 0 20	16 3 16
11 23 53 55				113 5 39 38	39 40	+ 0 02	
12 23 54 24				113 9 54 86	57 20	+ 2 34	
13 23 54 53				113 13 46 24	47 30	+ 1 06	
14 23 55 22				113 17 8 58	9 50	+ 0 92	16 1 92
17 23 56 50				113 24 24 94	28 00	+ 3 06	16 2 21
18 23 57 20				113 26 2 05	57 80	— 4 25	
19 23 57 50				113 26 59 38	59 40	+ 0 02	16 2 89
20 23 58 20				113 27 37 69	32 80	— 4 89	16 3 95
25 0 0 20				113 25 4 51	3 00	— 1 51	
1842							
Jan 5 0 5 36				112 39 40 88	38 40	— 2 48	
6 0 6 3				112 32 49 18	45 80	— 3 38	16 2 36
7 0 6 29				112 25 24 88	26 30	+ 1 42	16 0 61
9 0 7 20				112 9 24 96	27 80	+ 2 84	
10 0 7 45				112 0 46 56	49 30	+ 2 74	
13 0 8 56				111 32 21 58	20 10	— 1 48	
14 0 9 18				111 22 1 05	0 00	— 1 05	16 0 95
15 0 9 40				111 11 14 54	15 20	+ 0 66	16 2 43
16 0 10 1				111 0 5 18	6 10	+ 0 92	
18 0 10 41				110 36 34 64	36 40	+ 1 76	16 3 83
19 0 11 0				110 24 16 37	16 50	+ 0 13	16 2 35
20 0 11 18				110 11 33 08	33 50	+ 0 42	16 3 06
21 0 11 36				109 58 26 87	28 00	+ 1 13	16 2 51
22 0 11 52				109 44 58 14	0 10	+ 1 96	16 1 12
23 0 12 8				109 31 9 58	10 40	+ 0 82	
24 0 12 23				109 16 55 35	59 10	+ 3 75	16 2 98
26 0 12 50				108 47 35 14	33 40	— 1 74	16 2 99
27 0 13 3				108 32 15 24	19 70	+ 4 46	16 0 52
28 0 13 15				108 16 47 29	45 70	— 1 59	16 1 41
29 0 13 26				108 0 49 17	52 10	+ 2 93	16 1 75
30 0 13 36				107 44 40 74	39 10	— 1 64	
31 0 13 45				107 28 4 17	7 10	+ 2 93	16 4 30

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

	Mean Solar Time of Observation	A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	M H S mid
1842								
Feb 2	0 14 1				106 54 4 27	7 90	+ 3 63	16 3 13
3	0 14 8				106 36 41 24	41 30	+ 0 06	
4	0 14 14				106 18 53 87	57 20	+ 3 33	16 3 16
5	0 14 19				106 0 56 26	56 10	— 0 16	16 2 56
6	0 14 24				10 42 36 61	38 50	+ 1 86	
7	0 14 28				105 24 5 56	4 80	— 0 76	16 2 95
8	0 14 31				105 5 14 47	1 30	+ 0 83	16 3 15
9	0 14 33				104 46 4 63	10 60	+ 5 97	
10	0 14 34				104 26 48 05	51 00	+ 2 95	16 3 32
11	0 14 35				104 7 16 81	17 10	+ 0 29	15 59 98
12	0 14 34				103 47 25 83	29 20	+ 3 37	16 3 35
13	0 14 33				103 27 28 14	27 80	— 0 34	
14	0 14 32				103 7 12 33	13 20	+ 0 87	16 2 2
15	0 14 29				102 46 43 86	46 10	+ 2 24	16 1 90
16	0 14 26				102 26 7 95	6 70	— 1 25	16 3 01
17	0 14 22				102 5 12 38	15 60	+ 3 22	16 1 56
18	0 14 17				101 44 12 53	13 10	+ 0 57	16 3 01
19	0 14 12				101 22 53 34	59 80	+ 6 46	16 1 35
20	0 14 5				101 1 33 13	35 90	+ 2 77	
21	0 13 58				100 39 58 66	1 80	+ 3 14	16 1 96
22	0 13 51				100 18 13 94	18 00	+ 4 06	16 3 17
23	0 13 43				99 56 25 49	24 70	— 0 79	16 5 30
24	0 13 34				99 34 20 1	22 50	+ 2 05	16 2 28
25	0 13 25				99 12 10 71	11 80	+ 1 09	16 2 35
26	0 13 15				98 49 48 09	2 80	+ 4 11	16 2 25
27	0 13 4				98 27 25 20	26 00	+ 0 80	
28	0 12 53				98 4 49 49	51 60	+ 2 11	16 2 12
M 1	0 12 42				97 42 8 08	10 20	+ 2 12	16 4 15
2	0 12 30				97 19 22 34	22 10	— 0 24	16 3 39
3	0 12 17				96 56 27 24	27 50	+ 0 26	16 1 70
4	0 12 4				96 33 23 05	27 00	+ 3 95	16 2 15
5	0 11 50				96 10 19 79	21 00	+ 1 21	15 59 04
6	0 11 36				95 47 8 27	9 70	+ 1 43	
7	0 11 22				95 23 53 08	53 70	+ 0 62	16 0 52
8	0 11 7				95 0 33 26	33 30	+ 0 04	16 1 38
9	0 10 52				94 37 9 75	9 00	— 0 75	16 2 05
10	0 10 37				94 13 37 93	41 00	+ 3 07	16 0 26
11	0 10 21				93 50 10 66	9 90	— 0 76	16 3 70
12	0 10 5				93 26 36 72	36 00	— 0 7	16 2 88
13	0 9 49				93 2 53 56	59 70	+ 6 14	
14	0 9 32				9 39 20 56	21 50	+ 0 94	16 0 [illegible]
15	0 9 15				92 15 37 84	41 70	+ 3 86	15 58 47
16	0 8 58				91 51 58 31	0 80	+ 2 49	16 3 85
17	0 8 41				91 28 18 38	19 10	+ 0 72	16 2 88
18	0 8 23				91 4 33 1	37 00	+ 3 85	16 5 33
19	0 8 5				90 40 3 80	54 90	+ 1 10	16 4 06
20	0 7 47				90 17 8 41	13 10	+ 4 69	
22	0 7 11				89 29 49 11	51 70	+ 2 9	16 4 28
23	0 6 [illegible]				89 6 5 97	12 80	+ 6 83	16 2 75
24	0 6 34				88 42 34 77	35 80	+ 1 03	16 3 18
25	0 6 15				88 18 58 81	0 80	+ 1 99	16 0 7
28	0 5 19 3	0 26 2 12	2 33	— 0 09	87 8 31 59	31 00	— 0 59	16 2 83
29	0 5 1				86 45 5 61	7 20	+ 1 59	16 4 33
30	0 4 42 0	0 33 40 99	41 16	+ 0 17	86 21 40 64	47 10	+ 6 46	16 4 01
31	0 4 24				85 58 29 17	31 00	+ 1 83	16 3 70
Apr 1 1	0 4				85 3 14 46	19 20	+ 4 74	16 2 71
2	0 3 47				85 12 11 14	12 00	+ 0 86	16 2 36

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

Mean Sol Time of Observation		A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	M H S mid
1842	h m s	h m s	s	s	° ′ ″	″	″	′ ″
April 3	0 3 29				84 49 6 25	9 90	+ 3 65	
4	0 3 11				84 26 13 26	13 20	— 0 06	16 4 14
	0 2 53				84 16 72	22 20	+ 5 48	16 1 92
6	0 2 35				83 40 34 67	37 20	+ 2 53	16 0 53
7	0 2 18				83 17 55 41	58 60	+ 3 19	16 3 70
8	0 2 1 0	1 6 28 59	28 45	— 0 14	82 55 21 09	26 80	+ 5 71	16 2 76
9	0 1 43 6	1 10 7 71	8 01	+ 0 30	82 33 2 78	20	— 0 58	16 2 83
10	0 1 27				82 10 40 43	45 10	+ 1 67	
11	0 1 11				81 48 35 46	36 00	+ 0 4	16 1 65
12	0 0 55				81 26 33 18	35 00	+ 1 82	16 1 45
13	0 0 38 8	1 24 48 86	48 96	+ 0 10	81 4 43 37	42 70	— 0 67	16 1 23
14	0 0 23				80 42 58 95	59 30	+ 0 35	16 2 90
15	0 0 8				80 21 25 03	25 30	+ 0 27	16 1 72
15	23 59 53	1 35 52 87	52 86	— 0 01	79 59 58 35	0 90	+ 2 55	16 3 16
16	23 59 39				79 38 47 16	46 50	— 0 66	
17	23 59 25				79 17 41 52	42 40	+ 0 88	16 1 63
18	23 59 11				78 56 48 41	49 00	+ 0 59	16 0 81
19	23 58 57				78 36 4 34	6 50	+ 2 16	16 3 12
20	23 58 44				78 15 33 06	35 30	+ 2 4	15 9 26
21	23 58 32				77 55 10 91	15 70	+ 4 79	16 0 52
22	23 58 19				77 35 5 99	7 90	+ 1 91	16 3 25
23	23 58 8				77 15 6 77	12 30	+ 5 53	
25	23 57 45 6	2 13 10 48	10 55	+ 0 07				15 57 17
26	23 57 35				76 16 39 24	41 90	+ 2 66	16 2 58
27	23 57 26				75 57 37 20	38 20	+ 1 00	16 1 15
28	23 57 16 2	2 24 30 63	30 84	+ 0 21	75 38 44 02	48 20	+ 4 18	16 1 43
29	23 57 8				75 20 9 05	12 20	+ 3 15	16 2 92
30	23 56 59 4	2 32 6 87	7 00	+ 0 13	75 1 47 14	50 70	+ 3 56	16 1 35
May 1	23 56 52 5	2 35 56 56	55 93	— 0 63	74 43 47 47	43 70	— 3 77	16 1 12
2	23 56 45 1	2 39 45 76	45 41	— 0 35	74 25 48 15	51 80	+ 3 65	15 59 37
3	23 56 38 4	2 43 35 46	35 44	— 0 02				16 1 70
6	23 56 22 1	2 55 8 82	9 06	+ 0 24	73 17 3 49	0 50	— 2 99	16 1 72
7	23 56 18				73 0 26 68	28 40	+ 1 72	16 2 70
8	23 56 15				72 44 10 37	13 20	+ 2 83	16 2 44
9	23 56 11 7	3 6 48 08	47 91	— 0 17	72 28 12 39	15 30	+ 2 91	16 1 94
10	23 56 9				72 12 32 49	35 10	+ 2 61	16 4 63
11	23 56 7				71 57 12 77	12 70	— 0 07	16 2 59
12	23 56 6 5	3 18 32 47	31 93	— 0 54	71 42 8 63	8 30	— 0 33	15 59 11
13	23 56 5 1	3 22 27 66	27 74	+ 0 08	71 27 18 33	22 60	+ 4 27	16 1 37
15	23 56 5 6	3 30 21 20	21 05	— 0 15	70 58 49 17	47 60	— 1 57	16 1 16
16	23 56 6 6	3 34 18 74	18 53	— 0 21	70 44 54 42	59 00	+ 4 58	16 3 01
17	23 56 8 0	3 38 16 72	16 55	— 0 17	70 31 27 66	29 90	+ 2 24	15 58 61
18	23 56 10				70 18 18 65	20 50	+ 1 85	16 0 90
19	23 56 12 8	3 46 14 68	14 23	— 0 45	70 5 33 86	31 30	— 2 56	16 1 19
21	23 56 19				69 40 52 24	54 20	+ 1 96	16 2 30
2	23 56 23 3	3 58 14 82	14 72	— 0 10	69 29 8 85	6 60	— 2 25	16 1 25
23	23 56 27 9	4 2 15 98	15 92	— 0 06	69 17 41 41	40 00	— 1 41	16 0 30
24	23 56 33 5	4 6 18 13	17 64	— 0 49	69 6 34 06	34 70	+ 0 64	16 1 30
25	23 56 38 5	4 10 19 84	19 88	+ 0 05	68 55 50 39	50 90	+ 0 51	16 2 61
26	23 56 45 0	4 14 22 93	22 62	— 0 31	68 45 28 86	28 80	— 0 06	15 59 92
27	23 56 52				68 35 26 15	28 50	+ 2 35	
29	23 57 6				68 16 35 21	34 70	— 0 51	15 59 20
31	23 57 23				67 59 10 14	11 90	+ 1 76	15 57 25
June 3	23 57 51				67 36 0 45	57 60	— 2 85	15 59 96
5	23 58 11 2	4 55 14 85	15 02	+ 0 17	67 22 23 57	25 80	+ 2 23	16 0 75
7	23 58 33				67 10 28 94	29 20	+ 0 26	16 1 10
8	23 58 45	5 7 38 46	38 15	— 0 31	67 5 4 46	6 80	+ 2 34	16 0 72

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

1842		Mean Sol Time of Observation	A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Measured Semid
June	10	23 59 8				66 55 32 07	34 80	+ 2 73	16 0 45
	11	23 59 20 2	5 20 3 47	3 60	+ 0 13				16 5 57
	13	23 59 45				66 44 16 95	19 70	+ 2 75	16 2 70
	14	23 59 58				66 41 26 64	23 70	— 2 94	16 3 30
	18	0 0 36				66 34 59 35	3 90	+ 4 55	
	20	0 1 2				66 32 54 92	54 20	— 0 72	16 2 41
	21	0 1 15				66 32 22 54	26 60	+ 4 06	16 2 79
	22	0 1 27 3	6 1 36 43	36 74	+ 0 31	66 32 28 01	23 80	— 4 21	16 2 27
	23	0 1 40 4	6 5 46 39	46 38	— 0 01	66 32 44 34	45 70	+ 1 36	16 3 52
	24	0 1 53 4	6 9 55 80	55 56	— 0 24	66 33 30 39	32 40	+ 2 01	16 1 75
	2	0 2 5 9				66 34 41 35	43 80	+ 2 4	16 1 15
	28	0 2 43 3	6 26 32 00	32 13	+ 0 13	66 40 50 21	46 10	— 4 11	16 0 63
	29	0 2 55 6	6 30 41 02	40 94	— 0 08	66 43 34 63	36 20	+ 1 57	16 6 31
July	2	0 3 31				66 54 31 92	33 10	+ 1 18	16 3 67
	6	0 4 15				67 14 48 20	48 20	0 00	16 0 79
	7	0 4 25 0	7 3 43 16	43 11	— 0 05	67 20 50 65	51 70	+ 1 05	
	11	0 5 1 8	7 20 6 24	6 28	+ 0 04	67 49 2 72	0 10	— 2 62	16 3 26
	12	0 5 10 2	7 24 11 23	11 00	— 0 23	67 56 58 66	59 90	+ 1 24	16 3 70
	14	0 5 25 0	7 32 19 10	19 02	— 0 08	68 14 1 31	7 20	+ 5 89	16 0 68
	15	0 5 31 8	7 36 22 50	22 32	— 0 18	68 23 15 12	14 40	— 0 72	16 1 75
	16	0 5 38				68 32 42 38	43 40	+ 1 02	16 0 61
	20	0 5 57				69 14 13 64	16 30	+ 2 66	15 59 97
	21	0 6 1				69 25 32 85	32 50	— 0 35	16 0 76
	2	0 6 3				69 37 12 30	9 30	— 3 00	16 0 61
	25	0 6 9				70 14 5 26	1 90	— 3 36	16 0 28
	26	0 6 9 4	8 20 22 33	22 13	+ 0 10	70 26 58 80	59 30	+ 0 50	16 3 61
	27	0 6 9 4	8 24 18 91	19 02	+ 0 11	70 40 18 57	16 30	— 2 27	16 0 0
	29	0 6 8				71 7 47 04	47 80	+ 0 76	16 3 59
Aug	1	0 6 1				71 51 27 21	25 10	— 2 11	15 58 93
	2	0 5 57 3	8 47 46 2	46 39	+ 0 17	72 6 34 34	33 60	— 0 74	16 0 30
	6	0 5 38				73 10 2 45	1 10	— 1 35	16 1 25
	8	0 5 24				73 43 25 10	24 20	— 0 90	16 0 43
	9	0 5 17				74 0 36 05	29 50	— 5 55	15 59 83
	10	0 5 8				74 17 48 37	50 20	+ 1 83	16 0 03
	11	0 5 0				74 35 29 89	25 80	— 4 09	16 1 10
	12	0 4 50				74 53 22 31	16 10	— 6 21	
	13	0 4 41				75 11 20 06	21 00	+ 0 94	
	15	0 4 19				75 48 13 18	12 40	— 0 78	16 0 79
	22	0 2 47				78 4 1 98	0 80	— 1 18	16 1 85
	24	0 2 16				78 44 35 83	35 90	+ 0 07	15 58 60
	25	0 2 0				79 5 11 13	9 80	— 1 33	15 57 87
	31	0 0 17				81 12 4 47	2 60	— 1 87	15 58 9
Sept	2	23 59 21				82 17 33 87	29 10	— 4 77	16 0 41
	6	23 58 3				83 46 25 18	28 40	+ 3 22	16 0 65
	7	23 57 42				84 9 2 10	59 30	— 2 80	16 0 90
	13	23 55 38				86 25 55 33	54 50	— 0 83	16 4 08
	14	23 55 17				86 48 58 46	58 90	+ 0 44	16 1 25
	15	23 54 56				87 12 9 06	6 80	— 2 26	16 2 01
	16	23 54 35				87 35 15 66	17 70	+ 2 04	16 0 90
	18	23 53 52 9	11 44 54 37	4 03	— 0 34	88 21 48 05	47 80	— 0 25	16 0 68
	21	23 52 49				89 31 45 49	49 10	+ 3 61	16 2 14
	22	23 52 28				89 55 16 00	12 60	— 3 40	16 1 96
	23	23 52 8				90 18 37 32	37 00	— 0 32	16 0 48
	25	23 51 27				91 5 26 86	27 30	+ 0 44	16 0 21
	26	23 51 6				91 28 54 40	52 60	— 1 80	15 59 5
	29	23 50 7 2	12 24 30 17	29 93	— 0 24	92 39 4 96	4 80	— 0 16	16 0 05

RIGHT A CENS ONS AND NORTH POLAR DISTANCES OF THE SUN S CENTER (Con t u d)

M		S lar T m f Ob vati	A R fr m Ob ti	A R f m N A	E f N A	N P D f m Ob ti	N P D f m N A	E f N A	M H S m d
1842		m	m						
O t	2	23 49 10				93 49 3 18	3 50	+ 0 32	16 0 56
	3	23 48 51 9	12 39 0 85	0 73	— 0 12				16 1 03
	4	23 48 33 9	12 42 39 42	39 27	— 0 15	94 35 28 07	30 20	+ 2 13	16 1 41
	5	23 48 16 4	12 46 18 40	18 15	— 0 25	94 58 42 53	8 60	— 3 93	16 0 76
	6	23 47 59				95 21 43 03	43 20	+ 0 17	16 2 72
	7	23 47 42				95 44 47 34	43 70	— 3 64	16 0 32
	12	23 46 24 4	13 12 1 86	1 87	+ 0 01	97 38 29 09	30 10	+ 1 01	16 2 75
	13	23 46 10 1	13 15 44 08	44 27	+ 0 19	98 0 56 81	57 60	+ 0 79	16 0 72
	15	23 45 43 1	13 23 10 25	10 63	+ 0 38				16 2 16
	16	23 45 30 8	13 26 54 37	54 65	+ 0 28	99 7 38 42	38 00	— 0 42	16 0 32
	17	23 45 19 4	13 30 39 45	39 24	— 0 21	99 29 36 92	36 30	— 0 62	16 0 6
	18	23 45 8				99 51 24 22	26 30	+ 2 08	16 0 81
	0	23 44 47 7	13 41 57 31	56 72	— 0 59	100 34 39 96	40 30	+ 0 34	15 58 68
	1	23 44 37 9	13 45 44 00	43 84	— 0 16	100 56 0 22	3 40	+ 3 18	15 57 71
	25	23 44 7				102 19 52 10	55 00	+ 2 90	16 0 05
	26	23 44 1 6	14 4 50 47	50 04	— 0 43	102 39 28 56	25 70	— 2 86	16 3 50
	27	23 43 56				102 59 48 08	44 50	— 3 8	16 1 48
	28	23 43 52				103 19 50 11	51 40	+ 1 29	15 57 38
	29	23 43 48 3	14 16 26 82	26 80	— 0 02				16 3 16
N	2	23 43 43				104 58 6 39	8 30	+ 1 91	16 1 23
	3	23 43 43 3	14 36 4 42	3 95	— 0 47	105 16 56 69	53 30	— 3 39	16 2 48
	6	23 43 49				106 11 32 85	36 00	+ 3 15	15 58 94
	7	23 43 53				106 29 18 06	18 10	+ 0 04	15 58 9
	10	23 44 9				107 20 44 53	42 10	— 2 43	16 1 43
	15	23 44 54				108 40 16 70	17 80	+ 1 10	15 59 [illegible]
	17	23 45 16				109 9 52 32	51 80	— 0 52	15 58 82
	20	23 45 58				109 51 39 61	37 30	— 2 31	16 1 25
	1	23 46 13				110 4 54 22	49 50	— 4 72	16 2 61
	24	23 47 4							16 2 4
	25	23 47 23				110 53 55 44	54 50	— 0 94	16 2 43
	26	23 47 41 6	16 10 44 21	44 61	+ 0 40	111 5 9 50	12 90	+ 3 40	16 2 67
	28	23 48 22 9	16 19 18 74	18 72	— 0 02	111 26 40 23	38 00	— 2 23	16 2 35
	29	23 48 44 5	16 23 36 97	36 86	— 0 11	111 36 41 53	44 10	+ 2 57	16 4 79
	30	23 49 7				111 46 27 65	25 30	— 2 35	16 0 6
D	1	23 49 29 6	16 32 15 30	15 15	— 0 1	111 55 41 64	41 40	— 0 24	16 1 2
	2	23 49 53	16 36 3 26	35 25	— 0 01	112 4 33 65	32 30	— 1 35	16 2 7
	3	23 50 17				112 12 56 22	57 60	+ 1 38	16 1 88
	4	23 50 41 9	16 45 17 28	17 21	— 0 07	112 21 2 20	56 90	— 5 30	16 2 13
	6	23 51 33				112 35 35 68	37 00	+ 1 32	16 1 88
	7	23 51 59				112 42 15 77	17 20	+ 1 43	16 1 [illegible]
	8	23 52 25				112 48 29 63	30 60	+ 0 97	16 2 96
	11	23 53 47 9	17 15 59 98	59 93	— 0 05	113 4 28 38	28 30	— 0 08	16 3 01
	12	23 54 16 6	17 20 25 14	24 78	— 0 36				16 2 0
	13	23 54 45				113 12 49 98	49 70	— 0 28	16 2 88
	16	23 56 12 0	17 38 7 14	6 95	— 0 19	113 21 57 76	53 20	— 4 56	16 2 12
	17	23 6 41				113 23 59 68	58 50	— 1 18	15 59 37
	18	23 57 10 9	17 46 59 45	59 34	— 0 11	113 25 37 71	35 60	— 2 11	16 4 92
	19	23 57 41 0	17 51 26 17	25 74	— 0 43	113 26 42 63	44 40	+ 1 77	16 5 15
	21	23 58 40 4	18 0 18 82	18 87	+ 0 05	113 27 39 84	37 20	— 2 64	16 0 63
	3	23 59 40 9	18 9 12 54	12 15	— 0 39				15 59 84
	25	0 0 10 9	18 13 39 18	38 78	— 0 40	113 25 22 80	23 90	+ 1 10	16 0 90
	26	0 0 40 4	18 18 5 34	5 35	+ 0 01	113 23 43 26	43 00	— 0 26	16 1 32
	28	0 1 40 2	18 26 58 35	58 18	— 0 17	113 18 55 64	55 70	+ 0 06	16 1 61
	29	0 2 9 7	18 31 24 51	24 36	— 0 1	113 15 48 83	49 90	+ 1 07	16 1 01
	30	0 2 39 1	18 35 50 59	50 33	— 0 26	113 12 16 65	16 10	— 0 55	16 1 99
	31	0 3 8				113 8 15 02	14 30	— 0 72	16 0 76

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (*Continued*)

M S l Tim f Ob rv tio			A R from Ob tio	A R from N A	Err f N A	N P D from Ob rv tl	N P D from N A.	Err f N A	M an H S mid
1843						° ′ ″	″	″	
Ja	3	0 4 33				112 53 22 81	22 50	—0 31	16 0 43
	4	0 5 1							16 1 55
	5	0 5 28 8	19 2 20 12	19 95	—0 17	112 41 12 11	11 20	—0 91	16 3 55
	6	0 5 55 6	19 6 43 63	43 51	—0 12	112 34 19 95	25 00	+ 5 05	16 3 01
	7	0 6 22 2	19 11 6 74	6 59	—0 15	112 27 13 05	12 00	—1 05	16 1 43
	8	0 6 48				112 19 30 50	32 60	+ 2 10	16 2 50
	10	0 7 38				112 2 51 76	55 20	+ 3 44	16 2 96
	11	0 8 2 6	19 28 33 86	33 63	—0 23	111 53 59 95	57 60	—2 35	16 1 63
	12	0 8 26				111 44 32 19	34 50	+ 2 31	16 1 36
	17	0 10 15				110 51 26 94	26 20	—0 74	16 1 19
	20	0 11 11 6	20 7 12 39	12 46	+ 0 07	110 14 40 88	45 10	+ 4 22	16 1 99
	22	0 11 45 9	20 15 39 90	39 99	+ 0 09	109 48 23 99	22 80	—1 19	16 3 79
	23	0 12 2 0	20 19 52 57	52 63	+ 0 06	109 34 38 86	38 20	—0 66	16 2 63
	25	0 12 32				109 6 2 30	4 10	+ 1 80	16 4 39
	26	0 12 46							16 0 70
	27	0 12 58				108 36 4 03	5 70	+ 1 67	15 59 91
	28	0 13 11				108 20 33 18	35 90	+ 2 72	16 2 45
	29	0 13 22 0	20 44 52 10	52 02	—0 08	108 4 46 81	46 10	—0 71	
	30	0 13 32 8	20 48 59 48	59 10	—0 38	107 48 33 41	37 00	+ 3 59	16 3 39
	31	0 13 42 1	20 53 5 39	5 36	—0 03	107 32 5 30	8 80	+ 3 50	16 1 24
Feb	1	0 13 50 7	20 57 10 63	10 80	+ 0 17	107 15 17 70	22 00	+ 4 30	15 57 27
	2	0 13 59 0	21 1 15 51	15 40	—0 11	106 58 18 10	17 10	—1 00	16 1 45
	3	0 14 6				106 40 57 89	54 30	—3 59	16 2 9
	4	0 14 13				106 23 9 98	14 30	+ 4 32	16 3 59
	5	0 14 18 2	21 13 24 38	24 19	—0 19	106 5 17 18	17 30	+ 0 12	16 0 81
	6	0 14 23				105 47 3 52	3 90	+ 0 38	16 1 29
	7	0 14 27				105 28 31 55	34 50	+ 2 95	16 0 76
	8	0 14 29 7	21 25 25 56	25 47	—0 09	105 9 43 75	49 40	+ 5 65	16 1 52
	9	0 14 31 7	21 29 24 10	24 23	+ 0 13	104 50 47 08	49 00	+ 1 92	16 1 52
	10	0 14 33 1	21 33 22 08	22 19	+ 0 11				16 2 43
	11	0 14 33 7	21 37 19 40	19 35	—0 05	104 12 3 05	4 30	+ 1 25	16 3 01
	12	0 14 34 4	21 41 16 25	15 72	—0 53	103 52 17 31	20 80	+ 3 49	16 1 59
	13	0 14 33 0	21 45 11 44	11 32	—0 12	103 32 22 71	23 60	+ 0 89	16 2 37
	14	0 14 31 3	21 49 6 21	6 15	—0 06	103 12 8 98	13 30	+ 4 32	16 2 92
	15	0 14 28 7	21 53 0 30	0 23	—0 07	102 51 44 96	49 90	+ 4 94	16 3 45
	16	0 14 25 4	21 56 53 60	53 58	—0 02	102 31 9 69	14 10	+ 4 41	16 0 04
	17	0 14 22				102 10 24 86	26 40	+ 1 54	16 2 83
	18	0 14 16 8	22 4 38 12	38 13	+ 0 01	101 49 22 97	27 00	+ 4 03	16 1 54
	19	0 14 11 6	22 8 29 40	29 38	—0 02	101 28 14 64	16 30	+ 1 66	16 1 67
	20	0 14 6				101 6 56 25	54 80	—1 45	15 58 88
	21	0 13 58 9	22 16 9 91	9 88	—0 03	100 45 24 37	22 70	—1 67	16 4 48
	22	0 13 51 4	22 19 58 97	59 16	+ 0 19	100 23 37 78	40 50	+ 2 72	
	23	0 13 44				100 1 45 10	48 80	+ 3 70	16 2 59
	24	0 13 35				99 39 48 66	47 80	—0 86	16 2 65
	25	0 13 26				99 17 34 43	37 90	+ 3 47	16 2 76
	27	0 13 6 3	22 38 56 44	56 54	+ 0 10	98 32 51 59	53 50	+ 1 91	16 0 96
	28	0 12 56				98 10 17 15	19 80	+ 2 65	15 58 73
Mar	1	0 12 44 5	22 46 27 65	27 54	—0 11	97 47 36 37	38 90	+ 2 53	16 0 28
	2	0 12 33				97 24 48 15	51 40	+ 3 25	16 1 08
	3	0 12 20				97 2 2 80	57 50	—5 30	16 2 32
	5	0 11 54 3	23 1 23 63	23 41	—0 22	96 15 48 81	52 60	+ 3 79	16 0 90
	6	0 11 40				95 52 46 34	42 50	—3 84	16 2 15
	7	0 11 26				95 29 25 84	27 70	+ 1 86	16 2 19
	8	0 11 12				95 6 10 83	8 60	—2 23	16 4 82
	9	0 10 57				94 42 44 02	45 60	+ 1 58	16 1 48
	10	0 10 41				94 19 15 66	19 20	+ 3 54	16 2 85
	11	0 10 26				93 55 49 87	49 60	—0 27	16 0 75

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

Date	Mean Solar Time of Observation	A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Mean Hor Semid
1843								
Mar 14	0 9 36				92 45 2 64	5 80	+ 3 16	16 2 90
15	0 9 19				92 21 28 70	27 30	— 1 40	16 2 50
16	0 9 2				91 57 47 12	47 40	+ 0 28	16 0 16
17	0 8 45				91 34 2 83	6 40	+ 3 57	16 0 65
18	0 8 27				91 10 25 19	24 80	— 0 39	16 0 81
19	0 8 9 0	23 52 49 37	49 39	+ 0 02	90 46 39 75	43 00	+ 3 25	16 0 61
20	0 7 51				90 23 1 42	1 10	— 0 32	
21	0 7 32 7	0 0 6 07	6 26	+ 0 19	89 59 18 80	19 50	+ 0 70	16 3 79
22	0 7 14 4	0 3 44 31	44 53	+ 0 22				16 1 50
23	0 6 56 4	0 7 22 79	22 70	— 0 09				16 1 19
24	0 6 38				88 48 16 02	20 40	+ 4 38	16 1 36
25	0 6 19				88 24 40 62	43 80	+ 3 18	15 59 88
27	0 5 43				87 37 31 42	37 40	+ 5 98	16 1 08
28	0 5 24				87 14 4 77	8 30	+ 3 53	15 59 44
29	0 5 6				86 50 37 95	42 60	+ 4 65	1 57 97
30	0 4 47				86 27 20 47	20 50	+ 0 03	15 59 28
31	0 4 29				86 4 1 05	2 40	+ 1 35	15 59 57
April 1	0 4 11				85 40 4[illegible] 86	48 70	+ 2 84	16 2 27
5	0 2 59				84 8 44 26	4 40	+ 1 14	15 58 37
6	0 2 41				83 45 53 83	59 10	+ 5 27	16 2 36
7	0 2 24				83 23 17 74	19 40	+ 1 66	15 57 90
8	0 2 6				83 0 43 19	46 60	+ 3 11	16 2 81
10	0 1 33				82 15 59 60	2 80	+ 3 20	16 1 03
11	0 1 16				81 53 47 35	52 50	+ 5 15	16 2 76
12	0 1 0				81 31 48 29	50 50	+ 2 21	15 58 33
13	0 0 44				81 9 54 37	56 90	+ 2 53	16 2 0
14	0 0 28				80 48 12 39	12 10	— 0 29	16 2 10
15	0 0 12				80 26 32 78	36 40	+ 3 62	16 0 63
15	23 59 57 5	1 34 59 93	59 75	— 0 18	80 5 9 91	10 00	+ 0 09	15 58 99
16	23 59 43				79 43 48 02	53 50	+ 5 48	16 0 04
17	23 59 28				79 22 48 11	47 00	— 1 14	15 59 28
18	23 59 14				79 1 46 91	50 90	+ 3 99	16 2 16
19	23 59 1				78 41 0 23	5 40	+ 5 17	16 3 76
20	23 58 48				78 20 26 37	31 00	+ 4 63	16 1 10
21	23 58 35				78 0 2 19	7 90	+ 5 71	16 1 92
23	23 58 11				77 19 54 30	57 30	+ 3 00	16 1 48
24	23 58 0 0	2 8 31 15	31 20	+ 0 05	77 0 9 99	10 40	+ 0 41	16 0 30
25	23 57 49 1	2 12 16 81	17 03	+ 0 22	76 40 32 04	36 20	+ 4 16	16 3 10
26	23 57 39				76 21 11 58	15 00	+ 3 42	16 1 95
27	23 57 30				76 2 1 42	7 30	+ 5 88	16 0 99
28	23 57 20 4	2 23 37 63	37 51	— 0 12	75 43 8 32	13 40	+ 5 08	16 1 56
29	23 57 11 0	2 27 24 87	25 35	+ 0 48				15 56 95
30	23 57 3				75 6 8 38	8 10	— 0 28	16 1 35
May 1	23 56 56				74 47 54 81	57 50	+ 2 06	16 2 68
2	23 56 49				74 29 56 92	1 80	+ 4 88	16 2 19
3	23 56 42 2	2 42 42 11	42 08	— 0 03	74 12 19 45	21 70	+ 2 25	16 0 79
4	23 56 36				73 54 51 30	57 30	+ 6 00	16 1 96
5	23 56 31				73 37 46 09	48 80	+ 2 71	16 0 79
7	23 56 22 0	2 58 8 07	7 40	— 0 67	73 4 17 50	21 20	+ 3 70	16 1 39
8	23 56 18				72 48 1 98	2 70	+ 0 72	16 2 16
9	23 56 14				72 21 58 36	1 30	+ 2 94	16 0 99
10	23 56 12				72 16 14 42	17 40	+ 2 98	16 0 05
11	23 56 9 2	3 13 41 50	41 56	+ 0 06	72 0 47 81	51 40	+ 3 59	16 2 05
12	23 56 8				71 45 40 58	43 20	+ 2 62	16 0 45
13	23 56 7 0	3 21 32 42	32 04	— 0 38	71 30 50 26	53 40	+ 3 14	16 1 61
14	23 56 6 3	3 25 28 15	28 15	0 00	71 16 22 91	22 30	— 0 61	16 2 16
15	23 56 7 1	3 29 25 55	24 84	— 0 71	71 2 11 32	9 90	— 1 42	16 1 10

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

Mean Sol Time of Observation		A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Mean H Semid
1843		m						
May 16	23 56 7				70 48 14 82	16 70	+ 1 88	16 0 39
17	23 56 8 7	3 37 20 25	19 94	— 0 31	70 34 42 34	42 90	+ 0 56	16 2 16
18	23 56 10				70 21 25 35	28 70	+ 3 35	16 1 15
22	23 56 23				69 31 51 69	54 10	+ 2 41	16 0 25
23	23 56 28				69 20 26 55	22 10	— 4 45	16 0 21
27	23 56 52				68 37 45 61	49 20	+ 3 59	16 0 83
28	23 56 59 1	4 21 32 93	32 87	— 0 06	68 28 2 02	5 80	+ 3 78	16 2 15
29	23 57 6 9	4 25 37 30	37 10	— 0 20	68 18 39 36	44 70	+ 5 34	16 0 96
30	23 57 14 6	4 29 41 52	41 77	+ 0 25	68 9 48 33	46 30	— 2 03	16 1 12
31	23 57 23 7	4 33 47 24	46 86	— 0 38	68 1 6 94	10 50	+ 3 56	16 2 21
June 1	23 57 32 9	4 37 52 87	52 33	— 0 54	67 52 58 27	57 80	— 0 47	16 1 61
2	23 57 42				67 45 2 61	8 00	+ 5 39	16 0 79
3	23 57 50 7	4 46 4 01	4 43	+ 0 42	67 37 41 48	41 60	+ 0 12	16 3 76
4	23 58 1				67 30 33 57	38 70	+ 5 13	16 0 42
5	23 58 11 3	4 54 17 64	17 90	+ 0 26	67 23 56 01	59 20	+ 3 19	15 58 75
6	23 58 21 8	4 58 24 85	25 11	+ 0 26	67 17 39 98	43 60	+ 3 62	15 59 52
7	23 58 33				67 11 52 13	51 80	— 0 33	16 1 50
8	23 58 44				67 6 18 43	23 90	+ 5 47	16 1 79
9	23 58 56				67 1 18 42	20 10	+ 1 68	16 3 30
11	23 59 19				66 52 24 35	25 20	+ 0 85	16 0 96
12	23 59 31 1	5 23 13 68	13 78	+ 0 10	66 48 31 67	34 30	+ 2 63	16 2 10
14	23 59 56				66 42 2 72	5 90	+ 3 18	15 57 02
16	0 0 8 7	5 35 40 99	40 83	— 0 16	66 39 27 03	28 70	+ 1 67	16 0 82
17	0 0 21 3	5 39 50 22	50 12	— 0 10	66 37 13 03	16 00	+ 2 97	16 2 27
19	0 0 47				66 34 2 27	5 00	+ 2 73	16 1 45
20	0 1 0				66 33 6 31	6 70	+ 0 39	15 59 95
21	0 1 12 8	5 56 28 14	28 16	+ 0 02	66 32 32 23	33 30	+ 1 07	16 2 61
22	0 1 25 5	6 0 37 47	37 76	+ 0 29	66 32 23 89	24 80	+ 0 91	16 2 10
23	0 1 39				66 32 39 56	41 00	+ 1 44	16 2 59
25	0 2 4 6	6 13 6 34	6 44	+ 0 10	66 34 26 64	27 90	+ 1 26	16 0 39
26	0 2 18				66 35 59 75	58 60	— 1 15	16 2 43
27	0 2 30				66 37 55 25	54 00	— 1 25	16 0 21
29	0 2 55				66 42 59 28	58 70	— 0 58	16 0 54
30	0 3 7				66 46 7 80	7 80	0 00	16 2 95
July 1	0 3 19				66 49 41 72	41 30	— 0 42	16 1 10
2	0 3 31				66 53 34 99	39 20	+ 4 21	16 0 61
4	0 3 53				67 2 47 03	47 30	+ 0 27	16 3 61
6	0 4 15				67 13 29 84	31 30	+ 1 46	16 1 61
10	0 4 53				67 39 41 89	42 20	+ 0 31	16 3 87
11	0 5 1				67 47 8 78	13 10	+ 4 32	16 1 68
12	0 5 9				67 55 6 14	6 90	+ 0 76	15 59 36
13	0 5 17				68 3 17 39	23 30	+ 5 91	16 1 19
14	0 5 24				68 12 0 39	2 40	+ 2 01	16 0 83
21	0 6 1				69 22 51 76	52 10	+ 0 34	16 0 30
22	0 6 4				69 34 27 15	24 50	— 2 65	16 1 61
23	0 6 6				69 46 20 40	17 70	— 2 70	16 1 03
25	0 6 10				70 11 3 17	4 80	+ 1 63	15 59 92
27	0 6 11				70 37 15 05	11 30	— 3 75	16 1 65
29	0 6 10				71 4 33 69	34 90	+ 1 21	15 58 44
30	0 6 9				71 18 48 61	44 80	— 3 81	15 59 53
31	0 6 6				71 33 10 74	13 20	+ 2 46	15 59 59
Aug 2	0 6 0				72 3 3 45	3 70	+ 0 25	15 59 81
3	0 5 56				72 18 25 17	25 30	+ 0 13	
4	0 5 52							15 59 95
5	0 5 47				72 49 56 34	0 00	+ 3 66	15 59 15
7	0 5 34				73 22 43 25	41 10	— 2 15	16 0 30

Right Ascensions and North Polar Distances of the Sun s Center (Cont nued)

M Sola Tim f Ob rv ti		A R fr m Ob ti	A R f m N A.	Err f N A	N P D from Ob ti	N P D fr m N A	Err f N A	M H S mid
1843		m						
A g 8	0 5 27				73 39 24 29	25 90	+ 1 61	16 0 52
9	0 5 20				73 56 26 35	26 40	+ 0 05	
10	0 5 11				74 13 42 26	42 40	+ 0 14	
12	0 4 53				74 49 3 55	59 60	— 3 95	16 1 25
13	0 4 43				75 6 57 74	0 40	⊣ 2 66	16 2 45
14	0 4 33				75 25 14 30	15 40	+ 1 10	
15	0 4 22				75 43 42 40	44 50	+ 2 10	16 1 07
17	0 3 58				76 21 23 06	23 60	+ 0 54	
20	0 3 19				77 19 29 87	30 10	+ 0 23	16 1 01
24	0 2 21				78 39 52 82	47 20	— 5 62	
26	0 1 49				79 21 1 03	1 90	+ 0 87	16 3 83
27	0 1 33				79 41 49 90	54 70	+ 4 80	16 0 24
30	0 0 41				80 45 30 09	30 20	+ 0 11	16 1 45
31	0 0 23				81 7 2 98	0 00	— 2 98	16 0 65
S pt 1	23 59 46				81 50 24 76	24 60	— 0 16	16 2 75
2	23 59 27				82 12 17 14	18 60	+ 1 46	16 0 04
5	23 58 28				83 18 42 44	44 50	+ 2 06	16 3 95
6	23 58 8				83 41 8 21	6 60	— 1 61	16 2 16
9	23 57 6 7	11 11 42 48	42 67	+ 0 19	84 48 46 21	49 20	+ 2 99	15 59 73
10	23 56 46				85 11 32 62	34 50	+ 1 88	16 0 92
11	23 56 25				85 34 20 46	24 90	+ 4 44	16 1 79
12	23 56 5				85 57 21 01	19 90	— 1 11	16 0 68
13	23 55 43				86 20 20 01	19 40	— 0 61	16 3 83
15	23 55 1				87 6 27 65	30 30	+ 2 65	16 1 03
16	23 54 40				87 29 44 04	41 10	— 2 94	
17	23 54 19				87 52 52 81	54 80	+ 1 99	16 0 57
18	23 53 58				88 16 10 96	11 40	+ 0 44	16 3 72
23	23 52 13 7	12 2 0 45	0 13	— 0 32				
24	23 51 53				90 36 25 43	28 40	+ 2 97	16 3 44
25	23 51 32				90 59 50 63	54 10	+ 3 47	16 2 00
26	23 51 12				91 23 19 39	19 50	+ 0 11	16 2 30
27	23 50 52							15 59 35
28	23 50 32				92 10 6 66	8 60	+ 1 94	16 2 05
29	23 50 13				92 33 33 21	31 50	— 1 71	16 0 25
Oct 1	23 49 34				93 20 10 18	12 20	+ 2 02	16 1 83
2	23 49 16				93 43 29 13	29 00	— 0 13	16 2 05
3	23 48 57				94 6 45 13	43 60	— 1 53	16 1 32
6	23 48 3				95 16 11 19	7 50	— 3 69	16 3 38
10	23 46 57 3	13 3 44 54	44 67	+ 0 13	96 47 40 82	41 90	+ 1 08	16 1 92
11	23 46 42				97 10 22 26	23 00	+ 0 74	16 3 85
12	23 46 27 4	13 11 7 65	7 56	— 0 09	97 32 55 41	58 20	+ 2 79	16 1 85
15	23 45 46				98 39 6 89	5 70	— 1 19	15 59 85
16	23 45 34				99 2 11 08	14 20	+ 3 12	16 3 81
17	23 45 21 4	13 29 44 18	44 40	+ 0 22	99 24 16 33	14 90	— 1 43	16 0 83
20	23 44 49				100 29 26 18	27 40	+ 1 22	15 58 79
21	23 44 40				100 50 54 18	53 40	— 0 78	
22	23 44 31				101 12 7 77	9 70	+ 1 93	16 2 29
23	23 44 22 9	13 52 24 89	25 14	+ 0 25	101 33 15 02	16 00	+ 0 98	16 3 55
24	23 44 15 7	13 56 14 26	14 32	+ 0 06	101 54 13 99	11 70	— 2 29	15 57 31
25	23 44 9				102 14 55 57	56 40	+ 0 83	16 1 57
30	23 43 47				103 56 42 69	41 30	— 1 39	
31	23 43 45				104 15 13 20	11 70	— 1 50	16 2 52
Nov 2	23 43 42 4	14 31 9 76	9 75	— 0 01	104 53 33 09	30 60	— 2 49	16 2 30
6	23 43 47 6	14 47 1 11	1 36	+ 0 25	106 7 9 78	10 40	+ 0 62	16 0 61
7	23 43 51				106 24 54 68	56 00	+ 1 32	15 59 90
8	23 43 55 4	14 55 2 17	2 16	— 0 01	106 42 24 73	25 10	+ 0 37	16 0 64

Right Ascensions and North Polar Distances of the Sun s Center (C nt nued)

	M S l Tim f Ob ti	A R from Ob rv ti	A R fr m N A	E f N A	N P D f m Ob rv t	N P D fr m N A	Err f N A	M H S mid
1843						″		
N	11 23 44 13 6	15 7 10 12	9 78	— 0 34	107 33 12 35	8 90	— 3 45	16 0 16
	13 23 44 30				108 5 24 89	28 20	+ 3 31	16 2 05
	14 23 44 39				108 21 9 36	9 70	+ 0 34	16 1 23
	15 23 44 49				108 36 30 74	33 00	+ 2 26	16 0 59
	16 23 45 1				108 51 32 61	34 00	+ 1 39	16 1 21
	17 23 45 12 5	15 31 48 43	48 46	+ 0 03	109 6 14 33	16 20	+ 1 87	16 1 55
	18 23 45 25 5	15 35 58 01	57 90	— 0 11	109 20 35 63	37 90	+ 2 27	16 2 63
	19 23 45 39				109 34 38 98	38 70	— 0 28	16 1 75
	22 23 46 24 9	15 52 43 84	44 01	+ 0 17	110 14 29 94	31 60	+ 1 66	16 1 43
	23 23 46 42 2	15 56 57 69	57 54	— 0 15	110 27 3 92	4 80	+ 1 58	16 2 76
	24 23 47 0				110 39 13 53	15 40	+ 1 87	15 58 50
	25 23 47 18				110 51 3 82	2 80	— 1 02	15 58 73
	26 23 47 36 8	16 9 42 17	42 64	+ 0 47	111 2 29 55	26 90	— 2 65	16 2 31
	27 23 47 56 7	16 13 58 62	59 13	+ 0 51	111 13 27 36	27 00	— 0 36	16 0 68
	28 23 48 17 8	16 18 16 33	16 31	— 0 02	111 24 2 84	3 10	+ 0 26	16 1 28
Dec	7 23 51 51				112 40 34 66	37 50	+ 2 84	
	8 23 52 17 0	17 1 41 71	42 07	+ 0 36	112 46 59 28	57 60	— 1 68	16 1 95
	9 23 52 44 2	17 6 5 56	5 55	— 0 01				15 59 90
	10 23 53 11				112 58 14 76	16 90	+ 2 14	
	11 23 53 39				113 3 15 43	15 80	+ 0 37	
	12 23 54 7 1	17 19 18 40	18 69	+ 0 29	113 7 47 09	47 10	+ 0 01	16 1 25
	13 23 54 36				113 11 52 28	50 90	— 1 38	
	16 23 56 3				113 21 17 57	1 20	— 2 37	16 0 65
	18 23 57 2 5	17 45 53 74	53 62	— 0 12	113 25 10 89	11 00	+ 0 11	16 3 7
	19 23 57 32				113 26 26 32	26 60	+ 0 28	16 1 47
	20 23 58 2				113 27 14 24	13 90	— 0 34	16 1 05
	21 23 58 32 3	17 59 13 52	13 58	+ 0 06	113 27 32 94	32 80	— 0 14	16 1 20
	22 23 59 2 9	18 3 40 61	40 33	— 0 28	113 27 23 54	23 40	— 0 14	16 2 10
	23 23 59 32 7	18 8 7 11	7 09	— 0 02	113 26 42 46	45 70	+ 3 24	15 59 95
	26 0 0 32 6	18 17 0 19	0 43	+ 0 24	113 24 7 97	5 40	— 2 57	16 2 65
	27 0 1 2 6	18 21 26 88	26 93	+ 0 05	113 22 2 39	2 90	+ 0 51	16 1 12
	29 0 2 2				113 16 35 01	33 60	— 1 41	16 3 88
	30 0 2 31 1	18 34 45 33	45 34	+ 0 01	113 13 6 84	6 80	— 0 04	
	31 0 3 0 2	18 39 11 08	11 01	— 0 07	113 9 11 60	12 20	+ 0 60	16 4 36
1844								
J	2 0 3 57 5	18 48 1 69	1 47	— 0 22	112 59 59 94	59 60	— 0 34	
	3 0 4 25 2	18 52 26 01	26 18	+ 0 17	112 54 42 73	42 20	— 0 53	16 2 76
	4 0 4 53 2	18 56 50 58	50 51	— 0 07	112 49 0 21	57 30	— 2 91	16 2 81
	5 0 5 20 7	19 1 14 73	14 46	— 0 27				16 2 75
	6 0 5 46 8	19 5 37 51	37 97	+ 0 46	112 36 6 27	6 20	— 0 07	16 3 20
	7 0 6 13 6	19 10 0 97	1 03	+ 0 06	112 29 1 87	0 30	— 1 57	16 1 15
	8 0 6 39 7	19 14 23 66	23 63	— 0 03	112 21 26 17	27 80	+ 1 63	
	9 0 7 5 3	19 18 45 86	45 74	— 0 12	112 13 27 05	28 80	+ 1 75	
	10 0 7 29 5	19 23 6 93	7 33	+ 0 40	112 5 2 95	3 60	+ 0 65	16 3 88
	11 0 7 54 7	19 27 28 61	28 39	— 0 22	111 56 12 58	12 40	— 0 18	16 1 90
	12 0 8 18 3	19 31 48 86	48 87	+ 0 01				
	13 0 8 41 6	19 36 8 73	8 76	+ 0 03	111 37 11 83	13 20	+ 1 37	16 1 80
	17 0 10 8 6	19 53 22 24	22 10	— 0 14	110 54 11 96	15 20	+ 3 24	16 2 25
	18 0 10 29				110 42 29 44	30 10	+ 0 66	16 0 70
	19 0 10 47 9	20 1 54 76	54 70	— 0 06	110 30 19 33	21 30	+ 1 97	16 2 21
	20 0 11 6 4	20 6 9 84	9 91	+ 0 07	110 17 48 14	49 40	+ 1 26	16 2 10
	21 0 11 24				110 4 51 13	54 50	+ 3 37	
	22 0 11 41 9							16 0 12
	23 0 11 57 8	20 18 51 00	51 00	0 00				16 4 21
	24 0 12 13 1	20 23 2 87	3 12	+ 0 25	109 23 58 17	56 40	— 1 77	16 1 41
	25 0 12 27 8	20 27 14 29	14 43	+ 0 14	109 9 35 67	33 90	— 1 77	16 3 02
	26 0 12 41 9	20 31 24 95	24 92	— 0 03	108 54 47 86	50 30	+ 2 44	16 2 21
	27 0 12 55 0	20 35 34 70	34 60	— 0 10	108 39 44 81	46 10	+ 1 29	16 1 55

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN CENTRE (Continued)

		Mean Solar Time of Observation	A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Mean Semid
1844		m	m						′
Jan	28	0 13 7 5	20 39 43 70	43 44	−0 26	108 24 20 52	21 60	+1 08	16 3 27
	29	0 13 18 5	20 43 51 28	51 43	+0 15	108 8 36 98	37 50	+0 52	
	30	0 13 29 1	20 47 58 54	58 59	+0 05	107 52 35 36	33 90	−1 46	
Feb	3	0 14 3 0	21 4 18 58	18 86	+0 28	106 45 8 48	12 80	+4 32	
	5	0 14 15 3	21 12 24 14	24 01	−0 13	106 9 45 34	45 70	+0 36	16 0 90
	6	0 14 20 1	21 16 25 41	25 26	−0 15	105 51 35 55	36 80	+1 25	16 3 12
	7	0 14 24 2	21 20 26 14	25 92	−0 22				
	9	0 14 30				104 55 32 05	33 90	+1 85	16 2 70
	10	0 14 30 8	21 32 22 41	22 84	+0 43	104 36 16 93	22 20	+5 27	
	11	0 14 32				104 16 55 55	55 80	+0 25	16 1 70
	12	0 14 32 2	21 40 16 89	16 90	+0 01	103 57 13 33	14 90	+1 57	16 2 46
	13	0 14 32				103 37 18 92	20 30	+1 38	
	14	0 14 30 0	21 48 7 75	7 98	+0 23	103 17 8 77	12 20	+3 43	
	15	0 14 28 0	21 52 2 36	2 39	+0 03	102 56 50 18	51 10	+0 92	
	16	0 14 25 0	21 55 55 84	56 09	+0 25	102 36 14 96	17 40	+2 44	16 2 30
	17	0 14 21 5	21 59 48 99	49 07	+0 08	102 15 28 28	31 50	+3 22	16 3 50
	18	0 14 17 2	22 3 41 31	41 33	+0 02	101 54 33 88	34 00	+0 12	16 0 91
	19	0 14 12 5	22 7 33 08	32 90	−0 18	101 33 21 25	25 20	+3 95	16 4 01
	20	0 14 6 6	22 11 23 75	23 78	+0 03	101 12 4 20	5 50	+1 30	16 0 72
	21	0 14 0 2	22 15 13 91	13 98	+0 07	100 50 33 06	35 50	+2 44	16 2 6
	22	0 13 53 5	22 19 3 73	3 51	−0 22	100 28 54 61	55 50	+0 89	16 2 90
	23	0 13 46				100 7 4 29	5 90	+1 61	16 2 92
	24	0 13 37 0	22 26 40 34	40 60	+0 26	99 45 6 55	7 30	+0 75	16 3 35
	25	0 13 28 2	22 30 28 08	28 20	+0 12	99 22 58 81	59 90	+1 09	16 3 00
	26	0 13 18 8	22 34 15 12	15 18	+0 06	99 0 42 13	44 20	+2 07	16 2 35
	27	0 13 8 7				98 38 17 13	20 60	+3 47	16 1 37
	28	0 12 57 9	22 41 47 30	47 38	+0 08	98 15 48 43	49 60	+1 17	16 1 70
	29	0 12 46 6	22 45 32 75	32 62	−0 13	97 53 7 92	11 40	+3 48	16 2 10
Mar	1	0 12 34 7	22 49 17 08	17 34	+0 26	97 30 22 13	26 40	+4 27	15 59 46
	2	0 12 22 6	22 53 1 61	1 54	−0 07	97 7 33 19	35 10	+1 91	16 2 90
	3	0 12 10				96 44 37 50	37 70	+0 20	16 0 48
	4	0 11 56 3	23 0 28 35	28 41	+0 09	96 21 32 06	34 90	+2 84	16 2 39
	5	0 11 42 4	23 4 10 96	11 21	+0 25				16 3 50
	6	0 11 28 2	23 7 58 33	53 54	+0 21	95 35 14 49	13 70	−0 79	16 3 41
	7	0 11 14				95 11 54 29	56 00	+1 71	16 2 67
	8	0 10 58 9	23 15 17 00	17 01	+0 01	94 48 33 48	34 10	+0 62	16 3 47
	9	0 10 44				94 25 7 23	8 50	+1 27	16 3 21
	10	0 10 28 0	23 22 39 18	39 05	−0 13	94 1 39 09	39 40	+0 31	16 3 65
	11	0 10 11 9	23 26 19 38	19 57	+0 19	93 38 3 06	7 30	+4 24	16 3 16
	12	0 9 55 7	23 29 59 73	59 82	+0 09	93 14 29 88	32 50	+2 62	16 4 15
	13	0 9 39 2	23 33 39 78	39 78	0 00	92 50 51 73	55 30	+3 57	
	14	0 9 22 3	23 37 19 44	19 48	+0 04	92 27 15 92	16 20	+0 28	16 2 52
	15	0 9 5 2	23 40 58 79	58 95	+0 16	92 3 33 51	35 60	+2 09	16 2 39
	16	0 8 47 8	23 44 37 93	38 20	+0 27	91 39 54 20	53 90	−0 30	16 2 67
	17	0 8 30 7	23 48 17 36	17 25	−0 11	91 16 10 58	11 40	+0 82	16 1 90
	18	0 8 13 1	23 51 56 17	56 11	−0 06	90 52 27 86	28 50	+0 64	16 1 85
	19	0 7 55				90 28 43 6	45 60	+1 95	16 1 45
	20	0 7 37 2	23 59 13 25	13 36	+0 11	90 5 1 94	3 20	+1 26	16 3 12
	21	0 7 18 9	0 2 51 56	51 77	+0 21	89 41 19 38	21 50	+2 12	16 3 59
	22	0 7 1				89 17 41 72	41 00	−0 72	16 1 63
	23	0 6 42 7	0 10 8 30	8 28	−0 02	88 53 59 26	2 00	+2 74	16 1 81
	24	0 6 24 4	0 13 46 50	46 39	−0 11	88 30 23 22	25 00	+1 78	16 3 28
	25	0 6 6				88 6 47 94	50 30	+2 36	16 1 85
	26	0 5 47 3	0 21 2 37	2 46	+0 09	87 43 16 72	18 00	+1 28	16 2 36
	27	0 5 28 7	0 24 40 36	40 45	+0 09	87 19 48 36	48 20	−0 16	16 2 50
	28	0 5 10				86 56 21 32	23 20	+1 88	16 2 65
	29	0 4 51 8	0 31 56 31	56 43	+0 12	86 32 59 33	1 00	+1 67	16 1 15

RIGHT ASCENSIONS AND NORTH P LAR DISTANCES OF THE SUN S CENTRE (C t d)

	M an S l Tim f Ob rv ti	A R from Ob rv i	A R from N A	Err f N A	N P D fr m Ob ti	N P D fr m N A	Err f N A	M an H S mid
1844							′	
Mar 30	0 4 33 4	0 35 34 50	34 47	— 0 03	86 9 40 19	42 80	+ 2 61	16 2 78
31	0 4 14 7	0 39 12 84	12 54	— 0 30	85 46 24 91	29 00	+ 4 09	16 2 30
April 1	0 3 57				85 23 18 21	19 80	+ 1 59	16 3 65
2	0 3 38				85 0 12 20	15 60	+ 3 40	16 1 50
3	0 3 20				84 37 15 14	13 60	— 1 54	16 1 21
4	0 3 2 3	0 53 45 88	45 97	+ 0 09	84 14 20 53	22 30	+ 1 77	16 2 19
5	0 2 45				83 51 35 21	36 00	+ 0 79	16 1 25
6	0 2 27				83 28 53 94	54 90	+ 0 96	16 1 08
7	0 2 10				83 6 18 30	20 40	+ 2 10	15 59 21
8	0 1 52							16 3 99
9	0 1 36				82 21 31 67	32 60	+ 0 93	16 0 04
10	0 1 18 8	1 15 41 48	41 66	+ 0 18	81 9 17 61	19 90	+ 2 29	16 2 01
11	0 1 2 4	1 19 21 55	21 86	+ 0 31	81 37 13 71	15 20	+ 1 49	16 0 10
13	0 0 31				80 53 30 89	30 90	+ 0 01	
14	0 0 15 6	1 30 24 21	24 37	+ 0 16	80 31 50 17	52 10	+ 1 93	16 1 25
15	0 0 1				80 10 18 70	22 50	+ 3 80	
15	23 59 45 9	1 37 47 57	47 79	+ 0 22	79 49 0 50	2 70	+ 2 20	16 1 63
16	23 59 32				79 27 49 15	53 10	+ 3 95	16 3 21
17	23 59 17 8	1 45 12 48	12 71	+ 0 23	79 6 51 25	53 80	+ 2 55	16 0 55
18	23 59 4 3	1 48 55 58	55 77	+ 0 19	78 46 4 52	5 20	+ 0 68	16 3 74
19	23 58 51 4	1 52 39 17	39 25	+ 0 08	78 25 28 62	27 70	— 0 92	16 0 52
20	23 58 38 8	1 56 23 05	23 12	+ 0 07	78 4 59 66	1 80	+ 2 14	16 3 26
21	23 58 26 6	2 0 7 37	7 42	+ 0 05	77 44 45 23	47 60	+ 2 37	16 5 45
22	23 58 14				77 24 43 07	45 50	+ 2 43	16 1 66
23	23 58 3 8	2 7 37 61	37 38	— 0 23	77 4 52 85	55 90	+ 3 05	16 1 40
24	23 57 52 6	2 11 22 91	23 00	+ 0 09	76 45 16 88	19 10	+ 2 22	16 2 78
25	23 57 42 2	2 15 9 02	9 12	+ 0 10	76 25 52 77	55 40	+ 2 63	16 3 41
26	23 57 32 3	2 18 55 67	55 72	+ 0 05	76 6 42 79	44 90	+ 2 11	16 1 90
27	23 57 22 9	2 22 42 86	42 81	— 0 05	75 47 44 16	48 30	+ 4 14	16 0 67
28	23 57 14 0	2 26 30 43	30 40	— 0 03	75 29 3 96	5 70	+ 1 74	16 2 05
29	23 57 5 6	2 30 18 54	18 50	— 0 04	75 10 37 86	37 40	— 0 46	16 3 02
30	23 56 57 6	2 34 7 07	7 10	+ 0 03	74 52 20 80	23 80	+ 3 00	
M y 1	23 56 50 2	2 37 56 18	56 26	+ 0 08	74 34 23 05	25 00	+ 1 95	16 2 63
2	23 56 43 3	2 41 45 91	45 96	+ 0 05	74 16 37 81	41 60	+ 3 79	16 2 84
3	23 6 37 2	2 45 36 36	36 21	— 0 15	73 59 14 64	13 60	— 1 04	16 1 50
5	23 6 26 1	2 53 18 36	18 43	+ 0 07	73 25 4 21	5 40	+ 1 19	15 58 67
6	23 ు6 22				73 8 23 43	25 80	+ 2 37	15 59 87
9	23 56 11 6	3 8 0 07	49 90	— 0 17	72 20 7 87	8 60	+ 0 73	16 2 07
10	23 56 9 3	3 12 44 28	44 24	— 0 04	72 4 35 45	37 70	+ 2 25	15 59 07
11	23 56 8				71 49 27 89	24 70	— 3 19	16 0 32
12	23 56 6 7	3 20 34 78	34 71	— 0 07	71 34 26 28	30 00	+ 3 72	16 1 08
13	23 56 6 3	3 24 30 99	30 86	— 0 13	71 19 55 41	53 80	— 1 61	16 3 31
15	23 56 7 3	3 32 25 08	24 88	— 0 20	70 51 37 83	38 30	+ 0 47	16 2 46
16	23 56 8 4	3 36 22 77	22 76	— 0 01	70 37 57 83	59 50	+ 1 67	16 1 28
17	23 56 10 3	3 40 21 22	21 19	— 0 03	70 24 38 57	40 40	+ 1 83	16 1 19
18	23 56 13				70 11 41 37	41 30	— 0 07	16 1 59
19	23 56 16				69 59 2 53	2 30	— 0 23	16 1 35
21	23 56 23 2	3 56 20 26	20 37	+ 0 11	69 34 43 97	46 10	+ 2 13	16 4 67
22	23 56 27 7	4 0 21 37	21 47	+ 0 10	69 23 8 32	9 30	+ 0 98	16 1 68
23	23 56 33				69 11 52 63	53 70	+ 1 07	16 0 82
24	23 56 38 2	4 8 24 90	25 17	+ 0 27	69 0 58 69	59 60	+ 0 91	16 3 19
25	23 56 44				68 50 26 24	27 10	+ 0 86	
27	23 56 58				68 30 30 46	28 00	— 2 46	16 1 03
29	23 57 12 6	4 28 42 29	42 59	+ 0 30	68 11 59 24	58 00	— 1 24	16 2 94
30	23 57 21				68 3 15 62	16 80	+ 1 18	16 3 81
31	23 57 29 8	4 36 52 63	52 61	— 0 02	67 54 57 37	58 60	+ 1 23	15 59 23

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN S CENTER (Co t d)

	M Solar Tim f Ob tl	A R f om Ob rv tl	A R f m N A	Err f N A	N P D fr m Ob rv tl	N P D f m N A	Err f N A	M H S mi l
1844	m	m						
J	1 23 57 38 7	4 40 58 09	58 23	+ 0 14	67 47 0 89	3 30	+ 2 41	16 0 68
	2 23 57 48				67 39 29 72	31 20	+ 1 48	15 57 08
	3 23 57 58				67 32 22 57	22 50	— 0 07	16 3 07
	4 23 8 8 2	4 53 17 33	17 39	+ 0 06				16 2 87
	5 23 58 19				67 19 15 82	15 80	— 0 02	16 4 27
	6 23 58 29 5	5 1 31 81	31 93	+ 0 12	67 13 16 06	18 10	+ 2 04	16 3 43
	7 23 58 40 5	5 5 39 38	39 68	+ 0 30	67 7 45 07	44 30	— 0 77	16 1 07
	8 23 58 52 1	5 9 47 79	47 72	— 0 07				16 0 58
	9 23 59 3 9	5 13 56 06	56 03	— 0 03	66 57 49 56	49 00	— 0 56	16 3 85
	11 23 9 28				66 49 32 93	31 10	— 1 83	16 1 27
	12 23 59 40 4	5 26 22 51	22 36	— 0 15	66 45 57 14	58 80	+ 1 66	16 2 70
	13 23 59 53 2	5 30 31 63	31 52	— 0 11	66 42 50 77	51 10	+ 0 33	16 4 17
	15 0 0 5 6	5 34 40 56	40 83	+ 0 27	66 40 8 54	8 10	— 0 44	16 3 58
	16 0 0 18 6	5 38 50 30	50 26	— 0 04	66 37 45 40	49 60	+ 4 20	16 0 02
	18 0 0 44 3	5 47 9 09	9 36	+ 0 27	66 34 27 32	27 00	— 0 32	16 2 87
	19 0 0 57 3	5 51 18 67	18 99	+ 0 32	66 33 22 79	22 90	+ 0 11	16 3 34
	20 0 1 11				66 32 45 42	43 60	— 1 82	16 0 62
	22 0 1 37				66 32 38 59	39 30	+ 0 71	16 8 1
	25 0 2 14 8	6 16 15 84	16 02	+ 0 18	66 35 35 27	38 50	+ 3 23	
	26 0 2 28				66 37 27 16	27 60	+ 0 44	16 1 32
	27 0 2 39 9	6 24 34 05	34 18	+ 0 13	66 39 41 68	41 40	— 0 28	16 0 91
	28 0 2 52 0	6 28 42 82	43 00	+ 0 18	66 42 16 89	19 60	+ 2 71	16 2 87
	29 0 3 4 1	6 32 51 39	51 63	⊦ 0 24	66 45 24 84	22 50	— 2 34	16 3 85
J ly	1 0 3 27 4	6 41 7 99	8 24	+ 0 25	66 52 41 59	41 20	— 0 39	16 4 29
	3 0 3 50 2	6 49 23 96	23 83	— 0 13	67 1 36 43	37 10	+ 0 67	16 3 01
	4 0 4 0 9	6 53 31 23	31 21	— 0 02	67 6 42 55	41 20	— 1 35	16 0 57
	5 0 4 11 2	6 57 38 03	38 28	+ 0 25	67 12 8 36	9 10	+ 0 74	16 0 29
	6 0 4 22				67 18 3 86	0 90	— 2 96	16 1 5
	8 0 4 41							15 59 22
	9 0 4 50				67 37 56 6	58 00	+ 1 44	16 1 43
	11 0 5 7				67 53 11 27	12 30	+ 1 03	
	14 0 5 29				68 18 54 43	54 60	+ 0 17	
	15 0 5 35 8	7 38 28 50	28 59	+ 0 09	68 28 14 18	13 50	— 0 68	16 4 27
	16 0 5 41 7	7 42 30 93	31 17	+ 0 24	68 37 53 6	54 40	+ 0 84	
	21 0 6 4				69 31 39 52	40 40	+ 0 88	15 59 78
	22 0 6 6 6	8 6 35 23	35 27	+ 0 04	69 44 28 59	28 20	— 0 39	1C 2 32
	25 0 6 11 0	8 18 29 42	29 47	+ 0 05	70 20 51 83	52 60	+ 0 77	16 2 10
	27 0 6 11 2	8 26 22 70	22 58	— 0 12	70 47 29 60	26 90	— 2 70	16 2 32
	28 0 6 10				71 1 15 65	12 70	— 2 95	16 3 99
	29 0 6 8 8	8 34 13 36	13 26	— 0 10	71 15 17 33	17 20	— 0 13	1C 3 22
	30 0 6 6				71 29 43 96	40 40	— 3 56	16 3 01
A	1 0 6 1				71 59 22 26	21 10	— 1 16	
	2 0 5 57				72 14 34 17	38 10	+ 3 93	16 0 95
	3 0 5 52 2	8 53 39 51	39 44	— 0 07	72 30 11 66	12 40	+ 0 74	
	4 0 5 47 0	8 57 30 93	30 90	— 0 03	72 46 4 50	4 00	— 0 50	16 0 42
	5 0 5 41 7	9 1 22 06	21 77	— 0 29	73 2 13 14	12 60	— 0 54	1 9 6
	6 0 5 35 1	9 5 12 04	12 06	+ 0 02	73 18 38 0	37 60	— 0 45	16 1 2
	7 0 5 28				73 35 16 71	18 90	+ 2 19	15 9 35
	8 0 5 20 7	9 12 50 73	50 94	+ 0 21	73 52 13 33	16 30	+ 2 97	16 2 26
	9 0 5 13				74 9 30 40	29 30	— 1 10	16 0 33
	10 0 5 4				74 26 56 86	7 70	+ 0 84	15 58 32
	11 0 4 55				74 44 39 79	41 10	+ 1 31	15 ꞁ8 86
	12 0 4 46				7 2 36 4	39 20	+ 2 75	15 59 73
	13 0 4 36				75 20 50 41	51 50	+ 1 09	16 1 24
	14 0 4 24 7	9 3 33 85	34 08	+ 0 23	75 39 16 91	18 00	+ 1 09	15 8 39
	16 0 4 2				76 16 50 11	51 70	+ 1 59	16 2 39
	17 0 3 49 9	9 46 48 68	48 30	− 0 38	6 35 56 44	58 20	+ 1 76	15 59 1

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER (Continued)

	Mean Solar Time of Observation	A R from Obs	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Mean Hor Semid
1844								
Aug	18 0 3 36 7	9 50 31 98	32 00	+ 0 02	76 55 17 54	17 40	— 0 14	16 0 20
	19 0 3 23				77 14 47 58	49·00	+ 1 42	16 0 75
	20 0 3 10				77 34 34 35	32 50	— 1 85	
	23 0 2 25				78 34 51 04	52 40	+ 1 36	16 0 04
	24 0 2 9				78 55 19 21	21 10	+ 1 89	16 0 57
	31 23 59 49				81 45 1 43	2 10	+ 0 67	16 0 44
Sept.	2 23 59 11				82 28 55 50	54 10	— 1 40	16 3 03
	3 23 58 52				82 50 58 84	1 50	+ 2 66	
	4 23 58 32				83 13 15 09	16 00	+ 0 91	16 1 04
	5 23 58 12 2	11 0 1 20	1 20	0 00	83 35 32 98	37 20	+ 4 22	16 2 81
	6 23 57 52 1	11 3 37 58	37 63	+ 0 05	83 58 3 56	4 90	+ 1 34	16 4 14
	8 23 57 11 1	11 10 49 62	49 97	+ 0 35	84 43 19·06	18 40	— 0 66	16 1 00
	9 23 56 50 7	11 14 2 54	25 92	+ 0·28	85 6 3 94	3 30	— 0 64	
	10 23 56 30 4	11 18 1 90	1 75	— 0 15	85 28 51 68	53 40	+ 1 72	16 1 15
	11 23 56 9 3	11 21 37 21	37 47	+ 0 26	85 51 46 70	48 20	+ 1 50	16 0 75
	12 23 55 48 7	11 25 13 10	13 11	+ 0 01	86 14 47 82	47 40	— 0 42	16 4 03
	13 23 55 27 4	11 28 48 32	48·66	+ 0 34	86 37 49·39	50·60	+ 1 21	
	14 23 55 7				87 0 56 83	57 40	+ 0 57	16 1 08
	17 23 54 3 4	11 43 10·30	10 47	+ 0 17	88 10 35 25	36 40	+ 1 15	16 2 99
	18 23 53 42 1	11 46 45 49	45 90	+ 0 41	88 33 54 97	54 40	— 0 57	16 1 41
	19 23 53 21 4	11 50 21 32	21 37	+ 0 05	88 57 17 65	14 30	— 3·35	16 2 16
	20 23 53 0 3	11 53 56 57	56 84	+ 0 27	89 20 37 79	35 90	— 1 89	16 1 33
	21 23 52 39 6	11 57 32 35	32 42	+ 0 07	89 43 59 99	58 70	— 1 29	16 0 00
	23 23 51 57 8	12 4 43·71	43 89	+ 0 18	90 30 46 27	46·90	+ 0 63	
	24 23 51 37 1	12 8 19 51	19 82	+ 0 31	90 54 10·24	11 70	+ 1 46	16 4 57
	25 23 51 16 6	12 11 55 56	55 92	+ 0 36	91 17 34 65	36 20	+ 1 55	16 2 10
	26 23 50 56 5	12 15 31 84	32 19	+ 0 35	91 40 59 87	0 60	+ 0 73	16 2 83
	28 23 50 17 0	12 22 45 38	45 39	+ 0 01	92 27 45 54	46 90	+ 1 36	16 1 80
	29 23 49 57 3	12 26 22 16	22 38	+ 0 22	92 51 10 05	8 0	— 1 55	16 3 47
	30 23 49 38·2	12 29 59 56	59 64	+ 0 08	93 14 27 43	28·30	+ 0 87	16 1 79
Oct	3 23 48 43				94 24 12 46	14 00	+ 1 54	16 3 38
	9 23 47 1 5	13 2 51 31	51 36	+ 0·05	96 42 10 07	12 00	+ 1 93	16 4 10
	11 23 46 32				97 27 32 45	32 50	+ 0 05	16 0 97
	13 23 46 4				98 12 26 69	28 40	+ 1 71	16 0 02
	14 23 45 50 0	13 21 22 40	22 67	+ 0 27	98 34 46 59	46 10	— 0 49	16 4 57
	16 23 45 25 4	13 28 50 84	50 97	+ 0 13	99 18 58 06	59 10	+ 1 04	16 3 17
	17 23 45 13 9	13 32 35 93	35 99	+ 0 06	99 40 52 47	53 50	+ 1 03	16 4 18
	18 23 45 3 2	13 36 21 68	21 60	— 0 08	100 2 37 68	39 50	+ 1 82	16 2 32
	19 23 44 3				100 24 19 19	16 40	— 2 79	16 4 97
	20 23 44 42 9	13 43 54 35	54 67	+ 0 32	100 45 41 89	44 10	+ 2 21	16 2 26
	21 23 44 34 0	13 47 42 03	42 18	+ 0 15	101 7 3 77	2 10	— 1 67	16 4 57
	22 23 44 25 9	13 51 30 54	30 34	— 0 20	101 28 11 87	10 10	— 1 77	16 3 65
	23 23 44 18 0	13 55 19 09	19·19	+ 0 10	101 49 6 86	7 70	+ 0 84	16 2 10
	24 23 44 10 9	13 59 8 54	8 74	+ 0 20	102 9 52 10	54 50	+ 2 40	16 6 12
	25 23 44 4 5	14 2 58 70	59 00	+ 0 30	102 30 31 15	30 00	— 1 1	16 3 47
	27 23 43 54 5	14 10 41 79	41 75	— 0 04	103 11 5 62	5 90	+ 0 28	16 3 54
	28 23 43 49 9	14 14 33 74	34 27	+ 0 53				
	30 23 43 44 6	14 22 21 57	21 64	+ 0 07	104 10 26 10	26 00	— 0 10	16 5 92
	31 23 43 43 4	14 26 16 07	16 54	+ 0 47	104 29 46 29	46 10	— 0 19	16 0 87
Nov	1 23 43 42				104 48 48 73	52 20	+ 3 47	16 3 07
	2 23 43 42 4	14 34 8 95	8 81	— 0 14	105 7 43 44	43 90	+ 0 46	16 4 74
	5 23 43 47				106 2 47 53	48 70	+ 1 17	16 2 74
	6 23 43 51				106 20 40 51	38 80	— 1 71	16 1 83
	7 23 43 55				106 38 12 97	12 40	— 0 57	16 1 97
	8 23 43 59·7	14 58 5 78	5 94	+ 0 16	106 55 30 74	29 10	— 1 64	16 1 61
	9 23 44 5 9	15 2 8 46	8 44	— 0 02	107 12 26 18	28 50	+ 2 32	

Right Ascensions and North Polar Distances of the Sun s Center, (C nt n ed)

Mean Solar Tim f Ob rv tio		A R f m Ob rv ti n.	A R from N A	Err f N A	N P D fr m Ob rv ti	N P D from N A	Err f N A	M H S mid
1844								
Nov 11	23 44 20 5	15 10 16 19	16 02	—0 17	107 45 32 64	33 70	+1 06	16 5 25
13	23 44 38 0	15 18 26 86	26 97	+0 11	108 17 26 25	24 70	—1 55	16 2 92
14	23 44 48·1	15 22 33 52	33 70	+0 18				
15	23 44 59·5	15 26 41 55	41 28	—0 27	108 47 58 98	58 40	—0 58	16 4 23
18	23 45 37 1	15 39 8 87	8 84	—0 03	109 31 16 28	17 00	+0 72	16 2 90
19	23 45 51 8	15 43 20 11	19 66	—0 45	109 45 1 49	1 30	—0 19	16 3 61
20	23 46 6 5	15 47 31 41	31 26	—0 15	109 58 21 18	24 00	+2 82	16 2 57
21	23 46 22 5	15 51 44 10	43 66	—0 44	110 11 22 29	24 60	+2 31	16 5 87
22	23 46 38 5	15 55 56 59	56 83	+0 24	110 24 2 88	3 00	+0 12	16 3 14
24	23 47 14 1	16 4 25 48	25 45	—0 03	110 48 10 51	11 60	+1 09	
25	23 47 33 1	16 8 41 00	40 91	—0 09	110 59 39 63	41 00	+1 37	
26	23 47 53				111 10 44 76	46 90	+2 14	16 2 57
27	23 48 12 7	16 17 13 81	14 02	+0 21	111 21 28 82	28 80	—0 02	16 3 46
28	23 48 33 8	16 21 31 54	31 66	+0 12	111 31 47 06	46 40	—0 66	16 3 52
29	23 48 55 1	16 25 49 54	49 99	+0 45	111 41 39 28	39 50	+0 22	16 4 23
30	23 49 18 3	16 30 9 27	8 99	—0 28	111 51 8 93	7 70	—1 23	16 2 86
Dec 1	23 49 41 5	16 34 29 04	28 67	—0 37	112 0 11 75	10 70	—1·05	16 1 62
2	23 50 4 6	16 38 48 83	48 99	+0 16	112 8 49 68	48 30	—1 38	16 3 2
3	23 50 28 8	16 43 9 59	9 92	+0 33	112 16 58 72	0 20	+1 48	16 6 62
4	23 50 53 8	16 47 31 21	31 42	+0 21	112 24 45 69	46 00	+0 31	16 2 88
5	23 51 19 2	16 51 53 20	53 50	+0 30	112 32 2 13	5 70	+3 57	16 6 17
8	23 52 39				112 51 23 86	25 10	+1 24	
10	23 53 33 7	17 13 51 04	51 32	+0 28	113 2 4 44	2 90	—1 54	16 2 52
11	23 54 2 0	17 18 15 87	16 11	+0 24	113 6 42 10	39·80	—2 30	16 1 93
12	23 54 31				113 10 53 90	51 10	—2 80	
15	23 55 58				113 20 32 08	35 10	+3 02	16 1 7
21	23 58 56				113 27 28 19	24 80	—3 39	16 3 44
23	23 59 56				113 25 51 06	5. 20	+4 14	16 2 28
1845								
Jan. 2	0 4 18 8	18 51 22 27	22 26	—0 01	112 5 58 42	58 40	—0 02	16 8 16
5	0 5 41 5	19 4 34 73	34 78	+0 05	112 37 39 43	40 70	+0 27	16 1 91
8	0 7 1				112 15 19 54	20 70	+1 16	
9	0 7 26				112 7 2 34	1 30	—1 04	16 44
10	0 7 50·7	19 26 27 00	26 57	—0 43	111 58 16 06	16 10	+0 04	16 3 19
11	0 8 14 3	19 30 47 18	47 30	+0 12	111 49 3 82	5 00	+1 18	16 2 77
12	0 8 38 1	19 35 7 65	7 40	—0 25	111 39 31 09	28 60	—2 49	16 3 36
13	0 9 1 0	19 39 27 13	26 88	—0 25	111 29 28 02	27 10	—0 92	16 3 27
15	0 9 45 1	19 48 4 04	13 81	—0 23	111 8 9 00	9 90	+0 90	16 6 98
16	0 10 5 2	19 52 21 23	21·25	+0 02	110 56 53 60	54 80	+1 20	16 3 14
17	0 10 25 2	19 56 37 85	37 96	+0 11	110 45 16 65	15 90	—0 75	16 2 72
18	0 10 44 9	20 0 54 08	53 94	—0 14	110 33 12 23	13 40	+1 17	16 02
19	0 11 3 7	20 5 9 55	9 16	—0 39	110 20 45 96	47 70	+1 74	15 59 73
20	0 11 20 8	20 9 23 34	23 63	+0 29	110 8 0 17	59 20	—0 97	16 0 83
21	0 11 38 4	20 13 37 47	37 35	—0 12	109 54 50 48	48 00	—2 48	16 1 92
22	0 11 54 2	20 17 50·16	50 27	+0 11	109 41 14 04	14 50	+0 46	16 3 10
23	0 12 10 3	20 22 2 50	2 40	—0 10				
24	0 12 25 0	20 26 13 78	13 76	—0 02	109 13 8 09	2 30	—0 79	16 4 24
25	0 12 38 7	20 30 23 99	24 31	+0 32	108 58 24 01	24 30	+0 29	16 2 70
26	0 12 52 4	20 34 34 33	34 07	—0 26	108 43 26 03	25 40	—0 63	16 3 85
27	0 13 4 7	20 38 43 28	43 04	—0 24	108 28 6 45	6 10	—0 3	16 4 67
28	0 13 15 8	20 42 51 09	51 19	+0 10	108 12 28 06	26 80	—1 26	16 3 32
29	0 13 26 5	20 46 58·48	58 54	+0 06	107 56 27 56	27 70	+0 14	16 3 43
30	0 13 36 6	20 51 5 06	5 10	+0 04	107 40 9 58	9 30	—0 28	16 4 17
31	0 13 45 5	20 55 10·49	10 83	+0 34	107 23 32 32	32 00	—0 32	16 5 12
Feb 1	0 13 54 0	20 59 15 54	15 77	+0 23	107 6 35 65	36 20	+0 55	16 5 18
2	0 14 1 8	21 3 19·99	19 91	—0 08	106 49 23 75	22 30	—1 4	16 5 27
3	0 14 9				106 31 52 31	50 80	—1 51	16 6 81

Right Ascensions and North Polar Distances of the Sun's Center, (Continued)

Mean Sol Time of Observation		A R from Observat	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Mean H Semid
1845		m					'	"
Feb 5	0 14 19 2	21 15 27 06	27 43	+ 0 37	105 55 54 86	56 40	+ 1 55	16 5 90
6	0 14 24 1	21 19 28 47	28 31	— 0 16	105 37 34 49	34 40	— 0 09	16 3 21
7	0 14 27 2	21 23 28 09	28 39	+ 0 30	105 18 56 90	56 50	— 0 40	16 5 18
8	0 14 29 9	21 27 27 37	27 68	+ 0 31				
9	0 14 32 2	21 31 26 14	26 15	+ 0 01	104 40 53 10	54 50	+ 1 40	16 4 27
10	0 14 33 2	21 35 23 85	23 84	— 0 01	104 21 31 81	31 30	— 0 51	16 5 43
11	0 14 33 4	21 39 20 50	20 72	+ 0 22	104 1 52 35	53 90	+ 1 55	16 4 70
12	0 14 32 9	21 43 16 60	16 81	+ 0 21	103 42 4 42	2 70	— 1 72	16 5 99
13	0 14 32				103 21 56 48	58 20	+ 1 72	
14	0 14 29 3	21 51 6 06	6 67	+ 0 61	103 1 39 04	40 80	+ 1 76	16 4 01
15	0 14 26 8	21 55 0 10	0 44	+ 0 34	102 41 12 88	10 90	— 1 98	16 3 61
16	0 14 23 6	21 58 53 58	53 48	— 0 10	102 20 24 90	28 80	+ 3 90	16 6 34
17	0 14 19 1	22 2 45 56	45 77	+ 0 21	101 59 35 32	35 10	— 0 22	16 2 77
18	0 14 14 1	22 6 37 11	37 35	+ 0 24	101 38 29 53	30 00	+ 0 47	16 2 08
19	0 14 8 8	22 10 28 29	28 22	— 0 07	101 17 12 07	14 00	+ 1 93	16 3 97
20	0 14 1 9	22 14 17 9[illegible]	18 39	+ 0 44	100 55 47 12	47 50	+ 0 38	16 5 92
21	0 13 54 9	22 18 7 60	7 92	+ 0 32	100 34 12 13	10 90	— 1 23	16 2 01
22	0 13 48				100 12 21 33	24 50	+ 3 17	
23	0 13 39				99 50 30 66	28 80	— 1 86	16 4 03
24	0 13 30 4	22 29 32 62	32 65	+ 0 03	99 28 21 67	24 20	+ 2 53	16 4 87
25	0 13 20 5	22 33 19 44	19 69	+ 0 25	99 6 11 43	10 90	— 0 53	16 2 74
26	0 13 10 7	22 37 6 04	6 16	+ 0 12	98 43 48 01	49 50	+ 1 49	16 4 97
27	0 12 59 9	22 40 51 81	52 07	+ 0 26	98 21 18 00	20 20	+ 2 20	16 3 43
28	0 12 49 0	22 44 37 32	37 4[illegible]	+ 0 13	97 58 40 47	43 50	+ 3 03	16 5 13
Mar 1	0 12 36 9	22 48 21 84	22 34	+ 0 50	97 35 58 57	59 80	+ 1 23	16 5 07
2	0 12 25 3	22 52 6 82	6 71	— 0 11	97 13 6 56	9 40	+ 2 84	16 5 07
3	0 12 12 0	22 55 50 01	50 62	+ 0 61	96 50 8 35	12 80	+ 4 45	16 3 92
4	0 11 59 3	22 59 33 62	34 06	+ 0 44	96 27 10 01	10 50	+ 0 49	16 3 68
5	0 11 45 6	23 3 16 55	17 06	+ 0 51	96 4 3 06	2 60	— 0 46	16 4 65
6	0 11 31 7	23 6 59 17	59 64	+ 0 47				16 1 42
7	0 11 17 2	23 10 41 21	41 81	+ 0 60	95 17 35 04	32 50	— 2 54	16 6 58
8	0 11 2 9	23 14 23 26	23 58	+ 0 32	94 54 13 15	11 00	— 2 15	16 4 78
9	0 10 47 5	23 18 4 45	4 97	+ 0 52	94 30 45 34	45 70	+ 0 36	16 4 67
10	0 10 32 1	23 21 45 66	46 02	+ 0 36	94 7 14 80	17 00	+ 2 20	16 3 45
11	0 10 16 3	23 25 26 34	26 71	+ 0 37	93 43 46 08	45 30	— 0 78	16 2 00
12	0 10 0 1	23 29 6 69	7 08	+ 0 39	93 20 9 17	11 00	+ 1 83	16 2 81
15	0 9 10				92 9 18 12	16 60	— 1 5[illegible]	16 4 78
16	0 8 53							16 2 23
17	0 8 35 4	23 47 24 49	24 61	+ 0 12	91 21 53 76	54 20	+ 0 44	16 5 67
19	0 7 59 4	23 54 41 48	41 99	+ 0 51	90 34 29 69	30 60	+ 0 91	16 3 57
20	0 7 41 2	23 58 19 77	20 40	+ 0 63	90 10 50 76	49 10	— 1 66	16 2 83
21	0 7 23 5	0 1 58 62	58 69	+ 0 07	89 47 6 81	8 30	+ 1 49	16 5 6
22	0 7 5 1	0 5 36 74	36 84	+ 0 10	89 23 28 08	28 50	+ 0 42	16 2 87
23	0 6 46 7	0 9 14 87	14 91	+ 0 04	88 59 49 87	50 10	+ 0 23	16 4 27
24	0 6 27 8	0 12 52 43	52 88	+ 0 45	88 36 13 02	13 40	+ 0 38	16 4 58
25	0 6 9 2	0 16 30 44	30 81	+ 0 37	88 12 38 56	38 70	+ 0 14	16 4 07
26	0 5 50 9	0 20 8 64	8 72	+ 0 08	87 49 6 81	6 40	— 0 41	16 6 65
27	0 5 32 3	0 23 46 49	46 63	+ 0 14	87 25 36 05	36 90	+ 0 8[illegible]	16 6 05
29	0 4 55 3	0 31 2 43	2 55	+ 0 12	86 38 45 25	47 10	+ 1 85	16 2 52
30	0 4 36 5	0 34 40 20	40 58	+ 0 38	86 15 30 85	27 70	— 3 15	
31	0 4 18 1	0 38 18 23	18 71	+ 0 48	85 52 11 67	12 30	+ 0 63	16 3 57
Apr 1	0 3 59 8	0 41 56 41	56 94	+ 0 53	85 29 1 12	1 40	+ 0 28	16 2 28
2	0 3 41 5	0 45 34 72	35 30	+ 0 58	85 5 54 10	55 30	+ 1 20	16 4 63
3	0 3 23 5	0 49 13 25	13 81	+ 0 56	84 42 54 87	54 40	— 0 47	16 6 59
4	0 3 5 8	0 52 52 06	52 47	+ 0 41	84 20 0 87	59 80	— 1 07	16 5 63
5	0 2 48 6	0 56 31 2[illegible]	31 30	+ 0 05	83 57 7 46	9 40	+ 1 94	16 4 81
6	0 2 31 2	1 0 10 43	10 31	— 0 12	83 34 24 05	26 10	+ 2 05	16 5 37

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

Mean Solar Time of Observation	R.A. from Observation	R.A. from N.A.	Error of N.A.	N.P.D. from Observation	N.P.D. from N.A.	Error of N.A.	Mean H. S. mid.
1845							
April 7 0 2 13 9	1 3 49 65	49 54	—0 11	83 11 50 12	49 30	—0 82	16 7 37
8 0 1 56 5	1 7 28 73	28 99	+ 0 26	82 48 16 62	19·60	+ 2 98	16 7 78
9 0 1 39 8	1 11 8 68	8 67	+ 0 09	82 26 58 91	57 20	—1 71	16 6 65
10 0 1 23 4	1 14 48 56	48 58	+ 0 02	82 4 42 64	42 50	—0 14	16 4 43
11 0 1 6 8	1 18 28 53	28 75	+ 0 22	81 42 35 73	35 80	+ 0 07	16 4 72
12 0 0 51 1	1 22 9 44	9 20	—0 24	81 20 39 21	37 40	—1 81	16 3 38
13 0 0 35 0	1 25 49 83	49 93	+ 0 10	80 58 45 22	47 80	+ 2 58	16 2 17
14 0 0 19 5	1 29 30 73	30 98	+ 0 25	80 37 6 46	7 30	+ 0 84	16 2 92
15 0 0 4 4	1 33 12 25	12 33	+ 0 08	80 15 34 82	36 10	+ 1 28	16 3 06
15 23 59 49 5	1 36 53 87	54 03	+ 0 16	79 54 12 71	14 70	+ 1 99	16 2 67
16 23 59 34 8	1 40 35 69	36 07	+ 0 38	79 33 1 74	3 20	+ 1 46	16 2 [illegible]2
17 23 59 20 7	1 44 18 02	18 49	+ 0 47	79 12 5 98	2 20	— 3 78	16 3 41
18 23 59 7 3	1 48 1 20	1 27	+ 0 07	78 51 12 57	11 90	—0 67	15 59 27
19 23 58 54 2	1 51 44·54	44 47	—0 07	78 30 30 97	32 50	+ 1 53	16 3 85
20 23 58 40 9	1 55 27 77	28 08	+ 0 31	78 10 2 25	4 40	+ 2 15	16 1 08
21 23 58 28 1	1 59 11 57	12 13	+ 0 56	77 49 46 56	47 90	+ 1 34	16 5 08
22 23 58 16 4	2 2 56 30	56 60	+ 0 30	77 29 42 51	43 40	+ 0 89	16 2 63
23 23 58 5 1	2 6 41 53	41 56	+ 0 03	77 9 51 71	51 10	—0 61	16 4 92
24 23 57 54 2	2 10 27 10	27 00	—0 10	76 50 11 23	11 40	+ 0 17	16 3 83
25 23 57 43 4	2 14 12 87	12 95	+ 0 08	76 30 44 67	44 40	—0 27	16 2 52
26 23 57 33 3	2 17 59 32	59 39	+ 0 07				
27 23 57 23 9	2 21 46 31	46 35	+ 0 04	75 52 30 11	30 60	+ 0 49	16 6 0
28 23 57 14 8	2 25 33 78	33 86	+ 0 08	75 33 43 48	44 30	+ 0 82	16 4 93
29 23 57 6 3	2 29 21 82	21 91	+ 0 09	75 15 8 64	12 00	+ 3 36	16 8 68
30 23 56 58 3	2 33 10 31	10 50	+ 0 19	74 [illegible]6 53 78	54 30	+ 0 [illegible]2	16 3 52
May 1 23 56 51 0	2 36 59 66	59 66	0 00	74 38 51 14	51 50	+ 0 36	16 3 98
2 23 56 44 0	2 40 49 22	49 38	+ 0 16	74 21 3 54	3 70	+ 0 16	16 6 87
3 23 56 38 1	2 44 39 81	39·65	—0 16	74 3 35 33	31 30	—4 03	16 0 68
6 23 56 23				73 12 30 10	30 40	+ 0 30	16 1 97
7 23 56 19				72 56 4 83	3 20	—1 63	16 3 77
9 23 56 12							16 1 42
10 23 56 10 2	3 11 47 60	47 3	—0 07	72 8 21 92	2[illegible] 00	+ 3 08	15 59 95
11 23 56 8 6	3 15 42 62	42 34	—0 28	71 53 8 82	7 80	—1 02	16 5 89
12 23 56 7				71 38 8 79	8 80	+ 0 01	16 1 01
13 23 56 7				71 23 29 81	28 40	—1 41	16 4 70
14 23 56 6				71 9 4 62	6 70	+ 2 08	16 1 68
15 23 56 6 9	3 31 27 16	27 13	—0 03	70 55 4 59	4 20	—0 39	16 1 [illegible]0
16 23 56 8 1	3 35 24 81	24 74	—0 07	70 41 22 59	21 00	—1 [illegible]9	16 3 92
17 23 56 9 6	3 39 22 89	22 86	—0 03	70 27 57 52	57 50	—0 02	16 3 65
18 23 56 11 9	3 43 21 71	21 53	—0 18	70 14 52 34	53 70	+ 1 36	16 3 54
19 23 56 14 6	3 47 21 11	20 76	—0 35	70 2 13 17	10 20	—2 97	16 1 95
20 23 56 17 4	3 51 20 40	20 52	+ 0 12	69 49 45 90	46 90	+ 1 00	16 4 05
21 23 56 21 2	3 55 20 76	20 82	+ 0 06	69 37 43 8[illegible]	44 30	+ 0 45	16 1 12
22 23 56 25 5	3 59 21 58	21 67	+ 0 09	69 26 2 17	2 50	+ 0 33	15 59 96
23 23 56 30 2	4 3 22 96	23 03	+ 0 07	69 14 42 42	41 80	—0 62	16 3 47
24 23 56 35 6	4 7 24 90	24 93	+ 0 03	69 3 39 86	42 30	+ 2 44	16 0 84
25 23 56 41 4	4 11 27 24	27 35	+ 0 11				
26 23 56 47 7	4 15 30 21	30 26	+ 0 05	68 42 46 56	48 60	+ 2 04	16 2 92
27 23 56 54 6	4 19 33 73	33 69	—0 04	68 32 54 50	54 50	0 00	15 59 68
28 23 57 2				68 23 21 82	22 60	+ 0 78	15 59 33
29 23 57 9 7	4 27 41 83	41 97	+ 0 14	68 14 13 38	13 20	—0 18	15 59 70
30 23 57 17 7	4 31 46 55	46 80	+ 0 25	68 5 25 32	26 40	+ 1 08	16 0 84
31 23 57 26 4	4 35 51 84	52 06	+ 0 22	67 57 0 23	2 40	+ 2 17	16 2 67
June 1 23 57 35 8	4 39 57 79	57 77	—0 02	67 49 3 25	1 30	—1 95	16 0 93
2 23 57 45 1	4 44 3 58	3 86	+ 0 28	67 41 23 20	23 40	+ 0 20	16 4 70
3 23 57 54 8	4 48 9 83	10 36	+ 0 53	67 34 10 31	8 90	—1 41	16 2 18
4 23 58 5 0	4 52 16 64	17 19	+ 0 55	67 27 16 96	17 90	+ 0 94	16 3 01

Right Ascensions and North Polar Distances of the Sun s Center (Continued)

M S I Tim f Ob ti	A R fr m Ob rv ti	A R from N A	E f N A	N P D from Ob rv tion	N P D from N A	Erro f N A	M an H S mid
1845							
J 5 23 58 15 7	4 56 24 09	24 37	+ 0 28	67 20 51 49	50 60	— 0 89	16 1 17
6 23 58 27 0	5 0 31 91	31 87	— 0 04	67 14 46 46	47 00	+ 0 54	16 0 57
7 23 58 37 8	5 4 39 28	39 64	+ 0 36	67 9 7 72	7 50	— 0 2	16 4 07
8 23 58 49 4	5 8 47 34	47 68	+ 0 34	67 3 52 10	51 90	— 0 20	16 4 72
9 23 59 1 0	5 12 55 70	55 97	+ 0 27	66 58 59 52	0 50	+ 0 98	16 4 98
11 23 59 25				66 50 32 21	30 50	— 1 71	16 2 08
12 23 59 37 1	5 25 21 65	22 01	+ 0 36	66 46 51 27	52 30	+ 1 03	16 2 74
13 23 59 50				66 43 38 21	38 40	+ 0 19	16 1 59
16 0 0 14 7	5 37 48 92	49 39	+ 0 47	66 38 26 65	24 60	— 2 05	16 7 17
17 0 0 27 4	5 41 58 25	58 72	+ 0 47	66 36 25 16	24 80	— 0 36	16 2 10
18 0 0 40 4	5 46 7 81	8 13	+ 0 32	66 34 48 39	49 60	+ 1 21	16 3 07
19 0 0 53 0	5 50 17 07	17 57	+ 0 50	66 33 38 15	39 20	+ 1 05	16 2 96
20 0 1 6 2	5 54 26 86	27 03	+ 0 17	66 32 53 80	53 60	— 0 20	16 1 19
24 0 1 58				66 33 59 15	59 40	+ 0 25	16 1 22
25 0 2 10				66 35 17 46	17 80	+ 0 34	16 2 22
26 0 2 23				66 37 0 16	1 00	+ 0 84	16 3 89
28 0 2 47 9	6 27 41 17	41 39	+ 0 22				
29 0 3 0 0	6 31 50 01	50 19	+ 0 18	66 44 36 33	38 40	+ 2 07	
30 0 3 12				66 47 59 88	59 90	+ 0 02	16 3 34
J ly 1 0 3 24				66 51 46 12	45 90	— 0 22	
2 0 3 35 5	6 44 15 18	15 40	+ 0 22	66 55 56 49	56 20	— 0 29	16 3 63
3 0 3 46 6	6 48 22 91	23 31	+ 0 40	67 0 30 23	30 70	+ 0 47	16 0 67
4 0 3 58 0	6 52 30 83	30 95	+ 0 12	67 5 31 49	29 30	— 2 19	16 5 0[illegible]
5 0 4 8 7	6 56 38 17	38 26	+ 0 09	67 10 54 21	51 80	— 2 41	16 1 77
6 0 4 19 2	7 0 45 09	45 24	+ 0 15	67 16 36 33	38 10	+ 1 77	16 1 48
7 0 4 29 3	7 4 51 84	51 88	+ 0 04	67 22 45 64	48 10	+ 2 46	16 1 86
8 0 4 38 9	7 8 7 99	58 12	+ 0 13	67 29 21 80	21 40	— 0 40	16 2 59
11 0 5 5 4	7 21 14 40	14 37	— 0 03	67 51 18 66	20 90	+ 2 24	16 3 60
12 0 5 13 2	7 25 18 66	18 89	+ 0 23	67 59 28 94	26 50	— 2 44	16 5 23
13 0 5 20 7	7 29 22 81	22 94	+ 0 13	68 7 53 04	54 80	+ 1 76	16 2 27
14 0 5 28				68 16 46 74	45 60	— 1 14	16 1 08
15 0 5 34				68 26 1 00	58 50	— 2 50	
16 0 5 40				68 35 35 35	33 30	— 2 05	16 4 31
17 0 5 46				68 45 31 33	30 00	— 1 33	16 2 06
18 0 5 50 3	7 49 35 40	35 59	+ 0 19	68 55 48 62	48 40	— 0 22	16 2 03
20 0 5 59				69 17 29 14	29 00	— 0 14	15 57 89
21 0 6 1 6	8 1 36 35	36 82	+ 0 47	69 28 52 87	50 80	— 2 07	16 2 12
22 0 6 4 5	8 5 35 88	36 12	+ 0 24	69 40 35 70	33 30	— 2 40	16 3 97
23 0 6 7				69 52 35 51	36 30	+ 0 79	16 0 17
24 0 6 9				70 5 1 11	59 70	— 1 41	16 2 74
25 0 6 9·7	8 17 30 63	30 67	+ 0 04	70 17 43 25	42 90	— 0 35	16 1 39
26 0 6 10				70 30 47 20	46 00	— 1 20	16 1 86
27 0 6 10 0	8 25 24 12	24 20	+ 0 08	70 44 6 91	8 60	+ 1 69	16 1 03
29 0 6 7 9	8 33 15 07	15 41	+ 0 34	71 11 54 32	50 90	— 3 42	15 59 50
30 0 6 6 0	8 37 9 80	10 14	+ 0 34	71 26 12 05	10 10	— 1 95	15 58 91
31 0 6 4 1	8 41 4 39	4 27	— 0 12				
Aug 1 0 6 1 3	8 44 58 00	57 82	— 0 18	71 55 43 78	43 50	— 0 28	16 1 92
2 0 5 57 4	8 48 50 78	50 76	— 0 02	72 10 58 92	57 00	— 1 92	16 3 58
3 0 5 53 1	8 52 43 02	43 11	+ 0 09	72 26 25 74	27 80	+ 2 06	16 4 56
4 0 5 48				72 42 17 54	15 90	— 1 64	16 2 56
5 0 5 42 7	9 0 25 67	25 99	+ 0 32				
6 0 5 37				73 14 41 13	41 90	+ 0 77	16 0 88
8 0 5 23				73 48 15 34	12 90	— 2 44	15 59 51
9 0 5 15 0	9 15 44 11	44 49	+ 0 38	74 5 22 54	21 80	— 0 74	15 58 76
12 0 4 48 1	9 27 6 73	7 08	+ 0 35	74 58 20 71	18 80	— 1 91	16 4 48
13 0 4 38 1	9 30 53 22	53 45	+ 0 23	75 16 27 91	27 00	— 0 91	16 3 06
14 0 4 28				75 34 50 78	49 20	— 1 58	16 1 57

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN S CENTER *(Cont nued)*

Mea S lar Tim f Observ ti	A R fr m Ob rvati n.	A R fr m N A.	Erro f N A	N P D from Ob rv ti	N P D from N A.	Er f N A	M an H S mid.
1845	m						
A g 16 0 4 4				76 12 18 60	14 40	— 4 20	16 4 52
17 0 3 52				76 31 13 41	16 90	+ 3 49	16 1 22
18 0 3 39				76 50 36 58	32 20	— 4 38	16 0 86
19 0 3 26				77 10 2 42	0 20	— 2 22	16 2 50
20 0 3 12				77 29 41 30	40 30	— 1 00	
21 0 2 57 6	10 0 44 99	45 11	+ 0 12				
22 0 2 42 4	10 4 26 39	26 87	+ 0 48	78 9 35 66	36 30	+ 0 64	16 2 48
23 0 2 27 3	10 8 7 81	8 19	+ 0 38	78 29 51 39	51 50	+ 0 11	16 1 82
24 0 2 11 9	10 11 48 90	49 10	+ 0 20	78 50 19 79	17 70	— 2 09	15 59 88
25 0 1 55 6	10 15 29 07	29 59	+ 0 52	79 10 56 73	54 60	— 2 13	16 3 50
28 0 1 5 6	10 26 28 62	28 81	+ 0 19	80 13 46 61	46 60	— 0 01	16 1 6
29 0 0 47 9	10 30 7 43	7 81	+ 0 38	80 35 5 60	3 30	— 2 30	15 59 8
30 0 0 31				80 56 29 39	29 00	— 0 39	16 1 50
31 23 59 54				81 39 46 14	46 20	+ 0 06	16 2 30
Sept 1 23 59 34 9	10 44 40 34	40 67	+ 0 33	82 1 37 42	37 10	— 0 32	16 3 06
2 23 59 16				82 23 35 87	35 60	— 0 27	16 2 78
3 23 58 57				82 45 41 52	41 60	+ 0 08	16 4 71
4 23 58 37				83 7 56 02	54 50	— 1 52	16 1 15
6 23 57 58				83 52 38 91	40 00	+ 1 09	15 58 ͜2
7 23 57 37 4	11 6 21 84	21 76	— 0 08	84 15 10 98	11 00	+ 0 02	16 3 67
8 23 57 17 0	11 9 57 98	57 84	— 0 14	84 37 49 77	49 70	— 0 07	16 3 16
9 23 56 56 1	11 13 33 50	33 74	+ 0 24	85 0 32 68	32 70	+ 0 02	16 2 12
11 23 56 14 7	11 20 45 06	45 10	+ 0 04	85 46 16 28	13 50	— 2 78	16 ͜ 49
12 23 55 53 2	11 24 20 13	20 62	+ 0 49	86 9 10 76	10 70	— 0 06	16 5 10
13 23 55 32				86 32 11 68	11 90	+ 0 22	16 3 ͜7
14 23 55 11				86 55 18 35	16 90	— 1 45	16 4 03
17 23 54 7 5	11 42 17 01	17 27	+ 0 26	88 4 52 89	51 50	— 1 39	16 3 85
18 23 53 46 6	11 45 52 49	52 59	+ 0 10	88 28 7 71	8 40	+ 0 69	16 6 34
19 23 53 25 3	11 49 27 72	27 97	+ 0 25	88 51 28 92	27 70	— 1 22	1ſ 4 43
20 23 53 4 5	11 53 3 40	3 42	+ 0 02	89 14 50 62	48 80	— 1 82	1ſ 3 10
21 23 52 44				89 38 11 48	11 50	+ 0 02	16 0 17
23 23 52 1 9	12 3 50 31	50 43	+ 0 12	90 25 1 72	0 10	— 1 62	16 1 11
24 23 51 41 2	12 7 26 15	26 41	+ 0 26	90 48 28 13	25 40	— 2 73	1(4 7
25 23 51 20 6	12 11 2 01	2 56	⊦ 0 55	91 11 51 47	50 80	— 0 67	16 1 15
26 23 51 0 7	12 14 38 64	38 93	+ 0 29	91 3͜ 16 81	16 00	— 0 81	16 3 58
28 23 50 21 1	12 21 52 02	52 32	+ 0 30	92 22 6 29	4 50	— 1 79	1ſ 6 92
29 23 50 1 4	12 25 28 85	29 41	+ 0 56	92 45 28 82	27 10	— 1 72	16 4 41
30 23 49 42 8	12 29 6 53	6 75	+ 0 22	93 8 49 19	47 90	— 1 29	16 6 55
Oct 1 23 49 24 0	12 32 44 29	44 39	+ 0 10	93 32 3 93	6 70	+ 2 77	16 3 30
2 23 49 5 3	12 36 21 98	22 32	+ 0 34	93 56 26 56	23 10	— 3 46	16 4 5
3 23 48 47				94 18 37 00	36 70	— 0 30	16 4 87
4 23 48 29 2	12 43 38 94	39 18	+ 0 24	94 41 47 75	47 10	— 0 65	16 4 74
5 23 48 11 4	12 47 17 74	18 13	+ 0 39	95 4 56 44	54 10	— 2 34	16 3 16
6 23 47 54 2	12 50 57 08	57 47	+ 0 39	95 27 57 47	57 10	— 0 37	16 2 52
8 23 47 21 2	12 58 17 13	17 32	+ 0 19	96 13 48 65	50 00	+ 1 35	16 6 53
10 23 46 50 0	13 5 38 90	38 87	— 0 03	96 59 25 29	22 80	— 2 49	16 5 34
11 23 46 35 1	13 9 20 59	20 35	— 0 24				
16 23 45 28				99 13 35 34	32 40	— 2 94	16 0 68
17 23 45 16				99 35 28 86	28 40	— 0 46	1͜ ͜9 11
18 23 45 4 2	13 35 25 33	25 69	+ 0 36				
19 23 44 54 2	13 39 11 70	11 69	— 0 01	100 18 56 85	55 20	— 1 65	16 2 74
20 23 44 44 3	13 42 58 25	58 36	+ 0 11	100 40 27 89	25 30	— 2 59	
21 23 44 34 9	13 46 45 52	45 72	+ 0 20	101 1 47 91	45 80	— 2 11	16 1 81
22 23 44 26 6	13 50 33 70	33 76	+ 0 06				16 4 97
23 23 44 18 5	13 54 22 22	22 52	+ 0 30	101 43 56 11	57 20	+ 1 09	16 5 60
24 23 44 12 0	13 58 12 15	12 00	— 0 15	102 4 50 24	47 20	— 3 04	16 4 34
26 23 43 59 8	14 5 53 24	53 18	— 0 06	102 45 52 79	53 40	+ 0 61	16 2 74

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

Mean Solar Time of Observation	A. R. from Observation	A. R. from N. A.	Error of N. A.	N. P. D. from Observation	N. P. D. from N. A.	Error of N. A.	M H S m d
1845							′ ″
Oct 29 23 43 48				103 46 5 38	2 70	— 2 68	15 59·69
30 23 43 45 2	14 21 24 61	24 73	+ 0 12	104 5 42 60	40 10	— 2 50	16 6 63
31 23 43 43 5	14 25 19 49	19 58	+ 0 09	104 25 3 24	3 90	+ 0 66	16 2 01
Nov 1 23 43 42 7	14 29 15 14	15 22	+ 0 08	104 44 15 51	13 80	— 1 71	16 4 32
2 23 43 42 7	14 33 11 80	11 67	— 0 13	105 3 12 56	9 30	— 3 26	16 4 16
3 23 43 43 2	14 37 8 84	8 91	+ 0 07	105 21 50 16	49 90	— 0 26	16 3 74
4 23 43 44 9	14 41 7 02	6 97	— 0 05	105 40 17 50	15 30	— 2 20	16 3 10
5 23 43 47 8	14 45 5 49	5 84	+ 0 35	105 58 25 33	25 10	— 0 23	16 5 29
6 23 43 50 3	14 49 5 61	5 53	— 0 08	106 16 19 80	18 80	— 1 00	16 4 72
7 23 43 54 1	14 53 6 03	6 03	0 00				16 3 14
8 23 43 59 0	14 57 7 46	7 37	— 0 09	106 51 15 80	16 60	+ 0 80	
9 23 44 4 9	15 1 9 91	9 52	— 0 39	107 8 19 99	19 80	— 0 19	16 1 92
13 23 44 35				108 13 31 37	32 30	+ 0 93	16 3 18
15 23 44 55 6	15 25 40 05	40 17	+ 0 12				
16 23 45 7 4	15 29 48 44	48 24	— 0 20	108 59 6 71	6 50	— 0 21	16 4 07
17 23 45 19 4	15 33 57 08	57 16	+ 0 08	109 13 36 24	37 80	+ 1 56	16 5 01
20 23 46 1 5	15 46 28 92	28 95	+ 0 03	109 55 7 38	5 90	— 1 48	16 5 01
21 23 46 17 1	15 50 41 18	41 22	+ 0 04	110 8 12 36	12 20	— 0 16	16 5 03
23 23 46 51 2	15 59 8 45	8 18	— 0 27	110 33 19 58	17 70	— 1 88	16 7 83
24 23 47 9 0	16 3 22 83	22 85	+ 0 02	110 45 11 37	16 30	+ 4 93	16 3 64
25 23 47 28 2	16 7 38 55	38 28	— 0 27	110 56 51 69	51 80	+ 0 11	16 3 01
26 23 47 47 6	16 11 54 62	54 47	— 0 15	111 8 1 92	3 60	+ 1 68	16 5 34
27 23 48 8 0	16 16 11 58	11 41	— 0 17	111 18 50 47	51 60	+ 1 13	16 0 99
28 23 48 29 0	16 20 29 23	29 06	— 0 17	111 29 14 52	15 30	+ 0 78	16 5 23
Dec 2 23 49 59				112 6 40 55	41 90	+ 1 35	16 0 92
3 23 50 23 9	16 42 7 19	7 04	— 0 15				
4 23 50 48 3	16 46 28 35	28 40	+ 0 05				16 6 47
5 23 51 13 5	16 50 50 14	50 30	+ 0 16				
8 23 52 32 4	17 3 58 88	58 95	+ 0 07	112 50 0 44	57 20	— 3 24	16 3 54
9 23 52 59				112 55 42 05	36 50	— 5 55	
10 23 53 27 0	17 12 46 76	46 89	+ 0 13	113 0 50 08	48 50	— 1 58	16 1 77
11 23 53 55				113 5 35 39	33 00	— 2 39	16 0 53
12 23 54 23				113 9 52 11	50 10	— 2 01	16 3 16
13 23 54 52 0	17 26 1 68	1 48	— 0 20	113 13 42 39	39 [illegible]0	— 2 89	16 0 58
16 23 56 19				113 22 23 37	20 30	— 3 07	
17 23 56 48				113 24 21 45	17 90	— 3 55	16 3 14
21 23 58 48 2	18 1 31 01	30 88	— 0 13	113 27 26 98	25 30	— 1 68	16 4 74
22 23 59 18				113 27 4 04	1 40	— 2 64	
28 0 1 47 8	18 28 10 39	10 29	— 0 10				
30 0 2 46 6	18 37 2 51	2 32	— 0 19				
31 0 3 15 4	18 41 27 93	27 96	+ 0 03				
1846							
Ja 1 0 3 44				113 2 16 94	16 50	— 0 44	16 5 93
2 0 4 12				112 57 15 55	12 00	— 3 55	16 1 25
5 0 5 35 2	19 3 30 97	31 04	+ 0 07	112 39 16 27	14 70	— 1 57	16 5 38
6 0 6 2 1	19 7 54 50	54 40	— 0 10	112 32 23 31	21 60	— 1 71	16 5 52
9 0 7 19 0	19 21 1 21	1 42	+ 0 21	112 8 59 01	3 30	+ 4 29	
10 0 7 43 6	19 25 22 4[illegible]	22 70	+ 0 25				16 7 94
11 0 8 8				111 51 22 76	20 70	— 2 06	16 6 85
12 0 8 31 3	19 34 3 39	3 44	+ 0 05	111 41 51 59	51 00	— 0 59	16 8 63
13 0 8 54 1	19 38 22 91	22 90	— 0 01	111 31 58 82	56 10	— 2 72	16 6 94
14 0 9 16 5	19 42 41 89	41 73	— 0 16	111 21 35 51	36 20	+ 0·69	16 8 99
15 0 9 37 7	19 46 59 68	59 90	+ 0 22	111 10 53 22	51 70	— 1 52	16 5 38
16 0 9 59				110 59 42 70	42 80	+ 0 10	16 4 27
17 0 10 19 1	19 55 34 35	34 24	— 0 11	110 48 12 23	9 80	— 2 43	16 5 57
18 0 10 38 3	19 59 50 05	50 37	+ 0 32	110 36 11 39	13 00	+ 1 61	16 7 63
19 0 10 57 5	20 4 5 93	5 79	— 0 14	110 23 57 29	52 80	— 4 49	16 1 05

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN'S CENTER, (Continued.)

		Mean Sol. Time of Observation	A. R. from Observation	A. R. from N. A.	Error of N. A.	N. P. D. from Observation.	N. P. D. from N. A.	Error of N. A.	M. Sun's Semid.
1846		m	m				′		
Jan	20	0 11 16				110 11 11 96	9 50	—2 46	16 3 37
	21	0 11 32 7	20 12 34 34	34 48	+0 14	109 58 6 77	3 40	—3 37	16 2 12
	22	0 11 49 3	20 16 47 63	47 70	+0 07	109 44 37 13	34 90	—2 23	16 6 72
	23	0 12 4 9	20 20 59 68	0 16	+0 48	109 30 44 37	44 30	—0 07	16 4 91
	24	0 12 20 2	20 25 11 65	11 85	+0 20	109 16 31 80	32 10	+0 30	16 4 38
	25	0 12 34 9	20 29 22 94	22 77	—0 17	109 1 55 77	58 60	+2 83	16 2 26
	26	0 12 48 5	20 33 32 58	32 87	+0 29	108 47 2 63	4 20	+1 57	16 3 23
	27	0 13 1 2	20 37 41 88	42 17	+0 29	108 31 50 69	49 40	—1 29	
	28	0 13 13 0	20 41 50 43	50 65	+0 22				16 6 05
	29	0 13 24 2	20 45 58 04	58 33	+0 29	108 0 22 09	19 90	—2 19	16 5 05
	30	0 13 34				107 44 6 04	6 10	+0 06	16 4 70
Feb	2	0 14 0 0	21 2 20 77	20 64	—0 13	106 53 35 75	33 00	—2 75	16 7 14
	3	0 14 6 6	21 6 23 87	24 11	+0 24	106 36 6 59	6 20	—0 39	
	4	0 14 12 8	21 10 26 68	26 73	+0 05	106 18 21 70	22 30	+0 60	16 6 34
	5	0 14 18 1	21 14 28 55	28 51	—0 04	106 0 22 33	21 50	—0 83	16 6 34
	6	0 14 22 3	21 18 29 39	29 46	+0 07	105 42 5 30	4 40	—0 90	
	7	0 14 26				105 23 30 75	31 20	+0 45	
	9	0 14 30 6	21 30 27 28	27 39	+0 11	104 45 41 77	38 50	—3 27	16 3 41
	10	0 14 31 9	21 34 25 17	25 06	—0 11				16 4 38
	11	0 14 32 7	21 38 22 46	21 98	—0 48	104 6 46 64	46 80	+0 16	16 5 76
	12	0 14 31 8	21 42 18 19	18 11	—0 08	103 46 59 73	59 70	—0 03	16 2 41
	13	0 14 30 4	21 46 13 40	13 47	+0 07	103 26 59 54	59 00	—0 54	16 1 99
	15	0 14 26 0	21 54 2 01	2 00	—0 01	102 46 14 24	18 60	+4 36	16 4 46
	16	0 14 22 6	21 57 55 21	55 16	—0 05	102 25 40 60	39 50	—1 10	16 3 47
	17	0 14 18				102 4 49 19	48 40	—0 79	16 2 52
	18	0 14 13 9	22 6 39 55	39 40	—0 15				16 0 35
	19	0 14 8 5	22 9 30 74	30 50	—0 24	101 22 31 79	32 10	+0 31	16 1 97
	20	0 14 2 2	22 13 20 90	20 93	+0 03	101 1 6 55	7 60	+1 05	16 2 78
	21	0 13 55 3	22 17 10 55	10 74	+0 19	100 39 29 38	32 80	+3 42	16 3 24
	23	0 13 40 3	22 24 48 61	48 42	—0 19	99 55 49 02	53 90	+4 88	16 5 38
	24	0 13 31 8	22 28 36 63	36 34	—0 29	99 33 49 97	50 70	+0 73	16 0 37
	25	0 13 22 6	22 32 24 03	23 67	—0 36	99 11 38 07	38 80	+0 73	16 4 23
	26	0 13 12 6	22 36 10 51	10 39	—0 12	98 49 18 12	18 80	+0 68	16 1 92
	27	0 13 2 2	22 39 56 57	56 57	0 00	98 26 51 05	51 00	—0 05	16 2 74
	28	0 12 51 1	22 43 42 09	42 18	+0 09	98 4 16 43	15 80	—0 63	16 1 57
Mar	1	0 12 39 7	22 47 27 15	27 25	+0 10				16 6 05
	2	0 12 27 9	22 51 11 85	11 79	—0 06	97 18 45 40	44 90	—0 50	16 3 85
	3	0 12 15 2	22 54 55 69	55 82	+0 13	96 55 49 44	50 10	+0 66	16 1 61
	4	0 12 2 4	22 58 39 51	39 36	—0 15	96 32 49 12	49 60	+0 48	16 2 97
	5	0 11 48 8	23 2 22 28	22 40	+0 12	96 9 44 25	43 70	—0 55	16 0 50
	6	0 11 35 0	23 6 5 03	5 01	—0 02	95 46 34 18	32 90	—1 28	16 2 50
	7	0 11 20 7	23 9 47 25	47 15	—0 10	95 23 19 88	17 40	—2 48	16 2 83
	8	0 11 5 9	23 13 29 03	28 89	—0 14	94 59 58 83	57 80	—1 03	16 0 77
	9	0 10 50 7	23 17 10 31	10 23	—0 08	94 36 34 07	34 40	+0 33	16 2 50
	10	0 10 35 1	23 20 51 15	51 18	+0 03	94 13 10 78	7 50	—3 28	16 1 23
	11	0 10 19 1	23 24 31 74	31 80	+0 06	93 49 34 17	37 60	+3 43	16 2 83
	12	0 10 3				93 26 2 60	4 80	+2 20	16 1 32
	13	0 9 46				93 2 30 87	29 60	—1 27	16 2 10
	14	0 9 29 4	23 35 31 56	31 74	+0 18	92 38 50 66	52 50	+1 84	16 1 03
	15	0 9 13				92 15 15 78	13 70	—2 08	
	16	0 8 55 3	23 42 50 38	50 40	+0 02	91 51 32 40	33 50	+1 10	16 2 41
	17	0 8 37 9	23 46 29 52	29 40	—0 12	91 27 51 07	52 20	+1 13	15 58 85
	18	0 8 19 9	23 50 7 97	8 22	+0 25	91 4 11 17	10 40	—0 77	
	19	0 8 2 3	23 53 46 98	46 87	—0 11	90 40 30 48	28 30	—2 18	15 58 92
	20	0 7 44 6	23 57 24 92	25 38	+0 46	90 16 45 92	46 30	+0 38	16 1 86
	21	0 7 26 0	0 1 3 68	3 77	+0 09				16 0 26
	22	0 7 8 1	0 4 42 29	42 06	—0 23	89 29 24 43	24 10	—0 33	16 1 27

Right Ascensions and North Polar Distances of the Sun's Center (*Continued*)

Mean Solar Time of Observation		A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Mean Hor Semid
1846					° ′ ″			′
Mar	23 0 6 49 5	0 8 20 17	20 26	+ 0 09	89 5 42 06	44 50	+ 2 44	16 3 85
	24 0 6 31 7	0 11 58 82	58 40	— 0 42				16 1 37
	25 0 6 12 7	0 15 36 29	36 50	+ 0 21	88 18 31 12	30 70	— 0 42	16 3 36
	26 0 5 54 5	0 19 14 63	14 57	— 0 06	87 54 57 36	57 00	— 0 36	16 3 30
	27 0 5 36 0	0 22 52 55	52 63	+ 0 08	87 31 21 77	26 00	+ 4 23	16 4 55
	28 0 5 17 6	0 26 30 63	30 70	+ 0 07	87 7 54 81	58 00	+ 3 19	16 1 76
	29 0 4 59 0	0 30 8 62	8 79	+ 0 17	86 44 34 11	33 50	— 0 61	16 2 46
	30 0 4 41 1	0 33 47 27	46 92	— 0 35	86 21 10 54	13 30	+ 2 76	16 3 21
	31 0 4 22	0 37 25 06	25 10	+ 0 04	85 57 57 41	56 20	— 1 21	16 4 54
April	1 0 4 4 0	0 41 3 06	3 34	+ 0 28	85 34 42 05	44 20	+ 2 15	16 3 14
	2 0 3 45 6	0 44 41 28	41 67	+ 0 39	85 11 35 11	37 00	+ 1 89	16 4 07
	3 0 3 28 0	0 48 20 11	20 11	0 00	84 48 33 31	35 10	+ 1 79	16 1 55
	4 0 3 10				84 25 37 75	38 80	+ 1 05	16 2 57
	0 2 51 9	0 55 37 04	37 37	+ 0 33	84 2 46 62	48 40	+ 1 78	16 2 32
	6 0 2 34 4	0 59 15 99	16 23	+ 0 24	83 40 2 62	4 10	+ 1 48	16 1 04
	7 0 2 17				83 17 24 59	26 50	+ 1 91	16 3 56
	8 0 1 59 7	1 6 34 36	34 51	+ 0 15	82 54 54 39	55 80	+ 1 41	16 1 26
	9 0 1 42 7	1 10 13 89	13 97	+ 0 08	82 32 27 85	32 30	+ 4 45	16 1 35
	10 0 1 26 0	1 13 53 63	53 67	+ 0 04	82 10 16 08	16 40	+ 0 32	16 2 59
	11 0 1 9 7	1 17 33 88	33 64	— 0 24	81 48 11 34	8 10	— 3 24	16 2 45
	12 0 0 53 3	1 21 13 95	13 88	— 0 07	81 26 9 06	8 50	— 0 56	16 1 43
	13 0 0 37 1	1 24 54 25	54 41	+ 0 16	81 4 16 64	17 20	+ 0 56	15 59 78
	14 0 0 22				80 42 34 32	34 60	+ 0 28	15 59 76
	15 0 0 6 7	1 32 16 91	16 52	— 0 39	80 21 0 91	1 20	+ 0 29	16 4 54
	15 23 59 51 3	1 35 58 03	58 11	+ 0 08	79 59 37 48	37 30	— 0 18	16 1 28
	16 23 59 37				79 38 21 83	23 20	+ 1 37	16 3 83
	17 23 59 23				79 17 16 81	19 30	+ 2 49	16 1 37
	19 23 58 56				78 35 41 51	43 10	+ 1 59	16 2 46
	20 23 58 43				78 15 9 40	11 50	+ 2 10	16 2 12
	21 23 58 30 2	1 58 16 00	16 15	+ 0 15	77 54 50 18	51 50	+ 1 32	16 1 50
	22 23 58 18 2	2 2 0 61	0 70	+ 0 09	77 34 40 84	43 30	+ 2 46	16 2 37
	23 23 58 7 2	2 5 46 09	45 72	— 0 37	77 14 43 27	47 20	+ 3 93	16 4 31
	24 23 57 56				76 55 3 31	3 70	+ 0 39	15 59 96
	25 23 57 45 2	2 13 17 13	17 21	+ 0 08	76 35 31 00	33 00	+ 2 00	15 59 12
	26 23 57 35 4	2 17 3 90	3 70	— 0 20	76 16 16 37	15 50	— 0 87	16 1 35
	27 23 57 25 7	2 20 50 64	50 67	+ 0 03	75 57 10 04	11 50	+ 1 46	15 59 86
	28 23 57 16				75 38 24 22	21 50	— 2 72	16 2 78
	29 23 57 8 1	2 28 26 16	26 15	— 0 01	75 19 48 49	45 60	— 2 89	
	30 23 57 0 0	2 32 14 51	14 65	+ 0 14	75 1 25 28	24 20	— 1 08	16 0 82
May	1 23 56 52 8	2 36 3 89	3 68	— 0 21	74 43 19 58	17 70	— 1 88	16 2 78
	2 23 56 45 8	2 39 53 43	53 23	— 0 20	74 25 26 00	26 20	+ 0 20	16 1 86
	3 23 56 39 1	2 43 43 26	43 29	+ 0 03	74 7 52 46	50 50	— 1 76	15 59 90
	4 23 56 32 9	2 47 33 59	33 92	+ 0 33	73 50 31 28	30 30	— 0 98	16 1 63
	5 23 56 27 8	2 51 25 06	25 08	+ 0 02	73 33 23 93	26 30	+ 2 37	16 1 48
	6 23 56 22 8	2 55 16 59	16 78	+ 0 19	73 16 34 43	38 60	+ 4 17	16 5 32
	7 23 56 18 6	2 59 8 94	9 06	+ 0 12	73 0 6 31	7 60	+ 1 29	16 2 64
	8 23 56 14 6	3 3 1 50	1 90	+ 0 40	72 43 53 60	53 60	0 00	16 0 64
	9 23 56 11 7	3 6 55 04	55 30	+ 0 26				16 1 46
	10 23 56 9 2	3 10 49 15	49 27	+ 0 12	72 12 18 80	17 60	— 1 20	16 3 94
	11 23 56 7 1	3 14 43 62	43 83	+ 0 21	71 56 55 40	56 20	+ 0 80	16 0 40
	12 23 56 5 8	3 18 38 90	38 96	+ 0 06	71 41 52 22	52 80	+ 0 58	16 2 54
	13 23 56 5				71 27 7 12	7 80	+ 0 68	16 2 63
	14 23 56 4 6	3 26 30 75	31 00	+ 0 25	71 12 41 13	41 50	+ 0 37	16 2 65
	15 23 56 5 1	3 30 27 80	27 92	+ 0 12	70 58 33 86	34 20	+ 0 34	16 3 65
	16 23 56 5 9	3 34 25 13	25 41	+ 0 28	70 44 44 93	46 10	+ 1 17	16 3 92
	17 23 56 7 3	3 38 23 19	23 49	+ 0 30	70 31 19 23	17 50	— 1 73	16 2 63
	18 23 56 9 5	3 42 21 95	22 15	+ 0 20				16 1 22

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN S CENTER (C nt nued)

	Mean Solar Tim f Ob rv ti	A R from Ob rv ti	A R from N A.	Erro f N A	N P D from Ob rv tio	N P D from N A	E f N A	M an H S mid
1846					° ′ ″			
M y	19 23 56 11 9	3 46 20 92	21 40	+ 0 48	70 5 20 45	19 60	— 0 85	16 2 72
	20 23 56 15				69 52 49 37	51 10	+ 1 73	16 1 92
	21 23 56 19				69 40 41 28	43 10	+ 1 82	16 1 97
	22 23 56 24				69 28 57 84	55 80	— 2 04	16 0 22
	26 23 56 46 0	4 14 30 94	31 33	+ 0 39	68 45 20 46	19 60	— 0 86	16 1 02
	28 23 57 1				68 25 41 60	42 50	+ 0 90	16 1 60
	29 23 57 8 2	4 26 42 92	43 01	+ 0 09	68 16 27 52	27 50	— 0 02	16 1 68
	30 23 57 16				68 7 34 16	35 10	+ 0 94	16 1 66
	31 23 57 24 9	4 34 52 70	52 95	+ 0 25	67 59 7 19	5 40	— 1 79	15 59 91
J ne	1 23 57 34				67 50 58 36	58 70	+ 0 34	16 3 57
	2 23 57 43 1	4 43 4 10	4 44	+ 0 34	67 43 17 04	15 20	— 1 84	16 2 81
	3 23 57 53				67 35 54 50	55 00	+ 0 50	15 59 63
	4 23 58 3				67 28 57 14	58 20	+ 1 06	16 1 82
	5 23 58 13 7	4 55 24 53	24 31	— 0 22	67 22 25 52	25 10	— 0 42	15 59 84
	6 23 58 24	4 59 31 35	31 58	+ 0 23	67 16 19 23	15 70	— 3 53	16 1 70
	7 23 58 35				67 10 29 30	30 20	+ 0 90	16 0 17
	9 23 58 57 6	5 11 54 76	55 08	+ 0 32	67 0 11 78	11 50	— 0 28	16 1 66
	10 23 59 10				66 55 40 29	38 50	— 1 79	16 1 64
	11 23 59 22				66 51 29 62	29 80	+ 0 18	16 1 92
	12 23 59 33 4	5 24 20 28	20 77	+ 0 49	66 47 44 55	45 60	+ 1 05	16 1 72
	14 23 59 58 5	5 32 38 55	38 86	+ 0 31	66 41 32 87	30 70	— 2 17	16 2 37
	15 0 0 11 2	5 36 47 82	48 16	+ 0 34	66 38 59 30	0 30	+ 1 00	16 3 01
	17 0 0 24 0	5 40 57 16	57 58	+ 0 42	66 36 55 85	54 50	— 1 35	15 59 20
	18 0 0 37				66 35 13 68	13 50	— 0 18	16 0 07
	19 0 0 50 0	5 49 16 52	16 69	+ 0 17	66 33 57 86	57 20	— 0 66	16 5 81
	20 0 1 3				66 33 5 95	5 80	— 0 15	16 5 78
	22 0 1 29 0	6 1 45 21	45 72	+ 0 51	66 32 37 80	37 40	— 0 40	16 3 12
	24 0 1 55 2	6 10 4 59	4 98	+ 0 39	66 33 48 45	48 30	— 0 15	16 0 39
	25 0 2 8				66 35 1 66	0 90	— 0 76	16 0 68
	26 0 2 21				66 36 38 61	38 20	— 0 41	
	28 0 2 46				66 41 7 55	6 70	— 0 85	
	30 0 3 11				66 47 14 25	13 30	— 0 95	16 1 85
J ly	2 0 3 33 8	6 43 15 94	16 44	+ 0 50	66 54 58 09	57 50	— 0 59	16 2 34
	3 0 3 45 3	6 47 24 02	24 32	+ 0 30	66 59 27 22	25 80	— 1 42	16 3 57
	4 0 3 56 1	6 51 31 45	31 91	+ 0 46	67 4 18 89	18 30	— 0 59	15 59 91
	5 0 4 7 1	6 55 39 00	39 18	+ 0 18	67 9 36 16	34 70	— 1 46	16 1 48
	7 0 4 27 2	7 3 52 23	52 65	+ 0 42	67 21 19 72	18 80	— 0 92	16 0 59
	8 0 4 36 8	7 7 58 48	58 84	+ 0 36				
	9 0 4 45 8	7 12 4 02	4 65	+ 0 63	67 34 35 03	37 10	+ 2 07	16 0 97
	10 0 4 55				67 41 52 23	51 30	— 0 93	16 4 05
	13 0 5 19				68 5 51 63	51 50	— 0 13	16 1 88
	14 0 5 26				68 14 36 43	37 00	+ 0 57	15 59 02
	15 0 5 33				68 23 44 61	44 90	+ 0 29	
	16 0 5 39				68 33 13 37	14 90	+ 1 53	
	20 0 5 59				69 14 54 99	52 20	— 2 79	
	25 0 6 11				70 14 44 86	44 60	— 0 26	15 58 69
	26 0 6 12				70 27 44 89	43 20	— 1 69	16 1 74
	27 0 6 12 0	8 24 28 52	28 67	+ 0 15	70 41 1 91	1 30	— 0 61	16 1 92
	28 0 6 12				70 54 40 10	38 50	— 1 60	16 0 51
	29 0 6 11				71 8 34 43	34 50	+ 0 07	15 59 64
	30 0 6 8 6	8 36 14 73	15 10	+ 0 37	71 22 51 10	49 10	— 2 00	16 0 15
	31 0 6 6 4	8 40 9 16	9 33	+ 0 17	71 37 23 04	21 90	— 1 14	16 1 65
Aug	1 0 6 4				71 52 13 63	12 90	— 0 73	16 1 94
	2 0 6 0				72 7 24 83	21 50	— 3 33	15 59 95
	3 0 5 56				72 22 49 69	47 60	— 2 09	16 1 48
	5 0 5 45 9	8 59 31 39	31 15	— 0 24	72 54 32 81	31 10	— 1 71	16 0 60

Right Ascensions and North Polar Distances of the Sun's Center (*Continued*)

1846	Mean Sid. Time of Observation	A.R. from Observation	A.R. from N.A.	Error of N.A.	N.P.D. from Observation	N.P.D. from N.A.	Error of N.A.	Mean H. S. mid.
		m						
Aug 6	0 5 40				73 10 47 46	47 80	+ 0 34	15 59 84
10	0 5 10				74 18 36 61	36 20	− 1 41	
11	0 5 0 7	9 22 25 33	25 46	+ 0 13	74 36 11 21	10 80	− 0 41	16 2 27
12	0 4 51 2	9 26 12 33	12 51	+ 0·18	74 54 0 54	1 10	+ 0 56	16 1 01
13	0 4 41				75 12 4 39	6 00	+ 1 61	15 59 78
17	0 3 56				76 26 44 70	45 30	+ 0 60	16 0 75
18	0 3 43 3	9 48 43 59	43 73	+ 0 14	76 46 0 27	58 30	− 1 97	16 0 67
19	0 3 30				77 5 25 99	24 10	− 1 89	16 1 86
20	0 3 17				77 25 6 28	2 20	− 4 08	16 1 42
21	0 3 3				77 44 52 29	52 40	+ 0 11	16 0 22
22	0 2 48				78 4 57 97	54 20	− 3 77	15 57 90
24	0 2 18				78 45 31 56	31 20	− 0 36	16 2 23
25	0 2 1 8	10 14 37 66	38 04	+ 0 38	79 6 8 80	5 80	− 3 00	16 2 54
26	0 1 45 5	10 18 17 92	18 32	+ 0 40	79 26 54 95	50 90	− 4 05	
27	0 1 29 0	10 21 57 83	58 16	+ 0 33	79 47 46 85	45 90	− 0 95	16 1 74
28	0 1 12 2	10 25 37 65	37 62	− 0 03	80 8 52 06	50 60	− 1 46	16 3 94
29	0 0 54 7	10 29 16 62	16 68	+ 0 06	80 30 7 49	4 50	− 2 99	15 59 33
31	0 0 19				81 13 1 67	59 30	− 2 37	16 2 87
Sept. 1	23 59 41				81 56 31 21	27 40	− 3 81	
2	23 59 22				82 18 25 81	23 30	− 2 51	15 59 79
3	23 59 3 0	10 51 4 03	3 88	− 0·15				
4	23 58 43 6	10 54 41 05	40 73	− 0 32	83 2 38 69	37 00	− 1 69	16 1 81
6	23 58 3 4	11 1 53 86	53 74	− 0 12	83 47 19 62	18 30	− 1 32	15 58 77
7	23 57 43				84 9 52 89	48 30	− 4 59	15 58 83
13	23 55 39				86 26 44 06	41 90	− 2 16	15 59 84
14	23 55 17 7	11 30 40 08	39 81	− 0 27	86 49 48 04	46 70	− 1 34	16 2 21
15	23 54 56				87 13 0 25	55 10	− 5 15	16 1 81
18	23 53 53				88 22 38 74	38 50	− 0 24	16 0 75
20	23 53 11				89 9 20 43	19 10	− 1 33	16 2 14
21	23 52 51				89 32 44 26	41 90	− 2 36	16 0 28
22	23 52 30				89 56 8 47	5 80	− 2 67	15 57 99
23	23 52 9 2	12 2 59 97	59 87	− 0 10	90 19 29 96	30 50	+ 0 54	16 2 54
27	23 50 47 6	12 17 24 36	24 70	+ 0 34	91 53 13 05	10 10	− 2 95	16 1 72
28	23 50 27 9	12 21 1 20	1 37	+ 0 17	92 16 38 15	33 50	− 4 65	16 3 77
29	23 50 8 6	12 24 38 32	38 27	− 0 05	92 39 52 32	55 60	+ 3 28	16 0 12
Oct 1	23 49 30 2	12 31 53 03	52 79	− 0 24	93 26 36 19	34 30	− 1 89	16 0 17
4	23 48 34 6	12 42 46 84	46 86	+ 0 02	94 36 13 21	14 30	+ 1 09	16 4 26
5	23 48 16 8	12 46 25 59	25 57	− 0 02	94 59 25 10	21 30	− 3 80	16 0 71
6	23 47 59 4	12 50 4 70	4 67	− 0 03	95 22 24 65	24 70	+ 0 05	16 0 59
9	23 47 10				96 31 13 90	9 10	− 4 80	16 0 28
12	23 46 24 4	13 12 8 62	8 70	+ 0 08	97 39 6 26	8 30	+ 2 04	16 0 21
13	23 46 10 4	13 15 51 25	51 15	− 0 10	98 1 38 87	34 70	− 4 17	16 1 47
14	23 45 56 8	13 19 34 26	34 13	− 0 13	98 23 57 24	55 60	− 1 64	16 2 50
21	23 44 39				100 56 40 60	42 10	+ 1 50	
22	23 44 30 4	13 49 39 99	39 88	− 0 11	101 17 54 57	55 40	+ 0 83	16 1 72
23	23 44 22 2	13 53 28 31	28 51	+ 0·20	101 38 58 59	58 50	− 0 09	16 1 74
25	23 44 8 5	14 1 7 67	7 86	+ 0 19	102 20 32 62	32 20	− 0 42	16 1 94
26	23 44 2 9	14 4 58 61	58 59	− 0 02	102 41 3 68	2 10	− 1 58	16 1 70
27	23 43 58				103 1 23 06	20 10	− 2 96	16 1 01
28	23 43 53 3	14 12 42 10	42 24	+ 0 14	103 21 26 85	25 70	− 1 15	16 1 03
29	23 43 49 6	14 16 34 95	35 19	+ 0 24	103 41 18 64	18 70	+ 0 06	16 2 03
30	23 43 47	14 20 28 90	28 88	− 0 02	104 0 57 96	58 70	+ 0 74	16 3 06
Nov 1	23 43 43 6	14 28 18 65	18 61	− 0 04	104 39 35 56	37 70	+ 2 14	
2	23 43 43 1	14 32 14 61	14 68	+ 0 07	104 58 37 49	36 00	− 1 49	16 3 23
3	23 43 43 5	14 36 11 53	11 56	+ 0 03	105 17 19 68	19 70	+ 0 02	16 3 01
4	23 43 44 7	14 40 9 37	9 27	− 0 10	105 35 48 44	48 30	− 0 14	16 2 98

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE SUN S CENTER (C ntinued)

	M an S lar T m f Obs ti	A R fr m Obs rv ti	A R from N A	Err f N A	N P D fr m Ob vati	N P D from N A	Err f N A	M H S mid
1846							/	
Nov	5 23 43 46 5	14 44 7 68	7 81	+ 0 13	105 53 59 17	1 40	+ 2 23	16 1 23
	6 23 43 49 4	14 48 7 21	7 17	— 0 04	106 11 58 66	58·60	— 0 06	16 1 35
	8 23 43 58				106 47 2 45	4 00	+ 1 55	16 2 31
	15 23 44 53 6	15 24 40 48	40 50	+ 0 02	108 40 33 35	34 80	+ 1 45	16 3 81
	18 23 45 30				109 24 24 22	23 80	— 0 42	16 2 10
	27 23 48 4 0	16 15 10 07	9 82	— 0 25				16 2 63
	29 23 48 46				111 36 47 68	50·40	+ 2 72	
De	2 23 49 54				112 4 38 21	35 40	— 2 81	16 4 94
	10 23 53 19 9	17 11 42 17	42 05	— 0 12	112 59 27 49	32 30	+ 4 81	16 3 16
	11 23 53 48 2	17 16 7 07	6 58	— 0 49				
	17 23 56 41 6	17 42 40 28	40 53	+ 0 25				
	18 23 57 12 0	17 47 6 59	6 96	+ 0 37				
	21 23 58 41 4	18 0 26 72	26 88	+ 0 16	113 27 20 27	23 50	+ 3 23	16 3 38
	27 0 1 11 3	18 22 39 73	39 74	+ 0 01				16 5 32
1847								
J	4 0 5 0 9	18 58 2 40	2 17	— 0 23	112 47 12 34	10 50	— 1 84	16 4 57
	5 0 5 28 3	19 2 26 42	25 98	— 0 44	112 40 47 87	51 00	+ 3 13	16 2 84
	6 0 5 54 8	19 6 49 55	49 38	— 0 17	112 34 9 06	4 50	— 4 56	
	8 0 6 46 9	19 15 34 91	34 81	— 0 10	112 19 10 07	11 10	+ 1 03	16 ѵ 74
	9 0 7 12 6	19 19 57 22	56 80	— 0 42	112 11 4 20	4 90	+ 0 70	16 3 89
	10 0 7 37 5	19 24 18 75	18 27	— 0 48				16 4 78
	11 0 8 1 3	19 28 39 22	39 21	— 0 01	111 53 30 85	34 20	+ 3 3ѵ	16 2 81
	12 0 8 24 9	19 32 59 39	59 57	+ 0 18	111 44 14 41	10 20	— 4 21	16 3 2ѵ
	13 0 8 48 2	19 37 19 37	19 32	— 0 05	111 34 18 42	21 00	+ 2 58	16 3 1(
	14 0 9 10 7	19 41 38 45	38 47	+ 0 02	111 24 5 47	6 80	+ 1 33	16 4 97
	15 0 9 32 9	19 45 57 30	56 98	— 0 32	111 13 29 17	27 70	— 1 47	16 4 0
	16 0 9 53 6	19 50 14 66	14 83	+ 0 17	111 2 21 98	24 40	+ 2 42	16 2 81
	17 0 10 14 6	19 54 32 26	31 97	— 0 29				
	18 0 10 34 5	19 58 48 71	48 41	— 0 30	110 39 7 16	5 50	— 1 66	16 4 18
	19 0 10 53 7	20 3 4 63	4 12	— 0 52	110 26 46 86	50 80	+ 3 94	16 4 86
	20 0 11 12				110 14 15 27	13 10	— 2 17	16 5 17
	21 0 11 29 4	20 11 33 45	33 27	— 0 18	110 1 9 76	12 50	+ 2 74	16 6 16
	22 0 11 46 1	20 15 46 70	46 68	— 0 02	109 47 51 29	49 60	— 1 69	16 4 43
	2ѵ 0 12 32 1	20 28 22 54	22 12	— 0 42	109 5 33 46	30 40	— 3 06	16 5 47
	26 0 12 45 6	20 32 32 64	32 32	— 0 32	108 50 38 06	41 80	+ 3 74	16 3 94
	27 0 12 58 3	20 36 41 97	41 67	— 0 30	108 35 35 00	32 50	— 2 50	16 3 54
	30 0 13 31 4				107 48 0 36	5 60	+ 5 24	16 2 83
	31 0 13 41							16 1 66
Feb	1 0 13 49 4	20 57 15 97	15 98	+ 0 01	107 14 54 15	52 00	— 2 15	16 3 58
	2 0 13 57				106 57 49 63	47 60	— 2 03	16 2 21
	5 0 14 16 1	21 13 28 97	28 64	— 0 33	106 4 45 43	49 10	+ 3 67	16 3 79
	6 0 14 20 8	21 17 30 23	29 78	— 0 45	105 46 33 55	35 80	+ 2 25	16 4 18
	13 0 14 30 7	21 45 15 98	15 91	— 0 07	103 31 53 38	51 50	— 1 88	16 2 97
	15 0 14 27				102 51 9 71	15 90	+ 6 19	16 4 63
	16 0 14 23 6	21 56 58 57	58 59	+ 0·02	102 30 37 92	39 30	+ 1 38	16 5 37
	17 0 14 20				102 9 53 16	50 80	— 2 36	16 2 28
	18 0 14 15 4	22 4 43 43	43 38	— 0 05	101 48 46 54	50 70	+ 4 16	16 1 46
	20 0 14 4 1	22 12 25 23	25 36	+ 0 13	101 6 13 47	17 80	+ 4 33	
	23 0 13 42 5	22 23 53 17	53 20	+ 0 03	100 1 7 66	12 30	+ 4 64	16 4 58
	24 0 13 33 9	22 27 41 10	41 19	+ 0 09	99 39 12 84	12 00	— 0 84	16 1 37
	25 0 13 24 8	22 31 28 53	28 53	0 00	99 17 0 88	2 90	+ 2 02	16 1 87
	26 0 13 14 9	22 35 15 19	15 27	+ 0 08	98 54 45 97	45 50	— 0 47	16 3 83
	27 0 13 4 5	22 39 1 34	1 43	+ 0 09	98 32 17 26	20 40	+ 3 14	16 1 50
Mar	1 0 12 42 2	22 46 32 08	32 07	— 0 01	97 47 6 82	8 10	+ 1 28	16 2 50
	3 0 12 17·7	22 54 0 65	0 61	— 0 04	97 1 29 07	29 00	— 0 07	16 5 08
	4 0 12 4 7	22 57 44 14	44 15	+ 0 01	96 38 27 78	30 30	+ 2 52	16 2 41

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF T SUN CENTE (Cont nu d)

M S l Tim f Observ tl		A R fr m Ob rv t	A R f m N A	Er f N A	N P D fr m Ob tl	N P D fr m N A	Err f N A	M H S mid
1847	m	m						
M	5 0 11 51 3	23 1 27 20	27 23	+ 0 03	96 15 22 23	25 90	+ 3 67	16 5 03
	6 0 11 37 7	23 5 10 15	9 87	— 0 28	95 52 22 08	16 40	— 5 68	16 5 25
	8 0 11 8 6	23 12 34 04	33 95	— 0 09	95 ᴊ 39 86	43 40	+ 3 54	1b 3 61
	9 0 10 53 5	23 16 15 40	15 42	+ 0 02	94 42 18 49	20 50	+ 2 01	16 4 51
	10 0 10 38 0	23 19 56 42	56 55	+ 0 13	94 18 54 65	53 80	— 0 85	16 3 01
	11 0 10 22 0	23 23 36 86	37 35	+ 0 49	93 55 19 51	23 90	+ 4 39	16 4 50
	12 0 10 6 3	23 27 17 74	17 84	+ 0 10	93 31 51 69	51 10	— 0 59	16 2 6ɔ
	13 0 9 50 0	23 30 57 97	58 04	+ 0 07	93 8 10 04	15 80	+ 5 76	16 5 54
	16 0 8 59				91 57 21 19	18 40	— 2 79	16 3 81
	17 0 8 42				91 33 36 72	36 70	— 0 02	16 1 90
	18 0 8 25				91 9 57 17	54 50	— 2 67	16 0 27
	19 0 8 6 7	23 52 53 75	54 03	+ 0 28	90 46 6 80	12 00	+ 5 20	16 4 97
	20 0 7 49 1	23 56 32 67	32 67	0 00	90 22 30 44	29 70	— 0 74	16 4 37
	23 0 6 54 9	0 7 27 92	27 70	— 0 22	89 11 26 52	27 30	+ 0 78	16 1 83
	24 0 6 36 4	0 11 5 93	5 81	— 0 12	88 47 42 05	49 30	+ 7 25	16 3 32
	25 0 6 17 9	0 14 43 90	43 84	— 0 06	88 24 14 56	13 30	— 1 26	16 3 43
	26 0 5 59 4	0 18 21 91	21 82	— 0 09	88 0 37 19	39 80	+ 2 61	16 1 32
	27 0 5 40 6	0 21 59 63	59 75	+ 0 12	87 37 6 59	8 80	+ 2 21	16 3 68
	29 0 5 3 9	0 29 15 92	15 59	— 0 33	86 50 13 33	16 20	+ 2 87	16 5 25
	30 0 4 45				86 26 55 48	55 30	— 0 18	16 2 14
	31 0 4 26 2	0 36 31 29	31 57	+ 0 28	86 3 35 35	38 50	+ 3 15	16 4 09
Apı l	1 0 4 8				85 40 22 05	26 00	+ 3 95	16 2 57
	2 0 3 49 7	0 43 47 71	47 84	+ 0 13	85 17 15 99	18 20	+ 2 21	16 4 69
	3 0 3 31 7	0 47 26 28	26 13	— 0 15	84 54 15 68	15 50	— 0 18	16 4 bᴊ
	5 0 2 55 6	0 54 43 25	43 23	— 0 0?	84 8 29 23	26 20	— 3 03	16 4 37
	6 0 2 38				83 45 40 78	40 30	— 0 48	16 0 39
	7 0 2 20 8	1 2 1 34	1 06	— 0 28	83 22	0 90		16 6 87
	8 0 2 3 4	1 5 40 46	40 30	— 0 16				16 2 02
	9 0 1 46 3	1 9 19 84	19 79	— 0 05	82 38 2 49	2 40	— 0 09	16 5 68
	10 0 1 29 8	1 12 59 88	59 56	— 0 32	82 15 39 50	44 10	+ 4 60	16 5 8
	12 0 0 57				81 31 32 53	30 90	— 1 63	16 1 97
	13 0 0 41 0	1 24 0 62	0 57	— 0 05	81 9 31 87	36 70	+ 4 83	16 6 00
	14 0 0 25 0	1 27 41 13	41 53	+ 0 40	80 47 45 35	51 30	+ 5 95	16 3 58
	15 0 0 10				80 26 8 80	15 10	+ 6 30	16 1 82
	18 23 59 12 6	1 46 11 25	11 56	+ 0 31	79 1 31 44	28 30	— 3 14	16 4 21
	20 23 58 46 2	1 53 37 88	38 23	+ 0 35	78 20 6 37	8 70	+ 2 33	16 3 38
	21 23 58 33 8	1 57 22 06	22 18	+ 0 12	77 59 45 39	46 00	+ 0 61	16 5 10
	22 23 58 21 6	2 1 6 30	6 54	+ 0 24	77 39 30 25	35 20	+ 4 95	16 5 61
	23 23 ᴊ8 10 2	2 4 51 43	51 36	— 0 07	77 19 35 11	36 50	+ 1 39	16 4 J0
	25 23 57 47 8	2 12 22 15	22 34	+ 0 19	76 40 19 80	17 10	— 2 70	16 5 77
	27 23 57 27 7	2 19 ᴊ5 08	55 21	+ 0 13	76 1 48 33	50 30	+ 1 97	16 1 90
	28 23 57 18 1	2 23 41 96	42 40	+ 0 44	75 42 36 89	57 40	+ 0 51	16 0 3ɔ
	29 23 57 10				7ᴊ 24 17 79	18 60	+ 0 81	16 1 97
	30 23 57 1 5	2 31 18 45	18 35	— 0 10	75 5 52 62	54 10	+ 1 48	16 3 98
May	2 23 56 46 5	2 38 56 61	56 46	— 0 15				16 3 63
	3 23 56 39 6	2 42 46 16	46 34	+ 0 18	74 12 10 08	10 00	— 0 08	16 4 23
	4 23 56 33 8	2 46 36 88	36 81	— 0 07	73 4 49 61	46 10	— 3 51	16 2 63
	5 23 56 28 4	2 50 27 62	27 84	+ 0 22	73 37 37 34	38 10	+ 0 76	16 2 38
	6 3 56 23				73 20 47 20	46 40	— 0 80	16 0 73
	7 23 56 19				73 4 11 17	11 10	— 0 07	16 3 36
	10 23 56 9 2	3 9 51 62	51 88	+ 0 26	72 16 7 24	7 40	+ 0 16	16 3 74
	11 23 56 7 1	3 13 46 10	46 46	+ 0 36	72 0 40 94	41 10	+ 0 16	16 4 58
	12 23 56 6				71 45 31 52	33 00	+ 1 48	16 3 78
	13 23 56 5 5	3 21 37 49	37 38	— 0 11	71 30 43 40	43 20	— 0 20	16 2 17
	14 23 56 5 1	3 25 33 71	33 71	0 00	71 16 9 02	11 90	+ 2 88	16 1 26
	16 23 56 6 5	3 33 28 14	28 09	— 0 05	70 48 4 02	6 50	+ 2 48	16 4 21
	17 23 56 7 6	3 37 25 86	26 13	+ 0 27	70 34 33 24	32 90	— 0 34	16 3 45

Right Ascensions and North P lar Distances of the Sun s Center (C tnu d)

ƀ	S Tim f Ob tl	A R f m Ob l	A R f m N A	Err f N A	N P D fr m Ob rv tl	N P D f m N A	Err f N A	M an H S ld
1847		m						
M y 18	23 56 10				70 21 18 90	19 00	+ 0 10	16 3 10
19	23 56 12 1	3 45 23 53	23 83	+ 0 30	70 8 27 20	25 10	— 2 10	16 0 84
20	23 56 15 1	3 4J 23 09	23 48	+ 0 39	69 55 49 03	51 60	+ 2 57	16 3 45
24	23 56 32 5	4 5 26 76	27 23	+ 0 47	69 9 4 63	5 20	+ 0 57	16 0 64
25	23 6 38 4	4 9 29 22	29 12	+ 0 20	68 58 15 05	16 80	+ 1 75	16 2 90
26	23 56 15				68 47 52 52	50 00	— 2 52	16 0 60
30	23 57 13 8	4 29 47 39	47 42	+ 0 03	68 9 43 98	44 60	+ 0 62	16 0 70
31	23 57 21 6	4 33 51 J0	52 39	+ 0 49	68 1 8 28	9 50	+ 1 22	16 1 29
Ju 1	23 57 31				67 52 50 68	57 40	+ 6 72	16 2 48
2	23 57 40 0	4 42 3 37	3 57	+ 0 20	67 45 8 35	8 40	+ 0 05	15 59 77
3	23 57 o0				67 37 42 58	42 60	+ 0 02	16 2 12
4	23 57 59 4	4 50 15 94	16 32	+ 0 38	67 30 39 04	40 10	+ 1 06	16 3 72
6	23 58 21				67 17 44 66	46 20	+ 1 54	16 2 10
7	23 58 31 5	5 2 37 85	38 17	+ 0 32	6 11 53 88	54 90	+ 1 02	16 1 62
8	23 58 43				67 6 25 83	27 70	+ 1 87	16 1 13
11	3 59 18 5	5 19 11 20	11 46	+ 0 26	66 52 31 46	30 90	— 0 56	16 3 17
13	23 59 43 3	5 27 29 12	29 45	+ 0 33	66 46 15 85	14 80	— 1 05	16 0 7
19	0 0 47 8	5 48 16 32	16 64	+ 0 32	66 34 14 42	15 40	+ 0 98	15 9 31
23	0 1 40				66 32 55 55	53 70	— 1 85	16 0 1
25	0 2 5				66 34 42 65	41 60	— 1 05	16 1 57
30	0 3 7				66 46 24 01	23 50	— 0 51	15 59 09
J ly 2	0 3 31				66 53 55 61	55 90	+ 0 26	16 4 54
3	0 3 42				66 58 20 00	18 40	— 1 60	16 2 27
8	0 4 33 9	7 6 57 84	58 36	+ 0 52	67 26 12 16	11 30	— 0 86	16 2 03
9	0 4 43 3	7 11 3 96	4 42	+ 0 46	67 32 54 04	56 90	+ 2 86	16 3 3
10	0 4 52 5	7 15 9 71	10 11	+ 0 40	67 40 5 81	5 80	— 0 01	16 2 87
14	0 5 24 7	7 31 28 11	28 58	+ 0 44	68 12 31 31	30 40	— 0 91	16 3 51
15	0 5 31 6	7 35 31 69	32 05	+ 0 36	68 21 29 10	33 10	+ 4 00	16 0 84
17	0 44				68 40 42 11	44 40	+ 2 29	16 1 88
20	0 5 58 6	7 55 41 52	41 53	+ 0 01	69 12 14 41	13 50	— 0 91	16 3 18
21	0 6 2 1	7 59 41 55	41 76	+ 0 21	69 23 27 49	25 40	— 2 09	16 3 03
22	0 6 5 2	8 3 41 17	41 41	+ 0 24	69 34 55 42	58 10	+ 2 68	16 3 72
24	0 6 10				69 59 5 13	5 00	— 0 13	16 2 86
26	0 6 12				70 24 35 32	31 90	— 3 42	15 59 60
28	0 6 11				70 51 20 32	16 80	— 3 52	16 0 26
31	0 6 7				71 33 48 96	46 20	— 2 76	16 3 41
A g 6	0 5 41 0	9 2 25 28	25 08	— 0 20	73 6 50 79	48 60	— 2 19	15 59 93
9	0 5 20				73 57 4 96	6 00	+ 1 04	16 0 51
10	0 5 12				74 14 27 58	23 20	— 4 38	15 59 02
11	0 5 3				74 31 57 41	55 70	— 1 71	16 1 48
12	0 4 54				74 49 43 81	43 00	— 0 81	16 0 71
13	0 4 44				75 7 50 48	44 80	— 5 68	16 0 17
16	0 4 11 9	9 40 21 50	21 47	— 0 03	76 3 13 57	14 20	+ 0 63	
17	0 4 0 0	9 44 6 11	6 03	— 0 08	76 22 10 07	11 00	+ 0 93	16 0 42
18	0 3 47 3	9 47 49 96	50 06	+ 0 10	76 41 21 31	20 70	— 0 61	16 3 63
19	0 3 34				77 0 43 86	43 10	— 0 76	16 1 82
21	0 3 6 9	9 58 59 10	9 04	— 0 06	77 40 7 54	4 10	— 3 44	16 0 70
23	0 2 37				78 20 10 72	12 00	+ 1 28	15 59 56
24	0 2 22				78 40 32 64	32 70	+ 0 06	
25	0 2 6 4	10 13 44 66	44 27	— 0 39	79 1 6 57	4 10	— 2 47	16 1 79
26	0 1 50				79 21 42 93	46 00	+ 3 07	16 4 27
S pt 1	0 0 4				81 29 16 98	19 80	+ 2 82	16 0 17
7	23 57 48				84 4 22 94	21 00	— 1 94	16 2 07
8	23 57 28				84 26 56 60	56 20	— 0 40	16 2 68
9	23 7 7 1	11 11 19 33	49 73	+ 0 40	84 49 37 54	37 10	— 0 44	15 59 96

Right Ascensions and North Polar Distances of the Sun's Center (Continued)

Date	Mean Solar Time of Observation	A R from Observation	A R from N A	Error of N A	N P D from Observation	N P D from N A	Error of N A	Mean Hor. Semid.
1847		m					′	
Sept 10	23 56 46 5	11 15 25 23	25 66	+ 0 43	85 12 26 81	23 30	− 3 51	16 0 70
12	23 56 5				85 26 17 13	10 20	− 6 93	16 2 06
14	23 55 23 7	11 29 48 39	48 20	− 0 19	86 44 15 19	13 90	− 1 29	16 0 72
15	23 55 2				87 7 21 03	21 20	+ 0 17	16 1 55
16	23 54 41				87 30 33 59	31 70	− 1 89	16 0 24
17	23 54 20				87 53 44 28	4 20	+ 0 92	16 1 11
20	23 53 16 6	11 52 20 30	20 51	+ 0 21	89 3 34 56	39 20	+ 4 64	16 5 99
21	23 51 53				90 37 11 43	11 80	+ 0 37	16 1 88
26	23 51 12				91 23 58 07	61 00	+ 2 93	16 1 41
Oct 1	23 49 34				93 20 55 09	51 00	− 4 09	16 1 98
3	23 48 57				94 7 24 49	22 70	− 1 79	15 58 82
4	23 48 38 7	12 41 53 32	53 34	+ 0 02				16 3 11
5	23 48 20 6	12 45 31 83	32 10	+ 0 27	94 3 46 87	43 00	− 3 87	16 3 65
7	23 47 47				95 39 46 61	49 00	+ 2 39	16 3 89
8	23 47 30 3	12 56 30 99	30 82	− 0 17	96 2 43 06	45 70	+ 2 64	16 4 71
10	23 46 58 4	13 3 52 10	52 13	+ 0 03	96 48 23 43	21 40	+ 0 97	16 2 30
14	23 46 1				98 18 32 75	32 50	− 0 25	16 1 04
15	23 45 48				98 40 4 14	47 90	+ 2 76	16 2 05
17	23 45 23				99 24 55 42	55 70	+ 0 28	16 2 25
18	23 45 1 8	13 33 37 59	37 49	− 0 10	99 46 41 07	47 50	+ 3 43	16 3 91
19	23 45 1				100 8 24 90	30 70	+ 5 80	16 3 06
20	23 44 50 8	13 41 9 70	9 50	− 0 20	100 30 7 56	00	− 2 56	16 4 91
21	23 44 41 1	13 44 56 52	56 47	− 0 05	100 51 21 78	29 90	+ 8 12	16 5 47
22	23 44 32				101 12 41 05	41 90	+ 3 85	16 3 83
25	23 44 9 5	14 0 10 99	11 12	+ 0 13	102 15 29 94	27 80	− 2 14	
26	23 44 3				102 35 54 00	60 00	+ 6 00	16 3 79
27	23 43 58				102 56 24 59	20 60	− 3 99	16 4 43
Nov 3	23 43 43				105 12 35 63	44 50	+ 8 87	16 3 67
5	23 43 46				105 49 36 53	34 70	− 1 83	16 7 97
7	23 43 52 5	14 51 9 16	9 09	− 0 07	106 25 24 17	21 80	− 2 37	16 5 65
8	23 43 57				106 42 48 73	50 80	+ 2 07	16 3 38
9	23 44 2 0	14 59 11 85	11 97	+ 0 12	107 0 5 63	2 70	− 2 93	16 7 52
11	23 44 15				107 33 25 57	33 80	+ 8 23	16 6 05
14	23 44 41				108 21 29 58	32 60	+ 3 02	
15	23 44 51 6	15 23 40 89	40 76	− 0 13	108 36 55 05	53 90	− 1 15	16 4 03
17	23 45 15 5				109 6 31 94	36 40	+ 4 46	16 0 59
18	23 45 27 4	15 36 6 41	6 33	− 0 08	109 20 52 73	7 00	+ 4 27	
22	23 46 26 4				110 14 47 05	46 00	− 1 05	16 1 92
30	23 49 1				111 44 10 14	8 30	− 2 14	16 2 20
Dec 5	23 51 0 9				112 26 45 09	40 20	− 4 89	16 0 33
8	23 52 19 3	17 1 50 91	50 59	− 0 32				
15	23 55 36 3				113 18 25 38	29 90	+ 4 52	
16	23 56 5 5				113 21 8 25	9 20	+ 0 95	16 4 76
19	23 57 34 3							
20	23 58 4 2	17 54 55 18	55 08	− 0 10				
21	23 58 34 0	17 59 21 47	21 60	+ 0 13	113 27 15 80	23 20	+ 7 40	16 8 95
22	23 59 4 0	18 3 47 75	48 17	+ 0 42	113 27 12 89	13 00	+ 0 11	16 5 47
23	23 59 33 9	18 9 11 34	14 73	+ 0 39	113 26 30 90	34 00	+ 3 70	16 3 80

MEAN HORIZONTAL AND VERTICAL SEMIDIAMETERS OF THE SUN FROM EACH YEARS OBSERVATIONS

D t	N Ob	H S mid	N Ob	V S
1831	176	16 1 15		
1832	258	1 52		
1833	257	1 30		
1835	266	1 82	141	16 1 59
1836 1837	489	1 72	150	1 77
1838	231	0 90		
1839	226	0 87		
1840	245	1 01		
1841	205	1 94		
1842	223	2 24		
1843	242	1 38		
1844	241	2 20		
1845	268	3 33		
1846	230	2 29		
1847	189	2 98		
Mean		16 1 78		16 1 68

Right Ascensions and North Polar Distances of the Moon Center.

M an S l Tim f Ob rv ti	I II Limb	A R f m Ob rv t	A R fr m N A	E f N A	N S Limb	N P D fr m Ob ti	N P D fr m N A	Er f N A
1831		m						"
Feb 20 6 50 42 8	I	4 50 46 86	47 10	+ 0 24	S	72 41 41 77	37 47	— 4 30
21 7 47 40 2	I	5 51 50 60	51 42	+ 0 82	S	71 15 47 84	45 90	— 1 94
22 8 44 47 2	I	6 53 2 77	3 84	+ 1 07	N	71 4 29 30	33 49	+ 4 19
23 9 40 58 3	I	7 53 18 77	20 17	+ 1 40	S	72 6 54 47	52 96	— 1 51
25 11 27 16 8	I	9 47 45 20	46 19	+ 0 99	S	77 16 55 13	51 38	— 3 75
26 12 17 48 7	I II	10 41 17 83	18 25	+ 0 42	N	80 56 42 19	41 45	— 0 74
27 13 6 2 6	II	11 32 34 88	34 32	— 0 56	N	84 59 30 39	26 71	— 3 68
28 13 51 23 4	II	12 22 0 34	1 48	+ 1 14	S	89 11 4 76	1 26	— 3 50
Mar 1 14 35 38 1	II	13 10 19 47	19 12	— 0 35	S	93 19 20 77	19 92	— 0 85
2 15 19 18 7	II	13 58 4 12	4 37	+ 0 25	S	97 14 43 07	31 95	— 11 12
3 16 3 6 0	II	14 45 54 77	54 56	— 0 21	S	100 47 50 81	51 61	+ 0 80
4 16 47 29 8	II	15 34 21 29	22 37	+ 1 08	S	103 51 35 83	38 33	+ 2 50
5 17 32 58 4	II	16 23 53 57	54 14	+ 0 57	S	106 18 37 72	41 24	+ 3 52
6 18 19 49 1	II	17 14 47 50	47 17	— 0 33	S	108 2 0 95	5 97	+ 5 02
21 6 40 22 8	I	6 34 44 74	44 87	+ 0 13				
22 7 36 22 2	I	7 34 49 17	49 63	+ 0 16	N	71 36 25 67	23 35	— 2 32
23 8 30 25 5	I	8 32 56 75	57 50	+ 0 75	N	73 23 48 31	46 27	— 2 04
25 10 11 23 7	I	10 22 2 58	2 00	— 0 58	N	79 31 45 56	40 59	— 4 97
26 10 58 31 1	I	11 13 12 39	12 45	+ 0 06				
27 11 43 57 9	I	12 2 42 21	42 23	+ 0 02	N	87 32 57 94	49 21	— 8 73
28 12 30 21 2	II	12 51 9 00	8 74	— 0 26	N	91 43 48 36	57 21	+ 8 85
29 13 14 6 8	II	13 38 58 59	58 57	— 0 02	S	95 46 31 35	35 71	+ 1 36
30 13 57 53 5	II	14 26 48 68	48 42	— 0 26	S	99 31 19 42	19 06	— 0 36
Ap il 2 16 13 22 7	II	16 54 27 93	27 93	0 00	S	107 35 0 46	47 15	— 13 31
3 17 0 41 5	II	17 45 50 45	50 69	+ 0 24	S	108 48 41 00	40 59	— 0 41
19 6 27 2 5	I	8 15 41 07	41 21	+ 0 14	N	72 34 11 07	8 32	— 2 75
20 7 19 42 2	I	9 12 24 30	23 43	— 0 87	N	75 3 11 72	8 82	— 2 90
21 8 9 27 2	I	10 6 12 37	12 38	+ 0 01	N	78 17 33 11	29 78	— 3 33
22 8 56 41 2	I	10 57 29 56	28 91	— 0 65	N	82 3 10 30	59 40	— 10 90
23 9 41 58 1	I	11 46 49 26	49 38	+ 0 12	N	86 6 43 69	46 05	+ 2 36
25 11 9 23 5	I	13 22 21 27	21 09	— 0 18	N	94 23 56 67	52 83	— 3 84
26 11 53 47 9	I II	14 9 49 70	50 07	+ 0 37	N	98 17 8 65	9 65	+ 1 00
27 12 38 43 2	II	14 57 48 75	48 41	— 0 34	N	101 47 48 28	41 41	— 6 87
29 14 9 15 8	II	16 36 27 97	27 70	— 0 27	N	107 6 42 08	36 07	— 6 01
30 14 56 8 9	II	17 27 24 75	24 38	— 0 37	N	108 39 41 38	32 50	— 8 88
M y 1 15 43 59 3	II	18 19 18 85	18 28	— 0 57	N	109 20 53 35	59 02	+ 3 67
2 16 32 29 9	II	19 11 54 57	53 96	— 0 61	N	109 6 58 72	2 80	+ 4 08
3 17 21 26 4	II	20 4 54 44	54 64	+ 0 20	N	107 55 59 23	4 84	+ 5 61
20 7 41 6 7	I	11 32 5 47	5 23	— 0 24	N	84 39 5 70	2 98	— 2 72
21 8 2 22 0	I	12 20 23 57	23 17	— 0 40	N	88 50 11 33	18 14	+ 6 81
22 9 8 36 3	I	13 7 41 19	41 05	— 0 14	N	93 0 22 70	19 64	— 3 06
23 9 51 35 6	I	13 54 44 06	43 71	— 0 35	N	96 59 49 70	48 12	— 1 58
24 10 34 56 5	I	14 42 9 07	8 87	— 0 20	N	100 40 6 61	10 18	+ 3 57
25 11 19 9 0	I	15 30 26 04	25 86	— 0 18	N	103 52 33 28	34 11	+ 0 83
26 12 5 34 1	I II	16 19 54 58	54 43	— 0 15	N	106 28 53 73	57 25	+ 1 52
27 12 53 14 5	II	17 10 37 19	36 96	— 0 23	N	108 21 8 52	10 37	+ 1 85
29 14 29 20 0	II	18 54 50 60	50 86	+ 0 26	N	109 29 10 70	15 12	+ 4 42
30 15 18 3 6	II	19 47 38 64	39 05	+ 0 41	N	108 38 39 30	47 60	+ 8 30
31 16 6 44 0	II	20 40 23 89	24 47	+ 0 58	N	106 52 14 28	15 75	+ 1 47
Jun 1 16 55 11 3	II	21 32 55 55	56 15	+ 0 60	N	104 12 57 11	10 62	+ 13 51
20 8 33 31 1	I	14 26 50 71	0 03	— 0 68	N	99 22 35 62	35 93	+ 0 31
21 9 17 17 3	I	15 14 40 83	39 04	— 1 79	N	102 46 52 91	57 73	+ 4 82
28 14 53 7 7	II	21 16 59 65	0 47	+ 0 82	N	105 17 23 58	28 93	+ 5 35
29 15 41 19 1	II	22 9 15 24	15 55	+ 0 31				
30 16 29 8 1	II	23 1 8 80	9 46	+ 0 66	N	98 16 21 88	32 50	+ 10 62

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (Continued)

Mean Solar Time of Observation	I or II Limb	A R from Observation	A R from N A	Error of N A	N or S Limb	N P D from Observation	N P D from N A	Error of N A
1831		m						
July 2 18 5 42 2	II	0 45 51 53	51 82	+ 0 29	N	89 15 48 40	3 48	+ 15 08
17 6 30 29 9	I	14 9 6 31	56 30	— 0 01	N	97 52 40 78	47 14	+ 6 6
18 7 14 11 3	I	14 57 41 82	41 78	— 0 04	N	101 29 8 78	13 31	+ 4 53
29 16 3 38 9	II	0 29 55 23	54 64	— 0 59	N	90 48 39 54	36 64	— 2 90
Aug 17 7 25 8 9	I	17 6 59 67	58 99	— 0 68	N	108 6 41 33	4 22	+ 0 89
22 11 30 42 0	I	21 32 57 00	56 61	— 0 39	N	104 28 8 08	8 12	+ 0 04
Sept 15 6 53 13 1	I	18 29 19 64	19 26	— 0 38	N	109 37 5 07	8 08	+ 3 01
16 7 42 2 8	I	19 22 14 21	13 84	— 0 37	S	109 18 35 49	37 87	+ 2 38
17 8 31 24 9	I	20 15 41 11	40 68	— 0 43	S	108 1 27 76	29 80	+ 2 10
20 11 0 22 6	I	22 56 52 94	53 08	+ 0 14	S	98 43 11 48	1 84	— 9 64
21 11 51 20 6	I II	23 50 52 31	52 71	+ 0 40	S	94 13 6 01	5 73	— 0 28
22 12 42 52 5	II	0 45 24 93	25 32	+ 0 39	N	89 2 57 52	54 85	— 2 67
Oct 14 6 22 17 7	I	19 52 39 31	38 87	— 0 44	S	108 53 8 35	0 82	— 7 53
17 8 48 41 1	I	22 31 16 43	16 46	+ 0 03	S	100 47 22 93	20 08	— 2 85
20 11 19 38 8	I	1 14 29 94	30 84	+ 0 90	S	86 46 41 63	36 33	— 5 30
21 12 15 16 5	II	2 12 2 77	3 30	+ 0 53	S	81 50 43 67	30 14	— 13 3
23 14 8 45 1	II	4 13 40 03	40 48	+ 0 45				
25 16 8 13 1	II	6 21 20 20	20 69	+ 0 49	S	70 7 28 64	20 98	— 7 66
29 19 49 19 6	II	10 18 55 17	55 63	+ 0 46	S	78 13 23 73	25 0	+ 1 32
Nov 19 11 49 41 2	I II	3 41 48 77	49 20	+ 0 43	S	75 23 29 42	27 89	— 1 53
21 13 53 33 6	II	5 52 44 40	44 52	+ 0 12	N	70 15 44 56	32 86	— 11 70
26 18 36 15 4	II	10 56 2 89	3 86	+ 0 97	S	80 45 55 91	47 64	— 8 27
Dec 11 5 20 46 9	I	22 39 37 06	37 17	+ 0 11	S	100 41 8 89	11 13	+ 2 24
12 6 7 15 0	I	23 30 8 79	8 71	— 0 08	S	96 33 36 86	28 40	— 8 46
13 6 54 23 4	I	0 21 22 85	23 19	+ 0 34	S	91 58 52 90	38 31	— 14 59
14 7 43 5 1	I	1 14 10 38	11 07	+ 0 69	S	87 7 51 69	49 53	— 2 16
15 8 34 15 4	I	2 9 27 26	27 39	+ 0 13	S	82 16 0 63	48 27	— 12 36
16 9 28 40 3	I	3 8 0 69	1 04	+ 0 35	S	77 41 59 02	53 76	— 5 26
19 12 34 31 2	II	6 23 52 24	52 26	+ 0 02	S	69 48 32 20	31 16	— 1 04
21 14 39 10 9	II	8 36 47 13	46 95	— 0 18	S	71 59 49 64	48 85	— 0 79
22 15 36 37 0	II	9 38 20 87	20 74	— 0 13	S	75 3 16 12	12 02	— 4 10
24 17 19 34 2	II	11 29 32 66	32 89	+ 0 23	S	83 18 19 04	6 45	— 12 59
1832								
Jan 13 8 9 54 9	I	3 39 24 36	25 16	+ 0 80	S	75 43 23 84	30 80	+ 6 96
14 9 7 41 1	I	4 41 18 97	19 60	+ 0 63	S	72 26 13 30	13 00	— 0 30
15 10 8 51 0	I	5 46 35 83	36 25	+ 0 42	S	70 20 5 35	58 60	— 6 75
17 12 17 27 8	I	8 3 5 56	5 80	+ 0 24	S	70 45 51 30	51 40	+ 0 10
26 19 0 42 0	II	15 17 8 50	8 87	+ 0 37	N	102 47 8 81	9 10	+ 0 29
Feb 9 6 2 23 1	I	3 17 56 76	56 60	— 0 16	S	77 10 8 86	57 09	— 11 77
10 6 56 35 3	I	4 16 16 24	16 33	+ 0 09	S	73 38 41 27	32 66	— 8 61
11 7 53 58 7	I	5 17 47 39	47 63	+ 0 24	S	71 6 33 79	24 33	— 9 46
12 8 53 59 9	I	6 21 55 39	55 93	+ 0 54	N	69 51 6 45	9 45	+ 3 00
13 9 55 15 8	I	7 27 18 91	19 34	+ 0 43	N	70 4 3 54	1 15	— 2 39
14 10 56 2 2	I	8 32 10 31	11 20	+ 0 89	N	71 45 54 43	59 18	+ 4 75
15 11 54 42 0	I	9 34 55 99	56 02	+ 0 03	N	74 46 3 50	5 56	+ 2 06
21 16 54 22 9	II	14 56 55 07	54 77	— 0 30	S	101 21 21 56	23 93	+ 2 37
23 18 26 24 5	II	16 37 4 75	4 81	+ 0 06				
Mar 11 7 44 35 0	I	7 2 43 08	43 13	+ 0 05	N	69 43 0 57	8 60	+ 8 03
12 8 43 37 7	I	8 5 50 95	51 62	+ 0 67	N	70 49 36 75	33 74	— 3 01
13 9 41 21 6	I	9 7 39 63	40 21	+ 0 58	N	73 15 23 84	21 76	— 2 08
14 10 36 52 2	I	10 7 14 85	14 60	— 0 25	N	76 46 34 03	32 84	— 1 19
15 11 29 49 5	I	11 4 15 67	15 42	— 0 25	N	81 4 32 02	26 90	— 5 12

Right Ascensions and North Polar Distances of the Moon's Center (Cont n d)

M an S lar Tim f Ob ti	I II L mb	A R fr m Ob ti	A R fr m N A	E f N A	N S Limb	N P D from Ob ti	N P D from N A	E ro f N A
1832								
M r 16 12 21 28 9	I II	11 58 55 41	55 13	— 0 38	N	85 49 8 91	5 19	— 3 72
17 13 11 12 2	II	12 51 40 95	40 96	+ 0 01	S	90 41 8 93	15 01	+ 6 08
18 13 58 34 2	II	13 43 7 1	7 63	+ 0 12	S	9 23 36 83	30 11	— 6 72
20 15 31 51 4	II	15 24 33 67	33 24	— 0 43	S	103 28 6 40	5 40	— 1 00
21 16 18 40 9	II	16 15 26 71	26 81	+ 0 10	S	106 30 45 00	44 27	— 0 73
22 17 5 57 9	II	17 6 47 65	47 50	— 0 15	S	108 44 5 88	10 10	+ 4 22
23 17 53 42 9	II	17 58 37 12	36 55	— 0 57	N	110 3 23 81	29 47	+ 5 66
April 8 6 38 13 4	I	7 46 32 56	32 61	+ 0 05	N	70 8 5 72	32	+ 1 60
9 7 35 21 5	I	8 47 46 33	46 59	+ 0 26	N	72 8 57 40	1 40	+ 4 00
10 8 30 14 4	I	9 46 43 63	44 03	+ 0 40	N	75 17 21 58	21 64	+ 0 06
11 9 22 37 5	I	10 43 9 17	10 08	+ 0 91	N	79 16 34 41	48 99	+ 14 58
12 10 12 40 8	I	11 37 18 07	18 18	+ 0 11	N	83 49 13 77	27 66	+ 13 89
13 11 1 0 9	I	12 29 39 65	39 70	+ 0 05	N	88 37 48 6	48 12	— 0 55
14 11 48 10 1	I	13 20 52 62	52 76	+ 0 14	N	93 25 23 01	28 39	+ 5 38
15 12 36 56 2	II	14 11 39 37	39 07	— 0 30	N	97 58 12 33	13 24	+ 0 91
17 14 10 34 3	II	15 53 25 57	25 45	— 0 12	S	105 28 17 12	17 62	+ 0 50
18 14 58 6 0	II	16 45 1 35	1 15	— 0 20	N	108 6 28 87	33 61	+ 4 74
21 17 22 35 6	II	19 21 44 75	43 75	— 1 00	N	110 26 13 95	10 63	+ 5 68
May 6 5 31 15 9	I	8 29 47 81	48 18	+ 0 37	N	71 9 56 37	58 15	+ 1 78
8 7 19 59 5	I	10 26 39 31	39 96	+ 0 65	N	77 47 30 38	31 94	+ 1 56
9 8 10 1 8	I	11 20 45 24	45 17	— 0 07	N	82 10 37 97	36 55	— 1 42
11 9 44 22 9	I	13 3 12 53	12 78	+ 0 25	N	91 40 32 02	34 97	+ 2 05
12 10 30 14 3	I	13 53 7 89	7 75	— 0 14	N	96 18 20 30	27 90	+ 7 60
13 11 16 8 1	I	14 43 4 99	4 92	— 0 07	N	100 34 21 26	33 47	+ 12 21
14 12 4 38 9	II	15 33 36 83	37 08	+ 0 25	N	101 17 44 28	51 04	+ 6 76
Ju e 6 6 56 40 8	I	11 57 33 85	34 01	+ 0 16	N	85 15 36 36	40 66	+ 4 30
7 7 43 22 9	I	12 48 19 53	19 20	— 0 33	N	90 4 3 11	6 55	+ 3 44
9 9 14 8 9	I	14 27 12 68	12 70	+ 0 02	N	99 9 28 18	34 86	+ 6 68
10 9 59 42 6	I	15 16 51 13	50 82	— 0 31	N	103 4 5 81	16 89	+ 11 08
12 11 33 18 9	I	16 58 37 00	37 43	+ 0 43	N	108 49 40	5 13	— 0 27
Sept. 4 7 46 34 6	I	18 42 26 51	26 75	+ 0 24	N	111 3 35 77	35 58	— 0 19
5 8 34 52 0	I	19 34 48 23	47 69	— 0 54	S	110 41 0 05	55 98	— 4 07
O t 2 6 28 23 3	I	19 14 26 28	26 18	— 0 10	S	111 8 57 89	52 70	— 5 19
3 7 16 28 7	I	20 6 35 40	35 41	+ 0 01	S	110 8 54 58	53 70	— 0 88
4 8 3 45 0	I	20 57 55 69	55 76	+ 0 07	S	108 11 56 29	56 64	+ 0 35
5 8 50 7 7	I	21 48 22 13	22 67	+ 0 54	S	105 23 16 25	18 96	+ 2 71
8 11 6 7 0	I	0 16 33 52	34 30	+ 0 78	S	93 2 56 87	50 65	— 6 22
9 11 53 2 6	I	1 7 31 58	32 16	+ 0 58	S	88 10 52 49	56 30	+ 3 81
30 5 9 10 2	I	19 45 23 35	23 57	+ 0 22	S	110 56 38 07	39 03	+ 0 96
31 5 6 48 3	I	20 37 5 27	4 91	— 0 36	S	109 22 13 11	15 55	+ 2 44
No 1 6 43 17 1	I	21 27 37 76	37 62	— 0 14	S	106 54 7 80	9 19	+ 1 39
2 7 28 45 1	I	22 17 9 82	9 53	— 0 29	S	103 38 48 97	53 20	+ 4 23
3 8 13 34 7	I	23 6 2 41	2 67	+ 0 26	S	99 43 32 16	38 52	+ 6 36
4 8 58 17 9	I	23 54 49 34	49 75	+ 0 41	S	95 16 35 20	38 52	+ 3 32
5 9 43 36 4	I	0 44 12 66	13 19	+ 0 53	S	90 27 39 00	40 38	+ 1 38
15 18 55 3 8	II	10 34 29 01	30 15	+ 1 14	S	77 32 51 22	0 53	+ 9 31
29 5 22 33 2	I	21 57 1 06	1 24	+ 0 18	S	105 19 19 59	18 73	— 0 86
30 6 6 54 9	I	22 45 28 49	28 31	— 0 18	S	101 42 21 19	18 44	— 2 75
D c 3 8 19 45 3	I	1 10 30 60	30 76	+ 0 16				
4 9 6 44 7	I	2 1 36 18	36 67	+ 0 49	S	83 5 11 69	8 63	— 3 06
5 9 56 40 4	I	2 55 39 04	39 36	+ 0 32	S	78 19 16 73	13 62	— 3 11
6 10 50 18 2	I	3 53 23 25	23 62	+ 0 37	S	74 4 35 74	34 58	— 1 16

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON s CENTER, (*C nt nued*)

M an S l Tim f Ob ti		I II Limb	A R fr m Ob er ti	A R f m N A.	Err f N A	N S Limb	N P D from Ob ti	N P D fr m N A.	Err f N A
1832	m		m				′	′	
D	7 11 49 1 6	I	4 55 6 26	6 80	+ 0 54	S	70 44 37 09	33 92	— 3 17
1833									
J	4 10 27 12 1	I	5 24 37 10	37 51	+ 0 41	S	69 39 10 14	2 36	— 7 78
	5 11 29 34 3	I	6 31 7 37	8 12	+ 0 75	N	68 17 31 07	31 66	+ 0 59
	13 18 52 56 4	II	14 25 0 57	0 51	— 0 06	S	98 55 38 55	38 35	— 0 20
	29 6 23 36 5	I	2 58 48 79	49 02	+ 0 23	S	78 9 1 80	58 70	— 3 10
	30 7 14 5 9	I	3 53 25 33	25 71	+ 0 38	S	74 7 53 75	47 84	— 5 91
	31 8 8 45 4	I	4 52 11 97	12 78	+ 0 81	S	70 53 44 07	41 71	— 2 36
Feb	1 9 7 36 9	I	5 55 12 42	13 28	+ 0 86	N	68 48 39 22	35 95	— 3 27
	4 12 17 6 6	I	9 15 52 80	53 28	+ 0 48	N	72 3 27 90	30 80	+ 2 90
	27 5 59 11 0	I	4 28 42 29	42 35	+ 0 06	S	71 53 34 27	34 18	— 0 09
	28 6 54 14 9	I	5 27 53 21	53 42	+ 0 21	S	69 23 43 09	39 38	— 3 71
M	1 7 52 42 6	I	6 30 29 35	29 97	+ 0 62	N	68 10 5 04	4 74	— 0 30
	2 8 53 30 9	I	7 35 24 87	25 79	+ 0 92	N	68 27 30 88	27 54	— 3 34
	3 9 54 57 0	I	8 40 57 43	58 17	+ 0 74	N	70 21 36 50	35 38	— 1 12
	4 10 55 17 0	I	9 45 22 75	23 16	+ 0 41	N	73 45 31 84	33 7	+ 1 53
	6 12 51 2 6	II	11 47 4 53	5 01	+ 0 48	N	83 41 53 25	57 52	+ 4 27
	28 5 44 54 8	I	6 8 46 19	46 47	+ 0 28	N	68 11 19 99	15 63	— 4 36
	29 6 43 14 3	I	7 11 12 59	13 08	+ 0 49	N	67 56 18 87	19 25	+ 0 38
	30 7 42 26 3	I	8 14 30 85	31 44	+ 0 59	N	69 12 0 29	1 25	+ 0 96
	31 8 41 6 7	I	9 17 17 69	17 81	+ 0 12				
Apr l	1 9 38 13 6	I	10 18 28 26	28 94	+ 0 68	N	75 56 36 05	38 60	+ 2 55
	2 10 33 19 5	I	11 17 38 73	39 35	+ 0 62	N	80 54 30 52	26 10	— 4 42
	3 11 26 33 9	I	12 14 57 43	57 85	+ 0 42	N	86 26 7 61	7 97	+ 0 36
	4 12 20 41 8	II	13 10 59 47	59 69	+ 0 22	N	92 7 41 44	38 63	— 2 81
	27 6 34 49 4	I	8 57 5 13	5 95	+ 0 82	N	70 38 47 18	47 71	+ 0 53
	28 7 30 56 9	I	9 57 17 49	18 17	+ 0 68	N	74 11 15 71	13 71	— 2 00
	29 8 24 57 9	I	10 55 22 76	23 42	+ 0 66	N	78 44 27 64	28 46	+ 0 82
	30 9 17 4 8	I	11 51 33 69	34 30	+ 0 61	N	83 58 42 59	44 58	+ 1 99
M y	1 10 7 52 4	I	12 46 25 40	25 88	+ 0 48	N	89 32 49 84	49 90	+ 0 06
	2 10 58 4 5	I	13 40 42 26	42 41	+ 0 15	N	95 5 43 49	45 18	+ 1 69
	3 11 49 30 2	I II	14 35 8 40	8 58	+ 0 18				
June	28 9 16 19 3	I	15 43 24 20	24 19	— 0 01	N	105 43 36 58	42 72	+ 6 14
	29 10 6 36 0	I	16 37 46 29	46 39	+ 0 10	N	109 4 55 20	58 31	+ 3 11
	30 10 57 52 1	I	17 33 7 06	7 45	+ 0 39	S	111 22 52 02	51 85	0 17
July	1 11 50 39 6	I II	18 28 54 67	54 80	+ 0 13	N	112 30 43 43	42 26	— 1 17
	25 7 13 57 0	I	15 27 8 90	8 75	— 0 15	N	104 32 10 41	15 23	+ 4 82
	29 10 35 58 3	I	19 5 29 80	29 60	— 0 20	S	112 35 55 13	50 88	— 4 2ɔ
A g	29 11 44 33 0	I II	22 15 24 27	23 94	— 0 33				
S pt	21 6 28 5 0	I	18 29 50 23	50 23	0 00	S	112 49 40 60	39 39	— 1 21
	26 10 2ɔ 13 6	I	22 47 15 51	15 71	+ 0 20	S	102 15 5 16	2 03	— 3 13
Oct	20 6 2 49 4	I	19 58 49 86	49 91	+ 0 05	S	112 16 57 12	56 49	— 0 63
	21 6 51 35 8	I	20 51 39 44	39 46	+ 0 02	S	110 19 41 20	40 66	— 0 54
	22 7 38 1 6	I	21 42 7 86	8 49	+ 0 63	S	107 27 34 73	34 16	— 0 57
	23 8 22 22 ɔ	I	22 30 31 63	31 80	+ 0 17	S	103 51 1 50	4 71	+ 3 21
	25 9 46 55 7	I	0 3 10 48	10 93	+ 0 45	S	95 4 12 89	10 67	— 2 22
Nov	18 5 32 2 9	I	21 22 17 50	17 08	— 0 42				
	19 6 17 31 8	I	22 11 48 79	48 78	— 0 01	S	105 34 3 35	13 88	+ 10 53
	20 7 0 53 7	I	22 59 13 22	12 92	— 0 30	S	101 34 17 68	18 31	+ 0 63

Right Ascensions and North Polar Distances of the Moon s Center (C nt nu d)

M S l Tim f Ob rv ti		I II Limb	A R f m Ob ti	A R from N A	Erro f N A	N S Limb	N P D fr m Ob rv i	N P D fr m N A	E f N A
1833									
Nov 21	7 42 51 1	I	23 45 12 63	12 40	— 0 23	S	97 6 22 93	26 00	+ 3 07
22	8 24 14 2	I	0 30 37 87	37 92	+ 0 05	S	92 19 41 60	37 58	— 4 02
De 18	37 47 7	I	23 26 16 13	16 54	+ 0 41	S	99 7 39 14	39 25	+ 0 11
19	6 19 4 7	I	0 11 36 25	35 88	— 0 37	S	94 28 38 13	35 58	— 2 55
20	7 0 5 0	I	0 56 40 13	39 98	— 0 15	S	89 37 11 80	8 81	— 2 99
22	8 25 22 2	I	2 30 77	5 51	— 0 26	S	79 53 52 01	43 22	— 8 79
23	9 11 38 6	I	3 20 28 41	28 63	+ 0 22	S	75 24 46 11	41 51	— 4 60
24	10 1 30 9	I	4 14 27 44	28 00	+ 0 56	S	71 31 17 90	11 93	— 5 97
25	10 55 25 3	I	5 12 26 10	26 94	+ 0 84	N	68 32 50 49	48 93	— 1 56
26	11 54 3 1	I II	6 14 5 73	6 25	+ 0 52	N	66 49 53 39	54 06	+ 0 67
27	12 55 6 5	II	7 18 15	5 58	+ 0 43	N	66 38 59 44	6 05	+ 6 61
1834									
Ja 17	5 36 6 0	I	1 22 49 79	49 97	+ 0 18	S	86 45 4 44	2 50	— 1 94
18	6 17 56 9	I	2 8 4 64	45 50	— 0 14	S	81 57 9 08	3 78	— 5 30
19	7 1 54 8	I	2 56 48 77	48 73	— 0 04	S	77 23 4 50	56 58	— 7 92
20	7 48 58 4	I	3 47 59 42	59 67	+ 0 25	S	73 15 39 77	35 32	— 4 45
21	8 39 57 7	I	4 43 5 70	6 18	+ 0 48	S	69 51 32 06	25 77	6 29
22	9 35 9·8	I	5 42 25 44	25 68	+ 0 24	S	67 30 14 45	8 83	— 5 62
23	10 34 0 2	I	6 45 24 22	24 71	+ 0 49	N	66 31 53 81	51 89	— 1 92
24	11 35 1 3	I	7 50 31 05	31 73	+ 0 68	N	67 11 24 39	27 12	+ 2 73
25	12 38 29 2	II	8 55 45 76	46 69	+ 0 93	N	69 32 33 12	34 74	+ 1 62
F b 16	5 40 43 6	I	3 25 48 6	48 56	+ 0 09	S	74 45 11 17	9 55	— 1 62
17	6 28 35 5	I	4 17 46 58	46 77	+ 0 19	S	71 6 8 31	5 91	— 2 40
18	7 20 17 5	I	5 13 35 89	35 72	— 0 17	S	68 18 54 90	51 46	— 3 44
19	8 15 53 5	I	6 13 19 86	19 77	— 0 09	N	66 41 45 43	41 54	3 89
20	9 14 41 8	I	7 16 15 27	15 83	+ 0 56	N	66 31 59 80	59 79	— 0 01
21	10 15 12 1	I	8 20 52 06	52 70	+ 0 64	N	68 1 5 80	4 30	— 1 50
22	11 15 30 6	I	9 25 18 71	19 60	+ 0 89	N	71 8 49 31	50 46	+ 1 15
23	12 15 27 8	I II	10 28 10 37	11 03	+ 0 66	N	75 42 12 18	17 57	+ 5 39
24	13 13 2 3	II	11 28 43 22	43 90	+ 0 68	N	81 17 26 25	31 52	+ 5 27
1835									
Feb 6	6 27 36 2	I	3 32 25 25	25 06	— 0 19	S	72 41 48 35	43 17	— 5 18
7	7 13 49·1	I	4 22 45 55	45 26	— 0 29	S	69 8 56 51	47 47	— 9 04
8	8 3 16 2	I	5 16 18 50	18 57	+ 0 07	S	66 30 51 95	44 44	— 7 51
9	8 55 53 7	I	6 13 3 01	2 96	— 0 05	N	65 2 17 52	16 03	— 1 49
10	9 51 0 6	I	7 12 16 14	16 07	— 0 07	N	64 56 49 94	45 74	— 4 20
11	10 47 18 1	I	8 12 40 01	40 12	+ 0 11	N	66 22 34 65	31 40	— 3 25
12	11 43 18 9	I	9 12 45 75	46 57	+ 0 82	N	69 19 21 37	22 50	+ 1 13
13	12 40 15 6	II	10 11 33 17	33 04	— 0 13	N	73 37 58 90	3 78	+ 4 88
15	14 24 4 2	II	12 3 33 95	34 29	+ 0 34	S	85 4 24 48	22 23	— 2 25
17	16 4 54 0	II	13 52 23 20	23 96	+ 0 76				
Ma 8	6 44 14 4	I	5 47 27 84	27 82	— 0 02				
9	7 37 17 8	I	6 44 37 86	37 76	— 0 10	N	64 34 57 73	53 19	— 4 54
10	8 32 10 1	I	7 43 36 53	36 60	+ 0 07	N	65 19 34 67	30 15	— 4 52
11	9 27 41 0	I	8 43 13 07	13 12	+ 0 05	N	67 32 38 93	36 42	— 2 51
13	11 16 34 6	I	10 40 16 06	16 09	+ 0 03	N	76 11 53 78	53 25	— 0 53
14	12 10 19 0	I II	11 37 0 29	0 54	+ 0 25	N	82 7 38 54	41 27	+ 2 73
Apr l 7	7 14 51 0	I	8 16 28 09	27 98	— 0 11	N	66 7 40 71	31 19	— 9·52
8	8 8 38 6	I	9 14 20 97	20 59	— 0 38	N	69 6 32 27	24 63	— 7 64
10	9 53 53 5	I	11 7 45 55	45 49	— 0 06	N	78 50 59 67	58 94	— 0 73
11	10 45 36 8	I	12 3 32 52	32 84	+ 0 32	N	85 6 43 88	44 74	+ 0 86
12	11 37 36 2	I	12 59 37 59	36 84	— 0 75	N	91 49 11 77	10 95	— 0 82
13	12 31 58 1	I II	13 56 57 79	57 65	— 0 14	N	98 30 58 34	5 96	+ 7 62
May 5	6 0 5 4	I	8 51 52 55	52 81	+ 0 26	N	67 36 52 10	50 10	— 2 00

Right Ascensions and North Polar Distances of the Moon s Center (C nt ued)

M an Sol Tim f Ob tion	I II Limb	A R fr m Ob rv ti	A R from N A	Err of N A	N S Limb	N P D from Ob ti	N P D from N A	Erro f N A
1835								
M y 8 8 32 36 3	I	11 36 36 38	36 46	+ 0 08	N	81 53 14 22	15 26	+ 1 04
9 9 22 49 2	I	12 30 54 69	54 90	+ 0 21	N	88 17 5 48	8 08	+ 2 60
10 10 14 14 0	I	13 26 25·23	25 49	+ 0·26	N	94 57 52 71	54 59	+ 1 88
11 11 7 56 1	I	14 24 14 27	14 87	+ 0 60	N	101 28 51 08	47 28	— 3 80
12 12 6 2 7	I II	15 25 17 93	18 96	+ 1 03	N	107 18 45 55	53 17	+ 7 62
June 5 7 14 2 9	I	12 8 12 45	12 22	— 0 23	N	85 31 49 20	54 02	+ 4 82
7 8 53 37 5	I	13 55 57 95	58 17	+ 0 22	N	98 22 5 53	1 85	+ 7 32
8 9 47 22 9	I	14 53 51 04	51 25	+ 0 21	N	104 27 31 13	41 79	+ 10 66
9 10 45 1 1	I	15 55 37 90	38 24	+ 0 34	N	109 41 26 26	33 93	+ 7 67
10 11 47 44 7	I II	17 1 17 83	18 21	+ 0 38	N	113 32 28 34	34 97	+ 6 63
J ly 4 6 46 31 2	I	13 34 57 22	57 18	— 0 04	N	96 2 29 01	32 62	+ 3 61
6 8 31 10 2	I	15 27 50 38	50 15	— 0 23	N	107 34 53 55	58 71	+ 5 16
9 11 4 17 4	I	18 43 21 14	21 60	+ 0 46	S	115 50 24 25	28 76	+ 4 51
A g 2 6 24 49 5	I	15 7 34 23	34 85	+ 0 62	N	106 0 18 35	20 48	+ 2 13
3 7 19 56 5	I	16 6 46 89	47 07	+ 0 18	N	110 40 56 50	55 53	— 0 97
4 8 18 33 2	I	17 9 32 56	32 63	+ 0 07	N	114 2 33 04	33 17	+ 0 13
5 9 19 44 6	I	18 14 52 10	52 40	+ 0 30	N	115 44 21 21	22 22	+ 1 01
6 10 21 28 2	I	19 20 41 23	41 84	+ 0 61				
S pt 1 7 12 6 6	I	17 53 19 39	19 07	— 0 32	N	115 35 17 23	19 32	+ 2 09
4 10 8 5 8	I	21 1 33·63	34 39	+ 0 76				
6 11 49 9 3	I	22 50 43 40	44 41	+ 1 01	S	102 44 59 61	49 23	— 10 38
29 6 7 15 6	I	18 38 42 10	42 38	+ 0 28	S	116 18 51 88	52 51	+ 0 63
O t 2 8 56 11 1	I	21 39 48 66	49·24	+ 0 58	S	109 19 31 57	27 09	— 4 48
4 10 30 40 5	I	23 22 23 07	23 88	+ 0 81				
5 11 13 54 8	I	0 9 40 07	40 87	+ 0 80	S	93 46 4 82	55 73	— 9 09
29 6 53 36 9	I	21 23 15 82	16 16	+ 0·34				
N v 5 12 1 19·8	II	2 57 24 30	24 65	+ 0 35	N	74 20 15 73	14 81	— 0 92
28 7 12 5 5	I	23 40 4 78	4 46	— 0 32	S	97 28 8 69	3 72	— 4 97
D 2 0 57 35 8	I	2 41 48 36	48 64	+ 0 28	S	75 53 14 11	20 91	+ 6 80
3 10 41 4 6	I	3 29 22 40	22 15	— 0 25	S	71 29 15 27	9 01	— 6 26
27 6 33 15 9	I	0 55 27 55	28 14	+ 0 59	S	88 4 47 91	41 35	— 6 6
28 7 14 20 0	I	1 40 35 95	36 58	+ 0 63	S	82 28 31 72	21 28	— 10 44
29 7 55 46 7	I	2 26 6 88	7 51	+ 0 63				
30 8 38 34 8	I	3 12 58 89	59 22	+ 0 33	S	72 50 24 91	14 69	— 10 22
31 9 23 25 4	I	4 1 54 65	55 15	+ 0 50	S	68 57 24 28	12 34	— 11 94
1836								
J n 2 11 0 18 4	I	5 46 59 37	59 07	— 0 30	N	64 6 50 17	48 39	— 1 78
3 11 51 31 4	I	6 42 18 46	18 46	0 00	N	63 30 43 29	43 15	— 0 14
25 5 51 49 1	I	2 8 15 64	15 83	+ 0 19	S	79 7 55 60	42 98	— 12 62
26 6 34 29 8	I	2 55 0 18	0 79	+ 0·61				
27 7 18 44 8	I	3 43 21 21	21 48	+ 0 27				
28 8 5 11 4	I	4 33 52 99	53 04	+ 0 05	S	66 48 23 00	17 22	— 5 78
31 10 36 37 1	I	7 17 35 39	35 16	— 0·23	N	63 47 24 64	22 33	— 2 31
Feb 1 11 28 26 5	I	8 13 29 73	29 53	— 0 20	N	65 27 15 53	16 17	+ 0 64
2 12 20 17 1	I II	9 8 19 24	19 33	+ 0 09	N	68 25 35 21	36 75	+ 1 54
26 7 36 11 8	I	5 59 10 51	10 89	+ 0 38	S	63 32 32 39	35 58	+ 3 19
27 8 27 34·0	I	6 54 38 38	38 96	+ 0 58	N	63 19 10 27	6 90	— 3 37
28 9 19 24 1	I	7 50 33 56	33 39	— 0 17	N	64 27 47 28	44 60	— 2 68
29 10 10 40 3	I	8 45 54 09	53 71	— 0 38	N	66 57 29 76	29 61	— 0 15
Mar 1 11 0 38 8	I	9 39 56 50	56 01	— 0 49	N	70 42 1 30	0 18	— 1 12

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON S CENTER, (Cont nued)

M S l Tim f Ob rv ti		I II Limb	A. R fr m Ob rv ti n.	A. R fr m N A	Err f N A	N S Limb	N P D fr m Ob rv ti	N P D fr m N A.	E f N A
1836			m						
Mar	2 11 49 4 4	I	10 32 25 39	25 03	— 0 36	N	75 30 16 01	17 30	+ 1 29
	3 12 38 22 4	II	11 23 40 54	40 22	— 0 32	N	81 8 27 67	29 74	+ 2 07
	25 6 18 10 5	I	6 31 20 65	20 63	— 0 02	N	63 1 8 10	2 29	— 5 81
	26 7 9 30 7	I	7 26 45 56	46 18	+ 0 62	N	63 35 41 12	36 67	— 4 45
	27 8 0 33 2	I	8 21 53 84	53 55	— 0 29	N	65 31 10 68	7 96	— 2 72
	28 8 50 36 2	I	9 15 59 88	59 94	+ 0 06	N	68 43 43 94	39 82	— 4 12
	29 9 39 20 5	I	10 8 47 36	46 82	— 0 54	N	73 5 18 71	16 22	— 2 49
	30 10 26 53 2	I	11 0 23 89	23 66	— 0 23	N	78 24 43 74	42 ₀8	— 1 16
	31 11 13 49 9	I	11 51 24 81	24 72	— 0 09	N	84 27 46 31	46 04	— 0 27
Ap l	1 12 2 9 2	I II	12 42 44 91	44 96	+ 0 05	N	90 57 25 86	27 82	+ 1 96
	24 6 41 32 4	I	4 53 1 31	1 33	+ 0 02	N	67 4 26 17	23 90	— 2 27
	26 8 16 52 9	I	10 36 29 49	29 66	+ 0 17	N	75 43 24 88	24 95	+ 0 07
	27 9 3 11 1	I	11 26 51 58	51 38	— 0 20	N	81 23 27 09	27 44	+ 0 35
	28 9 49 36 8	I	12 17 21 58	21 ₀6	— 0 02	N	87 40 2 53	4 10	+ 1 57
	29 10 37 16 4	I	13 9 6 85	7 03	+ 0 18	N	94 16 18 79	20 31	+ 1 52
	30 11 27 25 0	I	14 3 21 86	22 07	+ 0 21	N	100 50 31 28	36 14	+ 4 86
M y	26 8 25 39 3	I	12 43 33 97	34 11	+ 0 14	N	90 1 43 49	46 89	+ 3 40
	28 10 4 37 5	I	14 30 45 25	45 40	+ 0 15	N	103 52 12 36	15 25	+ 2 89
J ly	26 10 35 18 7	I	18 54 15 57	16 11	+ 0 54	S	117 1 31 6	30 82	— 0 83
A ıg	21 7 15 25 1	I	17 16 17 22	17 66	+ 0 44	N	116 3 26 18	24 25	— 2 23
S pt	18 6 10 7 3	I	18 1 11 79	12 18	+ 0 39	N	117 18 39 56	36 47	— 3 09
	19 7 12 46 9	I	19 7 58 78	59 40	+ 0 62	S	117 10 14 15	8 94	— 5 21
	20 8 14 24 9	I	20 13 42 79	43 29	+ 0 50	S	115 4 37 30	27 46	— 9 84
	22 10 7 26 7	I	22 14 51 33	₀2 24	+ 0 91	S	106 7 15 00	1 04	— 13 96
	23 10 58 6 6	I	23 9 34 23	35 11	+ 0 88	S	100 6 46 63	32 64	— 13 99
Oct	17 6 8 37 8	I	19 54 1 84	2 46	+ 0 62	S	116 2 3₀ 16	32 99	— 2 17
	18 7 7 18 0	I	20 56 46 03	46 63	+ 0 60	S	112 45 54 08	50 62	— 3 46
	19 8 1 49 3	I	21 55 20 36	21 13	+ 0 77	S	108 6 3 00	54 81	— 8 19
	20 8 52 20 8	I	22 49 54 74	55 19	+ 0 45	S	102 28 15 36	4 43	— 10 93
	21 9 39 44 0	I	23 41 20 27	20 86	+ 0 59	S	96 16 32 10	22 86	— 9 24
	22 10 2₀ 7 1	I	0 30 46 95	47 37	+ 0 42	S	89 52 27 76	16 28	— 11 48
N v	17 7 37 48 6	I	23 25 32 91	33 42	+ 0 51	S	98 15 4 72	57 53	— 7 19
	18 8 22 54 1	I	0 14 40 50	40 93	+ 0 43	S	91 58 57 00	47 99	— 9 01
	22 11 21 41 3	I	3 29 45 94	46 08	+ 0 14	N	69 41 3 50	11 98	+ 8 48
	23 12 12 28 7	II	4 22 28 07	27 74	— 0 33	N	66 1 24 34	22 29	— 2 05
D	16 7 5 57 4	I	0 47 54 87	55 21	+ 0 34	S	87 30 9 40	0 85	— 8 55
	17 7 49 25 3	I	1 35 25 93	26 39	+ 0 46	S	81 28 24 43	15 49	— 8 94
	18 8 33 18 6	I	2 23 25 05	25 33	+ 0 28	S	75 55 32 30	24 88	— 7 42
	19 9 18 38 8	I	3 12 48 90	49 22	+ 0 32	S	71 4 21 47	12 10	— 9 37
	20 10 5 57 7	I	4 4 13 34	13 11	— 0 23	S	67 7 29 87	22 91	— 6 96
	21 10 55 20 5	I	4 57 42 05	41 49	— 0 56	N	64 17 15 27	9 99	— 5 28
1837									
Jan	17 8 51 51 2	I	4 40 18 98	19 64	+ 0 66				
	18 9 42 6 0	I	5 34 42 28	41 96	— 0 32	N	63 0 5 83	3 84	— 1 99
	19 10 33 19 6	I	6 29 58 78	58 60	— 0 18	N	62 24 31 24	30 43	— 0 81
	20 11 24 16 6	I	7 25 0 20	59 93	— 0 27	N	63 11 2 65	1 93	— 0 72
	21 12 14 58 5	I II	8 18 40 27	39 99	— 0 28	N	65 15 40 54	43 74	+ 3 20
I b	12 5 58 36 7	I	3 29 5 36	5 ₀0	+ 0 14	S	69 13 14 77	9 62	— 5 15
	13 6 47 16 4	I	4 21 51 26	51 57	+ 0 31	S	65 38 26 59	26 14	— 0 45
	14 7 37 27 3	I	5 16 7 48	7 90	+ 0 42	S	63 17 24 05	24 65	+ 0 60

Right Ascensions and North Polar Distances of the Moon s Center (C nt nu d)

M an S lar Tim f Ob ti n.			I II Limb	A R fr m Ob rv ti	A R f m N A	Erro f N A	N S Limb	N P D from Ob rv ti	N P D f m N A	Err f N A
1837				m						
F b	15	8 28 35 5	I	6 11 20 74	21 16	+ 0 42	N	62 16 33 30	31 14	— 2 16
	17	10 9 47 3	I	8 0 42 03	41 73	— 0 30	N	64 19 54 49	56 20	+ 1 71
	18	10 57 59 8	I	8 52 57 02	56 46	— 0 56	N	67 14 28 48	35 46	+ 6 98
	19	11 43 57 3	I	9 42 57 11	56 54	— 0 57	N	71 11 36 43	40 06	+ 3 63
	21	13 12 9 6	II	11 17 12 90	12 86	— 0 04	S	81 24 15 60	18 36	+ 2 76
Mai	16	8 3 57 0	I	7 40 57 83	58 32	+ 0 49	N	63 23 19 66	21 41	+ 1 75
	17	8 52 53 3	I	8 33 57 39	57 62	+ 0 23	N	65 53 51 78	57 64	+ 5 86
	18	9 39 37 2	I	9 24 43 98	43 82	— 0 16	N	69 31 5 20	9 04	+ 3 84
	19	10 24 12 7	I	10 13 22 10	21 83	— 0 27	N	74 3 40 43	46 05	+ 5 62
	20	11 7 8 8	I	11 0 20 55	20 11	— 0 44	N	79 19 50 34	56 24	+ 5 90
	21	11 50 11 2	I II	11 46 25 71	25 60	— 0 11	N	85 7 29 61	36 37	+ 6 76
	27	16 40 26 1	II	16 59 56 80	57 39	+ 0 59	S	116 27 36 17	43 58	+ 7 41
	28	17 41 12 7	II	18 4 47 48	48 02	+ 0 54	N	117 57 55 58	2 56	+ 6 98
Ap l	16	9 1 55 9	I	10 41 15 11	14 86	— 0 28	N	77 1 52 24	1 26	+ 9 02
	18	10 26 3 7	I	12 13 29 11	29 10	— 0 01	N	88 39 43 52	52 21	+ 8 69
	19	11 8 56 4	I	13 0 25 89	25 87	— 0 02	N	94 53 27 48	37 02	+ 9 54
	20	11 54 58 4	I II	13 49 30 37	30 48	+ 0 11	N	101 3 52 02	1 34	+ 9 32
M y	15	8 19 29 3	I	11 53 0 02	0 22	+ 0 20	N	85 58 54 79	2 26	+ 7 47
	16	9 1 25 6	I	12 39 1 46	1 29	— 0 17	N	92 5 39 23	43 42	+ 4 19
	17	9 45 9 5	I	13 26 49 63	49 65	+ 0 02	N	98 17 56 05	1 74	+ 5 69
	23	15 31 19 2	II	19 35 20 52	20 40	— 0 12	N	116 50 32 03	26 23	— 5 80
	24	16 32 30 4	II	20 40 39 71	40 29	+ 0 58	N	113 42 24 24	19 23	— 5 01
J e	12	6 54 46 7	I	12 18 27 26	27 57	+ 0 32	N	89 31 9 34	21 57	+ 12 23
	13	7 36 42 6	I	13 4 28 07	28 03	— 0 04	N	95 35 15 02	22 20	+ 7 18
	14	8 21 9 4	I	13 53 0 74	0 57	— 0 17	N	101 36 46 42	52 96	+ 6 54
	15	9 9 32 9	I	14 45 31 34	30 98	— 0 36	N	107 17 52 01	2 59	+ 10 58
	21	15 20 43 3	II	21 19 5 85	5 88	+ 0 03	S	110 46 32 50	23 44	— 9 06
	23	17 6 46 5	II	23 13 23 90	24 03	+ 0 13	N	98 49 18 79	9 70	— 9 09
	24	17 54 15 7	II	0 4 58 50	58 70	+ 0 20				
July	11	6 13 37 6	I	13 31 33 52	33 63	+ 0 11	N	99 16 22 74	33 69	+ 10 95
	13	7 48 37 9	I	15 14 48 14	48 21	+ 0 07	N	110 10 30 04	38 86	+ 8 82
	14	8 44 2 5	I	16 14 21 48	21 43	— 0 05	N	114 24 43 49	51 03	+ 7 54
	15	9 45 15 4	I	17 19 44 06	44 41	+ 0 35	N	117 10 41 99	46 83	+ 4 84
	16	10 50 48 2	I	18 29 25 21	25 54	+ 0 33	S	117 58 23 93	26 61	+ 2 68
A g	8	4 53 31 4	I	14 1 38 78	39 01	+ 0 23	N	103 8 5 61	8 18	+ 2 57
	9	5 40 3 3	I	14 52 16 95	17 32	+ 0 37	N	108 25 26 41	31 57	+ 5 16
	10	6 31 21 7	I	15 47 43 47	44 16	+ 0 69	N	112 57 37 09	40 80	+ 3 71
	11	7 28 12 2	I	16 48 42 95	43 44	+ 0 49	N	116 18 52 26	56 40	+ 4 14
	12	8 30 10 4	I	17 54 50 04	50 48	+ 0 44	S	118 0 40 98	39 19	— 1 79
	13	9 35 15 1	I	19 4 2 60	3 30	+ 0 70	S	117 39 5 86	2 66	— 3 20
	20	16 2 55 2	II	1 58 2 48	2 64	+ 0 16	N	77 10 54 59	59 54	+ 4 95
	21	16 51 39 0	II	2 50 50 84	51 02	+ 0 18	N	71 36 55 20	55 65	+ 0 45
	22	17 41 43 2	II	3 44 59 30	59 20	— 0 10	N	67 8 18 39	11 98	— 6 41
Sept	9	7 19 5 6	I	18 33 56 93	57 36	+ 0 43	S	118 14 40 99	33 20	— 7 79
	12	10 22 39 3	I	21 49 46 48	46 92	+ 0 44	S	107 53 29 20	14 82	— 14 38
	13	11 17 38 4	I	22 48 49 50	49 97	+ 0 47	S	101 25 49 09	37 25	— 11 84
	14	12 11 52 7	II	23 44 54 88	55 34	+ 0 46	N	94 17 36 45	23 43	— 13 02
	15	13 1 52 5	II	0 39 0 32	0 77	+ 0 45	N	87 1 47 95	34 60	— 12 35
	16	13 51 14 6	II	1 32 26 80	27 24	+ 0 44	N	80 5 54 15	40 06	— 14 09
	17	14 41 4 8	II	2 26 21 28	21 53	+ 0 25	N	73 53 37 03	25 44	— 11 59
	18	15 32 8 8	II	3 21 29 36	29 66	+ 0 30	N	68 44 20 86	11 68	— 9 18
	19	16 24 41 1	II	4 18 6 05	6 21	+ 0 16	N	64 53 4 81	54 64	— 10 17

R GHT ASCENSIONS AND NORTH P LAR DI TANCES OF THE M ON S CENTER (C tinued)

M	S l Tim f Ob ti	I II Limb	A R f m Ol rv	A R fr m N A	Err f N A	N S Li b	N P D f m Ob rv i	N P D from N A	E f N A
1837									
ꓢ pt	20 17 18 17 3	II	5 15 47 13	47 27	+ 0 14	N	62 29 38 63	34 72	— 3 91
Oct	9 8 10 17 9	I	21 23 30 59	30 7ᴗ	+ 0 16	S	110 22 38 26	32 03	— 6 23
	10 9 4 50 6	I	22 22 6 68	6 73	+ 0 05	S	104 34 12 13	0 81	— 11 32
	12 10 46 17 3	I	0 11 41 71	41 83	+ 0 12	S	90 42 42 34	32 64	— 9 70
	13 11 35 6 4	I	1 4 54 41	4 91	+ 0 50	S	83 35 21 87	6 77	— 15 10
N	6 6 58 41 0	I	22 2 3 49	3 61	+ 0 12	S	106 40 58 69	50 92	— 7 77
	7 7 49 34	I	22 ᴗ6 59 54	59 88	+ 0 34	ꓢ	100 26 36 99	34 10	— 2 80
D	16 15 51 22 6	II	9 34 45 03	44 70	— 0 33	S	0 6 5ᴗ 42	5⁄ 31	+ 1 89
1838									
J	3 6 7 26 4	I	0 59 16 85	17 43	⊣ 0 ᴗ8	S	83 54 0 40	3 11	— 7 29
	4 6 54 25 1	I	1 ᴗ0 20 82	20 93	+ 0 11	S	77 33 11 90	1 20	— 10 70
	ᴗ 7 42 47 3	I	2 42 48 42	48 21	— 0 21	S	71 55 0 09	40 11	— 9 95
	6 8 33 19 3	I	3 37 26 5ᴗ	26 68	+ 0 13	S	67 18 56 35	49 08	— 7 27
	7 9 6 11 9	I	4 34 25 50	25 63	+ 0 13	S	63 58 25 90	17 70	— 8 20
	8 10 20 4ᴗ 8	I	5 33 5 22	5 09	— 0 13	N	62 6 42 21	37 81	— 4 40
	9 11 15 35 2	I	6 31 59 76	60 21	⊢ 0 45	N	62 49 53 10	51 08	— 2 02
	10 12 10 10 2	I II	7 29 32 62	32 29	— 0 33				
Γ b	4 8 16 19 2	I	5 14 46 58	47 1	⊢ 0 57	S	62 20 25 00	23 24	— 1 6
	5 9 10 45 8	I	6 13 17 03	17 12	⊢ 0 09	N	61 36 49 ᴗ7	49 87	⊣ 0 30
	6 10 4 12 3	I	7 10 49 08	48 21	— 0 87	N	61 25 42 62	41 41	— 1 21
	7 10 55 21 4	I	8 6 0 91	0 36	— 0 ᴊᴗ	N	64 38 54 67	55 20	+ 0 53
	8 11 43 25 2	I	8 58 7 07	6 68	— 0 39	N	68 3 17 76	20 28	+ 2 2
	9 12 30 24 7	II	9 47 5 44	4 97	— 0 47	N	72 23 58 5ᴗ	4 19	+ 5 64
Ma	4 7 6 1 1	I	5 54 39 78	40 15	+ 0 37	N	61 29 0 20	49 26	— 0 94
	5 8 0 11 9	I	6 51 5ᴗ 30	55 9ᴗ	⊢ 0 6ᴗ	N	61 ᴗ1 30 53	34 79	+ 1 26
	6 8 52 7 0	I	7 48 53 73	51 32	⊣ 0 ᴗ9	N	63 40 56 12	2 30	⊢ 6 18
	8 10 26 34 1	I	9 31 2ᴗ 64	2ᴗ 16	— 0 48	N	70 50 3 24	9 6ᴗ	+ 6 41
	9 11 9 18 3	I	10 18 11 53	11 12	— 0 41	N	7ᴗ 40 23 35	31 01	+ 7 66
	10 11 49 52 8	I	11 2 48 08	47 65	— 0 43	N	81 3 0 10	5 69	⊢ 5 59
	11 12 31 12 2	II	11 46 12 07	11 41	— 0 66	N	86 46 0 69	9 12	+ 8 43
Ap l	2 6 46 43 0	I	7 29 37 09	37 93	ɩ 0 84	N	62 48 ᴗ9 85	2 80	⊣ 2 9
	3 7 37 9 6	I	8 24 6 69	7 43	+ 0 74	N	65 31 5 75	10 53	+ 4 78
	4 8 23 59 8	I	9 14 58 79	ᴗ9 98	+ 1 19	N	69 18 1 29	23 37	+ 8 08
	5 9 7 37 5	I	10 2 38 30	38 46	+ 0 16	N	73 55 9 40	22 50	+ 13 10
	6 9 48 45 4	I	10 47 48 43	48 36	— 0 07	N	79 8 24 04	34 09	+ 10 05
	7 10 28 21 3	I	11 31 26 32	26 15	— 0 17	N	84 45 53 25	2 53	+ 9 28
	8 11 7 25 0	I	12 11 32 91	32 63	— 0 28	N	90 36 37 02	4ᴗ 93	+ 8 91
	9 11 46 59 4	I	12 58 10 97	10 66	— 0 31	N	96 29 24 19	34 36	+ 10 24
May	2 7 3 54 ᴗ	I	9 45 2 36	2 96	⊢ 0 60	N	72 10 2 0	9 96	+ 7 46
	3 7 46 1 0	I	10 31 10 81	11 63	+ 0 82	N	77 11 57 87	7 03	+ 9 16
	5 9 5 12 1	I	11 58 26 63	26 49	— 0 14	N	88 7 32 09	41 00	+ 8 91
	6 9 44 29 4	I	12 41 47 64	47 47	— 0 17	N	94 20 18 00	22 37	+ 4 37
	7 10 25 5 8	I	13 26 28 70	28 32	— 0 38	N	100 8 26 83	30 37	+ 3 ᴗ4
	9 11 55 47 8	I II	15 4 18 11	17 49	— 0 62	S	110 34 58 83	7 27	— 1 56
J	2 7 40 36 3	I	12 24 1 11	1 48	+ 0 37	N	92 6 24 30	31 42	+ 7 12
	3 8 20 24 9	I	13 7 53 46	53 55	+ 0 09	N	97 55 8 98	14 74	+ 5 76
J ly	1 6 56 2 9	I	13 33 42 03	41 93	— 0 10	N	101 23 36 01	34 3	— 1 66
	31 7 6 0 1	I	15 42 3 29	3 73	+ 0 44	N	113 51 46 14	48 72	+ 2 58
A g	1 7 59 36 4	I	16 39 47 ᴗ9	48 14	+ 0 ᴗᴗ	N	116 53 59 74	3 35	+ 3 61

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (Continued)

Mean Sol. Time of Obs.		I II Limb	A R from Observ t	A R f m N A	E f N A	N S Limb	N P D f m Observ ti	N P D f m N A	E f N A
1838								/	
A g	2 8 57 48 1	I	17 42 7 92	8 44	+ 0 52	N	118 25 53 9	3 42	— 0 3
	3 9 59 2 8	I	18 47 30 36	30 83	+ 0 47	S	118 6 53 89	54 72	+ 0 8
S pt	3 11 35 18 5	I	22 26 10 36	10 81	+ 0 45	S	102 40 49 30	46 30	— 3 00
	4 12 30 20 3	II	23 23 2 53	2 80	+ 0 27	N	95 27 27 40	19 40	— 8 00
	27 6 28 29 9	I	18 53 11 20	11 86	+ 0 66	S	118 10 32 62	25 48	— 7 14
	28 7 26 49 2	I	19 55 36 53	37 19	+ 0 66	S	115 49 31 92	23 79	— 8 13
	29 8 23 54 4	I	20 56 47 18	47 64	+ 0 46	S	111 44 3 50	58 37	— 5 13
	30 9 18 54 3	I	21 55 50 86	50 88	+ 0 02	S	106 8 31 89	25 49	— 6 40
Oct	1 10 11 50 1	I	22 52 50 90	50 78	— 0 12	S	99 21 43 55	45 20	+ 1 6
N v	1 11 24 24 4	I	2 7 51 95	51 87	— 0 08	N	74 10 40 20	34 88	— 5 32
	24 5 54 2 0	I	22 7 12 91	13 7	+ 0 36	S	104 36 23 60	20 33	— 3 27
	25 6 42 56 3	I	23 0 10 42	10 94	+ 0 52	S	98 12 16 59	21 77	+ 18
	27 8 19 33 7	I	0 44 57 57	57 83	+ 0 26	S	81 9 2 22	47 12	— 10
Dec	1 12 4 53 0	II	4 44 22 05	22 41	+ 0 36	N	62 51 18 61	13 6	— 4 96
	24 6 15 32 6	I	0 27 2 36	2 58	+ 0 22	S	86 16 15 54	15 94	+ 0 40
	25 7 3 48 1	I	1 19 23 59	23 96	+ 0 37	S	79 29 21 00	16 81	— 4 19
	26 7 54 31 4	I	2 14 13 61	14 13	+ 0 52	S	73 14 26 03	22 32	— 3 71
	28 9 46 43 3	I	4 14 41 00	41 35	+ 0 35	N	64 2 23 84	18 45	— 5 39
	29 10 47 25 1	I	5 19 30 35	30 68	+ 0 33	N	61 53 24 46	23 26	— 1 20
1839									
Jan	23 6 43 34 2	I	2 53 29 17	30 01	+ 0 84	S	69 16 11 05	3 31	— 7 74
	26 9 37 22 5	I	5 59 39 59	39 85	+ 0 26	N	61 26 13 52	12 56	— 0 06
F b	21 6 32 28 3	I	4 36 44 83	45 95	+ 1 12	S	62 45 46 75	42 83	— 3 92
	22 7 31 40 9	I	5 40 3 40	4 37	+ 0 97	N	61 21 53 43	50 02	— 3 41
	23 8 30 10 8	I	6 42 39 11	39 83	+ 0 72	N	61 47 51 08	54 38	+ 3 30
	24 9 26 1 9	I	7 42 34 00	34 53	+ 0 53	N	63 54 49 61	56 63	+ 7 02
	25 10 18 1 0	I	8 38 35 73	35 99	+ 0 26	N	67 25 34 01	40 65	6 64
	26 11 5 53 1	I	9 30 29 87	29 86	— 0 01	N	71 59 27 07	33 28	+ 6 21
	27 11 51 9 9	I II	10 18 47 24	47 52	+ 0 28	N	77 16 48 97	57 0	+ 8 08
	28 1 33 39 2	II	11 4 20 24	19 90	— 0 34	N	83 0 4 63	14 38	+ 9 75
Mar	22 6 24 51 6	I	6 23 27 13	27 89	+ 0 76	N	61 2 54 94	57 34	+ 2 40
	23 7 22 4 3	I	7 24 43 55	44 40	+ 0 85	N	63 4 24 72	29 87	+ 5 15
	24 8 15 11 0	I	8 21 52 85	53 98	+ 1 13	N	66 11 41 33	48 91	+ 7 58
	25 9 3 54 2	I	9 14 38 47	38 88	+ 0 41	N	70 26 37 40	47 10	+ 9 70
	26 9 48 43 2	I	10 3 28 96	29 25	+ 0 29	N	75 29 15 38	26 42	+ 11 04
	27 10 30 32 5	I	10 49 20 01	20 01	0 00	N	81 2 32 21	39 83	+ 7 62
	28 11 10 25 9	I	11 33 15 29	15 16	— 0 13	N	86 51 56 89	6 70	+ 9 81
	29 11 49 27 1	I	12 16 19 45	19 33	— 0 12	N	92 45 12 77	19 16	+ 6 39
	30 12 30 41 9	II	12 59 39 15	38 68	— 0 47	S	98 31 11 36	15 89	+ 4 53
April	25 9 49 20 4	I	12 2 20 17	20 00	— 0 17	N	90 52 56 16	6 02	+ 9 86
	26 10 28 15 9	I	12 45 18 64	18 50	— 0 14	N	96 39 45 32	53 52	+ 8 20
	27 11 8 8 0	I	13 29 14 89	14 53	— 0 36	N	102 11 53 11	58 00	+ 4 89
	28 11 50 58 9	I II	14 15 8 09	7 91	— 0 18	S	107 17 45 21	45 99	+ 0 78
May	21 7 8 51 7	I	11 3 56 40	56 98	+ 0 58	N	83 12 56 00	45 51	— 10 49
June	21 7 44 44 1	I	13 42 7 44	7 58	+ 0 14	N	103 59 56 40	4 38	+ 7 98
Sept	23 12 15 22 2	II	0 22 0 56	0 44	— 0 12	N	85 34 4 44	57 10	— 7 34
Oct.	16 6 40 49 0	I	20 19 26 39	26 69	+ 0 30	S	113 16 47 14	38 37	— 8 77
	17 7 31 26 3	I	21 14 7 70	8 12	+ 0 42	S	108 45 41 50	31 65	— 9 85

Right Ascensions and North Polar Distances of the Moon's Center (Continued)

Mean Sid. Time of Observation	I II Limb	A R from Observation	A R from N A	Error of N A	N S Limb	N P D from Observation	N P D from N A	Error of N A
1839 h m		m						
Oct 18 8 20 42.9	I	22 7 28.05	28.27	+0.22	S	103 6 10.34	4.06	−6.28
1840								
Jan 14 7 45 36.1	I	3 19 17.33	18.12	+0.79	S	66 29 6.17	3.04	−3.13
15 8 46 45.8	I	4 24 37.02	37.86	+0.84	S	63 8 11.00	12.83	+1.83
16 9 51 20.0	I	5 33 19.62	19.94	+0.32	N	61 44 49.03	52.34	+3.31
18 11 58 20.1	I	7 48 30.82	31.26	+0.44	N	65 19 39.74	43.46	+3.72
Feb 12 7 39 45.9	I	5 7 49.61	50.50	+0.89	S	61 54 21.06	23.77	+2.71
13 8 42 49.0	I	6 14 59.44	0.33	+0.89	N	61 52 34.39	36.40	+2.01
14 9 44 23.0	I	7 20 38.99	39.87	+0.88	N	63 50 45.46	50.39	+4.93
15 10 42 14.3	I	8 22 33.86	34.45	+0.59	N	67 32 41.58	41.95	+0.37
16 11 35 26.8	I	9 19 48.49	48.75	+0.[illegible]6	N	72 32 9.96	16.73	+6.77
17 12 26 26.8	II	10 12 43.17	43.33	+0.16	N	78 22 12.04	19.40	+7.36
Mar 13 8 35 17.7	I	8 1 43.07	44.39	+1.32	N	66 6 7.10	14.40	+7.30
15 10 17 55.9	I	9 52 26.38	26.66	+0.28	N	76 0 38.15	44.69	+6.54
16 11 3 37.3	I	10 42 10.18	10.14	−0.04	N	82 1 6.44	9.15	+2.71
17 11 46 57.1	I	11 29 32.26	32.13	−0.13	N	88 15 46.64	50.98	+4.34
April 10 7 25 38.2	I	8 42 13.65	14.40	+0.75	N	69 13 11.35	14.84	+3.49
11 8 15 31.3	I	9 36 9.03	9.[illegible]1	+0.48	N	74 20 5.68	11.94	+6.26
13 9 44 46.7	I	11 13 28.47	28.35	−0.12	N	86 10 12.33	17.39	+5.06
15 11 8 1.5	I	12 44 49.45	49.40	−0.05	N	98 14 26.44	25.72	−0.72
May 15 11 16 34.3	I	14 51 43.47	42.98	−0.49	S	111 29 24.64	19.81	−4.83
June 8 7 6 28.8	I	12 15 31.04	31.35	+0.31	N	94 50 16.36	19.91	+3.55
Oct 6 8 10 48.6	I	21 13 10.85	10.13	−0.72	S	107 7 56.34	51.72	−4.62
7 8 56 12.5	I	22 2 38.02	37.71	−0.31	S	101 48 16.82	14.41	−2.41
9 10 26 16.4	I	23 40 50.86	50.48	−0.38	S	89 19 35.4	31.57	−3.97
Dec 3 6 51 14.6	I	23 42 3.53	4.00	+0.47	S	88 43 44.34	40.09	−4.25
5 8 24 46.8	I	1 23 47.37	48.18	+0.81	S	76 17 23.50	17.25	−6.25
6 9 18 7.4	I	2 21 16.12	17.12	+1.00	S	70 40 18.79	13.51	−5.28
1841								
Jan 2 7 4 9.8	I	1 53 22.10	23.21	+1.11	S	73 1 56.58	55.78	−0.80
3 7 58 23.2	I	2 51 43.65	44.88	+1.23	S	68 6 3.36	3.99	+0.63
5 10 3 38.6	I	5 5 18.44	19.02	+0.58	N	62 34 46.92	50.94	+4.02
Feb 1 7 45 13.5	I	4 32 55.42	56.19	+0.77	S	63 6 8.48	11.88	+3.40
2 8 49 30.1	I	5 41 20.46	21.51	+1.05	N	62 25 6.29	5.72	−0.57
3 9 54 42.2	I	6 50 39.00	39.34	+0.34	N	63 52 2.30	4.69	+2.39
4 10 57 42.2	I	7 57 44.39	44.96	+0.57	N	67 20 47.30	52.38	+5.08
27 4 39 19.5	I	3 8 57.96	57.33	−0.63	S	66 52 28.14	36.62	+8.48
28 5 36 58.1	I	4 10 44.05	43.94	−0.11	S	63 49 13.58	10.40	−3.18
Mar 3 8 42 43.8	I	7 28 49.87	50.56	+0.69	N	65 37 40.21	44.80	+4.59
4 9 41 28.6	I	8 31 38.91	39.47	+0.56	N	69 54 15.28	21.14	+5.86
5 10 36 23.4	I	9 30 37.09	37.66	+0.57	N	75 28 35.53	42.00	+6.47
April 2 9 19 27.1	I	10 3 49.97	51.01	+1.04	N	79 17 10.87	19.28	+8.41
3 10 7 50.0	I	10 56 15.93	16.37	+0.44	N	85 42 58.04	5.87	+7.83
4 10 54 40.6	I	11 47 10.13	10.38	+0.25	N	92 16 43.08	48.81	+5.73
May 26 5 12 52.6	I	9 29 29.51	30.45	+0.94	N	75 59 6.47	11.02	+4.55
June 16 21 51 17.0	II	3 31 7.49	7.19	−0.30				

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (Continued)

Mean Solar Time of Observation	I or II Limb	A R from Observation	A R from N A	Error of N A	N or S Limb	N P D from Observation	N P D from N A	Error of N A
1841								
July 14 20 31 21 8	II	4 4 22 86	22 77	— 0 09				
Aug 24 6 12 32 1	I	16 24 9 10	9 68	+ 0 58				
Sept 20 4 3 18 9	I	16 1 2 33	3 43	+ 1 10	N	11 23 0 90	4 59	+ 3 69
21 4 56 24 0	I	16 58 12 46	13 40	+ 0 94	N	116 45 14 48	14 46	— 0 02
4 7 27 59 1	I	19 41 57 90	57 83	— 0 07	S	112 41 13 71	11 02	— 2 69
Nov 5 17 55 48 3	II	8 51 55 79	56 41	+ 0 62				
17 3 12 2 8	I	18 58 16 55	17 28	+ 0 73				
18 4 0 27 4	I	19 50 43 76	43 89	+ 0 13				
1842								
Jan 4 18 42 8 5	II	13 37 59 03	0 04	+ 1 01				
22 8 4 56 5	I	4 12 16 17	17 48	+ 1 31	S	64 28 41 21	37 7	— 3 01
6 12 13 35 0	I	8 37 20 88	22 34	+ 1 46	S	72 8 2 22	5 91	+ 3 69
Feb 21 8 52 24 7	I	6 58 10 00	10 93	+ 0 93	N	65 44 13 9	14 41	+ 0 40
Mar 2 17 4 22 7	II	15 44 37 43	37 9	+ 0 16	S	114 24 16 53	13 41	— 3 12
30 15 47 8 2	II	16 17 33 43	33 40	— 0 03	S	115 17 50 5	1 73	+ 1 18
April 3 18 26 52 3	II	19 9 37 13	37 05	— 0 08				
May 17 6 10 42 2	I	9 51 1 98	2 54	+ 0 56	N	80 1 0 99	7 33	+ 6 34
18 7 0 18 6	I	10 44 42 14	42 82	+ 0 68	N	86 11 11 23	20 41	+ 9 18
20 8 38 17 1	I	12 30 50 11	50 85	+ 0 74	N	98 46 7 76	31 93	+ 4 17
22 10 21 36 5	I	14 22 21 72	22 32	+ 0 60	N	109 19 20 88	14 44	— 6 44
23 11 16 31 4	I	15 21 23 62	24 07	+ 0 45	S	112 57 37 60	3 8	— 2 02
24 12 15 18 5	II	16 21 59 08	59 62	+ 0 54	S	115 8 52 87	53 27	+ 0 40
2 13 11 43 8	II	17 22 30 39	30 56	+ 0 17	S	115 45 39 45	39 06	— 0 39
26 14 6 27 9	II	18 21 21 9	22 07	+ 0 48				
27 14 58 15 9	II	19 17 17 13	17 30	+ 0 17				
29 16 31 39 3	II	20 58 52 34	52 34	0 00				
June 19 9 8 44 7	I	14 59 41 8	42 21	+ 0 63	N	111 5 62	59 13	— 8 19
20 10 3 38 2	I	15 58 41 21	41 46	+ 0 25	N	114 31 6 49	1 29	— 2 20
21 10 59 21 3	I	16 58 30 64	31 04	+ 0 40	N	115 42 42 9	39 01	— 3 91
26 15 9 27 6	II	21 26 51 46	51 21	— 0 25				
July 19 9 48 14 4	I	17 37 34 5	34 59	+ 0 04	S	115 40 25 61	19 81	— 80
20 10 41 20 6	I	18 34 45 09	45 14	+ 0 05	S	114 24 22 53	16 48	— 6 0
22 12 20 26 9	I II	20 20 54 49	54 6	+ 0 07	N	108 21 14 98	10 99	— 3 99
26 15 8 19 1	II	23 24 1 17	1 68	+ 0 51				
27 15 48 22 2	II	0 8 6 57	6 79	+ 0 22				
28 16 29 43 9	II	0 53 31 40	31 22	— 0 18				
Aug 1 7 44 14 3	I	17 19 41 12	41 37	+ 0 2	N	115 43 38 71	34 13	— 4 8
16 8 37 35 2	I	18 17 6 42	6 46	+ 0 04	N	114 54 1 87	0 33	— 1 54
1 12 27 32 0	II	22 25 18 12	18 01	— 0 11	N	9 5 9 05	7 60	1 4
24 14 28 7 2	II	0 38 1 97	2 27	+ 0 30				
28 17 36 20 9	II	4 2 32 57	32 69	+ 0 12				
Sept 12 6 33 5 5	I	17 8 43 22	43 69	+ 0 47	N	115 8 42 66	45 7	+ 2 91
13 7 25 10 0	I	18 54 51 91	52 02	+ 0 11	S	113 25 59 78	8 48	— 1 30
14 8 14 10 7	I	19 47 54 76	55 07	+ 0 31	S	110 35 13 63	11 2	— 2 11
15 9 0 7 2	I	20 37 54 04	53 90	— 0 14	S	106 0 43 87	3 08	— 8 79
16 9 43 26 2	I	21 25 15 27	15 09	— 0 18	S	102 26 17 47	17 5	+ 0 08
17 10 24 48 9	I	22 10 40 40	40 12	— 0 28	S	97 34 12 99	14 29	+ 1 30
19 11 46 2 9	I II	23 39 1 45	1 31	— 0 14				

Right Ascensions and North Polar Distances of the Moon's Center (Continued)

		Mean Sid. Time of Observation	I or II Limb	R. A. from Observation	R. A. from N. A.	Error of N. A.	N or S Limb	N. P. D. from Observation	N. P. D. from N. A.	Error of N. A.
1842										
Oct	11	6 [illegible] 21 1	I	19 29 13 42	13 87	+ 0 45	S	111 28 9 80	7 06	— 2 74
	12	6 56 47 6	I	20 20 42 00	42 31	+ 0 31	S	108 0 12 53	12 25	— 0 28
	13	7 41 8 1	I	21 9 4 3	4 6	+ 0 12	S	103 48 48 90	49 44	+ 0 54
	14	8 23 7 3	I	21 5 6 22	6 58	+ 0 36	S	99 6 53 85	55 55	+ 1 70
	15	9 [illegible] 40 6	I	22 39 41 92	42 00	+ 0 08	S	94 5 37 88	36 14	— 1 74
	16	9 43 43 9	I	23 23 47 83	47 07	— 0 76	S	88 54 59 12	60 73	+ 1 61
	17	10 24 9 8	I	0 8 1 15	17 99	+ 0 54	S	83 45 6 69	[illegible] 42	+ 0 [illegible]3
	18	11 5 [illegible]5 7	I	0 54 8 13	8 [illegible]9	+ 0 [illegible]6	N	78 46 53 72	54 41	+ 0 69
	19	11 [illegible]0 54 6	I II	1 42 10 41	11 37	+ 0 96	N	74 12 35 11	31 41	— 4 00
Nov	11	7 0 29 3	I	22 22 37 62	37 80	+ 0 18	S	9[illegible] 48 38 71	39 69	+ 0 98
	12	7 40 37 7	I	23 6 48 98	19 56	+ 0 [illegible]	S	[illegible]0 42 0 46	9 29	+ 8 83
	13	8 20 48 2	I	23 1 3 01	3 0	+ 0 01	S	8[illegible] 33 18 19	20 36	+ 2 17
	15	[illegible] 4 10 4	I	1 23 3 67	3 81	+ 0 14	S	75 18 [illegible]6 1[illegible]	9 58	+ 3 39
	17	11 20 0 9	I	3 7 7 4	8 03	+ 0 19	N	68 15 0 38	58 04	— 2 34
	18	12 1[illegible] 29 8	II	4 3 58 9	0 05	+ 1 13	N	65 6 39 00	40 88	+ 1 88
Dec	12	7 38 38 1	I	1 3 7 54	7 82	+ 0 28	S	77 38 20 30	24 27	+ 97
	13	8 23 6 4	I	1 51 41 32	41 31	+ 0 [illegible]9	S	73 14 [illegible]7 51	3 63	+ 6 12
	14	[illegible] 10 52 [illegible]	I	2 43 31 42	34 99	[illegible] 0 57	S	[illegible]9 31 30 31	32 47	+ [illegible]16
	16	10 57 17 8	I	4 38 13 68	14 50	+ 0 82	N	65 12 18 08	20 91	+ 2 83
	17	11 [illegible]4 31 6	I	5 39 37 27	38 35	+ 1 08	N	6[illegible] [illegible] 11 70	13 10	+ 1 40
	18	12 54 53 1	II	6 41 13 38	41 10	+ 0				
	19	13 51 8 0	II	7 42 35 96	36 43	+ 0 17				
	[illegible]1	15 38 14 8	II	9 37 25 [illegible]	25 89	[illegible] 0 35				
	22	16 28 [illegible]3 0	II	10 31 39 39	40 14	+ 0 75				
	23	17 17 32 8	II	11 24 [illegible]4 03	54 6	+ 0 6[illegible]				
1843										
Jan	9	[illegible] 1 3 8	I	1 30 3 50	3 93	[illegible] 0 13	S	7[illegible] 4 17 49	13 58	— 91
	11	7 19 52 4	I	3 12 4 17	40 22	[illegible] 1 0	S	[illegible]7 3 4 71	9 00	+ 4 29
	21	1[illegible] [illegible]4 35 2	II	12 56 11 67	1[illegible] 48	+ 0 81				
	22	17 16 53 0	II	13 52 33 0[illegible]	34 00	+ 0 91				
Feb	8	[illegible] 30 27 0	I	3 43 31 3	31 71	+ 0 30	S	66 40 35 18	5 29	+ 0 11
	9	7 23 34 6	I	4 40 46 02	46 70	+ 0 68	S	65 1 39 78	43 34	+ 3 56
	10	8 19 2[illegible] 2	I	5 40 43 31	44 14	+ 0 83	S	65 14 40 87	43 91	+ 3 04
	11	9 16 16 1	I	6 42 10 82	11 38	+ 0 56	N	66 46 6 34	0 06	+ 3 [illegible]2
	12	10 1 11 5	I	7 41 41 6	41 92	+ 0 27	N	69 53 24 87	27 98	+ 3 11
	13	11 10 32 9	I	8 44 7 1	8 29	+ 1 14	N	74 24 4 12	1 23	+ 7 11
	14	12 6 29 6	I II	9 43 1 87	2 8	+ 0 98	S	80 3 2 71	24 63	+ 1 92
	15	13 1 3 3	II	10 40 33 97	34 48	+ 0 51				
	16	13 53 43 1	II	11 37 19 66	20 49	+ 0 83				
	17	14 46 33 [illegible]	II	12 34 14 93	15 38	+ 0 45				
	18	15 40 20 1	II	13 32 5 87	6 40	+ 0 53				
	19	16 35 30 1	II	14 31 20 47	20 57	+ 0 10				
	20	17 31 54 8	II	15 31 50 90	51 23	+ 0 33				
	21	18 28 50 6	II	16 32 52 66	[illegible]3 08	+ 0 42	S	114 32 38 46	33 82	— 4 64
Mar	11	7 58 4 5	I	7 13 38 5	38 36	— 0 19	N	67 21 39 71	45 86	+ 6 1
	12	8 53 22 5	I	8 13 1 79	1 99	+ 0 20	N	72 3 37 15	43 12	+ 97
	14	10 41 33 8	I	10 9 21 76	22 38	+ 0 62	N	82 55 4 17	12 78	+ 8 61
	15	11 34 55 1	I	11 6 48 91	48 76	— 0 15	N	89 23 15 52	22 64	+ 7 12
	16	12 31 0 6	II	12 4 46 20	46 40	+ 0 20				
	17	13 25 59 8	II	13 3 [illegible]0 36	[illegible]0 76	+ 0 40				
	19	1[illegible] 20 57 2	II	15 6 57 [illegible]9	57 77	+ 0 18				
April	8	6 42 23 7	I	7 48 7 17	7 87	+ 0 70	N	70 36 3 46	8 18	+ 4 72
	[illegible]	7 35 10 1	I	8 44 58 78	59 13	+ 0 3[illegible]	N	74 50 [illegible]8 40	7 74	+ 9 34
	10	8 27 14 4	I	9 41 7 68	8 30	+ 0 62	N	80 7 22 77	31 54	+ 8 77

Right Ascensions and North Polar Distances of the Moon's Center (Continued)

Mean Solar Time of Observation		I or II Limb	A R from Observation	A R from N A	Error of N A	N or S Limb	N P D from Observation	N P D from N A	Error of N A
1843									
April	11 9 19 5 4	I	10 37 3 74	4 64	+ 0 90	N	86 8 13 32	19 1	+ 5 83
	12 10 11 32 3	I	11 33 35 79	36 34	+ 0 55	N	92 31 39 83	46 11	+ 6 58
	13 11 5 28 1	I	12 31 37 81	38 23	+ 0 42	N	98 51 34 12	40 16	+ 6 04
	14 12 2 50 6	I II	13 31 57 80	58 36	+ 0 56	S	104 38 46 08	46 12	+ 0 04
	1 13 2 43 5	II	14 34 48 10	48 51	+ 0 11				
	16 14 3 18 5	II	15 39 28 18	28 78	+ 0 60				
	17 15 4 13 8	II	16 44 30 63	31 12	+ 0 49				
May	8 7 10 1 7	I	10 14 4 21	4 75	+ 0 54	N	83 48 55 74	4 34	+ 8 60
	9 8 0 10 8	I	11 8 18 09	18 37	+ 0 28	N	89 50 36 90	42 12	+ 5 22
	11 9 45 1 8	I	13 1 21 87	22 32	+ 0 45	N	101 54 57 19	1 66	+ 4 17
	12 10 41 29 4	I	14 1 57 03	57 71	+ 0 68	N	107 6 7 90	3 63	+ 1 73
	13 11 42 9 5	I II	15 5 34 26	35 23	+ 0 97				
	14 12 44 50 3	II	16 11 11 10	11 92	+ 0 82				
	15 13 46 18 9	II	17 16 46 19	46 93	+ 0 74				
J	6 6 55 1 4	I	11 43 18 78	19 37	+ 0 59				
	7 7 3 51 2	I	12 38 15 36	16 07	+ 0 71	N	99 4 3 07	4 07	+ 1 00
	8 8 29 13 3	I	13 35 44 36	44 89	+ 0 53	N	105 5 21 85	23 67	+ 1 8
	9 9 25 40 7	I	14 36 19 40	20 1[illegible]	+ 0 72	N	109 30 36 97	35 71	— 1 26
	10 10 25 0 9	I	15 38 47 08	47 69	+ 0 61	N	112 36 50 21	44 86	— 5 3
	15 15 10 24 1	II	20 23 25 74	25 76	+ 0 02				
	16 15 56 8 8	II	21 33 33 83	33 38	— 0 45				
A	8 10 50 48 9	I	19 58 10 75	11 06	+ 0 31	S	108 21 24 60	18 36	— 6 24
Sept	4 8 46 45 0	I	19 39 13 23	13 74	+ 0 51	S	109 23 20 16	9 4	— 10 71
	8 11 48 14 6	I	22 57 53 67	54 83	+ 1 16	N	91 21 45 29	44 95	— 0 34
	13 15 24 48 5	II	2 52 43 93	43 91	— 0 02				
	14 16 12 35 8	II	3 44 34 26	34 26	0 00				
Oct	2 7 33 44 9	I	20 17 24 21	24 23	+ 0 02	S	106 40 19 89	17 33	— 2 6
	3 8 20 35 1	I	21 8 16 40	16 75	+ 0 35	S	102 29 32 64	32 1	— 0 19
	4 9 4 44 5	I	21 55 27 78	28 28	+ 0 50	S	97 50 23 71	25 75	+ 2 04
	5 9 47 4 0	I	22 42 49 87	50 31	+ 0 44	S	92 56 15 19	15 81	+ 0 62
	6 10 28 26 8	I	23 28 15 43	15 87	+ 0 44	S	87 58 41 99	42 9	+ 0 60
	7 11 9 42 4	I	0 13 34 90	35 39	+ 0 49	N	83 8 33 91	32 0	— 1 41
	12 14 57 49 1	II	4 19 58 29	58 38	+ 0 09				
	13 15 48 10 7	II	5 14 24 30	24 06	— 0 24				
	14 16 39 22 5	II	6 9 40 18	40 36	+ 0 18				
	31 7 3 5 6	I	21 40 56 62	56 75	+ 0 13	S	99 10 34 35	28 80	— [illegible]
Nov	2 8 27 34 5	I	23 13 30 62	30 98	+ 0 36	S	89 25 3 58	55 92	+ 2 34
	3 9 8 40 1	I	23 58 40 00	40 33	+ 0 33	S	84 35 29 86	35 7	+ 5 71
	4 9 50 12 6	I	0 44 16 12	16 65	+ 0 53	S	79 59 31 77	35 21	+ 3 44
	5 10 32 56 0	I	1 31 4 04	4 74	+ 0 70	N	75 47 49 64	52 51	+ 2 87
	6 11 17 25 1	I	2 19 37 67	38 42	+ 0 7	N	72 10 53 33	3 00	+ 9 67
	7 12 6 7 3	II	3 10 19 35	20 02	+ 0 67	N	69 19 48 5	57 00	+ 8 47
	8 12 54 40 6	II	4 2 56 80	57 47	+ 0 67				
	11 15 26 41 9	II	6 47 11 07	11 32	+ 0 25				
	13 17 6 24 4	II	8 35 3 89	4 13	+ 0 24				
	14 17 55 4 8	II	9 27 49 79	50 18	+ 0 39				
	29 6 25 7 3	I	22 57 10 98	11 45	+ 0 47	S	91 2 8 29	1 3	+ 3 04
	30 7 6 35 9	I	23 42 42 56	43 25	+ 0 69	S	86 8 50 69	53 85	+ 3 16
Dec	5 10 48 3					N	87 7 42 43	45 35	+ 2 92
	9 14 14 13 6	II	7 24 54 52	5 06	+ 0 54				
	13 17 28 7 1	II	10 55 7 37	7 96	+ 0 59				
	29 6 26 4 8	I	0 56 26 28	26 90	+ 0 6[illegible]	S	78 44 31 12	3 99	+ 1 87

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (Continued)

Mean Sid Time of Observation	I II Limb	A R from Obs	A R from N A	Error of N A	N S Limb	N P D from Obs	N P D from N A	Error of N A
1843								
D 30 7 9 16 8	I	1 43 4 32	42 94	+ 0 62	S	74 42 27 6	32 83	+ 5 27
31 7 54 13 2	I	2 32 43 91	41 61	+ 0 67	S	71 18 39 40	43 38	+ 3 89
1844								
J 2 9 30 39 2	I	4 17 21 91	22 26	+ 0 35	S	67 6 1 91	18 56	+ 2 65
3 10 21 46 6	I	5 12 31 9	35 35	+ 0 40	S	66 37 22 77	25 87	+ 3 10
4 11 13 53 3	I	6 8 46 57	47 27	+ 0 30	N	68 21 32 99	33 36	+ 0 37
5 12 8 15 9	II	7 3 51	4 20	+ 0 26	N	69 22 39 66	46 41	+ 6 75
6 12 59 33 0	II	8 0 25 48	25 87	+ 0 39				
7 13 49 32 8	II	8 54 31 41	31 79	+ 0 3				
8 14 38 21 3	II	9 47 25 5	25 98	+ 0 43				
10 16 14 44 9	II	11 31 6 77	7 12	+ 0 3				
11 17 4 3 0	II	12 26 19 50	20 07	+ 0 7				
12 17 5 24 7	II	13 20 14 64	4 43	+ 0 79				
28 6 33 47 9	I	3 2 29 80	30 8	+ 0 78	S	69 40 1 59	4 18	+ 2 59
29 7 21 49 8	I	3 51 36 87	36 83	— 0 04	S	67 46 33 57	36 2	+ 2 65
F b 1 9 5 24 8	I	6 40 28 2	28 83	+ 0 31	N	68 24 2 22	6 62	+ 4 40
3 11 38 51 0	I	8 32 4 06	4 12	+ 0 06	S	74 49 44 95	48 34	+ 3 39
4 12 30 23 7	I II	9 26 37 10	37 49	+ 0 39	S	79 31 39 10	39 61	+ 0 54
6 14 10 46 3	II	11 14 4 86	5 40	+ 0 54				
7 15 0 55 3	II	12 8 18 07	18 46	+ 0 39				
8 15 52 29 4	II	13 3 55 99	56 52	+ 0 53				
9 16 46 8 7	II	14 1 39 34	39 63	+ 0 29				
27 6 52 37 7	I	5 19 41 74	42 19	+ 0 4	S	66 57 47 14	50 72	+ 3 8
28 7 43 38 0	I	6 14 47 17	47 37	+ 0 20	N	67 47 3 4	10 42	+ 4 97
29 8 34 9 3	I	7 10 13 68	13 88	+ 0 20	N	69 49 2 90	30 83	+ 4 93
M 1 9 26 12 3	I	8 5 31 31	31 37	+ 0 06	N	73 0 37 90	41 67	+ 3 77
2 10 17 0 8	I	9 0 24 55	24 68	+ 0 13	N	77 46 6 99	3 8	— 3 14
3 11 7 30 7	I	9 54 58 50	8 82	+ 0 32	N	82 17 18 1	19 84	+ 1 69
4 11 58 4 6	I	10 49 37 82	37 89	+ 0 07	S	87 54 40 71	34 44	— 6 30
5 12 51 36 3	II	11 45 4 44	4 70	+ 0 26				
6 13 44 19 4	II	12 41 51 53	51 90	+ 0 37				
7 14 39 2 7	II	13 40 39 18	39 82	+ 0 64				
8 15 35 59 3	II	14 41 40 92	41 55	+ 0 63				
9 16 34 46 7	II	15 44 32 91	33 48	+ 0 57				
10 17 34 17 4	II	16 48 10 2	10 85	+ 0 60				
27 6 24 48 3	I	6 46 7 12	7 23	+ 0 11	N	69 3 26 81	31 81	+ 5 00
28 7 14 47 3	I	7 40 10 44	10 4	+ 0 10	N	71 39 14 07	20 41	+ 6 34
29 8 4 29 8	I	8 33 57 56	58 00	+ 0 44	N	7 17 21 44	26 63	+ 5 19
30 8 54 3 1	I	9 27 35 98	36 04	+ 0 06	N	79 49 49 93	55 11	+ 5 18
31 9 43 53 5	I	10 21 31 16	31 23	+ 0 07	N	85 5 8 89	13 11	+ 4 22
Ap l 1 10 34 39 7	I	11 16 22 61	22 87	+ 0 26	N	90 47 28 60	31 51	+ 2 91
2 11 27 8 6	I	12 12 57 8	58 00	+ 0 42	N	96 36 16 54	15 98	— 0 6
3 12 23 14 2	I II	13 12 2 58	2 68	+ 0 10	S	102 6 38 64	3 98	— 2 66
4 13 22 11 0	II	14 13 56 37	7 18	+ 0 81				
5 14 22 29 0	II	15 18 19 52	0 62	+ 1 10				
6 15 24 8 4	II	16 24 5 27	6 16	+ 0 89				
7 16 25 20 1	II	17 29 24 00	24 59	+ 0 59				
8 17 24 12 5	II	18 32 24 99	25 37	+ 0 38				
26 6 44 25 4	I	9 4 2 90	3 36	+ 0 46	N	77 56 1 24	56 1	+ 5 27
28 8 21 12 1	I	10 48 58 94	59 25	+ 0 31	N	88 4 37 05	42 78	+ 5 73
29 9 11 31 4	I	11 43 24 09	24 37	+ 0 28	N	93 42 53 44	56 98	+ 3 54
30 10 4 22 9	I	12 40 22 66	23 14	+ 0 48	N	99 18 50 63	56 26	+ 5 63
M y 1 11 0 34 6	I	13 40 41 92	42 63	+ 0 71	N	104 27 14 25	19 04	+ 4 79
2 12 2 47 6	II	14 44 42 76	43 71	+ 0 95	S	108 39 35 47	31 15	— 4 02
3 13 5 28 9	II	15 51 29 74	30 88	+ 1 14				

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTRE (Continued)

Mean Solar Time of Observation	I II Limb	A R from Observation	A R from N A	Error of N A	N S Limb	N P D from Observation	N P D from N A	Error of N A
1844		m						
May 26 7 1 30 4	I	11 19 27 34	27 96	+ 0 62	N	91 30 20 45	23 20	+ 2 75
28 8 44 5 7	I	13 10 15 92	16 21	+ 0 29				
29 9 40 42 8	I	14 11 0 99	1 64	+ 0 65	N	106 39 10 61	12 69	+ 2 08
30 10 41 15 9	I	15 15 42 70	43 66	+ 0 96	N	110 10 24 67	24 41	— 0 26
31 11 44 46 3	I	16 23 20 55	21 70	+ 1 15	S	112 10 38 93	32 95	— [illegible]8
June 3 14 52 41 0	II	19 41 15 87	16 36	+ 0 49				
4 15 46 49 6	II	20 39 32 14	32 55	+ 0 41				
5 16 36 44 0	II	21 33 33 72	33 66	— 0 06				
6 17 23 17 4	II	22 24 12 82	12 90	+ 0 08				
25 7 28 15 3	I	13 44 37 02	37 74	+ 0 72	N	104 46 1 14	58 91	— 2 23
28 10 28 22 9	I	16 57 8 00	9 00	+ 1 00	N	112 30 56 19	49 77	— 6 42
July 2 14 25 33 6	II	21 8 26 99	27 44	+ 0 45				
24 7 14 24 8	I	15 25 6 32	7 30	+ 0 98	N	110 25 1 21	1 02	— 0 1[illegible]
27 10 16 29 3	I	18 39 30 82	31 3	+ 0 51	N	110 1 16 04	19 0[illegible]	+ 2 [illegible]8
Aug 4 16 52 24 3	II	1 45 [illegible]1 9	51 85	— 0 10				
5 17 37 58 8	II	2 35 30 17	30 00	— 0 17				
23 8 6 38 5	I	18 15 45 46	46 03	+ 0 57	N	111 25 20 07	19 87	— 0 20
24 9 4 22 2	I	19 17 33 50	34 30	+ 0 80	S	109 8 29 18	25 00	— 4 18
Sept 20 6 59 7 7	I	18 58 25 37	25 72	+ 0 35	S	109 46 32 71	31 96	— 0 7
21 7 53 58 4	I	19 57 19 95	20 39	+ 0 14	S	106 44 26 74	23 04	— 2 70
24 10 21 57 2	I	22 37 28 72	29 67	+ 0 95				
25 11 7 33 9	I	23 27 8 89	10 33	+ 1 44	N	88 1 42 92	41 67	— 1 2
28 13 25 11 0	II	1 54 5 33	56 09	+ 0 76				
29 14 11 34 5	II	2 45 21 89	22 39	+ 0 [illegible]0				
30 14 58 53 6	II	3 36 44 66	44 92	+ 0 26				
Oct 1 1 47 0 4	II	4 28 5 2	55 20	— 0 05				
2 16 35 35 3	II	5 21 34 63	34 02	— 0 61				
3 17 24 14 2	II	6 11 17 90	17 38	— 0 2				
18 5 50 15 9	I	19 39 44 77	45 30	+ 0 3	S	107 33 18 69	13 11	— 5 8
19 6 43 1 4	I	20 36 33 68	34 23	+ 0 5	S	103 51 9 87	2 13	— 7 74
21 8 19 30 9	I	22 21 8 64	9 26	+ 0 62	S	94 43 15 20	8 76	— 6 44
22 9 4 47 8	I	23 10 28 89	29 67	+ 0 78	S	89 50 0 9	58 73	— 2 22
23 9 49 15 2	I	23 59 0 25	0 92	+ 0 67	S	85 2 16 20	17 37	+ 1 17
24 10 33 40 0	I	0 47 28 65	29 65	+ 1 00	S	80 32 4 98	4 43	+ 0 55
25 11 18 37 3	I	1 36 30 58	31 34	+ 0 76	N	76 30 28 78	30 90	+ 2 12
26 12 6 39 4	II	2 26 33 25	33 98	+ 0 73	N	73 7 41 47	42 78	+ 1 31
27 12 53 38 0	II	3 17 35 95	36 46	+ 0 51				
28 13 41 32 3	II	4 9 34 13	33 94	— 0 19				
31 16 6 24 3	II	6 46 39 52	39 22	— 0 30				
Nov 2 17 40 14 7	II	8 28 39 30	39 4	+ 0 15				
3 18 26 23 0	II	9 18 51 99	52 39	+ 0 40				
17 6 17 34	I	22 20 46	21 00	+ 0 54	S	96 7 9 27	6 53	— 2 71
18 7 3 30 9	I	2 55 20 16	20 75	+ 0 59	S	91 14 25 00	22 45	— 2 55
19 7 48 2 4	I	23 43 51 40	55 11	+ 0 65	S	86 25 24 80	24 7	— 0 0
20 8 32 3 9	I	0 31 59 76	0 26	+ 0 50	S	81 51 32 02	32 80	+ 0 78
21 9 16 23 0	I	1 20 22 82	23 05	+ 0 23	S	77 42 53 62	57 26	+ 3 64
22 10 1 32 4	I	2 9 37 37	37 69	+ 0 32	S	74 9 15 94	17 67	+ 1 73
23 10 47 52 9	I	3 0 1 73	2 32	+ 0 59	S	71 19 42 77	44 10	+ 1 33
24 11 35 21 8	I	3 51 35 73	36 01	+ 0 28				
25 12 25 51 0	II	4 44 3 77	3 82	+ 0 05				
26 13 14 25 9	II	5 36 43 29	43 38	+ 0 09				
27 14 2 39 6	II	6 29 1 70	2 41	+ 0 71				
28 14 50 5 2	II	7 20 31 79	32 02	+ 0 23	S	71 34 23 12	20 32	— 2 80

Right Ascensions and North Polar Distances of the Moon's Center (Continued)

Month	Day	Sid. Time of Obs.	I or II Limb	R A from Obs.	R A from N A	Error of N A	N or S Limb	N P D from Observ.	N P D from N A	Error of N A
1811										
Nov	29	1 36 28 2	II	8 10 [illegible]	[illegible] 77	+ 0 12	S	74 29 19 22	19 38	+ 0 16
	30	16 21 57 4	II	9 0 32 96	33 01	+ 0 0	S	78 9 3 13	58 90	— 4 23
Dec	1	17 6 57 3	II	9 49 37 71	37 80	+ 0 09	S	82 25 2 27	1 6	— 0 62
	[illegible]	9 32 [illegible] 7	I	3 31 2 71	2 99	+ 0 28	S	69 [illegible] 37 41	42 01	+ 4 57
	22	10 20 0 7	I	1 26 26 2	26 68	+ 0 43	S	68 36 32 20	3 14	+ 2 94
181[illegible]										
Jan	17	7 8 7 0	I	3 16 31 01	34 71	+ 0 73	S	70 44 59 34	1 1	+ 1 78
	18	8 1 [illegible]	I	4 8 11 81	12 36	+ 0 5	S	69 4 21 88	25 29	+ 3 41
	19	9 3 [illegible]	I	[illegible] 0 32 80	33 28	+ 0 18	S	68 22 40 24	41 93	+ 4 69
	20	9 2 3 0	I	[illegible] 3 13 12	13 18	+ 0 06	N	68 42 30 2	36 72	+ 6 47
	21	10 10 [illegible] 8	I	6 1 41 34	41 42	+ 0 08	N	70 3 40 88	45 73	+ 4 8
	22	11 28 41 0	I	7 37 30 28	[illegible]	+ 0 31	N	72 22 42 27	46 70	+ 4 43
	23	1 16 3 7	I II	8 8 [illegible]7 14	27 32	+ 0 18	S	75 33 27 39	26 09	— 1 30
	[illegible]4	13 3 3	II	9 18 29 94	29 96	+ 0 02	S	79 26 50 10	2 60	+ 2 50
		13 18 [illegible]	II	10 7 3	53 86	+ 0 31				
	26	14 34 10 0	II	10 57 12 47	12 97	+ 0 50	S	88 38 55 32	55 36	+ 0 04
	[illegible]8	16 7 7	II	12 38 31 37	34 81	+ 0 44	S	98 23 5 36	6 38	+ 1 02
	29	16 7 5 9	II	13 32 17 2	17 60	+ 0 38	S	102 51 51 38	52 86	- 1 52
	30	17 19 46 0	II	14 29 0 21	0 62	+ 0 38	S	106 42 43 62	41 18	- 2 41
Feb	14	6 9 3 0	I	3 48 12 8	13 26	+ 0 68	S	69 1 28 13	26 03	— 10
	15	6 57 43 1	I	4 40 2 74	26 6	+ 0 82	S	68 4 19 18	18 08	— 1 40
	16	7 46 8 1	I	[illegible] 32 5 9	56 06	+ 0 16	S	68 39 13 41	43 78	+ 0 37
	17	8 34 29 0	I	6 2 20 7	20 77	+ 0 20	N	69 3 0 88	5 67	+ 1 79
	18	9 2 24 4	I	7 17 20 08	20 07	0 01	N	71 29 19 93	28 92	+ 0 99
	19	10 9 10 9	I	8 8 40 8	40 77	0 08	N	71 17 57 04	8 10	+ 1 06
	20	10 6 18 4	I	8 9 21 3	21 42	0 11	N	77 53 8 39	9 04	+ 0 6
	21	11 42 27 0	I	9 49 31 00	33 96	— 0 04	S	82 8 23 79	20 32	— 3 47
	22	12 29 3 0	I II	10 39 4 03	11 91	0 12	S	86 50 12 53	8 73	— 3 80
	23	13 17 14 9	II	11 30 26 67	26 53	0 14	S	91 46 26 73	16 26	10 47
	24	14 [illegible] 1 2	II	12 22 16 97	16 92	— 0 06	S	96 41 47 79	45 14	- 2 65
	25	14 51 40 6	II	13 15 59 3	59 61	+ 0 24	S	101 20 29 06	26 47	— 2 59
	26	15 46 45 3	II	14 12 8 13	8 52	+ 0 39	S	10[illegible] 24 39 83	35 13	— 4 40
	27	16 41 32 4	II	15 10 58 85	59 72	+ 0 87	S	108 35 59 86	9 31	— 0 56
	28	17 38 46 7	II	16 12 18 01	18 77	+ 0 76	S	110 37 46 17	40 46	— 5 71
Mar	17	7 14 38 8	I	6 5 40 70	41 00	+ 0 30	N	70 48 37 36	41 86	+ 4 1
	18	8 1 47	I	7 46 3 36	53 51	+ 0 15	N	73 12 9 37	10 93	+ 1 56
	19	8 18 19 9	I	8 37 28 98	28 88	— 0 10	N	76 2 9 67	11 15	+ 1 48
	20	9 31 28 7	I	9 27 41 2	41 42	— 0 10	N	80 20 31 00	34 17	+ 3 17
	21	10 0 39 3	I	10 17 56 93	56 8	0 08	N	84 49 18 14	20 29	+ 2 15
	22	11 7 27	I	11 8 49 90	49 79	— 0 11	N	89 10 17 11	16 60	— 0 1
	23	11 55 32	I	12 1 0 30	0 36	+ 0 06	S	94 39 36 38	29 63	- 6 75
	24	12 17 49 2	II	12 [illegible] 13 79	13 89	+ 0 10	S	99 30 43 07	38 33	— 4 74
	25	13 40 24 8	II	13 51 3 19	53 36	+ 0 17	S	103 53 36 40	31 34	— 5 06
	26	14 35 43 0	II	14 1 1 79	16 69	+ 0 80	S	107 28 11 18	4 2	— 6 93
	27	1[illegible] 33 26 4	II	1[illegible] 3 4 08	4 99	+ 0 91	S	109 55 13 91	5 74	— 8 17
	28	16 32 38 8	II	16 6 21 9	22 44	+ 0 52	S	111 0 28 9	18 21	— 10 38
	29	17 31 54 9	II	17 59 14 96	4 78	+ 0 82	S	110 37 50 04	38 35	— 11 69
April	14	5 4 18 0	I	7 25 29 61	29 48	— 0 16	N	72 17 23 17	24 97	+ 1 80
	15	6 10 26 4	I	8 1 41 62	41 80	+ 0 18	N	75 7 20 87	23 92	+ 3 05
	16	7 25 58 0	I	9 6 17 36	17 42	+ 0 06	N	78 40 51 0	55 91	+ 4 41
	17	8 11 21	I	9 54 44 39	41 54	+ 0 15	N	82 50 37 61	39 69	+ 2 08
	18	8 7 14 7	I	10 44 41 93	41 83	— 0 10	N	87 27 45 31	47 17	+ 1 86
	19	9 41 22 7	I	11 35 55 58	5 42	— 0 16	N	92 21 16 83	15 46	— 1 37
	20	10 33 3 4	I	12 29 14 32	14 49	+ 0 17	N	97 16 46 20	47 82	+ 1 62
	21	11 25 37 2	I	13 25 22 55	23 09	+ 0 54	N	101 56 12 96	14 69	+ 1 73

Right Ascensions and North Polar Distances of the Moon's Center (Continued)

Month	Day	Mean Solar Time of Observation	I or II Limb	A R from Observation	A R from N A	E of N A	N or S Limb	N P D from Observation	N P D from N A	E of N A
1845										
April	22	12 23 16 2	II	14 24 53 43	54 07	+ 0 64	S	105 58 15 12	13 43	— 1 69
	24	14 22 29 4	II	16 32 17 76	18 60	+ 0 84	S	110 39 13 06	9 61	— 3 45
	25	15 23 48 8	II	17 37 44 17	44 76	+ 0 59	N	110 47 44 94	39 84	— 5 10
	27	17 21 21 0	II	19 43 30 96	31 67	+ 0 71	N	106 44 14 97	8 46	— 6 [illegible]1
May	15	6 48 [illegible]2 9	I	10 22 25 80	26 25	+ 0 45	N	85 26 9 20	6 91	— 2 29
	16	7 34 14 0	I	11 11 51 53	51 71	+ 0 18	N	90 6 44 53	43 68	— 0 85
	18	9 11 4 0	I	12 56 53 45	53 90	+ 0 45	N	99 41 28 24	28 80	+ 0 56
	19	10 4 19 5	I	13 54 16 26	16 96	+ 0 70	N	104 2 33 55	35 88	+ 2 33
	20	11 1 29 8	I	14 55 34 88	35 81	+ 0 93	N	107 37 4 93	6 57	+ 1 64
	21	12 4 41 7	II	16 0 33 63	34 84	+ 1 21	N	110 1 4 34	3 32	— 1 02
	22	13 7 38 9	II	17 7 37 21	38 15	+ 0 94	S	110 54 37 17	31 10	— 6 07
	23	14 10 36 2	II	18 14 41 88	43 10	+ 1 22	N	110 10 4 02	2 15	— 1 87
	24	15 11 27 4	II	19 19 41 34	42 49	+ 1 15	N	107 54 35 69	32 66	— 3 03
	25	16 8 53 8	II	20 21 15 61	16 33	+ 0 72	N	104 26 23 41	23 72	+ 0 31
	26	17 2 36 5	II	21 19 5 47	5 91	+ 0 44	N	100 8 35 85	34 31	— 1 54
June	14	7 0 26 8	I	12 32 20 22	20 89	+ 0 67	N	97 31 34 09	31 93	— 2 16
	16	8 44 14 0	I	14 24 21 25	22 17	+ 0 92	N	105 54 17 [illegible]4	16 49	— 1 05
	17	9 42 13 6	I	15 26 29 13	30 05	+ 0 92	N	108 55 0 55	2 55	+ 2 00
	24	16 36 17 3	II	22 47 3 80	4 06	+ 0 26	N	92 22 37 75	30 66	— 7 09
July	13	6 33 30 7	I	13 59 41 91	42 82	+ 0 91	N	104 11 12 27	15 68	+ 3 41
	17	10 29 53 0	I	18 12 34 82	35 04	+ 0 22	N	110 13 4 77	56 93	— 7 84
	24	16 53 23 2	II	1 2 30 77	31 24	+ 0 47	N	80 11 4 70	3 62	— 1 08
	25	17 40 58 2	II	1 54 9 10	9 48	+ 0 38	N	76 16 54 67	58 59	+ 3 92
Aug	12	7 13 28 2	I	16 38 6 11	7 23	+ 1 12	N	110 25 10 07	10 50	+ 0 43
	13	8 13 35 1	I	17 42 20 53	21 65	+ 1 12	N	110 32 9 01	6 92	— 2 09
	22	16 21 57 2	II	2 25 17 92	18 09	+ 0 17	N	74 33 25 88	21 76	— 4 12
	23	17 10 44 3	II	3 18 9 88	10 08	+ 0 20	N	71 53 34 24	32 29	— 1 95
Sept	9	6 5 16 5	I	17 20 6 50	7 09	+ 0 59	N	110 25 43 67	38 61	— 5 06
	10	7 4 2 1	I	18 22 58 26	58 96	+ 0 70	N	109 37 57 09	57 55	+ 0 46
	11	8 2 24 7	I	19 25 26 48	27 44	+ 0 96	S	107 28 15 53	8 97	— 6 56
	12	8 59 24 3	I	20 26 30 83	31 92	+ 1 09	S	104 6 6 [illegible]7	58 19	— 8 38
	13	9 54 29 3	I	21 25 40 10	41 45	+ 1 35	S	99 48 4 89	[illegible]9 64	— 5 25
	14	10 47 38 5	I	22 22 54 18	55 64	+ 1 46	S	94 54 50 61	42 91	— 7 70
	17	13 21 56 2	II	1 7 18 06	19 12	+ 1 06	N	80 11 54 19	53 02	— 1 17
	19	15 1 30 8	II	2 55 1 88	2 43	+ 0 55	N	73 9 45 58	49 08	+ 3 50
	20	15 51 15 3	II	3 48 50 87	51 30	+ 0 43	N	71 0 46 63	46 77	+ 0 14
	22	17 29 36 8	II	5 35 22 65	22 76	+ 0 10	N	69 44 11 41	13 45	+ 2 04
Oct	8	5 56 43 9	I	19 5 51 87	52 39	+ 0 52	S	108 6 22 53	18 09	— 4 44
	9	6 52 53 4	I	20 6 5 87	6 56	+ 0 69	S	105 11 15 51	8 92	— 6 59
	11	8 39 15 8	I	22 0 36 71	37 59	+ 0 88	S	96 55 55 42	47 27	— 8 15
	20	16 9 54 9	II	6 5 51 16	50 95	— 0 21	N	70 15 33 86	35 81	+ 1 95
Nov	7	6 35 56 6	I	21 43 25 16	25 2[illegible]	+ 0 09	S	98 9 4 92	3 57	— 1 35
	8	7 26 10 9	I	22 37 42 35	43 06	+ 0 71	S	93 25 31 98	28 90	— 3 08
	9	8 15 5 2	I	23 30 40 78	41 43	+ 0 65	S	88 34 54 33	52 51	— 1 82
	10	9 3 25 0	I	0 23 5 08	6 03	+ 0 95	S	83 52 52 25	52 67	+ 0 42
	16	14 2 13 1	II	5 44 14 98	14 67	— 0 31	S	69 58 36 16	24 88	— 11 28
	18	15 37 24 4	II	7 27 36 60	36 69	+ 0 09	S	72 53 11 52	5 66	— 5 86
	21	17 50 18 1	II	9 52 43 53	43 63	+ 0 10	S	82 36 41 76	35 94	— 5 82
Dec.	6	6 13 15 9	I	23 14 58 41	59 10	+ 0 69	S	90 5 11 54	12 37	+ 0 83
	9	8 37 16 5	I	1 51 11 90	12 72	+ 0 82	S	77 1 29 90	31 54	+ 1 64
	10	9 25 48 2	I	2 43 48 44	48 86	+ 0 42	S	73 51 1 41	2 63	+ 1 22

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON'S CENTER (Continued)

Mean Solar Time of Observation		I or II Limb	A R from Observation	A R from N A	Error of N A	N or S Limb	N P D from Observation	N P D from N A	Error of N A
1845	h m s		h m s	s	s		° ′ ″	″	″
D 11	10 14 58.8	I	3 37 4.04	4.34	+ 0.30	S	71 31 43.75	44.74	+ 0.99
12	11 4 34.1	I	4 30 44.12	44.06	— 0.06	S	70 9 52.91	52.51	— 0.40
13	11 55 9.0	I II	5 24 20.38	19.90	— 0.48	N	69 48 24.30	27.78	+ 3.48
18	15 46 27.4	II	9 34 59.94	0.00	+ 0.06	N	81 0 30.37	21.88	— 8.49
19	16 29 12.2	II	10 21 48.29	48.38	+ 0.09	N	84 59 12.27	6.17	— 6.10
21	17 55 47.3	II	11 56 29.55	29.73	+ 0.18	N	93 35 44.61	35.20	— 9.41
1846									
Ja 5	6 35 20.0	I	1 35 22.90	23.75	+ 0.85	S	78 19 11.85	15.75	+ 3.90
6	7 23 41.4	I	2 27 49.00	49.77	+ 0.77	S	74 53 23.04	24.60	+ 1.56
9	9 50 25.3	I	5 6 46.78	46.98	+ 0.20	S	69 52 20.46	22.44	+ 1.98
10	10 39 6.2	I	5 59 31.44	31.58	+ 0.14	S	70 8 28.36	29.11	+ 0.75
12	12 14 33.1	I II	7 42 4.10	4.39	+ 0.29	S	73 25 18.02	10.13	— 7.89
13	13 0 44.0	II	8 31 21.08	21.35	+ 0.27	S	76 13 13.87	8.57	— 5.30
15	14 27 37.5	II	10 6 21.73	21.88	+ 0.15	S	83 26 22.79	18.30	— 4.49
16	15 10 12.2	II	10 52 59.90	0.15	+ 0.25	S	87 33 59.22	1.30	+ 2.08
17	15 53 5.0	II	11 39 55.37	55.53	+ 0.16	S	91 50 28.28	25.56	— 2.72
18	16 37 2.1	II	12 27 55.22	55.43	+ 0.21	S	96 6 37.56	33.71	— 3.85
19	17 22 54.6	II	13 17 50.88	51.18	+ 0.30	S	100 12 0.51	56.22	— 4.29
Feb 3	6 8 42.5	I	3 3 2.47	2.92	+ 0.45	S	73 18 37.74	40.37	+ 2.63
4	6 58 6.6	I	3 56 31.00	31.43	+ 0.43	S	71 16 3.71	3.85	+ 0.14
5	7 47 17.4	I	4 49 46.39	47.00	+ 0.61	S	70 12 3.78	0.42	— 3.36
6	8 36 0.4	I	5 42 33.50	33.77	+ 0.27	S	70 6 56.06	54.45	— 1.61
9	10 56 22.9	I	8 15 5.83	5.82	— 0.01	N	75 14 1.01	0.64	— 0.37
10	11 40 49.9	I	9 3 36.43	36.31	— 0.12	S	78 23 54.11	44.27	— 9.84
12	13 9 24.6	II	10 38 19.09	19.04	— 0.05	S	86 5 55.45	48.52	— 6.93
15	15 21 6.5	II	13 2 10.40	10.85	+ 0.45	S	98 42 17.21	17.41	+ 0.20
16	16 8 9.1	II	13 53 15.84	16.24	+ 0.40	S	102 29 35.33	24.51	— 10.82
18	17 50 30.9	II	5 43 44.07	44.41	+ 0.34	S	108 10 1.52	53.35	— 8.17
Mar 5	6 30 58.0	I	5 23 37.52	38.11	+ 0.59	S	70 16 43.03	39.60	— 3.43
6	7 19 31.6	I	6 16 14.97	15.70	+ 0.73	S	70 47 23.95	20.30	— 3.65
7	8 6 51.2	I	7 7 36.88	37.25	+ 0.37	N	72 12 3.37	6.54	+ 3.17
8	8 52 50.2	I	7 57 40.12	40.76	+ 0.64	N	74 25 1.26	2.08	+ 0.82
9	9 37 37.8	I	8 46 31.87	31.96	+ 0.09	N	77 19 16.22	12.37	— 3.85
10	10 21 31.2	I	9 34 28.26	27.99	— 0.27	N	80 47 8.93	2.00	— 6.93
11	11 4 52.7	I	10 21 53.47	53.41	— 0.06	N	84 40 23.85	16.42	— 7.43
12	11 48 14.0	I	11 9 18.76	18.81	+ 0.05				
13	12 34 14.6	II	11 57 22.96	22.90	— 0.06	S	93 6 42.15	30.73	— 11.42
14	13 19 22.2	II	12 46 33.85	33.80	— 0.05	S	97 18 23.80	17.31	— 6.49
15	14 6 10.3	II	13 37 30.28	30.06	— 0.22	S	101 13 28.59	16.67	— 11.92
16	14 55 24.1	II	14 30 41.78	42.03	+ 0.25				
17	15 47 2.5	II	15 26 23.95	24.57	+ 0.62	S	107 19 15.11	8.46	— 6.65
18	16 41 8.9	II	16 24 34.07	34.49	+ 0.42	S	109 2 23.77	17.16	— 6.61
19	17 37 12.6	II	17 24 42.97	43.35	+ 0.38	S	109 36 21.57	14.11	— 7.46
April 4	6 47 21.9	I	7 38 19.66	20.41	+ 0.75	N	73 37 36.94	36.21	— 0.73
5	7 32 40.1	I	8 27 40.72	41.41	+ 0.69	N	76 15 46.05	43.14	— 2.91
6	8 16 47.4	I	9 15 51.10	51.76	+ 0.66	N	79 29 52.80	50.67	— 2.13
7	9 0 12.6	I	10 3 19.89	20.32	+ 0.43	N	83 12 13.12	11.64	— 1.48
8	9 43 31.8	I	10 50 41.87	42.17	+ 0.30	N	87 14 51.22	50.19	— 1.03
9	10 27 21.6	I	11 38 36.01	36.05	+ 0.04	N	91 28 54.98	55.24	+ 0.26
10	11 12 22.6	I	12 27 41.73	41.90	+ 0.17	N	95 44 13.90	10.94	— 2.96
11	12 0 17.0	I II	13 18 39.87	39.72	— 0.15	S	99 48 51.36	42.53	— 8.83
12	12 50 35.2	II	14 11 58.08	58.03	— 0.05	S	103 28 29.77	20.21	— 9.56
13	13 42 22.2	II	15 7 49.69	49.89	+ 0.20	S	106 27 45.88	38.32	— 7.56
14	14 36 39.9	II	16 6 10.45	10.71	+ 0.26	S	108 31 49.55	40.19	— 9.36
15	15 32 50.2	II	17 6 25.36	25.75	+ 0.39	S	109 27 53.45	47.21	— 6.24
16	16 29 55.2	II	18 7 36.69	37.36	+ 0.67	N	109 8 27.90	24.43	— 3.47

Right Ascensions and North Polar Distances of the Moon Center (Continued)

Mean Solar Time of Observation		I or II Limb	A R from Observation	A R from N A	Error of N A	N or S Limb	N P D from Observation	N P D from N A	Error of N A
1846									
April	17 17 26 52 1	II	19 8 39 88	40 41	+ 0 53	N	107 32 57 35	54 38	— 2 97
May	4 6 54 33 5	I	9 43 46 42	47 11	+ 0 69	N	81 39 31 42	31 96	+ 0 54
	5 7 37 32 9	I	10 30 49 46	49 73	+ 0 27	N	85 32 53 76	54 99	+ 1 23
	6 8 20 44 7	I	11 18 5 15	5 62	+ 0 47	N	89 41 10 32	13 48	+ 3 16
	7 9 4 55 7	I	12 6 21 06	21 55	+ 0 49	N	93 55 48 21	43 60	— 4 61
	8 9 50 52 6	I	12 56 23 51	23 83	+ 0 32	N	98 5 58 62	57 83	— 0 79
	9 10 39 17 2	I	13 48 53 98	54 41	+ 0 43	N	101 59 0 07	2 93	+ 2 86
	10 11 30 38 1	I	14 44 21 49	21 81	+ 0 32	N	105 19 36 38	34 10	— 2 28
	11 12 27 19 6	II	15 42 56 95	57 09	+ 0 14	N	107 50 42 89	45 32	+ 2 43
	12 13 24 17 1	II	16 43 59 44	59 64	+ 0 20	N	109 16 5 89	6 38	+ 0 49
	13 14 22 42 3	II	17 46 30 00	30 65	+ 0 65	N	109 24 32 74	33 14	+ 0 40
	14 15 21 11 5	II	18 49 5 87	6 39	+ 0 52	N	108 12 41 79	43 18	+ 1 39
	15 16 18 29 1	II	19 50 30 02	30 72	+ 0 70	N	105 46 17 85	17 49	— 0 36
	16 17 13 50 6	II	20 49 57 [illegible]0	58 13	+ 0 63	N	102 18 11 88	12 66	+ 0 78
June	3 6 58 1 3	I	11 45 22 14	23 17	+ 1 03	N	92 0 14 87	11 37	— 3 50
	4 7 42 13 9	I	12 33 49 38	49 95	+ 0 57	N	96 10 39 74	36 43	3 31
	5 8 28 47 2	I	13 24 28 50	29 00	+ 0 50	N	100 11 4 13	59 85	— 4 28
	6 9 18 17 0	I	14 18 5 48	5 37	— 0 11	N	103 48 6 07	4 12	— 1 05
	7 10 10 52 3	I	15 15 7 50	7 17	— 0 33	N	106 45 45 20	37 77	— 7 13
	9 12 7 43 5	I II	17 18 43 61	44 10	+ 0 49	N	109 32 41 66	44 10	+ 2 44
	12 15 6 57 5	II	20 29 9 12	9 65	+ 0 53	N	103 45 3 03	3 39	+ 0 36
	14 16 55 39 1	II	22 26 4 33	4 71	+ 0 38	N	95 2 17 82	12 85	— 4 97
	15 17 46 55 7	II	23 21 26 46	26 84	+ 0 38	N	90 11 37 73	41 26	+ 3 53
July	3 7 7 47 1	I	13 53 38 41	39 28	+ 0 87	N	102 3 44 12	43 76	— 0 36
	4 7 57 52 6	I	14 47 50 62	51 44	+ 0 82	N	105 19 6 38	0 79	— 5 59
	5 8 51 34 4	I	15 45 40 14	40 72	+ 0 58	N	107 48 45 69	37 08	— 8 61
	7 10 48 38 4	I	17 50 59 25	59 85	+ 0 60	N	109 24 0 91	53 75	— 7 16
	8 11 49 39 5	I	18 56 6 94	8 03	+ 1 09	N	108 6 45 54	40 10	— [illegible] 44
Aug	1 6 39 51 3	I	15 20 0 90	2 11	+ 1 21	N	106 36 19 91	14 64	— 5 27
	2 7 33 44 5	I	16 18 0 77	1 90	+ 1 13	N	108 31 54 76	49 68	— 5 08
	10 15 16 4 4	II	0 30 56 75	57 05	+ 0 30	N	85 37 3 81	4 98	+ 1 17
Sept	4 11 7 48 3	I	22 2 46 86	48 06	+ 1 20	N	97 18 13 61	9 23	— 4 38
	29 7 0 21 1	I	19 33 12 37	12 98	+ 0 61	S	106 26 28 76	20 51	— 8 25
	30 7 56 36 2	I	20 33 33 43	33 61	+ 0 18	S	103 26 7 28	58 08	— 9 20
Oct	1 8 52 22 0	I	21 33 24 46	25 05	+ 0 59	S	99 28 18 52	14 19	— 4 33
	5 12 33 37 2	II	1 28 49 54	50 22	+ 0 68	N	80 17 49 66	54 14	+ 4 48
	8 15 16 46 7	II	4 24 15 64	15 55	— 0 09	N	71 45 10 45	17 28	+ 6 83
	9 16 9 32 2	II	5 21 6 96	7 27	+ 0 31	N	71 3 26 61	31 22	+ 4 61
	29 7 37 46 9	I	22 8 59 75	0 06	+ 0 31	S	96 43 18 99	18 02	— 0 97
	30 8 30 38 6	I	23 5 56 36	56 60	+ 0 24	S	92 0 8 14	8 03	— 0 11
	31 9 23 26 7	I	0 2 49 37	49 68	+ 0 31	S	87 8 12 79	13 71	+ 0 92
Nov	2 11 10 30 1	I	1 58 4 25	5 13	+ 0 88	S	78 16 24 67	28 96	+ 4 29
	3 12 7 19 7	II	2 56 47 78	48 29	+ 0 51	N	74 [illegible]2 53 56	0 87	+ 7 31
	4 13 2 6 3	II	3 55 40 17	40 76	+ 0 59	N	72 30 13 71	20 85	+ 7 14
	5 13 56 24 5	II	4 54 4 20	4 82	+ 0 62				
	7 15 40 27 6	II	6 46 18 72	19 54	+ 0 82	S	72 1 19 63	18 20	— 1 43
	30 9 53 30 0	I	2 31 14 59	15 20	+ 0 61	S	76 15 56 66	2 49	+ 5 83
Dec	1 10 47 9 2	I	3 28 58 44	58 96	+ 0 52	S	73 26 39 30	42 97	+ 3 67
	2 11 41 12 2	I	4 27 6 54	6 85	+ 0 31	S	71 39 16 78	17 38	+ 0 60
1847									
Jan	6 15 58 24 8	II	11 0 57 17	57 42	+ 0 25	S	87 6 18 13	9 29	— 8 84

Right Ascensions and North Polar Distances of the Moon s Center (Continued)

M S lar im Obs rv l	I Limb	A R m O serv i	R m N A	Erro f N A	N S Limb	N D m Observati	N P D from N A	Erro f N A
1847 d m		m						
Ja 7 16 40 25 2	II	11 47 0 81	1 02	+ 0 21	S	91 2 46 83	36 10	—10 73
8 17 22 50 7	II	12 33 29 31	29 54	+ 0 23	S	94 58 2 64	54 23	— 8 41
25 7 30 11 7	I	3 48 19 44	20 08	+ 0 64	S	73 2 24 76	25 01	+ 0 25
26 8 22 15 2	I	4 44 27 79	27 68	— 0 11	S	71 33 20 37	20 79	+ 0 42
27 9 13 51 8	I	5 40 8 60	8 27	— 0 33	S	71 6 27 76	27 04	— 0 72
28 10 4 28 7	I	6 34 49 74	50 03	+ 0 29	N	71 40 13 15	14 31	+ 1 16
29 10 53 39 8	I	7 28 4 35	4 31	— 0 04	N	73 9 39 72	38 07	— 1 65
30 11 41 5 6	I	8 19 33 42	33 46	+ 0 04	S	75 26 59 16	52 91	— 6 25
Feb 1 13 12 49 0	II	9 57 23 69	23 76	+ 0 07	S	81 47 19 65	14 21	— 5 44
4 15 19 51 1	II	12 16 37 07	37 04	— 0 03	S	93 18 14 26	4 06	—10 20
6 16 46 38 1	II	13 51 30 15	30 06	— 0 09	S	100 37 42 53	32 35	—10 18
23 7 10 45 2	I	5 23 9 05	9 66	+ 0 61	S	71 20 49 14	46 44	— 2 70
24 8 1 38 8	I	6 18 6 58	7 41	+ 0 83				
25 8 50 58 6	I	7 11 30 17	30 55	+ 0 38	N	72 44 33 55	32 68	— 0 87
26 9 38 33 4	I	8 3 8 15	8 25	+ 0 10	N	74 44 5 12	1 37	— 3 75
27 10 24 23 7	I	8 53 1 48	1 58	+ 0 10	N	77 24 26 80	23 00	— 3 80
Mar 1 11 51 48 6	I	10 28 32 44	32 57	+ 0 13	N	84 11 36 28	33 17	— 3 11
2 12 36 13 1	II	11 15 2 85	2 96	+ 0 11	S	88 0 32 27	23 65	— 8 62
3 13 18 24 0	II	12 1 17 20	17 66	+ 0 46	S	91 53 55 88	45 56	—10 32
4 14 0 57 9	II	12 47 54 16	54 52	+ 0 36	S	95 43 12 54	5 73	— 6 81
5 14 44 28 9	II	13 35 27 97	28 05	+ 0 08	S	99 19 38 85	29 30	— 9 55
6 15 29 28 7	II	14 24 30 94	31 14	+ 0 20	S	102 33 52 40	42 63	— 9 77
9 17 57 19 4	II	17 4 31 58	31 60	+ 0 02	S	108 23 50 30	45 43	— 4 87
24 6 47 8 3	I	6 53 47 34	48 17	+ 0 83	N	72 23 8 89	13 50	+ 4 61
25 7 35 40 7	I	7 46 22 90	23 79	+ 0 89	N	71 7 3 85	1 26	— 2 59
26 8 22 8 9	I	8 36 53 84	54 71	+ 0 87	N	76 34 8 06	1 84	— 6 22
27 9 6 50 2	I	9 25 38 07	38 34	+ 0 27	N	79 35 15 35	8 93	— 6 42
29 10 32 39 2	I	10 59 33 58	33 99	+ 0 41	N	86 44 55 51	47 87	— 7 64
30 11 14 53 5	I	11 45 50 94	51 44	+ 0 50	N	90 36 27 38	20 80	— 6 58
31 11 57 26 1	I	12 32 27 14	27 62	+ 0 48	N	94 27 32 19	34 23	+ 2 04
April 1 12 42 53 3	II	13 19 59 60	59 47	— 0 13	S	98 9 50 10	39 42	—10 68
3 14 14 10 3	II	14 59 22 88	22 93	+ 0 05	S	104 25 57 99	49 18	— 8 81
7 17 38 51 9	II	18 40 20 09	20 08	— 0 01	N	107 53 19 46	17 15	— 2 31
23 7 3 26 6	I	9 8 21 60	22 57	+ 0 97	N	78 27 14 79	12 57	— 2 22
26 9 12 25 6	I	11 29 29 77	30 88	+ 1 11	N	89 14 10 73	10 24	— 0 49
27 9 54 47 3	I	12 15 55 43	56 05	+ 0 62	N	93 6 39 60	35 50	— 4 10
May 1 12 59 14 9	II	15 34 37 54	37 53	— 0 01	N	106 2 46 34	50 85	+ 4 51
3 14 41 52 2	II	17 25 22 79	23 23	+ 0 44	N	108 32 0 87	0 64	— 0 23
4 15 35 12 4	II	18 22 47 29	47 70	+ 0 41	N	108 14 59 04	57 77	— 1 27
5 16 28 59 5	II	19 20 39 94	40 73	+ 0 79	N	106 52 37 72	35 60	— 2 12
6 17 22 40 9	II	20 18 26 50	27 20	+ 0 70	N	104 27 38 58	38 32	— 0 26
25 8 33 35 2	I	12 44 53 45	54 44	+ 0 99	N	95 22 30 69	28 52	— 2 17
26 9 17 24 1	I	13 32 47 24	48 03	+ 0 79	N	99 2 30 71	25 53	— 5 18
June 2 15 19 8 8	II	20 1 1 11	1 31	+ 0 20	N	105 26 46 98	52 02	+ 5 04
3 16 12 55 8	II	20 58 53 82	54 40	+ 0 58	N	102 21 56 62	63 32	+ 6 71
July 21 6 34 57 6	I	14 30 42 53	43 04	+ 0 51	N	102 28 29 51	29 27	— 0 24
Aug 20 6 52 40 0	I	16 46 47 34	48 48	+ 1 14	N	107 47 22 64	20 17	— 2 47
21 7 45 6 5	I	17 43 20 30	20 85	+ 0 55	N	108 23 34 39	31 31	— 3 08
23 9 35 39 3	I	19 42 5 75	6 84	+ 1 09	S	106 17 17 54	9 19	— 8 35
25 11 28 56 1	I	21 43 34 60	35 32	+ 0 72	N	99 45 21 60	18 10	— 3 50

Right Ascensions and North Polar Distances of the Moon s Center (*Continued*)

M lar Tim f Observati n.					I II Limb	A R from Obse vati n.	A R fr m N	Erro f N A	N S Limb	N P D fro Observ io	N P D rom N	Erro f N A
1847	d	h	m			h m						
Sept	18	6	27	44 7	I	18 16 8 83	9 68	+ 0 85	N	108 8 44 17	46 13	+ 1 96
	20	8	16	4 6	I	20 12 40 74	41 15	+ 0 41	S	104 56 44 58	36 88	— 7 70
Oct	18	6	59	2 9	I	20 45 48 96	49 29	+ 0 33	S	103 17 36 03	33 97	— 2 06
	19	7	52	30 3	I	21 43 21 99	22 71	+ 0 72	S	99 44 4 77	4 37	— 0 40
	20	8	46	26 0	I	22 41 23 21	23 71	+ 0 50	S	95 27 4 63	6 35	+ 1 72
	22	10	36	38 8	I	0 39 48 35	48 72	+ 0 37	S	85 48 48 34	48 87	+ 0 53
	26	14	31	0 0	II	4 48 19 04	19 95	+ 0 91	N	72 17 37 85	44 13	+ 6 28
Nov	16	6	37	22 4	I	22 18 24 37	24 86	+ 0 49	S	97 21 15 00	12 45	— 2 55
	20	10	12	39 3	I	2 10 5 19	5 83	+ 0 64	S	79 11 45 35	45 16	— 0 19
	23	13	10	36 1	II	5 18 5 46	6 13	+ 0 67	S	71 45 20 55	20 38	— 0 17
	27	16	44	30 8	II	9 8 27 43	28 08	+ 0 65	S	77 46 28 87	27 34	— 1 53
Dec	21	11	50	1 9	I II	5 48 50 94	51 51	+ 0 57	S	71 31 27 32	25 62	— 1 70

Sidereal Time Occupied by the Moon s Diameter Passing the Meridian Compared with the Nautical Almanac

D			O Sid ea Inter al	N A	Diff
			m		
1831	Feb	26	2 7 48		
	Apr l	26	3 06		
	M y	26	7 16		
	Sept	21	12 48		
1833	May	3	14 26		
	July	1	15 70		
1834	Feb	23	23 48	23 42	— 0 06
1835	Mar	14	18 16	17 66	— 0 50
	April	13	20 02	20 48	+ 0 46
	May	12	26 62	26 22	— 0 40
	June	10	31 68	31 46	— 0 22
1836	Feb	2	15 68	15 32	— 0 36
	April	1	13 16	12 86	— 0 30
1837	Jan	21	14 70	14 20	— 0 50
	Mar	21	5 32	5 30	— 0 02
	April	20	12 08	11 64	— 0 44

D			Obs S I	N A	D
			m		
1838	Jan	10	2 19 62	19 32	— 0 30
	May	9	15 12	14 76	— 0 36
1839	Feb	27	6 76	6 88	+ 0 12
	April	28	7 57	7 32	— 0 25
1842	July	22	9 52	9 82	+ 0 30
	Sept	19	1 52	1 56	+ 0 04
	Oct	19	8 30	8 54	+ 0 24
1843	Feb	14	20 10	19 70	— 0 40
	April	14	24 12	23 80	— 0 32
	M y	13	27 68	27 6	— 0 06
1845	Jan	23	8 28	8 14	— 0 14
	Feb	22	8 00	7 86	— 0 14
1846	Jan	12	7 30	6 94	— 0 36
	April	11	9 51	9 48	— 0 03
	June	9	24 64	24 15	— 0 49
1847	Dec	21	21 10	20 86	— 0 24

Th fi t limb s ted ough

Right Ascensions and North Polar Distances of the Center of Mercury (Continued)

Date	Mean Solar Time of Observation	Planet Observed	R A from Observation	R A from N A	Error of N A	Planet Observed	N P D from Observation	N P D from N A	Error of N A
1831	m								
Mar 11	22 56 6 4	C	22 12 35 78			C	103 20 16 78		
12	22 58 21 0		22 18 47 19				102 49 24 95		
16	23 7 0 1		22 43 13 97				100 33 18 72		
19							98 38 14 25		
21	23 19 4 1		23 15 2 56				97 15 30 74		
24	23 26 54 1		23 34 43 61						
28	23 38 7 6		0 1 45 23				91 49 33 11		
30	23 44 7 5		0 15 39 01				90 6 56 01		
July 1	22 43 24 8		5 21 35 89				68 9 3 60		
5	22 57 55 4		5 51 44 11				67 2 15 40		
7	23 6 35 1		6 8 19 47				66 38 12 74		
10	23 21 3 9		6 34 40 39				66 18 11 10		
1832									
Feb 18	22 52 27 8		20 44 22 92				109 33 36 04		
Mar 12	23 49 32 7		23 13 5 84				97 9 23 00		
April 2	0 52 55 8		1 35 30 68						
3	0 55 45 8		1 42 17 52				78 12 37 78		
4	0 58 28 0		1 48 56 37				77 23 9 83		
5	1 0 58 6		1 55 23 09				76 35 40 24		
7	1 5 27 5		2 7 47 14				75 7 20 05		
9	1 8 58 3		2 19 12 22				73 48 46 86		
10	1 10 24 5		2 24 35 39				73 13 25 73		
Oct 6	23 7 26 8		12 10 54 23				89 6 17 93		
Nov [illegible]	0 13 34 3		15 11 35 35				108 41 20 51		
10	0 25 11 1		15 42 56 69				111 5 11 06		
12	0 29 56 4		15 55 36 31				111 55 34 49		
15	0 37 12 4		16 14 42 77				113 3 3 75		
18	0 44 33 3		16 33 55 71				113 0 2 07		
19	0 47 2 4		16 40 21 68				114 16 35 09		
23	0 56 51 7		17 [illegible] 58 04				115 10 5 18		
Dec	1 20 45 8		18 17 14 48				115 36 50 24		
8	1 22 50 6		18 31 9 81				115 11 47 64		
1833									
Mar 18	0 59 33 0		0 42 2 21				84 51 3 12		
23	1 9 0 8		1 11 15 29				80 42 16 69		
25	1 10 58 6		1 21 6 36				79 17 51 42		
26	1 11 28 3		1 25 32 76				78 39 43 22		
27	1 11 37 4		1 29 38 62				78 6 37 16		
28	1 11 24 2		1 33 21 79				77 32 37 21		
29	1 10 48 0		1 36 42 12				77 3 49 69		
April 1	1 6 36 7		1 44 19 53				75 58 5 30		
May 28	22 36						75 8 54 34		
31	22 [illegible]0 36 5		3 21 57 46				73 21 10 36		
July 17	1 50						74 45 51 48		
Oct 19	0 21 13 8		14 11 17 32				103 39 35 34		
21	0 25 15 4		14 23 12 66				104 54 16 25		
Dec 23	22 27 30 1		16 37 26 89				109 32 17 80		
25	22 24 44 8		16 43 33 15				109 58 28 63		

Right Ascensions and North Polar Distances of the Center of Mercury (*Continued*)

Month and Day	Mean Solar Time of Observation	Point Observed	A. R. from Observation	A. R. from N. A.	Error of N. A.	Point Observed	N. P. D. from Observation	N. P. D. from N. A.	Error of N. A.
1834								′	
Jan 16	22 58 26 2	C	18 43 6 06	6 03	— 0 03	C	113 45 33 87	35 68	+ 1 81
17	23 0 58 7		18 49 36 32	36 47	+ 0 15		113 45 5 92	8 68	+ 2 76
19	23 6 15 3		19 2 45 39	45 22	— 0 17		113 40 21 13	25 56	+ 4 43
22	23 14 23 9		19 22 45 12	45 12	0 00		113 23 23 59	30 22	+ 6 63
24	23 19 58 7		19 36 14 08	14 44	+ 0 36		113 5 24 78	27 42	+ 2 64
26	23 25 40 7		19 49 50 13	50 07	— 0 06		112 41 50 81	51 55	+ 0 74
27	23 28 33 5		19 56 39 93	39 91	— 0 02		112 27 53 26	56 88	+ 3 62
29	23 34 24 5		20 10 23 46	23 28	— 0 18		111 55 47 94	49 88	+ 1 94
Feb 2	23 46 12 9		20 38 1 69	1 86	+ 0 17		110 34 7 14	10 85	+ 3 71
18	0 31 48 7		22 22 52 84	52 64	— 0 20		101 57 25 40	26 74	+ 1 34
19	0 34 50 1		22 29 51 66	51 45	— 0 21		101 11 34 43	35 58	+ 1 15
20	0 37 50 7		22 36 49 02	49 21	+ 0 19		100 24 29 53	29 47	— 0 06
21	0 40 49 9		22 43 45 59	45 53	— 0 06		99 36 10 47	12 13	+ 1 66
23	0 46 43 0		22 57 32 34	32 41	+ 0 07		97 56 22 45	23 49	+ 1 04
24	0 49 34 9		23 4 21 41	21 75	+ 0 34		97 5 6 93	5 61	— 1 32
25	0 52 23 6		23 11 7 61	7 55	— 0 06		96 13 3 25	1 42	— 1 83
26	0 55 8 1		23 17 48 50	48 90	+ 0 40		95 20 21 91	20 39	— 1 [illegible]2
27	0 57 46 4		23 24 25 33	24 88	— 0 45		94 27 16 58	13 24	— 3 3[illegible]
28	1 0 18 7		23 30 54 51	54 47	— 0 04		99 33 47 16	51 84	+ 4 68
Mar 1	1 2 45 7		23 37 16 50	16 38	— 0 12		92 40 31 93	29 30	— 2 63
3	1 8 6 4		23 50 32 19	32 11	— 0 08		90 54 44 45	37 63	— 6 82
4	1 8 59 8		23 55 22 42	22 35	— 0 07		90 2 52 41	49 62	— 2 [illegible]
1835									
Feb 13	1 8 28 0		22 38 58 94	58 99	+ 0 05				
15	1 12 41 6		22 51 6 71	6 50	— 0 21				
April 28	22 48 41 5		1 14 31 91	31 21	— 0 70		84 38 40 13	43 04	+ 2 91
30	22 53 38 1		1 27 22 11	21 82	— 0 29		83 10 13 48	17 15	+ 3 67
May 1	22 56 17 8		1 33 58 69	58 38	— 0 31		82 24 57 70	0 63	+ 2 93
10	23 26 33 6		2 39 47 47	47 51	+ 0 04		75 18 54 38	59 80	+ 5 12
June 19	1 49 29 1		7 36 52 65	52 82	+ 0 17		67 35 1 85	6 22	+ 4 37
Sept 26	0 59 59 7		13 17 34 13	33 97	— 0 16		99 6 5 78	6 57	+ 0 79
27	1 1 22 7		13 22 54 09	53 76	— 0 33		99 45 48 54	54 [illegible]9	+ 6 0[illegible]
28	1 2 43 2		13 28 11 09	11 11	+ 0 02		100 25 1 80	3 43	+ 1 63
Oct 17	1 17 18 0		14 57 42 77	42 80	+ 0 03				
23	1 11 50 8		15 15 52 23	52 28	+ 0 05				
Nov 23	22 29 10 6		14 38 57 41	57 20	— 0 21				
24	22 29 8 8		14 42 52 50	52 51	+ 0 01		103 20 53 55	50 40	— 3 15
27	22 30 42 1		14 56 15 32	15 09	— 0 23				
Dec 3	22 38 42 0		15 27 56 40	56 33	— 0 07				
11	22 55 6 7		16 15 55 76	55 84	+ 0 08				
17	23 10 0 6		16 54 30 35	30 57	+ 0 22		112 48 36 61	39 95	+ 3 34
24	23 29 23 0		17 41 32 41	31 92	— 0 49				
25	23 32 17 0		17 48 24 17	23 89	— 0 28		114 29 7 45	10 37	+ 2 92
28	23 41 14 0		18 9 11 47	11 33	— 0 14				
29	23 44 15 5		18 16 10 63	10 59	— 0 04				
1836									
Jan 16	0 38 20 1		20 17 25 55	25 00	— 0 55				
19	0 47 45 8		20 38 42 64	42 40	— 0 24		110 33 13 59	12 52	— 1 07
21	0 53 52 8		20 52 43 47	43 22	— 0 25		109 33 24 68	15 86	— 8 82
22	0 56 51 2		20 59 38 76	38 98	+ 0 22		109 1 0 10	2 92	+ 2 82

Right Ascensions and North Polar Distances of the Center of Mercury (C nt nu d)

M S l Tim f Ob rv ti		P int Ob ed	A R fr m Ob ti	A R from N A	Erro f N A	P i Ob rv d	N P D fr m Ob ti	N P D fr m N A	Err f N A
1836			m						
J	23 0 59 46 1	C	21 6 30 87	30 96	+ 0 09	C	108 27 25 48	23 60	— 1 88
	26 1 8 0 9		21 26 36 64	36 72	+ 0 08		106 38 30 91	29 21	— 1 70
	27 1 10 33 1		21 33 6 08	5 66	— 0 42		105 59 52 76	50 09	— 2 67
	29 1 15 12 3		21 45 37 90	37 57	— 0 33		104 39 46 28	45 28	— 1 00
Feb	2 1 22 2 0		22 8 15 89	15 48	— 0 41		101 53 47 66	46 46	— 1 20
	3 1 23 3 4		22 13 14 11	13 87	— 0 24		101 12 34 60	31 48	— 3 12
	4 1 23 44 1		22 17 51 54	51 45	— 0 09		100 32 1 61	59 81	— 1 80
	5 1 24 2 1		22 22 6 29	5 85	— 0 44		99 52 37 84	33 67	— 4 17
	6 1 23 54 0		22 25 54 92	54 60	— 0 32		99 14 39 09	37 47	— 1 62
	8 1 22 12 1		22 32 5 70	5 24	— 0 46		98 4 54 92	54 28	— 0 64
	9 1 20 33 2		22 34 23 30	22 49	— 0 81		97 34 0 01	59 02	— 0·9)
	10 1 18 18 9		22 36 5 58	4 87	— 0 71		97 6 15 77	15 86	⊦ 0 09
April	13 23 0 51 3		0 30 33 76	33 85	+ 0 09		89 10 44 11	51 23	+ 7 12
	14 23 3 20 0		0 36 59 40	59 82	+ 0 42		88 25 11 13	17 05	+ 5 92
	18 23 14 14 9		1 3 42 17	42 32	+ 0 15		85 14 11 87	19·70	+ 7 83
	22 23 26 52 9		1 32 8 17	8 70	+ 0 53		81 52 4 22	4 28	+ 0 06
	24 23 34 4 8		1 47 4 50	4 83	+ 0 33		80 8 12 23	13 09	⊣ 0 86
	25 23 37 36 2		1 54 43 84	43 92	+ 0 08				
M y	31 1 38 53 7		6 14 20 44	20 03	— 0 41		64 52 59 50	0·58	⊦ 1 08
J ly	19 22 39 39 7		6 31 45 13	45 19	+ 0 06		68 47 7 88	6 68	1 20
O t	6 1 12 29 4		14 12 30 79	30 65	— 0 14		106 8 27 86	22 93	— 4 93
No	22 22 56 34 1		1ᴗ 5 28 70	28 38	— 0·32		106 19 48 69	53 58	⊣ 4 89
	25 23 3 16 4		15 24 0 09	59 97	— 0 12		107 53 53 73	55 35	+ 1 62
D	4 23 25 30 1		15 21 46 49	46 06	— 0 43		111 52 14 02	13 11	0 91
1837									
Jan	3 0 52 57 2		19 43 49 04	48 95	— 0 09		113 28 49 32	48 79	— 0 53
	7 1 4 49·2		20 11 29 49	29 30	— 0 19		112 3 31 51	31 19	— 0 32
	8 1 7 36 8		20 18 14 01	13 76	— 0 25		111 38 25 84	2ᴗ 91	+ 0 07
	9 1 10 18 5		20 24 52 57	52 33	— 0 24		111 11 55 77	ᴗ5 76	— 0 01
	10 1 12 53 0		20 31 24 32	24 08	— 0·24		110 44 2 94	4 64	+ 1 70
	24 1 21 29 0		21 35 13 ᴗ0	12 83	— 0 67		103 25 24 86	23 05	— 1 81
Гeb	19 22 37 21 1		20 37 5 09	4 21	— 0 88				
	20 22 35 6 7		20 38 47 81	47 25	— 0 56		107 1 14 77	18·15	+ 3 38
Mar	1 22 28 11 6		21 7 20 03	19 70	— 0·33		106 52 17 01	18·01	+ 1 00
	5 22 30 16 7		21 25 12 03	11 14	— 0 89		106 9 41 26	48 69	⊦ 7 43
	6 22 31 6 9		21 29 59 02	58 77	— 0 25		105 5ᴗ 33 57	38 53	+ 4 96
	7 22 32 5 5		21 34 53 34	53 10	— 0 24		105 40 0 88	4 82	⊦ 3 94
	8 22 33 8 8		21 39 54 01	53 66	— 0 35		105 23 3 20	8 59	⊦ 5 39
	9 22 34 19 0		21 45 0 38	0 00	— 0 38		105 4 43 21	49 78	+ 6 57
	10 22 35 33 3		21 50 12 39	11 72	— 0 67		104 45 5 14	9 77	+ 4 63
	13 22 39 47 2		22 6 16 13	15 84	— 0 29		103 38 3 89	8 47	+ 4 58
	16 22 44 39 2		22 22 58 39	57 97	— 0 42		102 19 16 55	19 35	+ 2 80
	22 22 56 0 1		22 57 59 51	59 38	— 0 13		99 7 22 42	26 39	⊦ 3 97
	23 22 58 3 8		23 4 1 64	1 33	— 0 31		98 31 1 66	8 72	ǀ 7 06
	24 23 0 12 5		23 10 6 59	6 68	+ 0 09				
	26 23 4 41 6		23 22 28 21	27 64	— 0 57		96 35 4·00	5 85	+ 1 85
	27 23 6 57 3		23 28 43 19	43 39	+ 0 20		95 54 1 26	4 21	⊣ 2 95
	28 23 9 19 9		23 35 2 47	2 71	+ 0 24		95 11 53 02	54 04	⊦ 1 02
	29 23 11 47 6		23 41 25 93	25 71	— 0 22		94 28 39 85	36 05	— 3 80
	30 23 14 16 6		23 47 52 60	52 66	+ 0 06		93 42 10 53	11 56	+ 1 03

Right Ascensions and North Polar Distances of the C nter of Mercury (Co t n d)

M S lar Tim f Observ tl		Pl t Ob d	A R fr m Ob ti n.	A R f m N A	Er f N A	P l t Ob rv d	N P D from Ob ati	N P D f m N A	Err f N A
1837									
Apr l 19	0 16 43 8	C	2 5 24 23	24 36	+ 0 13	C			
20	0 20 46 6		2 13 24 54	24 40	— 0 14		76 19 6 30	5 06	— 1 24
21	0 24 51 2		2 21 26 19	26 22	+ 0 03		75 26 56 32	54 91	— 1 41
25	0 41 6 4		2 53 30 57	30 72	+ 0 15		72 12 54 50	52 66	— 1 84
26	0 43 3 8		3 1 25 05	24 75	— 0 30		71 29 2 64	3 05	+ 0 41
30	0 59 51 0		3 32 1 78	2 17	+ 0 39		68 56 17 01	11 04	— 5 97
M y 2	1 6 23 8		3 46 27 64	27 73	+ 0 09		67 54 37 7ↄ	32 53	— 5 22
3	1 9 22 5		3 53 23 70	23 89	+ 0 19		67 27 37 28	29 93	— 7 35
11	1 24 5ↄ 9		4 40 32 16	32 43	+ 0 27		65 7 42 68	44 34	+ 1 66
12	1 25 41 1		4 45 13 94	14 03	+ 0 09		65 11 25 79	26 48	+ 0 69
J ly 9	22 44 11 4		5 55 54 24	54 80	+ 0 56				
11	22 50 26 4		6 10 3 54	4 18	+ 0 64		67 19 11 55	10 38	- 1 17
18	23 20 7 0		7 7 25 62	25 65	+ 0 03		66 49 8 59	7 81	— 0 78
19	23 25 0 3		7 16 19 23	19 81	+ 0 58				
A g 7	0 46 38 3		9 49 5 48	6 07	+ 0 59				
9	0 53 1 4		10 3 22 51	22 80	+ 0 29		76 27 29 46	32 75	+ 3 29
28	1 28 33 4		11 53 54 96	54 92	— 0 04		90 6 33 84	34 ↄ2	+ 0 68
S pt 13	1 28 37 0		12 57 3 46	3 38	— 0 08				
20	1 15 7 2		13 11 7 39	7 06	— 0 33		101 30 16 47	18 03	+ 1 56
21	1 12 3 8		13 11 59 89	59 59	— 0 30		101 39 20 23	21 52	+ 1 29
22	1 8 39 8		13 12 31 71	31 22	— 0 49		101 45 20 23	22 95	+ 2 72
23	1 5 39 4		13 12 41 05	40 74	— 0 31		101 48 7 15	8 11	+ 0 96
1838									
J 7	1 24 28 3		20 30 14 69	14 34	— 0 35		109 7 10 77	11 70	+ 0 93
8	1 22 17 8		20 32 0 06	59 38	— 0 68		108 44 29 85	27 70	— 2 15
9	1 19 24 9		20 33 3 61	2 98	— 0 63		108 23 14 51	13 90	— 0 61
M 12	23 17 56 7		22 39 38 77	38 29	— 0 48		100 52 54 45	57 70	+ 3 25
14	23 22 59 2		22 52 34 82	34 35	— 0 47		99 34 7 69	11 10	+ 3 41
15	23 25 33 7		22 59 7 07	6 65	— 0 42		98 52 53 08	5 20	+ 2 12
18	23 33 34 7		23 18 58 95	58 6?	— 0 33		96 41 44 67	48 60	+ 3 93
19	23 36 20 5		23 25 41 49	41 60	+ 0 11				
20	23 39 10 4		23 32 27 68	27 63	— 0 05		95 8 30 69	27 70	2 99
21	23 42 2 9		23 39 17 06	16 78	— 0 28		94 20 5 73	4 40	— 1 33
22	23 44 57 4		23 46 9 22	9 18	— 0 04		93 30 34 64	34 70	+ 0 06
April 19	1 10 4 7		2 57 57 34	57 35	+ 0 01		70 41 41 40	38 10	3 30
20	1 11 34 0		3 3 36 36	36 29	— 0 07		70 11 23 55	19 60	— 3 95
21	1 13 13 0		3 8 59 22	59 21	— 0 01		69 43 42 56	38 10	— 4 46
26	1 15 58 3		3 31 28 70	27 59	— 1 11		68 4 36 53	34 20	— 2 33
29	1 13 43 0		3 41 2 92	2 10	— 0 82		67 35 48 47	51 60	+ 3 13
30	1 12 16 8		3 43 32 28	31 96	— 0 32				
De 9	1 11 45 1		18 22 12 21	12 02	— 0 19		115 40 33 32	38 30	+ 4 98
10	1 13 58 9		18 28 22 83	22 58	— 0 25		115 35 18 75	22 00	+ 3 25
13	1 19 50 2		18 46 4 55	4 23	— 0 32		115 10 55 29	57 90	+ 2 61
14	1 21 25 7		18 51 36 76	36 46	— 0 30		115 0 3 35	5 10	+ 1 75
18	1 25 6 1		19 11 4 17	3 76	— 0 41		114 4 41 72	42 60	+ 0 88
21	1 23 48 4		19 21 36 10	35 70	— 0 40		113 14 0 61	58 40	— 2 21
22	1 22 19 4		19 24 3 51	2 91	— 0 60		112 56 10 86	9 40	— 1 46
24	1 17 12 9		19 27 1 09	0 67	— 0 42		112 20 29 06	28 80	— 0 26
1839									
Γ b 18	23 10 20 9		21 4 18 25	18 06	— 0 19		108 40 3 45	8 18	+ 4 73
20	23 15 19 9		21 17 13 68	13 31	— 0 37		107 50 31 74	35 40	+ 3 66
21	23 17 53 2		21 23 43 17	43 32	+ 0 15		107 23 43 75	47 50	+ 3 75

Right Ascensions and North Polar D stances of the Center of Mercury (C nt nued)

M S t Tim f Ob erv ti		P in Ob rved	A R f m Ob i	A R fr m N A	Err f N A	P t t Ob-rved	N P D f m Ob rv ti	N P D fr m N A	E ro f N A
1839								″	
Feb	24 23 25 41 3	C	21 43 22 49	22 54	+ 0 05	C	105 55 13 84	16 60	+ 2 76
	26 23 31 1 1		21 56 36 63	36 03	— 0 60		104 49 25 21	28 90	+ 3 69
	28 23 36 26 3		22 9 55 78	55 61	— 0 17		103 38 10 17	15 90	+ 5 73
M r	1 23 39 11 4		22 16 38 20	37 65	— 0 55		103 0 31 95	37 80	+ 5 85
	22 0 39 48 1		0 36 15 56	15 45	— 0 11		86 21 45 88	42 20	— 3 68
	25 0 48 58 9		0 57 17 82	17 37	— 0 45		83 31 57 96	54 90	— 3 06
	26 0 51 53 0		1 4 8 76	8 56	— 0 20		82 36 41 01	39 40	— 1 61
	28 0 57 19 5		1 17 29 32	29 31	— 0 01		80 49 39 91	35 80	— 4 11
	29 0 59 49 8		1 23 56 41	56 15	— 0 26		79 58 20 05	17 10	— 2 95
Ap l	3 1 9 9 3		1 53 0 32	59 99	— 0 33		76 11 33 12	32 70	— 0 42
	9 1 10 45 2		2 18 15 77	15 43	— 0 34		73 9 48 24	46 60	— 1 64
J ly	5 0 44 36 7		7 35 13 96	14 48	+ 0 52		66 29 20 33	21 20	+ 0 87
O t	3 23 18 9 3		12 7 38 37	38 65	+ 0 28		88 51 2 01	6 40	+ 4 39
	4 23 21 11 2		12 14 6 82	7 04	+ 0 22		89 36 10 55	14 80	+ 4 25
	6 23 26 10 3		12 26 59 96	0 43	+ 0 47		91 7 23 46	28 90	+ 5 44
	8 23 31 3 4		12 39 47 57	47 87	+ 0 30				
	26 0 9 3 1		14 24 54 38	54 19	— 0 19				
	27 0 11 12 0		14 31 0 02	59 98	— 0 04		105 15 58 65	6 20	+ 7 56
	29 0 15 29 4		14 43 11 69	11 61	— 0 08		106 27 4 18	9 80	+ 5 62
1840									
F b	6 23 26 19 0		20 32 5 63	5 23	— 0 40		110 45 22 75	24 80	+ 2 05
	7 23 29 7 8		20 38 50 97	50 46	— 0 51		110 24 16 36	20 30	+ 3 94
S pt	13 23 17 49						80 43 15 11	15 80	+ 0 69
Oct	9 0 20 21 0		13 32 12 62	12 43	— 0 19		99 34 13 35	16 90	+ 3 55
	10 0 22 19 5		13 38 7 90	7 93	+ 0 03		100 15 49 06	56 00	+ 6 94
	17 0 35 44 1		14 19 10 76	10 51	— 0 25				
	18 0 37 36 6		14 24 59 99	59 89	— 0 10		105 24 31 06	33 50	+ 2 44
	19 0 39 29 1		14 30 49 29	48 91	— 0 38		105 59 39 99	45 30	+ 5 31
	20 0 41 20 8		14 36 37 90	37 55	— 0 35		106 34 5 84	8 00	+ 2 16
	21						107 7 36 92	40 20	+ 3 28
1841									
F b	12 0 37 51 4		22 6 32 22	31 43	— 0 79		103 30 13 42	11 90	— 1 52
	16 0 49 42						100 27 27 19	27 40	+ 0 21
	17 0 53 33						99 38 57 89	57 60	— 0 29
	19 0 58 2 1		22 54 21 60	21 81	+ 0 21		97 59 17 24	19 30	+ 2 06
	27 1 14 27 2		23 42 22 49	22 03	— 0 46		91 13 30 76	28 30	— 2 46
S pt	17 0 19 59 5		12 4 9 21	9 57	+ 0 36				
	20 0 26 38 7		12 22 38 89	39 39	+ 0 50				
	21 0 28 44 2		12 28 41 32	41 92	+ 0 60				
	24 0 34 41 9		12 46 30 01	30 12	+ 0 11				
	25 0 36 35 4		12 52 20 40	20 36	— 0 04				
O t	16 1 8 34 3		14 47 12 63	12 13	— 0 50		108 27 4 72	7 70	+ 2 98
Dec	1 22 27 39 3		15 11 9 38	8 32					
	2 22 27 16 4		15 14 42 03	41 55	— 0 48				
	10 22 30 15 2		15 52 14 85	14 41	— 0 44				
1843									
J n	20 1 12 6 5		21 8 17 06	17 23	+ 0 17		108 4 11 20	13 60	+ 2 40
	23 1 18 48 8		21 26 50 22	49 98	— 0 24		106 14 53 59	53 60	+ 0 01
Oct	24 22 46 8 2		12 57 56 99	57 38	+ 0 39		94 40 47 11	47 70	+ 0 59
Dec	26 0 47 36 0		19 4 11 17	11 18	+ 0 01				

Right Ascensions and North Polar Distances of the Centre of Mercury (Continued)

	Mean Solar Time of Observation	Instrument Observed	R.A. from Observation	R.A. from N.A.	Error of N.A.	Instrument Observed	N.P.D. from Observation	N.P.D. from N.A.	Error of N.A.
1844									
J	3 1 10 55 6	C	19 59 7 15	6 82	−0 33	C	112 38 41 15	41 37	+ 3 22
	4 1 13 28 7		20 5 37 52	37 30	−0 22		112 15 39 25	41 56	+ 2 31
	8 1 22 11 4		20 30 7 94	7 76	−0 18		110 31 4 31	5 90	+ 1 59
	9 1 23 51 7		20 35 45 12	44 82	−0 30		110 2 27 55	25 77	− 1 78
	11 1 26 22 3		20 46 9 28	8 88	−0 40		109 3 13 62	13 80	+ 0 18
	12 1 27 7 6		20 50 51 20	51 16	−0 04		108 33 10 67	9 63	− 1 04
Feb	25 22 29 56 8		20 50 36 05	35 57	−0 48		108 9 47 62	53 36	+ 5 71
M	12 22 53 25		22 18 13 57	13 18	−0 39		102 54 41 96	47 42	+ 5 46
	17 23 4 0 2		22 47 32 30	32 01	−0 29		100 8 24 00	26 17	+ 2 11
	18 23 6 15 0		22 53 44 76	44 48	−0 28		99 31 2 07	29 51	+ 6 44
Ap	127 1 10 21 3		3 31 56 55	56 95	+ 0 40		68 32 1 75	48 61	− 3 14
	28 1 12 38 5		3 38 10 94	11 21	+ 0 27				
	9 1 14 41 9		3 44 10 88	11 07	+ 0 19		67 41 58 10	5 13	− 2 97
M y	3 1 20 16 3		4 5 32 55	32 74	+ 0 19				
J ly	2 22 42 10 4		5 27 30 15	30 25	+ 0 10		68 9 2 92	5 51	+ 2 59
	3 22 45 9 6		5 34 26 89	26 76	−0 13				
	14 23 33 35 1		7 6 23 16	23 79	+ 0 63		66 30 5 78	5 6	− 0 16
	29 0 41 37 6		9 9 48 07	48 14	+ 0 07				
A g	4 1 2 12 9		9 54 6 08	6 06	−0 02		75 40 50 61	53 89	+ 3 28
	6 1 7 48 9		10 7 36 05	36 50	+ 0 45				
	9 1 15 10						79 10 54 09	58 68	+ 4 9
	16 1 27 47						84 10 4 84	10 80	+ 5 06
	17 1 29 8 2		11 12 21 33	21 21	−0 12		84 52 20 27	23 93	+ 3 66
	18 1 30 22 2		11 17 31 74	31 64	−0 10		85 34 14 85	19 81	+ 4 06
	24 1 34 28 1		11 45 17 63	17 38	−0 25				
S pt	7 1 29 54 4		12 35 55 93	55 75	−0 18		97 14 48 1	54 31	+ 0 19
	10 1 24 14 5		12 42 3 05	2 67	−0 38		98 17 28 51	33 61	+ 00
	1 1 19 8 0		12 44 49 29	48 96	−0 33		98 48 16 83	20 86	+ 4 03
	14 1 12 49 2		12 46 22 48	22 21	−0 27		99 8 28 95	34 16	+ 5 21
	19 0 50 45 7		12 43 58 09	58 06	−0 03			9 91	
O t	9 22 46 41 3		12 1 21 56	21 80	+ 0 24		88 50 1 84	58 10	− 3 14
	14 22 47 19 1		12 17 31 38	31 86	+ 0 48		89 52 46 14	44 01	− 13
	16 22 43 26 5		12 26 40 26	40 22	−0 04		90 43 1 61	55 49	− 6 12
	17 22 44 26 2		12 31 37 98	38 23	+ 0 2		91 12 29 36	9 80	+ 0 44
	20 22 48 39 0		12 47 41 39	41 71	+ 0 32		92 53 58 54	2	− 3 02
	21 22 50 21 0		12 53 19 83	20 21	+ 0 38		93 30 59 93	50 8	− 0 36
	22 22 52 9 0		12 59 4 69	4 95	+ 0 26		94 9 13 50	13 13	− 0 37
	23 22 54 1 5		13 4 54 57	54 94	+ 0 37		94 48 21 05	21 73	− 0 22
	24 22 55 58 8		13 10 48 85	49 20	+ 0 35		95 28 12 12	12 62	+ 0 50
	25 2 57 59 7		13 16 46 27	46 75	+ 0 48		96 8 33 08	31 07	+ 0 09
	26 23 0 3 6		13 22 47 03	47 25	+ 0 22		96 49 15 14	16 10	+ 0 96
	29 23 6 26 7		13 41 0 51	1 13	+ 0 62		98 51 57 09	59 75	+ 2 66
No	7 23 26 36 5		14 37 43 04	43 65	+ 0 61				
	29 0 19 40 3		16 52 43 53	43 46	−0 07		114 9 46 18	49 3	+ 3 05
De	3 0 31 3 4		17 19 51 05	51 14	+ 0 09		115 1 44 75	47 34	+ 2 59
	4 0 33 52 9		17 26 40 54	40 76	+ 0 22		115 11 23 50	27 39	+ 3 89
	6 0 39 40 2		17 40 21 84	21 98	+ 0 14		115 26 34 92	39 40	+ 1 48
1845									
J	2 1 18 32 4		20 5 47 71	47 42	−0 29		110 12 7 24	4 22	+ 3 02
	5 1 5 9 5		20 4 12 16	11 55	−0 61		109 21 21 85	19 58	− 2 27
	23 22 43 14 3		18 56 47 91	46 88	−1 03		110 0 49 08	48 89	− 0 19

RIGHT ASCEN IONS AND NORTH POLAR DISTANCES OF THE CENTER OF MERCURY (C nt nued)

M S l Tim f Ob tl	P int Ob rv d	A R fr m Obse i	A R f m N A	Err f N A	P int Ob- rv d	N P D from Ob tl	N P D from N A	Er f N A
1845 m		m						
J n 26 22 34 28 6	C	18 59 0 78	49 56	— 1 22	C	110 27 20 06	22 93	+ 2 87
29 22 29 38 9		19 6 49 56	48 85	— 0 71		110 49 31 71	34 73	+ 3 02
F b 9 22 32 39 2		19 53 1 76	12 14	— 0 62		111 2 46 04	48 61	+ 2 57
10 22 33 56 2		19 58 25 89	25 72	— 0 17		110 57 19 85	25 38	+ 5 53
11 22 35 19 3		20 3 46 09	45 91	— 0 18		110 50 46 52	49 60	+ 3 08
13 22 8 23 5		20 14 43 80	43 72	— 0 08		110 33 52 77	55 99	+ 3 22
17 22 4 29 5		20 37 37 19	37 00	— 0 19		109 44 56 68	0 58	+ 3 90
18 22 47 2 8		20 43 30 46	30 20	— 0 26		109 29 29 83	33 29	+ 3 46
25 23 2 22 1		21 26 5 26	5 26	0 00		107 4 55 94	58 34	+ 2 40
26 23 4 40 0		21 32 20 19	20 05	— 0 14		106 39 0 98	2 73	+ 1 75
27 23 7 0 0		21 8 36 95	36 99	+ 0 04		106 11 46 40	49 04	+ 2 64
28 23 9 21 5		21 44 55 47	55 93	+ 0 46		105 43 16 94	17 40	+ 0 46
Ma 2 23 14 11 6		21 57 39 36	39 69	+ 0 33		104 42 10 60	15 30	+ 4 70
3 23 16 39 6		22 4 4 34	4 54	+ 0 20		104 9 42 60	46 05	+ 3 45
4 23 19 9 6		22 10 31 09	31 26	+ 0 17		103 35 53 17	58 38	+ 5 21
6 23 24 14 8		22 23 30 24	30 52	+ 0 28		102 24 26 89	28 29	+ 1 40
7 23 26 50 3		22 30 2 86	3 11	+ 0 25		101 46 44 37	46 21	+ 1 84
9 23 32 7 6		22 43 14 36	14 45	+ 0 09		100 27 28 07	30 29	+ 2 22
10 23 34 49 5		22 49 53 20	53 32	+ 0 12		99 45 57 05	57 66	+ 0 61
Ap l 2 0 43 45 3		1 25 45 00	45 56	+ 0 56		80 30 2 44	59 00	— 3 44
4 0 50 6 3		1 40 0 05	0 61	+ 0 56		78 42 35 23	30 98	— 4 25
5 0 53 7 6		1 46 58 74	58 90	+ 0 16		77 50 57 87	54 53	— 3 34
6 0 56 1 1		1 53 49 45	49 27	— 0 18		77 1 4 72	0 60	— 4 12
7 0 58 45 7		2 0 31 00	30 69	— 0 31		76 13 4 40	0 45	— 3 95
8 1 1 19 6		2 7 1 55	1 49	— 0 06		75 27 9 24	6 23	— 3 01
9 1 3 41 7		2 13 20 73	20 70	— 0 03		74 43 29 89	26 27	— 3 62
10 1 5 51 0		2 19 27 02	26 89	— 0 13		74 2 12 62	9 28	— 3 34
11 1 7 46 2		2 25 18 90	19 00	+ 0 10		73 23 26 86	22 70	— 4 16
12 1 9 26 4		2 30 55 91	56 05	+ 0 14		72 47 16 16	11 42	— 4 74
13 1 10 50 3		2 36 16 76	16 78	+ 0 02		72 13 41 90	39 69	— 2 21
14 1 11 57 3		2 41 20 36	20 46	+ 0 10		71 42 55 15	51 16	— 3 99
J 2 22 22 55 2		3 8 58 49	58 58	+ 0 09		76 7 12 60	19 34	+ 6 74
8 22 23 43 7		3 33 26 57	26 34	— 0 23		73 9 25 14	28 31	+ 3 17
11 22 27 15 4		3 48 ——	47 93			72 42 38 68	40 23	+ 1 55
12 22 28 53 1		3 54 22 60	22 93	+ 0 33		72 15 53 10	55 45	+ 2 35
16 22 37 49 0		4 19 6 00	6 58	+ 0 58		70 26 37 97	38 02	+ 0 05
Aug 1 1 38 30 8		10 17 42 52	42 43	— 0 09		78 56 12 90	17 49	+ 4 59
3 1 41 7 4		10 28 12 37	12 46	+ 0 09		80 14 53 48	59 30	+ 5 82
12 1 45 51 4		11 8 25 54	25 65	+ 0 11		85 53 45 00	47 72	+ 2 72
22 1 35 45 8		11 37 44 07	43 96	— 0 11		90 53 42 66	45 33	+ 2 67
23 1 33 37 0		11 39 31 66	31 45	— 0 21		91 15 48 64	55 08	+ 6 44
S pt 25 22 47 30 0		11 7 1 71	1 57	— 0 14		83 24 16 58	10 14	— 6 44
26 22 47 4 5		11 10 31 72	31 67	— 0 05		83 32 57 45	56 38	— 1 07
28 22 47 25 7		11 18 49 11	48 68	— 0 43		84 3 11 48	6 72	— 4 76
29 22 48 13 1		11 23 30 04	30 29	+ 0 25		84 24 7 69	4 01	— 3 68
30 22 49 16 4		11 28 30 17	30 46	+ 0 29		84 48 33 30	30 87	— 2 43
Oct 1 22 50 35 5		11 33 46 31	46 31	0 00		85 16 11 77	8 78	— 2 99
2 22 52 8 5		11 39 16 04	16 26	+ 0 22		85 46 38 72	38 26	— 0 46
3 22 53 52 5		11 44 56 76	57 34	+ 0 58		86 19 41 56	40 10	— 1 46
8 23 4 20 4		12 15 9 26	9 58	+ 0 32				
10 23 8 56 7		12 27 39 80	39 84	+ 0 04		90 57 56 45	58 15	+ 1 70
N v 6 0 8 14 1		15 9 37 19	36 87	— 0 32		108 24 25 89	32 01	+ 6 12

Right Ascensions and North Polar Distances of the Center of Mercury (Continued)

Mean Solar Time of Observation			Point Observed	A R from Observation	A R from N A	Error of N A	Point Observed	N P D from Observation	N P D from N A	Error of N A
1845		h m s		h m s	s	s		° ′ ″	″	″
Nov	9	0 15 23 4	C	15 28 27 57	27 43	— 0 14	C	109 55 8 92	13 94	+ 5 02
	24	0 52 18 9		17 4 47 82	47 27	— 0 55		115 3 41 65	45 83	+ 4 18
	27	0 59 47 9		17 24 7 59	7 16	— 0 43		115 31 50 02	54 31	+ 4 29
Dec	11	1 23 34 7		18 43 9 51	9 21	— 0 30		114 54 52 72	48 60	— 4 12
1846										
Jan	11	22 29 22 3		17 54 38 61	37 90	— 0 71		111 6 19 63	19 69	+ 0 06
	12	22 28 6 4		17 57 18 68	17 96	— 0 72		111 15 57 78	55 48	— 2 30
	14	22 26 37 8		18 3 43 15	42 69	— 0 46		111 35 4 33	4 70	+ 0 37
	20	22 28 41 0	2	18 29 25 70	25 44	— 0 26		112 23 2 04	6 06	+ 4 02
	21	22 29 43 6	2	18 34 24 85	24 71	— 0 14		112 28 38 70	42 17	+ 3 47
	22	22 30 55 3	2	18 39 33 21	33 11	— 0 10		112 33 24 29	25 64	+ 1 35
	23	22 32 15 6	2	18 44 50 32	49 88	— 0 34		112 37 9 31	13 10	+ 3 79
	26	22 36 58 7	C	19 1 23 89	23 73	— 0 16		112 42 25 99	30 64	+ 4 65
	27	22 38 45 1		19 7 7 71	7 40	— 0 31		112 42 2 75	7 04	+ 4 29
Feb	2	22 50 53 6		19 43 7 07	6 91	— 0 16		112 15 0 14	1 18	+ 1 04
	4	22 55 37 6		19 55 35 87	35 63	— 0 24		111 55 58 46	2 88	+ 4 42
	5	22 57 59 8		20 1 54 25	54 11	— 0 14		111 44 35 09	37 39	+ 2 30
	6	23 0 23 8		20 8 15 05	15 13	+ 0 08		111 31 49 33	53 35	+ 4 02
	8	23 6 18 4		20 21 4 10	3 88	— 0 22		111 2 25 24	26 66	+ 1 42
	9	23 7 49 2		20 27 31 56	31 32	— 0 24		110 45 37 26	42 91	+ 5 65
	10	23 10 21 5		20 34 1 10	0 59	— 0 51		110 27 32 31	38 26	+ 5 95
	14	23 20 46 8		21 0 14 06	14 06	0 00		109 1 40 99	41 04	+ 0 05
	17	23 28 50 9		21 20 9 05	8 99	— 0 06		107 42 41 86	45 03	+ 3 17
	18	23 31 34 7		21 26 49 94	49 83	— 0 11		107 13 37 54	39 82	+ 2 28
	19	23 34 19 2		21 33 31 88	31 87	— 0 01		106 43 7 33	11 19	+ 3 86
	22	23 42 42 2		21 53 45 56	45 30	— 0 26		105 3 18 94	23 63	+ 4 69
	23	23 45 32 0		22 0 32 52	32 19	— 0 33		104 27 15 70	20 94	+ 5 24
	24	23 48 22 8		22 7 20 44	20 26	— 0 18		103 49 52 47	55 31	+ 2 84
	25	23 51 24 1		22 14 9 58	9 58	0 00		103 11 3 15	6 80	+ 3 65
Mar	11	0 30 24 7		22 44 40 55	40 11	— 0 44		92 50 12 24	9 08	— 3 16
	14	0 39 39 2		0 5 46 11	46 24	+ 0 13		90 3 2 99	3 49	+ 0 50
	15	0 42 35 7		0 12 ——	45 38			89 6 36 05	32 40	— 3 65
	17	0 48 35 9		0 26 34 23	34 43	+ 0 20		87 13 26 19	22 49	— 3 70
	18	0 51 27 4		0 33 22 36	22 37	+ 0 01		86 17 14 28	9 70	— 4 58
	19	0 54 12 0		0 40 4 38	4 43	+ 0 05		85 21 31 36	29 82	— 1 54
	20	0 56 49 8		0 46 38 61	39 29	+ 0 68		84 26 43 07	38 21	— 4 86
	21	0 59 19 4		0 53 5 56	5 64	+ 0 08		83 32 55 13	49 93	— 5 20
	22	1 1 38 7		0 59 22 04	22 01	— 0 03		82 40 24 23	20 95	— 3 28
	23	1 3 47 0		1 5 26 92	26 94	+ 0 02		81 49 30 03	26 49	— 3 54
	24	1 5 41 9		1 11 19 17	19 06	— 0 11		81 0 26 29	28 81	+ 2 52
	25	1 7 23 3		1 16 56 64	56 74	+ 0 10		80 13 24 27	19 83	— 4 44
	26	1 8 48 0		1 22 18 57	18 65	+ 0 08		79 28 34 94	35 05	+ 0 11
	27	1 9 56 3		1 27 23 43	23 41	— 0 02		78 46 22 12	19 58	— 2 54
	28	1 10 45 9		1 32 9 73	9 66	— 0 07		78 6 47 53	44 66	— 2 87
	29	1 11 15 9		1 36 36 25	36 24	— 0 01		77 30 3 37	59 59	— 3 78
	31	1 11 13 1		1 44 26 66	26 21	— 0 45				
April	1	1 10 38 1		1 47 47 68	47 68	0 00		75 58 11 39	7 81	— 3 8
	2	1 9 39 6		1 50 46 10	45 90	— 0 20		75 34 0 88	0 61	— 0 27
	3	1 8 17 5		1 53 20 49	20 18	— 0 31		75 13 19 29	17 73	— 1 56
	5	1 4 20 5		1 57 15 44	15 43	— 0 01		74 42 18 56	19 11	+ 0 55
	9	0 51 34 1		2 0 13 34	12 65	— 0 69		74 23 12 33	17 20	+ 4 87
May	7	22 30 37 4		1 33 13 37	13 06	— 0 31		83 16 43 36	47 60	+ 4 24
	10	22 25 3 9		1 39 28 76	28 65	— 0 11		83 0 7 06	13 71	+ 6 65
	11	22 23 40 0		1 42 1 13	1 43	+ 0 30		82 50 13 20	18 25	+ 5 05
	14	22 20 45 8		1 50 56 35	56 39	+ 0 04		82 8 31 62	36 85	+ 5 23

R GHT AS ENSIONS AND N BTH POLAR D ANCE OF HE C M RCURY (C nt u d)

	M l Tim f Ob tl	P i Ob d	A R f m O i	A R f m N A	E f N A	P (d	N P D f m Ob	N P D f m N A	E f N A
1846			m						
M y	18 22 19 41 8	C	2 5 37 10	37 23	+ 0 13	C	80 48 25 22	27 73	+ 2 51
	19 2 19 52 6		2 9 45 37	45 64	+ 0 27		80 24 34 23	37 18	+ 2 J
	26 2 26 19 0		2 43 48 69	48 82	+ 0 13		77 4 18 23	22 17	+ 3 J4
	29 22 31 48 6		3 1 8 90	9 20	+ 0 30		75 2ᴗ 18 91	20 46	+ 1 5ᴗ
J ly	9 1 28 2 1		8 35 33 9	34 27	+ 0 88		69 41 11 80	14 65	+ 2 85
A g	5 1 41 30 3		10 3ᴗ 31 76	31 60	− 0 16		84 0 23 5	29 66	+ 6 11
Sept	6 22 57 41 4	2 L	9 57 26 7	26 47	− 0 25		78 16 16 76	13 15	− 3 (1
	23 23 14 29 6	C	11 25 14 15	14 21	+ 0 06		84 13 J 93	10 67	+ 0 4
	28 23 28 8 4		11 58 28 15	28 53	+ 0 38		87 5ᴗ 20 32	22 J1	+ 2 5J
	29 23 31 6 1		12 5 2 54	2 J6	+ 0 42		88 41 31 15	32 28	+ 1 13
O t	24 0 21 10 4		14 33 22 80	22 8	− 0 02		10 47 59 07	3 38	+ 4 31
	26 0 28 16 8		14 45 23 00	22 84	− 0 16		106 ᴗ7 18 29	21 36	+ 3 07
	27 0 30 19 9		14 51 23 22	23 14	− 0 08		107 30 40 9(	41 22	+ 3 26
	30 0 36 31 7		15 9 2 67	2ᴗ 39	− 0 8		109 5 29 6	32	+ 2 J
N	2 0 42 4 6		15 27 30 33	30 03	− 0 30		110 31 49 25	2 8	+ 3 (0
	3 0 44 ᴗ0 7		1 33 32 0	31 96	− 0 24		110 58 36 71	40 20	+ 3 1
	4 0 46 55 8		15 39 34 3	33 94	− 0 2J		111 24 22 61	2 38	+ 2 77
	5 0 49 0 6		15 45 36 13	35 86	− 0 27		111 49 2 82	6 87	+ 1 0ᴗ
	6 0 51 5 6		1ᴗ 51 37 71	37 51	− 0 20		112 1 40 15	42 9	+ 2 47
	7 0 53 9 9		15 57 39 11	38 80	− 0 31		112 3 13 4	12 27	− 1 18
	16 1 10 3 7		16 50 36 7	36 17	− 0 28		115 49 74	51 80	+ 06
D	1 2 39 32 1	2 1	16 41 4 2ᴗ	3 ᴗ	− 0 70		109 11 7 77	51 50	− 2
1847									
J	(22 31 30 8	C	17 36 6 80	6 56	− 0 24		112 23 11 1	14 01	− 0 20
	7 22 33 3 2		17 41 3 83	3ᴗ 37	− 0 46		112 31 42 2	4 18	0 1
	8 22 34 4 9		17 47 12 48	11 ᴗ5	− 0 J3		112 45 2 3	21 68	0 95
	12 22 42 22 1		18 10 3 14	38 68	0 46		113 1J 12 81	1 28	+ 0 17
	13 2 44 30 4		18 16 41 30	43 72	− 0 8		113 2 9 17	10 38	+ 1 1
	14 22 46 43 1		18 22 53 86	53 17	− 0 69		113 2J 8 4	2 11	+ 3 87
	15 22 48 59 0		18 29 7 07	6 75	− 0 32		113 33 11 (7	46 (1	+ 4 J1
	18 22 56 10 9		18 48 9 77	9 21	− 0 56		113 37 53 19	7 36	+ 1 17
	21 23 3 49 5		19 7 39 16	38 87	− 0 29		113 30 ᴗ8 2	0 7	+ 2 3
	27 23 20 6 4		19 47 38 24	38 02	− 0 22		112 41 37 60	33 24	− 4 36
Γ b	24 0 40 27 4		2 54 38 96	38 79	− 0 17		98 21 4ᴗ 39	47 14	+ 1 7
	5 0 43 24 6		23 1 33 23	33 23	0 00		97 34 3 3	6 02	+ 2 (7
	6 0 46 19 7		23 6 25 36	25 11	+ 0 05		J6 12 27 9	25 2J	+ 0 7
M	1 0 54 44 3		23 28 41 09	41 43	+ 0 34		94 3 25 7	23 39	− 2 18
	3 0 59 51 9		23 41 45 74	46 09	+ 0 3(		92 1 36 87	30 82	− 6 0
	4 1 2 1 1		23 48 6 74	7 20	+ 0 46		J1 21 13 06	40 15	− 2 J1
	5 1 4 4 3		23 ᴗ4 18 96	19 16	+ 0 20		90 28 17 18	12 87	− 4 31
	6 1 6 38 5		0 0 20 29	20 41	+ 0 12		89 3 31 09	2ᴗ 02	− (07
	8 1 10 8 9		0 11 44 18	44 34	+ 0 16		87 3 41	59 J8	− 6 40
	9 1 11 31 4		0 17 3 (6	3 61	− 0 0		87 4 2 81	57 J4	− 4 87
	10 1 12 37 0		0 22 5 50	5 58	+ 0 08		86 1(5 12	48 40	− 1 02
	11 1 13 23 4		0 26 48 30	48 44	+ 0 14		85 31 51 0	48 J	− 2 2(
	12 1 13 49 2		0 31 11 04	10 54	− 0 50		84 49 17 (3	17 0	− 0 13
	13 1 13 ᴗ 6		0 35 11 09	10 35	− 0 74		84 9 29 1	2J 37	0 14
A l	1 21 22 6 4 2		0 24 36 86	37 15	+ 0 29		89 37 43 71	42 9	− 1 1
	22 22 24 39 5		0 27 8 45	8 96	+ 0 ᴗ1		89 30 33	30 6	− 3 1
	2ᴗ 21 (3)						88 6 11 80	1J 50	+ 4 0
	28 22 20 19 6		0 46 27 22	28 20	+ 0 98		88 4 57 71	51 68	− 3 03
M y	(2 23 (1)						84 37 5(02	51 6	1 (6
	14 22 6 16 2		2 5 31 5ᴗ	32 26	+ 0 71		79 54 47 0	46 86	− 0 34
	20 22 52 4 1		2 45 1 19	1 32	+ 0 13		75 5 8 3	8 66	+ 0 13
	21 22 5 18 2		2 52 12 30	12 18	− 0 12		75 10 38 11	36 14	− 1 97

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS

Mean Solar Time of Observation		Point Observed	A.R. from Observation	A.R. from N.A.	Error of N.A.	Point Observed	N.P.D. from Observation	N.P.D. from N.A.	Error of N.A.
1831									
Feb 19	1 10 25 2	C	23 4 28 98			C	97 28 53 25		
20	1 11 6 3		23 9 6 82				96 59 11 04		
21	1 11 46 7		23 13 43 68				96 29 26 48		
22	1 12 25 6		23 18 19 25				95 59 21 40		
23	1 13 3 3		23 22 53 55				95 29 9 23		
24	1 13 41 4		23 27 28 21				94 58 48 21		
2	1 14 20 0		23 32 3 66				94 28 19 38		
26	1 14 55 1		23 36 35 49				93 57 44 41		
M 2	1 17						91 54 29 31		
3	1 17 52 1		23 59 15 64				91 23 29 59		
4	1 18						90 52 24 08		
5	1 19 0 7		0 8 17 48				90 21 21 57		
6	1 19 35 5		0 12 48 93				89 50 16 80		
7	1 20 8 7		0 17 18 80				89 19 12 49		
8	1 20 42 9		0 21 49 57				88 48 2 73		
10	1 21 50 8		0 30 50 91				87 45 56 30		
11	1 22 24 5		0 35 21 22				87 14 54 85		
12	1 22 58 3		0 39 51 63				86 43 56 84		
13	1 23 32 8		0 44 22 61				86 13 4 70		
14	1 24 6 9		0 48 53 45				85 42 21 61		
17	1 25						84 10 25 06		
19	1 27 2 8		1 11 32 63				83 9 41 12		
20	1 27 40 3		1 16 6 77				82 39 37 80		
21	1 28						82 9 45 72		
22	1 28						81 40 4 24		
27	1 32						79 14 19 01		
28	1 32 46 2		1 52 46 18				78 45 55 87		
29	1 33 27 6		1 57 24 20				78 17 46 71		
April 2	1 36 21 0		2 16 4 20				76 28 2 19		
10	1 42 51 1		2 54 7 65				73 4 53 84		
May 22	2 31 37 4		6 28 37 43				64 45 12 75		
23	2 32 52 7		6 33 49 29						
26	2 36 32 4		6 49 19 34				65 0 28 43		
27	2 37 44 8		6 54 28 50				65 4 3 48		
30	2 41 15 4		7 9 49 30						
J 1	2 43 30 1		7 19 57 52				65 40 47 49		
2	2 44 36 0		7 25 0 24				65 50 1 32		
3	2 45 41 3		7 30 2 31				65 59 55 72		
5	2 47 46 1		7 40 0 53				66 21 35 11		
29	3 4 41 1		9 31 35 72				73 31 2 67		
July 2	3 5 45 1		9 44 20 40				74 42 28 96		
Aug 12	2 50 31 7		12 11 2 38						
13	2 49 37 6		12 13 54 59				93 50 41 08		
20	2 41 48 5		12 33 41 18				96 53 55 94		
Dec 10	20 46 48 7	2 L	14 3 12 88				99 37 53 90		
1832									
Jan 24	21 5 59 0		17 19 50 61				110 47 51 46		
26	21 8 1 9		17 29 47 29				111 2 15 17		
29	21 11 14 3		17 44 48 13				111 19 47 73		
30	21 12 19 3		17 49 50 22						
31	21 13 23 6		17 54 52 60				111 28 33 71		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS *(Continued)*

M Ob	S l Tim f Ob ti	P int Ob d	A R f m Ob rv ti	A R f m N A	E f N A	l i t Ob d	N P D f m Ob rv ti	N P D fr m N A	Erro f N A
1832									
F l 1	21 14 30 5	2 L	17 59 56 21			C	111 32 7 56		
3	21 16 45 8		18 10 4 92				111 37 40 72		
4	21 17 54 1		18 15 9 91				111 39 29 12		
5	21 19 0 4		18 20 15 42				111 40 44 66		
7	21 21 21 8		18 30 27 30				111 41 31 26		
8	21 22 31 8		18 35 34 28				111 40 47 29		
11	21 26 0 9		18 50 55 4[illegible]				111 35 25 95		
1	21 27 12 1		18 56 2 61				111 32 22 92		
22	21 38 53 4		19 47 10 [illegible]9				110 28 43 67		
23	21 40						110 19 4 03		
24	21 41 10 0		19 57 20 64				110 8 46 66		
25	21 42 15 2		20 2 24 93				109 57 57 33		
27	21 44 30 6		20 12 31 55				109 34 34 10		
29	21 46 41 0		20 22 35 13				109 8 57 43		
M 1	21 47 45 5		20 27 36 54				108 55 12 41		
2	21 48 48 6		20 32 36 44				108 41 1 55		
3	21 49 51 4		20 37 36 03				108 26 16 61		
4	21 50 54 0		20 42 34 88				108 10 0 70		
5	21 51 55 7		20 47 32 66				107 55 11 26		
7	21 53 54 6		20 57 26 11				107 22 5 14		
11	21 57 43 5		21 17 1 75				106 9 59 16		
12	21 58 39 2		21 21 54 02				105 50 48 68		
13	21 59 33 5		21 26 44 02				105 31 11 20		
15	22 1 18 8		21 36 23 79				104 50 3[illegible] 41		
17	22 3 0 5		21 45 59 34				104 8 23 23		
19	22 4 39 9		21 55 31 65				103 24 33 19		
26	22 9 59 6		22 28 27 31				100 39 58 79		
A g 13	0 24 39 7		9 51 31 40				75 35 43 94		
17	0 28 2 5		10 10 41 59				77 18 33 61		
20	0 30 24 3		10 24 53 40				78 32 48 63		
21	0 31						78 59 48 98		
S pt 11	0 52 53 4		12 5 49 74				89 17 59 84		
24	0 52 10 2		13 4 41 95				95 56 44 36		
26	0 54 14 1		13 13 52 42				96 59 59 75		
7	0 54 47 7		13 18 25 41				97 26 56 18		
O t 2	0 57 24 7		13 41 30 20				99 53 56 23		
8	1 1 51 2		14 9 37 16				102 42 50 74		
12	1 5 8 4		14 28 40 84				104 29 42 14		
13	1 6 0 5		14 33 29 53				104 55 31 73		
24	1 16 50 4		15 27 43 17				109 12 56 42		
25	1 17 56 9		15 32 46 23				109 33 33 41		
26	1 19 4 3		15 37 50 36				109 53 42 31		
27	1 20 13 3		15 42 56 33				110 13 11 41		
28	1 21 23 3		15 48 3 08				110 32 8 55		
29	1 22 34 0		15 53 10 49				110 50 34 21		
30	1 23 47 7		15 58 20 76				111 8 29 01		
31	1 25 1 2		16 3 30 85				111 25 48 92		
Nov 1	1 26 15 9		16 8 42 27				111 42 29 31		
3	1 28 49		16 19 9 33				112 14 3 48		
4	1 30 7 8		16 24 24 55				112 28 51 68		
5	1 31 26 7		16 29 40 52				112 43 6 0[illegible]		
10	1 38 17 2		16 56 14 91				113 44 8 08		
12	1 41 7 4		17 6 58 81				114 3 46 89		
16	1 46 56 3		17 28 34 52				114 34 29 54		

Right Ascensions and North Polar Distances of the Center of Venus (Continued)

Mean Solar Time of Observation		Planet Observed	AR from Observation	AR from N A	Error of N A	Planet Observed	N P D from Observation	N P D from N A	Error of N A
1832									
Nov	17 1 48 21 7	2 L	17 33 59 99			C	114 40 19 54		
	18 1 49 53 4		17 39 25 47				114 45 24 16		
	19 1 51 22 6		17 44 52 43				114 49 45 68		
	23 1 57 21 5		18 6 37 81				114 59 51 40		
	24 1 58 52 0		18 12 4 88				115 0 19 77		
1833									
April	5 2 40 41 9		3 34 56 47				65 32 39 58		
	6 2 39 47 3		3 37 28 85				65 20 11 58		
May	6 1 0 53 0		3 56 34 24				64 40 14 83		
	8 0 49 28 0		3 53 1 02				65 7 32 87		
	23 23 10 59 1		3 17 20 99				70 33 46 46		
	24 23 5 11 1		3 15 28 34				70 55 35 6?		
	28 23						72 16 53 05		
	29 22						72 35 22 47		
	31 22 28 18 6		3 6 5 63				73 9 33 48		
July	15 20 53 2 8		4 27 59 61				72 5 0 67		
	23 20 51 26 1		4 56 54 80				70 51 34 32		
	25 20 51 26 1		5 5 47 88				70 30 41 94		
	26 20 51 30 5		5 9 48 97				70 30 42 15		
	28 20 51 43 7		5 17 55 18				70 16 3 20		
	29 20 51 53 6		5 22 1 80				70 9 7 21		
Aug	2 20 52 54 1		5 38 48 48				69 44 36 84		
	5 20 53 57 7		5 51 42 02				69 29 51 38		
	7 20 54 50 0		6 0 26 75				69 21 58 93		
	9 20 55 46 5		6 9 17 28				69 15 44 65		
	13 20 57 57 7		6 27 1 11				69 8 32 48		
	14 20 58 33 8		6 31 47 94				69 7 54 53		
	15 20 59 10 6		6 36 20 56				69 7 43 82		
Sept	10 21 18 51 8		8 38 35 88				72 4 29 0?		
	11 21 19 39 8		8 43 20 68				72 19 2 18		
Nov	27 22 12 20 6		14 39 44 99				103 58 48 68		
Dec	2 22 17 13 8		15 4 21 49				10 51 49 3		
	9 22 24 53 0		15 39 37 99				108 19 53 89		
	11 22 27 15 2		15 49 53 52				106 57 5 93		
	13 22 28 43 1		16 0 13 78				109 32 11 51		
	17 22 34 51 1		16 21 7 64						
	18 22 36 7 8		16 26 24 07				110 50 11 47		
	25 22 45 51 2		17 3 44 45				112 14 0 19		
	26 22 47 15 6		17 9 7 85				112 25 23 61		
	30 22 50 24 9		17 30 47 82				112 56 7 28		
1834									
Jan	16 23 19 3 3	C	19 3 46 49	46 05	— 0 44		112 59 18 21	17 10	— 1 11
	17 23 20 34 6		19 9 12 79	12 41	— 0 38		112 53 5 06	3 41	— 1 6
	19 23 23 31 5		19 20 4 42	3 68	— 0 74		112 38 29 94	29 10	— 0 84
	21 23 26 26 0		19 30 52 77	52 31	— 0 46		112 21 8 81	8 28	— 0
	24 23 30 42 6		19 46 59 76	59 42	— 0 34		111 50 0 18	0 89	+ 0 71
	26 23 33 29 6		19 57 40 29	39 80	— 0 49		111 25 57 98	57 07	— 0 91
	27 23 34 51 5		20 2 58 92	58 54	— 0 38		111 12 57 26	56 94	0 32
	29 23 37 34 1		20 13 33 59	33 04	— 0 55		110 44 2 69	2 5	— 0 14
Feb	2 23 42 41 2		20 34 29 38	29 17	— 0 21		109 41 84	54 9	— 0 89
	6 23 47 31 9		20 55 7 48	6 93	— 0 55		108 29 34 41	33 88	— 0 53
	10 23 52 2 9		21 15 25 50	25 38	— 0 12		107 8 46 97	42 85	— 4 12

RIGHT ASCENSION AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS *(Continued)*

M S l T m f Ob	P tOb d	A R f m Ob	A R from N A	Err f N A	P int Ob d	N P D f m Ob ti	N P D f m N A	Err f N A
1834								
I b 11 23 53 8 1	C	21 20 27 42	26 91	— 0 51	C	106 47 17 46	15 57	— 1 89
14 23 6 11 6		21 35 24 02	24 21	+ 0 19		104 40 5 97	8 26	+ 2 29
17 23 59 10 7		21 50 10 26	10 64	+ 0 38		104 29 6 89	6 45	— 0 44
18 0 0 8 1		21 55 3 65	3 78	+ 0 13		104 4 36 77	37 41	+ 0 64
1) 0 1 14		21 59 55 65	5 77	+ 0 12		103 39 44 71	45 48	+ 0 77
23 0 3 40 9		22 14 4 99	25 23	+ 0 24		102 23 0 26	59 56	— 0 70
21 0 4 34 4		22 19 12 57	12 77	+ 0 20				
183								
F 1 3 21 11 2 8	I	18 6 8 13	7 43	— 0 70		108 20 30 55	36 54	+ 5 99
4 21 10 52 8		18 9 8 29	7 47	— 0 82		108 24 7 39	12 83	+ 5 44
5 21 9 57 7		18 12 12 92	12 02	— 0 90		108 27 38 45	42 57	+ 4 12
J 21 7 12 0		18 2 12 J2	12 14	— 0 78		108 40 4 12	8 88	+ 4 76
10 21 6 40 3		18 28 37 54	36 89	— 0 6J		108 42 42 78	45 79	+ 3 01
12 21 5 17 8		18 3 37 78	37 02	— 0 76		108 47 12 14	15 07	+ 2 93
13 21 26 3		18 3J 13 04	12 1J	— 0 89		108 49 1 43	5 50	+ 4 07
20 21 4 18 9		19 5 41 19	40 3J	— 0 84		108 52 47 43	52 74	+ 5 31
23 21 4 25 8		19 17 38 78	38 32	— 0 46		108 48 46 40	51 17	+ 4 77
21 21 4 33 2		19 21 42 35	41 72	— 0 63		108 46 36 69	40 48	+ 3 79
M 10 21 8 41 3		20 21 3 53	2 83	— 0 70		107 28 4 32	5 89	+ 1 57
23 21 14 4J 5		21 18 23 18	22 54	— 0 64		104 51 7 38	9 58	+ 2 20
Ap l 9 21 2? 46 7	C	2 33 28 23	27 29	— 0 94		99 35 49 39	49 22	— 0 17
2C 21 29 46 3		23 47 30 23	29 45	— 0 78		92 51 8 64	7 71	— 0 93
30 21 31 20 9		0 4 50 31	49 71	— 0 60		91 8 2 37	4 84	+ 2 47
May 1 21 31 43		0 9 10 86	9 81	— 1 05		90 42 1 46	2 90	+ 1 44
3 21 32 31 0		0 17 1 06	50 19	— 0 87		89 49 43 87	43 81	— 0 06
1 21 32 53 9		0 22 10 88	10 56	— 0 32		89 23 27 27	28 14	+ 0 87
(21 33 4 0		0 30 52 30	51 76	— 0 54		88 30 48 10	47 54	— 0 56
7 21 34 6 7		0 35 13 08	12 64	— 0 44		88 4 23 85	23 81	— 0 04
8 21 34 30 6		0 39 34 61	33 75	— 0 86		87 37 57 45	58 75	+ 1 30
10 21 3 21 5		0 48 17 53	16 87	— 0 66		86 45 6 15	6 98	+ 0 83
11 21 3 46 0		0 5? 39 12	38 91	— 0 21		86 18 42 21	41 44	— 0 77
14 21 3 4 3		1 5 47 51	47 34	— 0 17		84 59 36 26	34 21	— 2 05
1 21 37 32 3		1 10 11 41	11 06	— 0 3		84 33 17 11	17 09	— 0 02
17 21 38 27 8		1 19 0 14	59 97	— 0 17		83 40 57 01	54 84	— 2 17
19 21 39 25 5		1 27 51 70	51 05	— 0 65		82 48 53 09	52 77	— 0 32
20 21 39 55 6		1 32 18 31	17 54	— 0 77		82 23 0 64	0 90	+ 0 26
21 21 40 25 J		1 3C 45 44	44 65	— 0 79		81 57 17 89	16 22	— 1 67
22 21 40 56 9		1 41 13 30	12 40	— 0 90		81 31 41 88	39 40	— 2 48
24 21 42 1 b		1 J0 10 64	10 03	— 0 61		80 40 57 30	51 88	— 5 42
25 21 42		1 51	39 88			80 15 44 60	42 85	— 1 75
26 21 43 8 4		1 59 10 87	10 61	— 0 26		79 50 48 35	44 39	— 3 96
27 21 43 43 1		2 3 42 52	42 07	— 0 45		79 26 0 27	57 20	— 3 07
28 21 44 19 2		2 8 15 08	14 37	— 0 71		79 1 25 16	22 00	— 3 16
J ne 7 21 51 6 1		2 51 27 53	27 28	— 0 25		76 9 4 95	4 86	— 0 09
8 21 51 51 3		2 59 10 43	10 08	— 0 35		74 47 28 11	27 85	— 0 26
18 22 0 33 4		3 47 19 60	19 17	— 0 43		71 31 50 24	49 90	— 0 34
19 2? 1 32 1		3 52 14 67	14 33	— 0 34		71 14 34 97	34 17	— 0 80
28 22 11 6 2		4 37 19 97	20 17	+ 0 20		69 1 26 88	24 98	— 1 90
29 22 12 15 8		4 42 25 79	25 99	+ 0 20		68 49 16 45	16 50	+ 0 05
30 22 13 25 8		4 47 32 52	32 75	+ 0 23		68 37 44 28	42 03	— 2 25
J ly 1 22 14 36 8		4 52 40 15	40 43	+ 0 28		68 26 45 46	42 14	— 3 32
2 22 15 48 7		4 57 48 80	49 01	+ 0 21		68 16 19 59	17 09	— 2 50
3 22 17 1 2		5 2 58 37	58 45	+ 0 08		68 6 30 69	27 51	— 3 18
24 22 44 33 4		6 53 22 90	23 07	+ 0 17		67 7 16 02	15 27	— 0 75

Right Ascensions and North Polar Distances of the Center of Venus (Co tinu d)

M S lar Tim f Ob ti	P t Ob ed.	A R f m Ob ti	A R f m N A	Err f N A	P t Ob d	N I D f m Ob i	N P D f m N A	E f N A
1835								
J ly 26 22 47 14 6	C	7 3 57 24	57 52	+ 0 28	C	67 16 53 25	53 18	— 0 07
31 22 53 50		7 30	17 61			67 52 35 22	34 66	— 0 56
Aug 6 23 1 28 3		8 1 36 00	35 78	— 0 22		68 56 44 30	43 57	— 0 73
19 23 16 25 7		9 7 45 14	44 96	— 0 18		72 28 55 22	58 80	+ 3 58
Sept 2 23 29 17 6		10 15 56 74	56 38	— 0 36		77 50 15 50	17 25	+ 1 75
6 23 32 26 6		10 34 52 49	52 09	— 0 40		79 35 38 32	37 59	— 0 73
7 23 33 11 7		10 39 34 11	33 94	— 0 17		80 2 40 71	42 37	+ 1 66
Oct 15 23 58 19 3		13 34 34 50	33 72	— 0 78		98 46 6 49	4 45	— 2 04
16 23 59 3 5		13 39 15 42	14 75	— 0 67		99 14 56 70	53 29	— 3 41
19 0 0 34 4		13 48 39 80	39 15	— 0 65		100 11 54 09	53 20	— 0 89
20 0 1 21 4		13 53 23 45	22 58	— 0 87		100 40 3 31	2 58	— 0 73
23 0 3 47 2		14 7 39 17	38 37	— 0 80		102 3 0 26	58 63	— 1 63
24 0 4 37 6		14 12 26 32	25 53	— 0 79		102 30 3 91	3 86	— 0 05
N v 6 0 17 12 5		15 16 19 02	18 57	— 0 45		107 49 51 40	51 82	+ 0 42
7 0 18 19 1		15 21 22 35	21 75	— 0 60		108 11 32 24	30 56	— 1 68
8 0 19 27 0		15 26 27 02	26 20	— 0 82		108 32 41 39	40 04	— 1 35
9 0 20 35 8		15 31 32 34	31 89	— 0 45		108 53 18 47	19 40	+ 0 93
22 0 37 22 2		15 39 36 47	36 05	— 0 42		112 30 40 36	40 18	— 0 18
23 0 38 47 3		15 44 58 37	57 96	— 0 41		112 43 3 94	2 83	— 1 11
28 0 46 6 1		17 12 0 61	0 68	+ 0 07		113 34 40 48	39 45	— 1 03
Dec 15 1 12 20 9		18 45 21 55	21 46	— 0 09		114 13 35 07	34 40	— 0 67
19 1 18 27 3		19 7 15 49	15 12	— 0 37		113 51 16 72	14 05	— 2 67
20 1 19 57 5		19 12 42 33	42 11	— 0 22		113 43 50 07	48 34	— 1 73
21 1 21 26 9		19 18 9 07	8 36	— 0 71		113 35 40 03	39 01	— 1 02
22 1 22 55 7		19 23 34 13	33 89	— 0 24		113 26 51 78	46 24	— 51
23 1 24 23 5		19 28 58 72	58 56	— 0 16		113 17 14 66	10 65	— 4 01
24 1 25 50 6		19 34 22 68	22 37	— 0 31		113 6 55 81	52 64	— 3 17
26 1 28 41 8		19 45 7 77	7 14	— 0 63		112 44 11 91	10 79	— 1 12
30 1 31 11 4		20 6 24 34	24 03	— 0 31		111 50 40 21	37 78	— 2 43
1836								
Jan 4 1 40 36 9		20 32 33 75	33 43	— 0 32		110 29 15 8	14 02	— 1 83
7 1 44 12 6		20 47 59 41	59 52	+ 0 11		109 33 15 36	12 27	— 3 09
8 1 45 22 0		20 53 5 58	5 54	— 0 04		109 13 28 11	23 92	— 4 19
16 1 53 47 2		21 33 5 09	4 94	— 0 15		106 16 22 64	21 32	— 1 32
19 1 56 34 6		21 47 42 64	42 52	— 0 12		105 2 21 17	17 56	— 3 61
20 1 57 27 6		21 52 32 27	32 41	+ 0 14		104 36 49 86	46 93	— 2 93
21 1 58 20 0		21 57 21 48	21 06	— 0 42		104 10 53 16	52 94	— 0 22
22 1 59 9 9		22 2 7 82	8 40	+ 0 58		103 44 37 65	36 27	— 1 38
23 1 59 59 7		22 6 54 39	54 52	+ 0 13		103 18 2 04	57 83	— 4 21
25 2 1 35 1		22 16 23 00	23 01	+ 0 01		102 23 41 08	39 25	— 1 83
26 2 2 20 9		22 21 5 49	5 59	+ 0 10		101 56 2 41	0 41	— 2 00
28 2 3 49 4		22 30 27 20	27 13	— 0 07		100 59 49 30	47 91	— 1 39
29 2 4 31 5		22 35 6 25	6 27	+ 0 02		100 31 17 51	15 90	— 1 61
F b 2 2 7 10 3		22 53 32 57	32 53	— 0 04		98 34 35 51	34 57	— 0 94
3 2 7 48 2		22 58 6 26	6 56	+ 0 30		98 4 50 3	49 63	— 0 72
4 2 8 25 0		23 2 39 89	39 86	— 0 03		97 34 52 44	52 46	+ 0 02
5 2 9 0 5		23 7 12 25	12 21	— 0 04		97 4 45 17	43 80	— 1 37
6 2 9 35 5		23 11 43 88	43 81	— 0 07		96 34 27 71	24 42	— 3 29
8 2 10 43 1		23 20 44 61	44 69	+ 0 08		95 33 19 64	16 44	— 3 20
9 2 11 15 9		23 25 14 25	14 10	— 0 15		95 2 33 45	29 31	— 4 14
July 31 23 20 5 7	2 L	7 59 34 83	35 30	+ 0 47		76 36 15 81	17 99	+ 2 18

RIGHT ASCENSIONS AND NORTH POLAR DISTANCE OF THE CENTER OF VENUS (Continued)

Mean Solar Time of Observation		Part of Limb observed	A.R. from Observation	A.R. from N.A.	Error of N.A.	Limb Observed	N.P.D. from Observation	N.P.D. from N.A.	Error of N.A.
1836									
Sept	9 21 5 27.8	2 L	8 22 1.69	15.73	+ 0.04	C	74 48 21.35	13.18	− 8.17
	12 21 2 36.4		8 31 14.72	14.8	+ 0.13		74 54 33.03	26.76	− 6.27
	20 20 57 33.9		8 57 44.39	44.10	− 0.29		75 38 42.86	36.71	− 6.1
Oct	3 20 54 0.7		9 46 16.22	16.17	− 0.05		77 52 47.36	42.22	− 5.14
Nov	25 21 9 40.0		13 30 17	5.05	− 0.42		97 13 35.8	35.74	− 0.08
Dec	1 21 13 12.8		13 57 17.26	16.66	− 0.60		99 41 1.18	2.95	+ 1.77
	5 21 15 51.8		14 1 44.15	43.64	− 0.51		101 22 [illegible]	0.38	+ 0.44
	6 21 16 33.7		14 20 23.38	22.98	− 0.10		101 16 49.42	50.32	+ 0.90
	19 21 27 29.1		15 22 36.33	35.98	− 0.35		106 33 38.7	38.25	− 0.50
1837									
Jan	2 21 43 0.4		16 33 20.37	20.01	− 0.36		110 27 10.37	13.36	+ 2.99
	19 22 5 59.5	C	18 3 93	2 19	− 0.74		112 41 26.57	30.64	+ 4.07
Feb	3 22 27 24.0		19 24 2.33	1.84	− 0.49		111 9 44.71	49.74	+ 03
	5 22 30 9.4		19 31 41.47	10.93	− 0.54		111 42 39 4	42 [illegible]	+ 4.11
	6 22 31 32.0		19 39 9.78	9.49	− 0.29		111 33 7.3	11.87	+ 4 [illegible]
	7 22 32 51.8		19 45 17.64	17.28	− 0.36		111 22 55.98	1.7	+ 77
	8 22 4 13.1		19 50 34.46	31.32	− 0.14		111 12 7.13	13.12	+ [illegible]9
	9 22 35 32.3		19 55 50.99	50.56	− 0.43		111 0 42.35	46 9	+ 1.24
	10 22 36 51.7		20 1 6.34	94	− 0.40		110 18 10.68	42.47	+ 1 [illegible]
	17 22 45 33.9		20 37 28.03	27.18	− 0.85		109 7 21.20	2 04	+ 3.84
	19 22 47 56.0		20 47 41.74	41 3	− 0.51		108 33 17.27	20.71	+ 3.14
	20 22 49 3.5		20 52 46.87	46.60	− 0.27		108 1 26.8	30.1	+ 3.33
	26 22 55 32.7		21 22 55.79	55.76	− 0.03		106 17 44.20	48.80	+ 4.60
March	1 22 8 30.1		21 37 45.51	4 40	− 0.11		105 12 33.05	38.09	+ 04
	5 23 2 16.2		21 57 16.83	16.30	− 0.53		103 30 48.98	52.14	+ 3.16
	7 23 4 2.5		22 6 55.58	6 37	− 0.21		102 51 7.11	11.76	+ 4.3
	8 23 4 55.1		22 11 43.45	43.35	− 0.10		102 26 16.04	19.70	+ 3.06
	9 23 44.2		22 16 30.73	30.38	− 0.35		102 1 5.46	7.60	+ 2.14
	10 23 6 32.7		22 21 16.90	16.41	− 0.49		101 35 32.27	35.98	+ 3.71
	13 23 8 54.4		22 35 29.07	28.8	− 0.22		100 17 8.09	11.79	+ 3.70
	15 23 10 21.7		22 44 53.00	52.73	− 0.27		99 23 30.87	32.13	+ 1.26
	16 23 11 10.1		22 49 33.56	33.44	− 0.12		98 6 19.08	19.11	+ 0.03
	19 23 13 17.8		23 3 31.62	30.98	− 0.64		97 33 1.40	17 4	+ 2.14
	20 23 13 58.9		23 8 8.96	8.74	− 0.22		97 5 11.36	11.61	+ 0.2
	21 23 14 40.0		23 12 46.22	45.89	− 0.33		96 36 55.32	54.30	− 1.02
	22 23 15 18.3		23 17 22.43	22.42	− 0.01		96 8 26.29	26.28	− 0.01
	23 23 15 57.7		23 21 58.49	58.36	− 0.13		95 39 18.28	48.10	− 0.18
	24 23 16 36.9		23 26 33.67	33.80	+ 0.13		95 11 1.29	0.61	− 0.68
	26 23 17 54.5		23 35 43.67	43.26	− 0.41		94 13 2.36	0.18	− 2.18
	27 23 18 29.4		23 40 17.09	17.35	+ 0.26		93 43 0.90	48.83	− 2.07
	28 23 19 6.7		23 44 50.82	51.07	+ 0.25		93 14 31.58	30.88	− 0.70
	29 23 19 44.9		23 49 24.55	24.48	− 0.07		92 45 8.41	7.08	− 1.33
	30 23 20 20		23 53 57.48	57.56	+ 0.08		92 15 39.80	38.21	− 1.59
April	1 23 21 32.6		0 3 3.08	3.05	− 0.03		91 16 28.13	28.00	− 0.13
	7 23 25 6.7		0 30 16.31	16.48	+ 0.17		91 18 11.33	10.48	− 0.85
	11 23 27 29.3		0 48 25.72	26.09	+ 0.37		86 19 41.39	37.29	− 4.10
	12 23 28 6.2		0 5[illegible] 59.10	58.96	− 0.14		85 50 11.84	7.86	− 3.98
	13 23 28 41.6		0 57 32.25	32.06	− 0.19		85 20 45.35	43 0	− 1.85
	14 23 29 18.5		1 2 5.36	5.47	+ 0.11		84 51 27.42	24.77	− 2.65
	17 23 31 11.8		1 15 48.06	47.97	− 0.09		83 24 13.14	9.85	− 3.29
	19 23 32 29.0		1 24 58.45	58.53	+ 0.08		82 26 43.76	41.41	− 2.35
	20 23 33 7.6		1 29 34.25	34.62	+ 0.37		81 58 16.78	11.73	− 5.05
	21 23 33 47.8		1 34 10.61	11.30	+ 0.69		81 29 59.41	52.66	− 6.75

R GH A C S A D N RTH PO R DIS A CE F T C LE F VENUS *(C t i d)*

1 8 O	Tm f l		Ob d	A R f Ob	A R f m N A	E f N A	P I t Ol rv d	N I D f m Ob tt	N P D f m N A	E f N A
1837										
Aı	l 23	23 35 9 8	C	1 43 26 46	26 6	+ 0 10	C	80 33 5 87	49 15	— 6 2
	21	23 3 50 6		1 48 5 07	5 21	+ 0 11		80 6 10 47	6 21	— 1 26
		23 36 34 0		1 52 41 27	41 61	+ 0 34		79 38 43 43	36 71	— C 2
	6	?3 37 17 8		1 7 24 42	24 77	+ 0 3		79 11 2 22	21 13	— 79
	27	23 38 2 2		2 2 1	5 74	+ 0 20		78 44 26 61	21 0J	— 2
M y	1	23 41 8 1		2 20 58 12	8 13	+ 0 01				
	3	23 1 1 8		2 30 29 33	29 J2	+ 0 59				
J		0 14 32		4 5C 40 89	40 95	+ 0 06		67 11 28 67	21 6	— 4 02
		0 18 3 3		5 1? 36 00	36 16	+ 0 16		66 43 17 90	14 07	— 3 63
	C	0 20 1 2		17 5 78	55 90	+ 0 12		66 35 12 75	11 06	— 1 ( )
	J	0 24 1?		5 33 8 77	8 2	— 0 25		66 15 11 1	9 16	— 35
	11	0 27 2 J		5 14 4 8C	4 51	— 0 3		66 5 18 35	16 83	— 1 2
	12	0 28 28 7		5 50 5 0	5 01	+ 0 02		66 1 26 38	24 07	— 2 31
	13	0 29 54 4		5 5 2 50	2 81	+ 0 31		6 8 15 64	13 8	— 1 79
	14	0 31 20 6		6 0 50 32	0 81	+ 0 49		65 55 47 56	46 37	— 1 19
	16	0 34 13 3		6 11 37 31	37 14	— 0 17		6 3 1 01	0 09	— 0 92
	17	0 31 3J 8		C 16 59 88	0 17	+ 0 2J		6 52 43 22	41 3	— 1 87
	18	0 37 6 7		6 ?2 23 88	23 63	— 0 2		65 3 6 10	5 61	— 0 49
	ɔ	0 47		7 0 0 1	0 1	+ 0 39		66 15 58 23	56 4	— 1 78
J ly	9	1 36 0		8 13 45 45	45 64	+ 0 19		68 42 59 41	59 13	— 0 28
	11	1 7 59 0		8 24 2 14	2 40	+ 0 26		69 14 13 93	14 4	⊦ 0 61
	12	1 9 8 9		8 29 8 75	9 08	+ 0 33		69 30 45 13	45 51	⊦ 0 38
	13	1 10 17 6		8 34 14 98	14 55	— 0 43		69 47 0 04	51 10	+ 1 06
	14	1 11 25 3		8 39 19 26	18 85	— 0 41		70 5 29 44	30 80	⊦ 1 36
	20	1 17 41 9		9 9 18 8	18 85	0 00		72 2 45 68	46 59	+ 0 91
	3	1 20 37		9 24 2 09	2 11	+ 0 02		73 8 8 26	10 31	⊦ 2 0
	S	1 25 2 9		9 48 10 58	10 02	— 0 6		75 6 5 62	7 03	⊣ 1 41
A g	9	1 33 41		10 41 12 2J	11 97	— 0 32		80 26 33 79	36 6	+ 2 83
	28	1 43 4 9		12 9 9 94	9 46	— 0 48		89 8 4 9	59 01	⊦ 4 0(
S ıt	13	1 1 29 C		13 19 59 89	59 9	— 0 30		98 10 52 95	0 41	+ 3 10
	11	1 5 1 6		13 24 28 4J	28 05	— 0 41		98 40 41 04	4C 55	⊦ 1
	20	1 5 26 0		13 51 32 7	32 20	— 0 5		101 35 31 90	3 90	+ 4 00
	21	1 6 2 6		13 56 77	5 45	— 0 32		102 3 53 25	55 73	+ 2 48
	22	1 56 40 2		14 0 40 08	39 2	— 0 56		102 31 55 74	9 89	+ 1 1
	23	1 57 13		14 5 15 01	11 49	— 0 52		102 9 43 74	47 50	+ 3 f
1838										
J	11	3 10 7 1	1 I	22 32 53 47	52 92	— 0 55		98 1 58 17	47 36	— 10 91
	13	3 8 6 0		22 38 39 95	39 40	— 0 55		98 0 16 76	3 73	— 13 03
	17	3 3 55 2		22 49 24 17	23 52	— 0 6		96 17 48 85	36 68	— 1? 17
	18	3 2 28 1		22 51 54 47	53 76	— 0 71		95 52 30 51	19 20	— 11 31
	19	3 0 58 0		22 54 20 31	19 54	— 0 77		95 27 28 50	11 83	— 16 67
	20	? 9 22 6		22 56 41 32	40 62	— 0 70		95 2 30 01	15 91	— 11 10
	24	2 52 12 6		23 5 16 21	15 62	— 0 59				
	2C	2 48 5 6		23 9 1 65	1 16	— 0 49		92 38 9 46	59 90	— 9 C
	27	2 45 53 5		23 10 45 78	45 36	— 0 42		92 15 15 20	39	— 9 81
	29	2 41 11 5		23 13 56 02	55 51	— 0 48		91 30 42 37	29 35	— 13 02
	30	2 38 41 0		23 15 21 67	21 12	— 0 55		91 9 10 38	54 93	— 15 4
	31	2 36 3 7		23 16 40 81	40 17	— 0 64		90 48 6 54	49 41	— 1 13
Γ l	2	2 30 28 6		23 18 57 77	57 49	— 0 28		90 7 29 83	16 91	— 12 92
	3	2 27 30 7		23 19 55 94	55 41	— 0 53		89 48 10 14	54 83	— 15 1
	4	2 24 24 7		23 20 46 33	45 83	— 0 50		89 9 24 89	12 20	— 12 6J
		2 21 11 7	2 I	23 21 29 06	28 61	— 0 45		89 11 26 81	11 03	— 15 78
	9	2 6 58 2	1 L	2 22 59 86	59 20	— 0 66		88 7 8 87	56 60	— 12 27

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS *(Cont nued)*

M an S l Tim f Ob rv ti	P int Ob d.	A R f m Ob	A R fr m N A.	Err f N A	P int Ob rv d	N P D fr m Ob rv i	N P D fr m N A	Err f N A
1838		m						
Feb 10 2 3 3 9	1 L	23 23 1 64	0 91	— 0 73	C	87 53 19 82	4 83	— 14 99
11 1 59 1 0		23 22 54 18	53 95	— 0 23		87 40 24 73	8 65	— 16 08
15 1 41 22 0		23 20 58 50	58 24	— 0 26		86 59 12 63	58 20	— 14 43
17 1 31 39 6		23 20 8 38	7 73	— 0 65		86 45 25 62	16 83	— 8 79
22 1 5 0 3		23 12 7 39	7 16	— 0 23		86 33 46 29	28 32	— 17 97
24 0 53 29 8		23 8 27 87	27 96	+ 0 09		86 38 17 57	10 47	— 7 10
25 0 47 35 8		23 6 29 32	29 36	+ 0 04		86 42 38 80	33 74	— 5 06
26 0 41 36 2		23 4 25 65	25 57	— 0 08		86 48 23 88	17 53	— 6 35
27 0 35 32 3		23 2 17 36	17 32	— 0 04		86 55 31 55	20 15	— 11 40
28 0 29 24 7		23 0	6 19			87 3 47 96	39·63	— 8 33
M 4 0 4 34 7		22 50 57 10	57 08	— 0 02		87 48 52 50	40 27	— 12 23
13 23 5 16 2	2 L	22 30 49 83	49 76	— 0 07		90 32 29 64	31 95	+ 2 31
14 22 59 52 9		22 29 22 88	23 34	+ 0 46		90 49 58 52	1 76	+ 3 24
15 22 54 38 8		22 28 5 19	5 34	+ 0 15		91 7 16 38	20 01	+ 3 63
19 22 35 13 6		22 24 22 89	23 73	+ 0 84		92 12 43 87	49 89	+ 6 02
26 22 7 14 5		22 23 54 92	55 24	+ 0 32		93 43 55 09	0 73	+ 5 64
Ap 1 23 21 12 35 1		23 19 30 79	30 81	+ 0 02		93 25 47 23	1 33	+ 14 10
24 21 11 42 2	C	23 22 34 98	34 13	— 0 85		93 15 9 32	21 21	+ 11 89
S pt 27 22 38 16 2		11 4 26 84	26 95	+ 0 11		82 35 22 43	21 91	— 0 52
28 22 38 58 2		11 9 4 82	4 62	— 0 20		83 3 10 03	8 01	— 2 02
29 22 39 38 8		11 13 41 96	41 79	— 0 17		83 31 5 49	6 57	+ 1 08
O t 4 22 42 56 3		11 36 41 91	42 05	+ 0 14		85 53 43 54	43 76	+ 0 22
9 22 46 7 1		11 9 36 85	36 33	— 0 52		82 19 43 47	50 29	+ 6 82
1839								
J 2 0 19 37 5		19 4 33 78	32 84	— 0 94		113 27 12 49	15 76	+ 3 27
5 0 24 9 2		19 20 5 91	54 87	— 1 04		113 4 52 49	54 15	+ 1 66
7 0 27 6 7		19 31 46 82	46 09	— 0 3		112 46 22 94	26 07	+ 3 13
8 0 28 40 7		19 37 11 35	10 48	— 0 87		112 36 6 25	9 05	+ 2 80
14 0 36 58 8		20 9 17 51	17 10	— 0 41		111 20 13 97	14 72	+ 0 75
16 0 39 40 0		20 19 51 44	50 84	— 0 60		110 49 42 55	44 57	+ 2 02
17 0 40 58 3		20 25 6 48	5 98	— 0 50		110 33 29 95	33 48	+ 3 53
18 0 42 15 3		20 30 20 14	19 82	— 0 32		110 16 41 15	46 20	+ 5 05
22 0 47 11 3		20 51 3 52	2 95	— 0 57		109 3 47 58	47 40	— 0 18
23 0 48 22 2		20 56 11 06	10 54	— 0 52		108 44 6 60	8 57	+ 1 97
29 0 55 0 0		21 26 29 07	28 94	— 0 13		106 35 27 42	28 70	+ 1 28
Feb 4 1 0 52 1		21 56 1 69	1 32	— 0 37		104 10 10 69	14 69	+ 4 00
11 1 6 49 5		22 29 35 90	35 86	— 0 04		101 3 29 48	31 97	+ 2 49
12 1 7 36 8		22 35 19 46	19 37	— 0 09		100 35 35 49	35 42	— 0 07
13 1 8 22 8		22 39 2 06	1 93	— 0 13		100 7 20 42	21 68	+ 1 26
14 1 9 7 7		22 43 43 59	43 62	+ 0 03		99 38 51 84	52 13	+ 0 29
15 1 9 51 7		22 48 24 42	24 30	— 0 12		99 10 6 78	7 75	+ 0 97
16 1 10 34 8		22 53 4 22	4 12	— 0 10		98 41 7 03	9 97	+ 2 94
17 1 11 17 0		22 57 42 98	43 08	+ 0 10		98 11 54 05	56 36	+ 2 31
18 1 11 58 6		23 2 21 47	21 24	— 0 23		97 42 30 06	31 02	+ 0 96
19 1 12 39 1		23 6 58 52	58 61	+ 0 09		97 12 54 97	54 59	— 0 38
21 1 13 58 2		23 16 11 47	11 22	— 0 25		96 13 11 23	5 93	— 5 30
22 1 14 36 9		23 20 46 17	46 53	+ 0 36		95 42 59 18	56 99	— 2 19
24 1 15 52 2		23 29 55 40	55 20	— 0·20		94 42 19 15	14 48	— 4 67
25 1 16 29 0		23 34 28 45	28 73	+ 0 28		94 11 42 61	40·93	— 1 68
27 1 17 41 1		23 43 34 57	34 26	— 0 31		93 10 17 47	14 89	— 2 58
28 1 18 16 6		23 48 6 29	6 42	+ 0 13		92 39 25 70	23 83	— 1 87
M 1 1 18 51 9		23 52 38 19	38 16	— 0 03		92 8 33 63	28 44	— 5 19
2 1 19 26 7		23 57 9 94	9 59	— 0 35		91 37 32 04	31 46	— 0 58

Right Ascensions and North Polar Distances of the Center of Venus (C nt nu d)

M an S lar Tim f Obs rv ti		P int Ob ed	A R fr m Ob rv t	A R fr m N A	Err f N A	P in Ob rv d	N P D f m Ob t n	N P D fr m N A	E f N A
1839			m						
Mar 22	1 32 0 4	C	1 27 36 42	36 46	+ 0 04	C	81 23 26 40	23 35	— 3 05
25	1 32 55 3		1 41 21 47	21 37	— 0 10		79 55 41 56	37 07	— 4 49
26	1 33 34 9		1 45 57 49	57 54	+ 0 05		79 26 53 47	48 77	— 4 70
27	1 34 15 4		1 50 34 62	34 29	— 0 33		78 58 18 31	15 23	— 3 08
28	1 34 55 8		1 55 11 71	11 95	+ 0 24		78 30 1 03	59 55	— 1 48
29	1 35 37 7		1 59 50 18	50 21	+ 0 03		78 1 58 54	55 64	— 2 90
30	1 36 20 0		2 4 29 20	29 26	+ 0 06		77 34 15 05	10 87	— 4 18
April 15	1 49 42 7		3 20 58 93	58 81	— 0 12		70 58 44 59	41 04	— 3 55
16	1 50 41 4		3 25 54 29	54 15	— 0 14		70 37 40 82	37 13	— 3 69
17	1 51 39 8		3 30 50 70	50 61	— 0 09		70 17 6 11	3 30	— 2 81
19	1 53 43 6		3 40 46 62	46 63	+ 0 01		69 37 31 36	28 89	— 2 47
20	1 54 46 3		3 45 46 05	46 18	+ 0 13		69 18 31 78	32 32	+ 0 4
25	2 0 14 5		4 10 57 83	58 14	+ 0 31		67 51 0 95	57 89	— 3 06
26	2 1 22 9		4 16 3 30	3 30	0 00		67 36 24 38	25 03	+ 0 65
27	2 2 31 9		4 21 8 89	9 27	+ 0 38		67 21 30 18	28 53	— 1 65
S pt 23	0 50 15 6	1 L	12 56 9 50	8 36	— 1 14	N	104 48 7 29	47 40 57	— 26 72
26	0 33 57 0		12 51 37 92	37 07	— 0 85	C	104 3 39 13	22 00	— 17 13
27	0 28 18 2		12 49 54 81	53 80	— 1 01		104 21 59 42	38 39	— 21 03
30	0 11 1 8		12 44 15 26	13 71	— 1 55		104 47 2 85	48 81	— 14 04
Oct 4	23 40 49 9		12 33 50 81	49 75	— 1 06				
6	23 28 51 7	2 L	12 29 39 79	39 17	— 0 62		101 42 29 87	12 79	— 17 08
8	23 16 59 5		12 25 39 31	38 13	— 1 18		100 59 3 73	58 42 23	— 21 50
1840									
Aug 14	0 27 55 9	C	9 59 1 03	1 27	+ 0 24		76 10 55 86	56 78	+ 0 92
Sept 7	0 44 28		11 50	13 21			87 32 24 13	26 39	+ 2 26
14	0 48 28		12 21	49 96			91 7 33 32	35 92	+ 2 60
17	0 50 11		12 35	22 92			92 40 0 01	1 41	+ 1 40
22	0 53 8		12 58	2 65			95 13 7 48	8 78	+ 1 30
Oct 8	1 4 6 0		14 12 7 82	7 37	— 0 45		102 58 21 40	24 49	+ 3 09
10	1 5 43 4		14 21 38 91	37 98	— 0 93		103 52 4 57	8 14	+ 3 57
17	1 11 58 1		14 55 30 70	29 83	— 0 87		106 47 58 19	1 65	+ 3 46
19	1 13 56 1		15 5 21 93	20 99	— 0 94		107 35 55 51	56 96	+ 1 4
20	1 14 56 6		15 10 19 18	18 37	— 0 81		107 58 42 90	44 35	+ 1 45
Dec 4	2 16 1 1		19 8 58 80	58 43	— 0 37		104 22 32 53	34 97	+ 2 14
1841									
Jan 4	2 50 7 8		21 45 24 71	24 18	— 0 53		105 21 3 85	58 38	— 47
6	2 51 31 6		21 54 41 63	41 00	— 0 63		104 29 17 53	13 49	— 4 04
23	2 59 36 7		23 9 50 37	50 02	— 0 35		96 22 1 58	55 45	— 6 13
30	3 1 17 8		23 39 6 65	6 71	+ 0 06		92 46 5 73	56 24	— 9 49
Feb 1	3 1 38 0		23 47 20 42	19 94	— 0 48		91 43 45 25	35 08	— 10 17
4	3 2 1 5		23 59 33 23	33 08	— 0 15		90 10 1 35	53 09	— 8 26
5	3 2 7 4		0 3 35 70	35 74	+ 0 04		89 38 47 04	39 31	— 7 73
16	3 2 24 3		0 47	15 66			83 58 58 96	52 92	— 6 04
Mar 26	2 49		3 4	1 78			68 3 38 83	41 58	+ 2 75
April 21	1 58 4 9		3 55 5 69	7 37	+ 1 68		63 43 21 54	24 74	+ 3 20
24	1 46 45 8		3 56 34 45	36 33	+ 1 88		63 44 57 44	1 58	+ 4 14
May 26	22 51 31 4		2 59 43 87	45 76	+ 1 89		72 41 4 59	13 22	+ 8 63
June 10	21 41 2 6		2 58 24 65	25 20	+ 0 55		75 32 14 54	25 60	+ 11 06

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS *(C i ued)*

	M S l Tim f Ob ti	l in Ob d	A R fr m Ob t	A R from N A	E f N A	l i Ob d	N P D fr m Ob l	N P D f m N A	E f N A
1841									
J e 15	21 27 44 1	C	3 4 45 02	45 90	+ 0 88	C	75 39 32 88	47 47	+ 14 59
16	21 25 24 9		3 6 20 52	21 01	+ 0 49		75 38 41 79	48 51	+ 6 72
J ly 14	20 52 39 7		4 23 48 51	48 39	— 0 12		72 11 23 65	22 25	— 1 40
1842									
M 28	0 28 8 8		0 49 18 52	18 54	+ 0 02				
30	0 29 22 0		0 58 24 82	25 09	+ 0 27		84 58 15 54	12 61	— 2 90
Ap l 2	0 31 14		1 12				83 28 39 22	3 50	— 3 72
4	0 32 31		1 21				82 29 36 79	32 62	— 4 17
7	0 34 31 1		1 35 7 21	7 49	+ 0 28		81 2 18 04	15 25	- 2 79
9	0 3ս 49 9		1 44 23 38	23 70	+ 0 32				
M y 2	0 ս6 2 7		3 35 16 78	16 75	— 0 03		70 38 56 85	51 75	— 5 10
11	1 6 28 8		4 21 13 29	13 88	+ 0 59		68 3 9 73	ս 19	— 4 54
26	1 26 29 7		5 40 25 63	26 17	+ 0 54		65 36 9 34	9 75	+ 0 41
1843									
Ja 19	21 30 19 8	2 L	17 25 52 70	51 42	— 1 28		107 36 4 20	39 27	— 3 93
22	21 24 13 3		17 31 34 72	33 43	— 1 29		107 45 6 93	2 59	— 4 34
F b 9	21 5 11		18 23 27 97	28 34	+ 0 37		108 51 17 87	21 28	+ 3 41
12	21 4 12 2		18 34 18 16	17 40	— 0 6				
13	21 3 58 2		18 38 1 13	0 31	— 0 82		108 59 54 62	5 06	+ 10 44
14	21 3 47 4		18 41 46 86	46 14	— 0 72		109 1 23 14	31 28	+ 8 14
1	21 3 39 3		18 45 35 27	34 83	— 0 44		109 2 28 53	37 38	+ 8 8
16	21 3 34 2		18 49 26 82	26 13	— 0 69		109 3 1ս 43	22 87	+ 7 41
17	21 3 31 7		18 53 20 72	20 01	— 0 71		109 3 36 07	46 61	+ 10 57
19	21 3 33 7		19 1 15 80	14 97	— 0 83		109 3 16 75	26 01	+ 9 26
20	21 3 37 5		19 5 16 46	15 86	— 0 60		109 2 33 24	40 30	+ 7 06
22	21 3 52 2		19 13 24 56	23 84	— 0 72		108 59 47 19	54 59	+ 7 10
23	21 4 2 6		19 17 31 37	30 72	— 0 65		108 57 43 63	53 50	+ 9 87
26	21 4 41 0		19 30 2 40	1 70	— 0 70		108 49 2 55	11 31	+ 8 76
27	21 5 0 9		19 34 15 72	15 13	— 0 59		108 45 13 37	22 84	+ 9 47
28	21 5 18 9		19 38 30 58	29 99	— 0 59		108 40 5ı 29	6 98	+ 9 69
Mar 1	21 5 38 7		19 42 46 81	46 14	— 0 67		108 36 10 02	22 36	+ 12 34
2	21 5 59 1		19 47 4 04	3 49	— 0 55		108 30 59 80	9 72	+ 9 92
3	21 6 21 4		19 51 22 66	21 97	— 0 69		108 25 19 79	28 56	+ 8 77
5	21 7 8 2		20 0 2 66	2 01	— 0 65		108 12 31 44	40 00	+ 8 56
6	21 7 32 9		20 5 24 04	23 43	— 0 61		108 5 21 03	32 11	+ 11 08
8	21 8 24 9		20 13 9 26	8 68	— 0 58		107 49 40 07	48 75	+ 8 68
16	21 12 18 5		20 48 33 24	32 71	— 0 53		106 27 15 80	24 91	+ 9 11
19	21 13 48 6		21 1 55 70	55 01	— 0 69		105 48 22 89	33 92	+ 11 03
Ap l 4	21 21 55		22 13				101 14 27 40	37 05	+ 9 65
5	21 22 23		22 17				100 54 1 62	10 44	+ 8 82
6	21 22 52 2		22 21 59 74	59 00	— 0 74		100 33 11 63	23 69	+ 12 06
7	21 23 20 0		22 26 23 99	23 67	— 0 32		100 12 3 58	15 98	+ 12 40
9	21 24 15 6						99 28 56 23	4 07	+ 7 84
11	21 25 8 6		22 43 59 70	59 39	— 0 31		98 44 28 36	38 67	+ 10 31
12	21 25 35 9		22 48 22 95	22 59	— 0 36		98 21 49 30	59 04	+ 9 74
S pt 1	23 30 49 4	C	10 13 50 40	50 20	— 0 20		77 38 44 95	45 22	+ 0 27
N v 20	0 37 12 0		16 31 49 23	48 50	— 0 73		112 12 15 15	19 10	+ 3 95
24	0 42 51 4		16 53 16 34	15 95	— 0 39		113 1 37 07	40 43	+ 3 36
28	0 48 46 0		17 14 57 43	57 31	— 0 12		113 39 59 07	63 09	+ 4 02
De 9	1 5 42 8		18 15 19 26	18 78	— 0 48		114 25 28 76	32 70	+ 3 94

R GHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (C t u d)

M Sa Tim f Ob t			P int Ob ed	A R f m Ob ti	A R f m N A	Err f N A	P i Ob rv d	N P D fr m Ob rv ti	N P D rom N A	E f N A
1843										
D	10	1 7 16 0	C	18 20 49 32	49 15	—0 17	C	114 25 7 87	11 24	+ 3 37
	13	1 11 56 0		18 37 19 77	19 45	—0 32		114 19 32 11	34 50	+ 2 39
	14	1 13 28 7		18 42 49 44	49 04	—0 40		114 16 9 14	11 68	+ 2 54
	18	1 19 35 5		19 4 44 11	43 25	—0 86		113 55 9 63	11 8	+ 2 22
	19	1 21 6 3		19 10 11 27	10 47	—0 80		113 48 3 10	5 89	+ 2 79
	23	1 27 0 3		19 31 52 75	51 86	—0 89		113 12 27 31	27 18	— 0 13
1844										
J	2	1 40 36 2		20 24 56 51	56 06	—0 45		110 55 16 93	17 13	+ 0 20
	3	1 41 52 6		20 30 8 19	7 90	—0 29		110 38 0 78	2 92	+ 2 14
		1 44 17 7		20 40 28 31	27 70	—0 61				
	6	1 45 30 4		20 45 35 89	35 55	—0 34		109 42 48 20	47 89	— 0 31
	7	1 46 38 5		20 50 42 21	42 09	—0 12		109 23 9 61	14 60	+ 4 99
	8	1 47 46 9		0 55 47 48	47 26	—0 22		109 3 8 63	8 11	— 0 52
	9	1 48 53 7		21 0 51 15	51 07	—0 08		108 42 29 94	29 21	— 0 73
	10	1 49 59 7		21 5 53 36	53 53	+0 17		108 21 21 67	18 87	— 2 80
	12	1 52 9 0		21 15 54 62	54 33	—0 29		107 37 27 93	26 04	— 1 89
	17	1 57 11 5		21 40 32 80	32 55	—0 25		105 39 27 11	25 26	— 1 85
	20	1 59 42 6		21 55 3 85	3 61	—0 24		104 23 27 09	2 65	— 1 44
	21	2 0 33 4		21 59 51 86	51 40	—0 46		103 57 20 51	19 26	— 1 25
	23	2 2 12 2		22 9 23 51	23 26	—0 25				
	24	2 2 58 7		22 14 7 49	7 34	—0 15		102 36 50 26	48 79	— 1 47
	25	2 3 45 8		22 18 50 40	50 22	—0 18		102 9 21 51	18 49	— 3 02
	26	2 4 30 7		22 23 32 26	31 95	—0 31		101 40 31 76	29 02	— 2 74
	27	2 5 14 5		22 28 12 81	12 56	—0 25		101 13 25 77	21 5	— 4 ?2
	28	2 5 57 0		22 32 51 97	52 04	+0 07		100 44 59 80	56 88	— 2 92
	29	2 6 39 3		22 37 30 66	30 40	—0 26		100 16 18 03	15 64	— 2 39
F b	2	2 9 16		22 55	53 77			98 19 6 42	1 83	— 4 9
	3	2 9 52 7		23 0 27 06	27 26	+0 20		97 49 13 80	9 82	— 3 98
	5	2 11 3 4		23 9 31 53	31 62	+0 09		96 48 52 94	50 90	— 2 04
	7	2 12 11 6		23 18 33 07	32 74	—0 33		95 47 55 74	50 72	— 5 02
	8	2 12 44 3		23 23 2 61	2 20	—0 41				
	9	2 13 16 4		23 27 31 42	31 00	—0 42		94 46 19 82	1 23	— 4)
	10	2 13 48 2		23 31 59 02	59 13	+0 11		94 1 23 68	16 04	— 7 64
	12	2 14 49 0		23 40 53 52	53 69	+0 17		93 13 5 09	8 29	— 6 80
	13	2 15 19		23 45	20 17			92 41 45 80	41 25	— 4
	14	2 15 48 5		23 49 46 17	46 16	—0 01		92 10 27 74	19 77	— 7 97
	15	2 16 17 3		23 54 11 84	11 74	—0 10		91 39 2 06	4 4	— 7 3
	16	2 16 46 0		23 58 36 69	36 94	+0 25		91 7 33 24	26 68	— 6 6
	17	2 17 5 2		0 3 1 76	1 77	+0 01		90 36 1 28	56 70	— 4 58
	18	2 17 41 7		0 7 26 14	26 28	+0 14		90 4 29 83	32 47	+ 2 64
	19	2 18 9 4		0 11 50 46	50 52	+0 06		89 33 0 68	9 38	— 1 30
	20	2 18 36 4		0 16 14 03	14 48	+0 45		89 1 25 66	20 60	— 0[illegible]
	21	2 19 13 8		0 20 37 98	38 27	+0 29		88 29 54 56	49 13	— 43
	22	2 19 30 7		0 25 1 75	1 86	+0 11		87 58 24 73	19 29	— 44
	23	2 19 57 5		0 29 25 56	25 34	—0 22		87 26 57 29	51 73	— 56
	24	2 20 14 2		0 33 48 04	48 70	+0 66		86 55 33 97	27 28	— 6 69
	26	2 21 17 7		0 42 35 03	35 29	+0 26		85 52 56 98	50 20	— 6 8
	27	2 21 44 2		0 46 58 07	58 60	+0 53		85 21 42 24	39 08	— 3 16
	28	2 22 11 0		0 51 21 73	21 94	+0 21		84 50 39 94	34 12	— 5 82
	29	2 22 36 7		0 55 45 12	45 38	+0 26		84 19 41 68	35 3	— 6 1
M	1	2 23 4 6		1 0 8 48	8 90	+0 42		83 48 51 42	44 72	— 6 70
	2	2 23 31 6		1 4 32 25	32 59	+0 34		83 18 6 85	1 25	— 5 60
	4	2 24 26 5		1 13 20 43	20 57	+0 14		82 17 9 39	2 26	— 7 13
	6	2 25 22 0		1 22 9 06	9 48	+0 42		81 16 51 87	43 83	— 8 04
	8	2 26 34 5		1 30 59 88	59 87	—0 01		80 17 17 88	11 57	— 6 31
	9	2 27 18 5		1 35 25 38	25 58	+0 20		79 47 50 43	44 69	— 5 74
	11	2 27 47 9		1 44 17 86	18 34	+0 48		78 49 38 79	32 28	— 6 51

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (C nt nued)

M an S la Tim f Ob tl		P i Ob rv d	A R fr m Ob ti	A R fr m N A	E f N A	P int Ob rv d	N P D from Ob rv ti	N P D from N A	Erro f N A
1844	m		m						//
M 12	2 28 18 3	C	1 48 45 01	45 43	+ 0 42	C	78 20 54 40	48 18	— 6 22
13	2 28 49 2		1 53 12 84	13 01	+ 0 17		77 52 25 13	19 98	— 5 15
15	2 29 52 6		2 2 9 41	9 84	+ 0 43		76 56 18 31	13 46	— 4 85
16	2 30 25 6		2 6 38 48	39 10	+ 0 62		76 28 42 95	38 25	— 4 70
18	2 31 32 1		2 15 39 25	39 45	+ 0 20		75 34 24 18	19 53	— 4 65
19	2 32 7 2		2 20 9 89	10 12	+ 0 23		75 7 45 50	40 40	— 5 10
20	2 32 42 1		2 24 41 88	42 33	+ 0 45		74 41 25 17	22 02	— 3 15
22	2 33 54 0		2 33	47 80			73 49 56 55	50 05	— 6 50
23	2 34 31 2		2 38 21 09	21 53	+ 0 44		73 24 43 54	37 76	— 5 78
Ap 1 11	2 48 14 2	1 L	4 7 1 10	1 09	— 0 01		66 51 57 29	51 53	— 5 76
13	2 49 49		4 16	31 59			66 21 28 60	29 02	+ 0 42
15	2 51 28 7		4 2[illegible] 2 91	3 07	+ 0 16		65 53 29 60	26 66	— 2 94
16	2 52 17		4 30	49 08			65 40 20 20	18 93	— 1 27
17	2 53 7		4 35	35 16			65 27 47 47	47 28	— 0 19
18	2 53 6 9		4 40 20 75	21 26	+ 0 51		65 15 51 65	51 95	+ 0 30
20	2 55 35 4		4 49 52 78	53 33	+ 0 55		64 53 51 52	51 40	— 0 12
22	2 57 13 5		4 59 24 23	24 68	+ 0 45		64 34 19 56	19 07	— 0 49
24	2 58 49 6		5 8 54 45	54 73	+ 0 28		64 17 15 33	16 34	+ 1 01
25	2 59 37 5		5 13 38 69	39 04	+ 0 35		64 9 40 80	41 39	+ 0 59
26	3 0 25 0		6 18 22 33	22 80	+ 0 47		64 2 43 09	44 15	+ 1 06
27	3 1 12 5		5 23 5 69	5 96	+ 0 27		63 56 23 96	24 77	+ 0 81
29	3 2 41 9		5 32 29·59	29 80	+ 0 21		63 45 36 08	39 14	+ 3 06
30	3 3 25 7		37 10 10	10 41	+ 0 31		63 41 7 38	12 60	+ 5 22
M y 1	3 4 8 5		41 49 44	50 00	+ 0 56		63 37 19 19	23 61	+ 4 42
2	3 4 50 4		5 46 28 00	28 52	+ 0 52		63 34 8 69	11 99	+ 3 30
3	3 5 31 2		5 51 5 61	5 90	+ 0 29		63 31 32 27	37 39	+ 5 12
4	3 6 10 5		5 55 41 73	41 [illegible]6	+ 0 23		63 29 36 97	39 88	+ 2 91
10	3 9 34 3		6 22 46 47	46 83	+ 0 36		63 30 31 34	36 92	+ 5 58
13	3 10 52 6		6 35 54 58	54 89	+ 0 31		63 38 51 42	59 33	+ 7 91
14	3 11 15 4		6 40 13 03	13 34	+ 0 31		63 42 47 79	54 08	+ 6 29
23	3 12 35 3		7 17 3 00	3 48	+ 0 48		64 41 12 97	24 86	+ 11 89
June 15	2 52 29 5		8 27 34 04	34 55	+ 0 51		69 25 38 86	59 17	+ 20 31
19	2 44 5 7		8 34 54 95	55 39	+ 0 44		70 24 9 73	28 39	+ 18 66
27	2 21 14 9		8 43 33 14	33 76	+ 0 62		72 17 35 51	56 11	+ 20 60
29	2 14 7 1		8 44 17 34	17 85	+ 0 51		72 44 7 39	29 42	+ 22 03
J ly 4	1 53 23 6		8 43 23 65	24 20	+ 0 55		73 45 26 18	44 53	+ 18 35
5	1 48 58 3		8 42 43 87	44 65	+ 0 78		73 56 38 69	56 60	+ 17 91
26	23 47 26 3	2 L	7 57 32 67	33 34	+ 0 67		76 2 1 03	10 65	+ 9 62
7	23 31 4 1		7 55 4 33	5 18	+ 0 85		76 1 59 13	7 23	+ 8 10
28	23 24 46 0		7 52 41 25	41 75	+ 0 50		76 1 30 62	38 74	+ 8 12
Aug 3	22 49 11 0		7 40 40 67	41 11	+ 0 44		75 51 3 81	6 18	+ 2 37
4	22 43 44 6		7 39 9 77	10 07	+ 0 30		75 48 16 36	17 11	+ 0 75
5	22 38 26 5		7 37 47 54	48 08	+ 0 54		75 45 10 77	13 86	+ 3 09
7	22 28 18 9		7 35 32 52	33 04	+ 0 52		75 38 28 24	30 61	+ 2 37
11	22 10 5		7 32	1 70			75 23 21 24	19 80	— 1 44
12	22 5 57 2		7 32 48 34	48 61	+ 0 27		75 19 19 49	18 93	— 0 56
13	22 1 56 9		7 32 44 50	45 28	+ 0 78		75 15 14 35	15 78	+ 1 43
15	21 54 26 9		7 33 6 78	7 23	+ 0 45		75 7 8 42	8 55	+ 0 13
16	21 50 56 7		7 33 31 89	32 28	+ 0 39		75 3 12 27	7 23	— 5·04
19	21 41 16 8		7 35 40 42	40 90	+ 0 48		74 51 33 75	28 82	— 4 93
Sept 5	21 7 21 7		8 8 41 28	41 22	— 0 06		74 22 2 85	54 23	— 8 62
6	21 6 13 2		8 11 29 46	29 72	+ 0 26		74 23 20 01	8 82	— 11 19
8	21 4 10 2	2 L	8 17 19 29	19 74	+ 0 45		74 27 0 52	51 24	— 9 28

Right Ascensions and North Polar Distances of the Center of Venus (Continued)

Mean Solar Time of Observation		Point Observed	A R from Observation	A R from N A	Error of N A	Point Observed	N P D from Observation	N P D from N A	Error of N A
1844	m		m						
Sept	9 21 3 16 2	2L	8 20 20 64	20 91	+ 0 27	C	74 29 31 25	20 48	— 10 77
	10 21 2 24 2		8 23 25 66	25 99	+ 0 33		74 32 25 76	15 69	— 10 07
	11 21 1 36 1		8 26 34 43	34 72	+ 0 29		74 35 45 98	37 16	— 8 82
	17 20 57 58 7		8 46 35 72	35 84	+ 0 12		75 5 27 80	17 88	— 9 92
	18 20 57 33 4		8 50 6 03	6 15	+ 0 12		75 12 3 20	52 53	— 10 67
	23 20 55 57 1		9 8 13 22	13 42	+ 0 20		75 52 2 20	55 40	— 6 80
	24 20 55 46 3		9 11 57 15	57 27	+ 0 12		76 1 29 52	22 58	— 6 94
	25 20 55 33 1		9 15 42 81	43 04	+ 0 23		76 11 30 02	18 66	— 11 36
	26 20 55 24 3		9 19 30 38	30 60	+ 0 22		76 21 52 78	43 74	— 9 04
	27 20 55 17 3		9 23 19 55	19 93	+ 0 38		76 32 47 99	37 61	— 10 38
	29 20 55 9 5		9 31 3 30	3 33	+ 0 03		76 55 57 74	51 38	— 6 36
	30 20 55 5 6		9 34 57 02	57 26	+ 0 24		77 8 22 16	11 05	— 11 11
Oct	9 20 55 38 1		10 10 6 71	56 95	+ 0 24		79 19 54 94	43 83	— 11 11
	10 20 55 44 0		10 15 1 68	1 69	+ 0 11		79 36 41 90	31 90	— 10 00
	11 20 55 53 0		10 19 7 46	7 22	— 0 24		79 53 51 80	45 90	— 5 90
	16 20 56 48 4		10 39 44 66	44 65	— 0 01		81 25 50 85	44 84	— 6 01
	17 20 56 59 8		10 43 53 99	53 88	— 0 11		81 45 23 17	16 58	— 6 59
	18 20 57 12 8		10 48 3 52	3 61	+ 0 09		82 5 16 44	9 89	— 6 55
	20 20 57 40 4		10 56 24 59	24 58	— 0 01		82 46 6 81	58 87	— 7 94
	21 20 57 55 5		11 0 35 81	35 79	— 0 02		83 6 58 46	53 54	— 4 92
	22 20 58 10 3		11 4 47 46	47 41	— 0 05		83 28 16 60	7 43	— 9 17
	23 20 58 25 4		11 8 59 68	59 50	— 0 18		83 49 45 71	40 30	— 5 41
	24 20 58 41 5		11 13 12 22	12 01	— 0 21		84 11 35 20	31 28	— 3 92
	25 20 58 58 0		11 17 25 04	24 96	— 0 08		84 34 44 73	40 09	— 4 64
	28 20 59 49 8		11 30 6 60	6 43	— 0 17		85 41 51 14	46 56	— 4 58
	30 21 0 26 5		11 38 36 46	36 13	— 0 33		86 28 29 87	27 91	— 1 96
	31 21 0 44 1		11 42 51 99	51 64	— 0 35		86 52 12 68	9 86	— 2 82
Nov	3 21 1 44 2		11 55 40 91	40 71	— 0 20		88 4 35 22	32 34	— 2 88
	5 21 2 25 6		12 4 15 77	15 60	— 0 17		88 53 45 54	44 26	— 1 28
	7 21 3 9 5		12 12 52 49	52 29	— 0 20		89 43 34 91	35 18	+ 0 27
	8 21 3 33 4		12 17 11 88	11 34	— 0 54		90 9 44 53	45 03	+ 0 0
	11 21 4 42 9		12 30 11 87	11 36	— 0 51		91 24 52 04	50 51	— 1 53
	12 21 5 6 6		12 34 32 83	32 41	— 0 42		91 50 25 31	24 65	— 0 66
	13 21 5 31 8		12 38 54 55	53 97	— 0 58		92 16 4 86	3 36	— 1 0
	14 21 5 57 7		12 43 16 65	16 08	— 0 57		92 41 46 63	46 04	— 0 59
	15 21 6 23 0		12 47 39 00	38 75	— 0 25		93 7 31 36	31 94	+ 0 58
	19 21 8 13 7		13 5 16 26	15 71	— 0 55		94 50 53 95	53 08	— 0 87
	20 21 8 42 6		13 9 42 05	41 59	— 0 46		95 16 45 53	44 06	— 1 47
	21 21 9 12 4		13 14 8 66	8 21	— 0 45		95 42 35 39	33 89	— 1 50
	22 21 9 43 5		13 18 36 14	35 56	— 0 58		96 8 21 5	21 69	+ 0 17
	25 21 11 20 5		13 32 2 97	2 36	— 0 61		97 25 25 53	25 92	+ 0 39
	27 21 12 28 8		13 41 4 92	4 40	— 0 52		98 16 25 54	24 77	— 0 77
	28 21 13 5 1		13 45 37 47	36 79	— 0 68		98 41 42 43	44 74	+ 2 31
Dec	1 21 14 57 4		13 59 20 08	19 45	— 0 63		99 56 54 21	57 12	+ 2 91
	3 21 16 20 8		14 8 33 41	32 81	— 0 60		100 46 16 49	17 46	+ 0 97
	4 21 16 59 2		14 13 11 67	11 02	— 0 65		101 10 39 16	40 92	+ 1 76
	5 21 17 41 9		14 17 50 94	50 26	— 0 68		101 34 50 69	52 12	+ 1 43
	10 21 21 31 5		14 41 23 36	22 65	— 0 71		103 32 12 96	15 50	+ 2 54
	11 21 22 20 8		14 46 9 24	8 45	— 0 79		103 54 54 49	55 89	+ 1 40
	23 21 33 33		15 40	49 45			107 59 47 68	52 06	+ 4 38
1845									
Jan	5 21 49 7 5		16 51 35 12	34 11	— 1 01		111 10 45 95	50 57	+ 4 62
	10 21 55 48 8		17 17 59 68	58 84	— 0 84		111 58 30 21	34 60	+ 4 39
	12 21 58 33 8		17 28 38 68	37 87	— 0 81		112 13 10 45	14 73	+ 4 28
	15 22 2 42 7		17 44 41 60	40 70	— 0 90		112 30 17 63	20 41	+ 2 78
	20 22 9 55 6		18 11 34 19	33 44	— 0 75		112 45 21 08	24 41	+ 3 33

Right Ascensions and North Polar Distances of the Center of Venus (C t nued)

M S l Tim f Ob rv ti		P i t Ob- ed	A R f m Ob rv on	A R fr m N A	Err f N A	P int Ob rved	N P D fr m Ob rv i n.	N P D from N A	Er f N A
1845									
Jan	23 22 14 16 2	2 L	18 27 44 63	43 57	— 1 06	C	112 46 12 39	14 60	+ 2 21
	26 22 18 35 7		18 43 54 81	53 67	— 1 14		112 40 47 75	52 75	+ 5 00
	28 22 21 27 9		18 54 40 32	39 67	— 0 65		112 33 46 91	51 26	+ 4 35
	29 22 22 53 8		19 0 3 03	2 16	— 0 87		112 29 15 23	18 90	+ 3 67
	30 22 24 19·1		19 5 24 99	24 52	— 0 47		112 24 2 58	5 63	+ 3 05
	31 22 25 44 4		19 10 47 03	46 38	— 0 65		112 18 6 39	11 43	+ 5 04
F b	2 22 28 33 8		19 21 29 06	28 69	— 0 37		112 4 15 06	21 82	+ 6 76
	4 22 31 19		19 32	8 81			111 47 47 04	52 06	+ 5 02
	5 22 32 41 6		19 37 28 59	27 95	— 0 64		111 38 34 42	37 82	+ 3 40
	7 22 35 24 4		19 48 4 42	3 96	— 0 46		111 18 6 94	12 83	+ 5 89
	9 22 38 3 7		19 58 37 79	36 82	— 0 97		110 55 11 11	14 96	+ 3 85
	10 22 39 22 2		20 3 52 30	51 95	— 0 35		110 42 43·66	49 79	+ 6 13
	12 22 41 56 0		20 14 20 14	19 42	— 0 72		110 16 4 01	9 45	+ 5 44
	13 22 43 11 5		20 19 32 16	31 77	— 0 39		110 1 50 18	55 23	+ 5 05
	17 22 48 3 4		20 40 11 09	10 85	— 0 24		108 59 9 21	11 27	+ 2 06
	21 22 52 38 5		21 0 32 98	32 85	— 0·13		107 47 34 97	39 39	+ 4 42
	23 22 54 49 0		21 10 37 32	37 16	— 0 16		107 8 45 33	48 02	+ 2 69
	24 22 55 53 1		21 15 38 42	37 67	— 0 75		106 48 35 58	38 16	+ 2 58
	25 22 56 55 [illegible]		21 20 37 29	37 02	— 0 27		106 27 56 90	59 87	+ 2 97
	26 22 57 56 7		21 25 35 41	35 30	— 0 11		106 6 51 37	53 85	+ 2 48
	28 22 59 56 9		21 35 28 97	28 50	— 0 47		105 23 18 56	20 93	+ 2 37
Mar	1 23 0 54 8		21 40 24 01	23 45	— 0 56		105 0 52 17	55 65	+ 3 48
	2 23 1 51 8		21 45 17 23	17 32	+ 0 09		104 37 59 87	5 32	+ 5 45
	3 23 2 48 0		21 50 10 18	10 11	— 0 07		104 14 45 07	50 77	+ 5 70
	4 23 3 43 3		21 55 2 02	1 79	— 0 23		103 51 8 63	12 70	+ 4 07
	7 23 6 22 0		22 9 30 87	30 68	— 0 19		102 38 2 44	4 96	+ 2 52
	9 23 8 2 4		22 19 4 92	4 86	— 0·06		101 47 31 80	35 86	+ 4 06
	11 23 9 39 3		22 28 35 22	35 18	— 0 04		100 55 48 44	50 59	+ 2 15
	16 23 13 25 8		22 52 5 68	5 43	— 0 25		98 41 29 86	32 37	+ 2 51
	18 23 14 51 4		23 1 23 83	23 91	+ 0 08		97 46 3 20	6 50	+ 3 30
	19 23 15 32 5		23 6 1 79	2 07	+ 0 28		97 18 2 78	4 50	+ 1 72
	20 23 16 13 3	C	23 10 39 81	39 57	— 0 24		96 49 50 50	50 53	+ 0 03
	21 23 16 52 6		23 15 16 42	16 45	+ 0 03		96 21 25 01	25 75	+ 0·74
	23 23 18 12 3		23 24 28 31	28 52	+ 0 21		95 24 7 43	5 31	— 2 12
	24 23 18 50 5		23 29 3 77	3 77	0 00		94 55 11 10	11 27	+ 0 17
	25 23 19 29 6		23 33 39 27	38 50	— 0 77		94 26 10 02	9 07	— 0 95
	28 23 21 20 2		23 47 20 25	20 40	+ 0·15		92 58 18 05	20 04	+ 1 99
	30 23 22 33 4		23 56 26 15	26 67	+ 0 52		91 59 22 49	19 21	— 3 28
	31 23 23 8 4		0 0 59 25	59 47	+ 0 22		91 29 44 32	42 48	— 1 84
April	1 23 23 45 4		0 5 32 08	32 05	— 0 03		91 0 3 46	2 52	— 0 94
	2 23 24 21 6		0 10 4 36	4 53	+ 0 17		90 30 22 11	20 19	— 1 92
	3 23 24 57 2		0 14 36 72	36 80	+ 0 08		90 0 37 09	35 62	— 1 47
	4 23 25 32 6		0 19 9 20	9 05	— 0 15		89 30 48 54	50 48	+ 1 94
	6 23 26 43 6		0 28 13 70	13 52	— 0 18		88 31 20 98	19 41	— 1 57
	7 23 27 19 2		0 32 45 89	45 80	— 0 09		88 1 37 82	35 27	— 2 55
	8 23 27 55 1		0 37 18 44	18 17	— 0 27		87 31 54 15	52 82	— 1 33
	9 23 28 31 0		0 41 50 98	50 64	— 0 34		87 2 15 56	12 92	— 2 64
	10 23 29 7 0		0 46 23 36	23 31	— 0 05		86 32 38 32	36 25	— 2 07
	11 23 29 43 9		0 50 56 16	56 16	0 00		86 3 7 09	3 61	— 3 48
	12 23 30 19 0		0 55 28 83	29 25	+ 0 42		85 33 39 46	35 57	— 3 89
	13 23 30 55 8		1 0 2 17	2 62	+ 0 45		85 3 15 47	13 01	— 2 46
	14 23 31 32 7		1 4 36 22	36 32	+ 0 10		84 34 58 30	56 52	— 1 78
	15 23 32 10 7		1 9 10 32	10 37	+ 0 05		84 5 49 76	46 84	— 2 92
	16 23 32 47 9		1 13 44 24	44 66	+ 0 42		83 36 47 40	44 50	— 2 90
	17 23 33 26 4		1 18 19 27	19 72	+ 0 45		83 7 53 21	50 47	— 2 74
	18 23 34 5 0		1 22 54 79	55 10	+ 0 31		82 39 9 35	5 53	— 3 82

R ght Ascensions and North Polar Distances of the Center of Venus (C ntn d)

M S lar Tim f Ob t	P l Ob d	A R fr m Obs t	A R f m N A	E f N A	P Ol d	N I D fr m Ob rv t	N P D f m N A	E r f N A
1845						′		
Ap 1 21 23 36 4	C	1 36 43 93	44 62	+ 0 69	C	81 13 5 15	51 00	— 4 15
22 23 36 45 7		1 41 21 73	22 28	+ 0 55		80 45 52 49	48 52	— 3 97
23 23 37 26 8		1 45 59 88	0 70	+ 0 82		80 18 0 82	58 78	— 2 04
24 23 38 9 1		1 50 39 25	39 8	+ 0 57		79 50	22 37	
25 23 38 52 3		1 5 19 22	19 66	+ 0 44		79 23 3 00	59 82	— 3 18
27 23 40 21 0		2 4 41 08	41 81	+ 0 73		78 9 1 66	59 41	— 2 2
29 23 41 54 3		2 14 6 59	7 27	+ 0 68		77 36 4 85	3 85	— 1 00
M y 2 23 44 18 1		2 28 21 96	22 38	+ 0 42		76 18 58 94	54 62	— 4 32
24 0 5 40 5		4 12 35 10	35 22	+ 0 12		69 1 1 20	56 32	— 4 88
30 0 13 14 2		4 43 49 29	49 30	+ 0 01		67 38 9 43	5 34	— 4 09
31 0 14 33 1		4 49 4 87	4 94	+ 0 07		67 26 28 97	26 94	— 2 03
J ne 1 0 15 53 1		4 54 21 60	21 45	— 0 15		67 15 28 81	27 33	— 1 48
3 0 18 34 7		5 4 56 59	56 86	+ 0 27		66 55 28 87	25 81	— 3 06
5 0 21 19 8		5 15 35 06	35 18	+ 0 12		66 38 6 09	4 24	— 1 85
7 0 24 6 7		5 26 16 13	15 97	— 0 16		66 23 27 25	2 69	— 1 56
8 0 2 31 4		5 31 37 23	37 15	— 0 08		66 17 10 77	8 49	— 2 28
9 0 26 56 0		5 36 58 61	58 83	+ 0 22		66 11 3o 07	33 01	— 2 06
10 0 28 19 9		5 42 20 48	20 88	+ 0 40		66 6 42 29	39 42	— 2 87
13 0 32 38 9		5 58 28 54	28 88	+ 0 34		65 56 14 89	13 21	— 1 68
16 0 36 58 2		6 14 38 06	38 41	+ 0 35		65 52 12 55	11 92	— 0 63
17 0 38 25 6		6 20 1 26	1 59	+ 0 33		65 52 17 77	17 37	— 0 40
20 0 42 43 0		6 36 10 25	10 68	+ 0 43		65 56 53 85	52 10	— 1 75
28 0 53 58 0		7 18 59 34	59 91	+ 0 57		66 40 24 12	22 27	— 1 8
J ly 2 0 59 21 3		7 40 9 67	9 86	+ 0 19		67 18 46 91	45 13	— 1 78
3 1 0 40 3		7 45 25 27	25 28	+ 0 01		67 30 2 89	1 15	— 1 74
4 1 1 57 6		7 50 39 68	39 79	+ 0 11		67 41 56 82	56 36	— 0 46
5 1 3 14 3		7 55 53 17	53 34	+ 0 17		67 4 28 93	30 57	+ 1 64
7 1 5 45 3		8 6 17 53	17 47	— 0 06		68 21	33 04	
11 1 10 33 3		8 26 52 72	2 53	— 0 19		69 22 59 33	0 04	+ 0 71
12 1 11 42 3		8 31 58 59	58 52	— 0 07		69 39 50 34	50 58	+ 0 24
Aug 3 1 31 57 9		10 19 1 22	0 89	— 0 33		77 33	8 67	+ 1 34
5 1 33 22			17 38			78 49 39 05	39 90	+ 0 85
9 1 35 55 9		10 46 39 01	38 97	— 0 04		80 42 4 16	5 31	+ 1 15
12 1 37 43 3		11 0 16 05	16 12	+ 0 07		82 8 58 28	58 32	+ 0 04
13 1 38 17 5		11 4 47 37	46 94	— 0 43		82 38 18 77	21 45	+ 2 68
21 1 42 28 6		11 40 31 77	31 20	— 0 57		86 39 21 73	23 64	+ 1 91
23 1 43 26 7		11 49 22 98	22 57	— 0 41		87 40 50 50	52 86	+ 2 36
24 1 43 54 8		11 3 47 88	47 79	— 0 09		88 11 41 71	44 65	+ 2 94
25 1 44 24 9		11 58 13 31	12 71	— 0 60		88 42 39 35	40 28	+ 0 93
29 1 47 15		12 15	50 82			90 46 46 70	47 99	+ 1 29
Sept 2 1 48 6 3		12 33 29 05	28 25	— 0 80		92 51 0 97	1 71	+ 0 74
8 1 50 56 7		12 59 59 80	58 69	— 1 11		95 55 49 80	53 57	+ 3 77
9 1 51 30 6		13 4 25 51	24 77	— 0 74		96 26 21 77	22 61	+ 0 84
10 1 51 56 0		13 8 51 94	51 25	— 0 69		96 56 41 62	44 15	+ 2 53
11 1 52 6 3		13 13 18 73	18 14	— 0 59		97 26 55 99	57 59	+ 1 60
12 1 52 56 8		13 17 46 27	45 50	— 0 77		97 57 0 76	2 03	+ 1 27
13 1 53 28 2		13 22 13 87	13 38	— 0 49		98 26 54 45	56 88	+ 2 43
14 1 54 2		13 26	41 79			98 56 37 74	41 21	+ 3 47
18 1 56 13 1		13 44 42 34	41 58	— 0 76		100 53 38 80	40 80	+ 2 00
19 1 56 48 2		13 49 14 20	13 28	— 0 92		101 22 19 66	22 61	+ 2 95
21 1 57 59 6	1 I	13 58 19 62	18 98	— 0 64		102 18 59 54	1 33	+ 1 79
23 1 59 15 2		14 7 28 52	28 04	— 0 48		103 14 33 95	35 61	+ 1 66
24 1 59 54 7		14 12 4 50	3 89	— 0 61		103 41 55 36	56 57	+ 1 21
26 2 1 16 3		14 21 19 01	18 39	— 0 62		104 35 41 26	42 69	+ 1 43

Right Ascensions and N rth P lar Distances of the Center of Venus *(Cont nu d)*

M Sol Tim f Ob rv ti		P i t Ob d	A R f m Ob ti	A R f m N A	E f N A	P int Ob d	N P D f m Ob t	N P D f m N A	E f N A
1845			m						
Sept 27	2 1 58 0	1 L	14 25 57 70	57 10	—0 60	C	105 2 6 27	6 42	+ 0 15
29	2 3 25 2		14 35 18 25	17 56	—0 69		105 53 49 83	51 06	+ 1 23
30	2 4 10 2		14 39 59 78	59 35	—0 43		106 19 10 27	10 56	+ 0 29
Oct 1	2 4 56 3		14 44 42 82	42 21	—0 61	NL	106 44 4 94	7 14	+ 2 20
2	2 5 43 4		14 49 26 74	26 11	—0 63		107 8 37 76	40 17	+ 2 41
3	2 6 31 7		14 54 11 54	11 10	—0 44		107 32 46 50	48 70	+ 2 20
5	2 8 11 4		15 3 44 76	44 38	—0 38		108 19 48 07	49 58	+ 1 51
7	2 9 56 2		15 13 22 55	22 02	—0 53		109 4 59 84	3 62	+ 3 78
8	2 10 49 7		15 18 13 14	12 50	—0 64		109 27 0 05	58 80	— 1 2
9	2 11 44 2		15 23 4 61	4 10	—0 41		109 48 23 73	25 29	+ 1 56
10	2 12 40		15 2, 57 43	6 76	—0 67		110 9 22 03	22 08	+ 0 05
11	2 13 37 5		15 32 51 36	50 55	—0 81		110 29 51 83	48 60	— 3 23
20	2 22 5, 3		16 17 41 92	41 28	—0 64		113 9 8 26	9 22	+ 0 96
21	2 24 4 3		16 22 45 58	45 10	—0 48		113 23 58 97	55 53	— 3 44
22	2 25 12 5		16 27 50 40	49·77	—0 63		113 38 2 95	4 44	+ 1 49
23	2 26 21 1		16 32 55 89	55 30	—0 59		113 51 37 55	35 47	— 2 08
24	2 27 30 8		16 38 2 09	1 62	—0 47		114 4 27 82	27 92	+ 0 10
25	2 28 40 7		16 43 9 26	8 67	—0 59		114 16 39 93	41 40	+ 1 47
26	2 29 53 1		16 48 17 27	16 42	—0 85		114 28 12 59	15 38	+ 2 79
28	2 32 15 5		16 58 34 18	33 84	—0 34		114 49 20 65	23 26	+ 2 61
31	2 35 54 8		17 14 4 29	3 92	—0 37		115 15 58 85	58 51	— 0 34
N v 1	2 37 19 4		17 19 15 08	14 69	—0 39		115 23 26 34	26 92	+ 0 58
3	2 39 38 3		17 29 37 67	37 15	—0 52		115 36 13 44	17 39	+ 3 95
5	2 42 7 7		17 40 0 60	0 09	—0 51		115 46 15 99	17 49	+ 1 0
6	2 43 22 7		17 45 11 90	11 58	—0 32		115 50 8 99	13 24	+ 4 25
7	2 44 37 2		17 50 23 59	22 98	—0 61		115 53 24 92	25 90	+ 0 98
8	2 45 51 5		17 55 34 66	34 23	—0 43		115 55 55 66	5 41	— 0 2
10	2 48 19 1		18 5 56 15	55 85	—0 30		115 58 4 45	44 91	— 0 54
17	2 56 40 9		18 41 54 99	54 52	—0 17		115 46 3 24	2 73	— 0 51
19	2 58 57 2		18 52 4 35	3 89	—0 16		115 36 5 39	2 74	— 2 6
24	3 4 16 3		19 17 7 63	7 14	—0 49		114 59 6 23	3 22	— 3 01
27	3 7 11 5		19 31 52 77	52 47	—0 30	SL	114 29 0 18	54 90	— 5 28
29	3 9 0 2		19 41 34 94	34 69	—0 25		114 5 47 42	39 44	— 7 98
De 4	3 13 1 0		20 5 19 03	18 45	—0 58		112 57 13 54	3 04	—10 50
5	3 13 43 1		20 9 57 54	57 27	—0 27		112 41 47 52	3 71	— 9 81
9	3 16 10 4		20 28 11 49	10 99	—0 50		111 34 52 29	40 98	—11 31
19	3 19 31 ?		21 10 58 35	58 12	—0 23		108 15 27 39	17 23	—10 16
22	3 19 41 4		21 22 58 23	57 59	—0 64		107 8 20 14	6 91	—13 23
1846									
Jan 3	3 15 58 9		22 6 34 03	33 77	—0 26		102 17 8 14	16 57 48	—10 66
5	3 14 37 4		22 13 5 15	4 81	—0 34		101 26 28 82	15 74	—13 08
6	3 13 51 3		22 16 15 69	15 08	—0 61		101 1 3 27	0 49 09	—14 18
9	3 8 11 2		22 25 23 99	23 58	—0 41		99 44 31 52	18 85	—12 67
10	3 10 9 3		22 28 19 00	18 73	—0 27		99 19 0 61	49 10	—11 51
14	3 6 23 0		22 39 18 42	18 17	—0 25		97 37 33 33	22 71	—10 62
15	3 4 0 9		22 41 52 42	52 24	—0 18		97 12 28 86	15 41	—13 45
19	2 57 44 9		22 51 21 75	21 73	—0 0		95 33 35 07	22 07	—13 00
22	2 52 10 3		22 57 36 11	35 98	—0 13		94 21 44 07	31 70	—1? 37
23	2 50 8 6		22 59 30 11	29 86	—0 25		93 58 24 57	9 41	—15 16
24	2 48 0 0		23 1 18 12	18 00	—0 12		93 35 20 27	7 31	—12 96
26	2 43 26 1		23 4 36 71	36 39	—0 32		92 50 23 59	10 60	—12 99
27	2 41 0 1		23 6 6 64	6 28	—0 36		92 28 33 91	19 58	—14 33
28	2 39 26 8		23 7 29 96	29 64	—0 32		92 7 8 41	6 56 25	—12 16
29	2 35 47 4		23 8 46 37	46 32	—0 05		91 46 13 62	2 53	—11 09
31	2 30 7 4		23 10 59 15	58 74	—0 41		91 6 6 36	56 21	—10 15

Right Ascensions and North Polar Distances of the Center of Venus (C nt ed)

M S lar Tim f Ob rv ti		P in Ob rv d	A R f m Ob ti	A R f m N A	Err f N A	P l t Ob rv d	N P D fr m Ob rv ti	N P D f m N A	Err f N A
1846									
F b	3 2 20 42 5	1 L	23 13 21 85	21 76	—0 09	SL	90 10 29 58	21 41	— 8 17
	4 2 17 18 6		23 13 54 14	53 76	—0 38		89 53 22 14	9 11	—13 03
	5 2 13 46 2		23 14 17 87	17 57	—0 30		89 37 0 40	36 47 98	—12 42
	6 2 10 5 7		23 14 33 18	33 05	—0 13		89 21 25 63	16 01	— 9 62
	10 1 53 57 1		23 14 8 49	8 44	—0 05		88 28 22 40	11 70	—10 70
	11 1 49 33 0		23 13 40 61	40 20	—0 41		88 17 34 21	25 84	— 8 37
	12 1 45 0 1		?3 13 3 10	3 02	—0 08		88 7 53 66	45 28	— 8 38
	13 1 40 18 1		23 12 16 81	16 97	+0 16		87 59 23 44	12 68	—10 76
	15 1 30 28 0		23 10 18 31	18 49	+0 18		87 46 48 94	40 75	— 8 19
	18 1 14 39 5		23 6 17 15	17 53	+0 38		87 34 53 36	46 35	— 7 01
	19 1 9 7 8		23 4 41 11	41 52	+0 41		87 33 51 91	45 06	— 6 85
	20 1 3 29 2		23 2 57 90	58 29	+0 39		87 34 10 49	3 68	— 6 81
	23 0 45 54 8		22 57 10 48	10 63	+0 15		87 43 5 47	0 66	— 4 81
	25 0 33 55 3		22 52 53 08	53 46	+0 38		87 55 36 12	31 98	— 4 14
	27 0 21 24 7		22 48 22 50	22 84	+0 34		88 13 5 25	59 82	— 5 43
	28 0 15 10 5	2 L	22 46 3 70	4 56	+0 86		88 23 30 56	27 53	— 3 03
Ma	1 0 8 59 8		22 43 45 12	45 41	+0 29		88 35 0 95	58 25	— 2 70
	2 0 2 45 3		22 41 26 09	26 48	+0 39		88 47 31 48	28 95	— 2 53
	2 23 56 32 0		22 39 7 83	8 49	+0 66		89 0 56 78	52 95	— 3 83
	3 23 50 20 4		22 36 52 06	52 31	+0 25		89 15 7 46	5 66	— 1 80
	4 23 44 11 7		22 34 8 52	38 91	+0 39		89 30 5 98	1 08	— 4 90
	5 23 37 56 6		22 32 29 09	29 14	+0 05		89 45 35 86	32 69	— 3 17
	6 23 32 5 3		22 30 23 69	23 86	+0 17		90 1 35 51	34 67	— 0 84
	8 23 20 19 9		22 26 28 98	29 64	+0 66		90 34 43 50	42 88	— 0 62
	9 23 14 36 7		22 24 41 81	42 14	+0 33		90 51 33 23	36 30	+ 3 07
	10 23 9 1 0		22 23 1 45	1 86	+0 41		91 8 33 12	34 42	+ 1 30
	11 23 3 33		22 21	29 31			91 25 29 46	30 87	+ 1 41
	13 22 53 1 5		22 18 48 73	49 39	+0 66		91 58 58 11	57 63	— 0 48
	16 22 38 21 5		22 15 56 37	56 91	+0 54	NL	92 46 40 31	45 07	+ 4 76
	17 22 33 47 0		22 15 17 83	18 22	+0 39		93 1 39 07	45 99	+ 6 92
	18 22 29 21 7		22 14 48 61	49 06	+0 45		93 16 8 10	13 16	+ 5 06
	19 22 25 6 3		22 14 28 57	29 46	+0 89		93 29 59 41	63 88	+ 4 47
	20 22 20 59 9		22 14 18 81	19 56	+0 75		93 43 6 82	15 62	+ 8 80
	22 22 14 16 2		22 14 26 54	27 19	+0 65		94 7 27 27	34 55	+ 7 28
	23 22 9 38 1		22 14 44 48	44 89	+0 41		94 18 30 57	37 50	+ 6 93
	24 2 6 8 6		22 15 10 95	11 51	+0 56		94 28 47 83	54 87	+ 7 04
	25 22 2 49 3		22 15 46 45	46 85	+0 40		94 38 18 40	25 82	+ 7 42
	26 21 59 35 6		22 16 30 38	30 72	+0 34		94 47 1 71	9 58	+ 7 87
	27 21 56 31 5		22 17 22 47	22 80	+0 33		94 54 57 02	5 28	+ 8 26
	29 21 50 48 4		22 19 30 65	30 78	+0 13		95 8 21 83	31 62	+ 9 79
	30 21 48 6 7		22 20 45 82	46 14	+0 32		95 13 55 32	62 18	+ 6 86
	31 21 45 33 2		22 22 8 38	8 71	+0 33		95 18 37 34	44 37	+ 7 03
Api l	1 21 43 7 1		22 23 37 98	38 27	+0 29		95 22 30 07	38 42	+ 8 35
	2 21 40 47 1		22 25 14 28	14 54	+0 26		95 25 35 70	44 48	+ 8 78
	3 21 38 33 3		22 26 56 99	57 29	+0 30		95 27 55 60	62 88	+ 7 28
	5 21 34 25 0		22 30 40 90	41 17	+0 27		95 30 8 39	18 37	+ 9 98
	6 21 32 29 7		22 32 41 87	41 89	+0 02		95 30 8 16	16 47	+ 8 31
	8 21 28 54 7		22 36 59 49	59 59	+0 10		95 27 45 26	56 47	+11 21
	9 21 27 14 9		22 39 15 88	16 15	+0 27		95 25 31 64	39 61	+ 7 97
	10 21 25 40 0		22 41 37 28	37 55	+0 27		95 22 30 03	39 18	+ 9 15
	12 21 22 44 6		22 46 33 92	34 17	+0 25		95 14 21 88	31 11	+ 9 23
	15 21 18 52 1		22 54 30 18	30 36	+0 18		94 56 58 76	68 34	+ 9 58
	17 21 16 34 0		23 0 6 38	6 64	+0 26		94 42 9 06	18 12	+ 9 06
	20 21 13 34 7		23 8 55 55	55 83	+0 28		94 15 18 41	27 28	+ 8 87
	21 21 12 40 4		23 11 57 93	58 23	+0 30		94 5 10 97	20 48	+ 9 51
	6 21 8 48 8		23 27 48 77	48 99	+0 22		93 6 34 49	43 38	+ 8 89
	27 21 8 9 5		23 31 6 01	6 09	+0 08		92 53 20 79	29 64	+ 8 85

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (Conti ued)

M S l T m f Ob ti	P i t Ob rv d	A R fr m Ob ti	A R f m N A	E f N A	P i Ob d	N P D f Ob rv t	N P D f m N A	E f N A
1846								
April 29 21 6 57 3	2 L	23 37 46 13	46 39	+ 0 26	NL	92 25 31 12	38 90	+ 7 78
May 3 21 4 54 1		23 51 29 08	29 13	+ 0 05		91 24 41 17	48 16	+ 6 99
4 21 4 27 3		23 54 58 92	59 06	+ 0 14		91 8 27 07	35 65	+ 8 58
5 21 4 2 4		23 58 30 41	30 56	+ 0 15		90 51 53 02	60 25	+ 7 23
6 21 3 38 7		0 2 3 51	3 57	+ 0 06		90 34 56 22	64 77	+ 8 55
7 21 3 17 0		0 5 38 05	38 06	+ 0 01		90 17 42 16	47 61	+ 5 45
10 21 2 18 9		0 16 29 52	29 92	+ 0 40		89 23 55 06	61 94	+ 6 88
13 21 1 33 5		0 27 33 35	33 75	+ 0 40		88 27 31 20	38 77	+ 7 57
15 21 1 9 4		0 35 2 07	2 55	+ 0 48		87 48 39 52	46 86	+ 7 34
17 21 0 49 8		0 42 35 93	36 07	+ 0 14		87 8 57 29	61 57	+ 4 28
18 21 0 41 8		0 46 24 19	24 54	+ 0 35		86 48 45 26	50 90	+ 5 64
20 21 0 28 7		0 54 4 49	4 84	+ 0 35		86 7 52 46	57 95	+ 5 49
21 21 0 23 8		0 57 56 33	56 62	+ 0 29		85 47 12 07	17 14	+ 5 07
26 21 0 16 1		1 17 31 34	31 45	+ 0 11		84 1 57 89	61 53	+ 3 64
June 4 21 1 7 4		1 53 51 49	51 74	+ 0 25		80 48 49 03	51 09	+ 2 06
5 21 1 18 0		1 57 59 12	59 35	+ 0 23		80 27 22 36	24 27	+ 1 91
8 21 1 57 9		2 10 28 50	28 83	+ 0 33		79 23 22 67	24 81	+ 2 14
9 21 2 13 3		2 14 40 64	40 94	+ 0 30		79 2 13 70	14 51	+ 0 81
10 21 2 30 4		2 18 54 10	54 19	+ 0 09		78 41 9 64	9 88	+ 0 24
14 21 3 48 4		2 35 58 61	59 03	+ 0 42		77 18 5 05	5 83	+ 0 78
18 21 5 25 1		2 53 12 87	23 19	+ 0 32		75 57 34 57	37 30	+ 2 3
19 21 5 53 2		2 57 46 83	47 31	+ 0 48		75 37 59 76	60 13	+ 0 37
21 21 6 52 2		3 6 38 86	39 22	+ 0 36		74 59 28 84	26 95	— 1 85
July 2 21 13 43 0		3 56 53 35	53 51	+ 0 16		71 47 55 29	52 66	— 2 63
3 21 14 27 6		4 1 34 61	34 99	+ 0 38		71 32 32 26	30 79	— 1 47
7 21 17 39 3		4 20 32 84	33 09	+ 0 25		70 35 8 43	5 26	— 3 17
8 21 18 30 0		4 25 20 23	20 64	+ 0 41		70 21 48 96	47 55	— 1 41
20 21 30 5 6		5 24 17 11	17 47	+ 0 36	C	68 20 0 59	55 80	— 4 79
29 21 40 10 4		6 9 51 59	51 93	+ 0 34		67 40 13 76	8 76	— 5 00
30 21 41 19 9		6 14 58 13	58 61	+ 0 48		67 38 47 56	42 18	— 5 38
Aug 10 21 55 24 4		7 11 27 30	27 74	+ 0 44		68 3 49 79	44 28	— 5 51
16 22 1 30 8		7 42 14 07	14 52	+ 0 45		68 49 16 32	11 24	— 5 08
17 22 2 41 1		7 47 20 88	21 23	+ 0 35		68 59 0 34	54 63	— 5 71
23 22 9 30 7		8 17 50 48	51 05	+ 0 57		70 9 47 67	44 12	— 3 55
24 22 10 36 9		8 22 53 66	53 96	+ 0 30		70 23 37 34	34 08	— 3 26
26 22 13 26 9		8 32 57 65	57 72	+ 0 07		70 52 58 56	54 92	— 3 64
27 22 13 51 4		8 37 58 46	58 54	+ 0 08		71 8 29 31	24 88	— 4 43
28 22 14 54 2		8 42 58 57	58 59	+ 0 02		71 24 31 30	27 34	— 3 96
30 22 16 59		8 52	56 41			71 58 10 93	7 49	— 3 44
Sept. 6 22 23 48 2		9 27 23 37	23 41	+ 0 04		74 11 47 18	44 93	— 2 25
14 22 30 48 2	C	10 5 57 01	56 85	— 0 16		77 11 18 38	17 69	— 0 69
23 22 37 49 1		10 48 22 09	22 00	— 0 09		81 0 57 57	55 19	— 2 38
28 22 41 12 3		11 11 34 47	34 32	— 0 15		83 18 12 42	11 77	— 0 65
29 22 41 53 3		11 16 11 67	11 30	— 0 37		83 46 18 70	18 35	— 0 35
Oct 23 22 57 24 2		13 6 22 73	22 25	— 0 48		95 30 42 18	42 63	+ 0 45
25 22 58 47 9		13 15 39 41	38 88	— 0 53		96 29 4 30	4 54	+ 0 24
26 22 59 30 4		13 20 18 81	18 04	— 0 77		96 58 4 76	4 61	— 0 15
28 23 0 57 2		13 29 38 75	38 03	— 0 72		97 55 38 63	6 93	— 1 70
29 23 1 41 2		13 34 19 89	19 31	— 0 58		98 24 11 20	9 98	— 1 22
30 23 2 26 7		13 39 1 64	1 14	— 0 50		98 52 29 43	31 02	+ 1 59
Nov 1 23 3 59 3		13 48 27 59	27 11	— 0 48		99 48 34 82	36 84	+ 2 02
2 23 4 47 7		13 53 12 03	11 32	— 0 71		100 16 17 26	0 31	+ 3 05

RIGHT ASCEN IONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS (C ntinu d)

M an S lar Tim f Ob rv ti		P int Ob d	A R from Ob ti	A R fr m N A	E f N A	P i t Ob rv d	N P D f m Ob	N P D fr m N A	E f N A
1846									
N v	4 23 6 24 6	C	14 2 43 14	42 40	— 0 74	C	101 11 0 21	3 88	+ 3 67
	5 23 7 14 9		14 7 30 16	29 31	— 0 85		101 38 1 97	2 63	+ 0 66
1847									
Jan	6 0 28 19 6		19 29 18 26	17 27	— 0 99		112 51 17 39	19 33	+ 1 94
	8 0 31 14 8		19 40 6 96	5 94	— 1 02		112 30 39 47	40 4	+ 1 07
	11 0 35 30 4		19 56 12 86	12 05	— 0 81		111 54 35 34	35 31	— 0 03
	12 0 36 53 2		20 1 32 27	32 22	— 0 05		111 41 12 58	13 33	+ 0 75
	13 0 38 15 6		20 6 51 69	51 18	— 0 51		111 27 10 29	12 49	+ 2 20
	14 0 39 36 9		20 12 9 65	9 08	— 0 57		111 12 31 83	33 15	+ 1 32
	15 0 40 56 9		20 17 26 77	25 85	— 0 92		110 57 13 63	15 85	+ 2 22
	16 0 42 15 7		20 22 41 87	41 50	— 0 37		110 41 19 90	21 34	+ 1 44
	18 0 44 49 4		20 33 9 98	9 15	— 0 83		110 7 42 03	42 97	+ 0 94
	20 0 47 19 0		20 43 33 07	31 91	— 1 16		109 31 42 24	43 48	+ 1 24
	21 0 48 31 9		20 48 42 16	41 39	— 0 77		109 12 51 70	52 46	+ 0 76
	22 0 49 42 9		20 53 49 80	49 60	— 0 20		108 53 28 34	28 27	— 0 07
	26 0 54 15 5	1 L	21 14 10 02	9 41	— 0 61	SL	107 30 33 68	34 11	+ 0 43
	27 0 55 20 2		21 19 11 48	11 07	— 0 41		107 8 35 84	34 97	— 0 87
F b	1 1 0 24 8		21 44 0 33	0 24	— 0 09		10 11 42 57	43 35	+ 0 78
	13 1 10 38 8		22 41 33 76	33 15	— 0 61		99 2 0 29	59 44	— 0 85
	16 1 12 49 4		22 55 34 24	34 11	— 0 13		98 25 22 64	21 32	— 1 32
	18 1 14 11 9		23 4 50 11	50 24	+ 0 13		97 26 32 37	28 74	— 3 63
	20 1 15 31 9		23 14 3 28	3 39	+ 0 11		96 26 51 94	47 93	— 4 01
	23 1 17 26 4		23 27 47 85	48 10	+ 0 25		94 56 12 10	7 69	— 4 41
	24 1 18 3 4		23 32 21 51	21 79	+ 0 28		94 25 41 91	35 88	— 6 03
	25 1 18 40 0		23 36 54 85	54 96	+ 0 11		93 55 6 22	59 67	— 6 55
	26 1 19 16 2		23 41 27 53	27 66	+ 0 13		93 24 17 78	15 78	— 2 00
	27 1 19 52 0		23 46 0 01	59 92	— 0 09		92 53 29 12	26 34	— 2 78
Ma	3 1 22 10 5		0 4 5 29	5 42	+ 0 13		90 49 32 04	28 23	— 3 81
	4 1 22 44 5		0 8 35 89	36 11	+ 0 22		90 18 26 55	22 12	— 4 43
	6 1 23 51 9		0 17 36 82	37 06	+ 0 24	C	89 16 17 50	7 31	— 10 19
	8 1 24 59 5		0 26 37 54	37 67	+ 0·13	SL	88 13 58 65	53 58	— 5 07
	9 1 25 33 1		0 31 8 06	7 96	— 0 10		87 42 52 60	48 98	— 3 62
	10 1 26 6 9		0 35 38 01	38 30	+ 0 29	C	87 11 57 86	47 00	— 10 86
	11 1 26 40 8		0 40 8 21	8 70	+ 0 49	SL	86 40 52 20	48 16	— 4 04
	12 1 27 14 6		0 44 39 06	39 23	+ 0 17		86 10 1 55	53 48	— 8 07
	13 1 27 48 8		0 49 9 96	9 97	+ 0 01		85 39 9 35	3 38	— 5 97
	19 1 31 19 0		1 16 19 81	20 16	+ 0 35		82 36 29 67	23 30	— 6 37
	23 1 33 47 5		1 34 35 39	35 31	— 0 08		80 37 51 51	45 32	— 6 19
	24 1 34 25 9		1 39 10 35	10 47	+ 0 12		80 8 41 06	36 16	— 4 90
	25 1 35 4 8		1 43 45 86	46 25	+ 0 39		79 39 47 49	40 83	— 6 66
	26 1 35 44 8		1 48 22 60	22 65	+ 0 05		79 11 5 46	59 91	— 5 55
	27 1 36 25 2		1 52 59 38	59 75	+ 0 37	C	78 42 43 66	34 67	— 8 99
	29 1 37 48 1		2 2 16 06	16 12	+ 0 06	SL	77 46 37 48	30 79	— 6 69
	31 1 39 14 7		2 11 35 43	35 58	+ 0 15		76 51 39 94	37 11	— 2 83
April	2 1 40 44 3		2 20 58 53	58 34	— 0 19		75 58 2 92	58 71	— 4 21
	3 1 41 30 0		2 25 41 18	41 05	— 0 13		75 31 43 09	39 64	— 3 45
	5 1 43 4 7		2 35 9 17	9 25	+ 0 08		74 40 11 11	5 48	— 5 63
	6 1 43		2 40				74 14 58 73	51 90	— 6·83
	8 1 45 34 3		2 49 28 92	28 73	— 0 19		73 25 41 85	35 10	— 6 75
	9 1 46 25 9		2 54 17 08	17 28	+ 0 20		73 1 37 71	33 44	— 4 27
	10 1 47 18 5		2 59 6 69	6 78	+ 0 09		72 38 0 88	57 32	— 3 56
	13 1 50 3 2		3 13 41 24	41 52	+ 0 28		71 29 53 12	48 83	— 4 29
	14 1 51 0 3		3 18 34 59	35 22	+ 0 63		71 8 6 30	2 16	— 4 14
	19 1 56 0 6		3 43 18 62	19 10	+ 0 48		69 26 41 23	35 92	— 5 31
	22 1 59 12 6		3 58 20 99	21 44	+ 0 45		68 32 11 71	8 53	— 3 18
	23 2 0 19 0		4 3 23 97	24 10	+ 0 13		68 15 12 07	5 30	— 6 77

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF VENUS *(Cont nued)*

M S l Tim f Ob ti		l mt Ob rv d	A R fr m Ob ti	A R f m N A	Err f N A	P int Ob rv d	N P D f m Ob ti	N P D fr m N A	Err f N A
1847	m								
Apr l 26	2 3 41 7	1 L	4 18 37 04	37 40	+ 0 36	SL	67 27 38 08	35 98	— 2 10
28	2 6 1 7		4 28 50 55	50 54	— 0 01		66 58 59 90	57 45	— 2 45
29	2 7 12 3		4 33 57 52	58 21	+ 0 69		66 45 37 50	34 50	— 3 00
May 1	2 9 36 1		4 44 15 45	15 71	+ 0 26		66 20 46 03	43 67	— 2 36
3	2 12 2 8		4 54 35 64	35 75	+ 0 11		65 58 31 27	29 43	— 1 84
4	2 13 16 9		4 59 46 21	46 61	+ 0 40		65 48 23 62	22 01	— 1 61
5	2 14 31 4		5 4 57 68	57 99	+ 0 31	C	65 38 58 19	54 85	— 3 34
12	2 23 23 3		5 41 26 49	27 18	+ 0 69	SL	64 54 1 27	58 21	— 3 06
14	2 25 56 7		5 51 53 93	54 81	+ 0 88		64 44 51 91	50 96	— 0 95
15	2 27 12 8		5 57 6 64	7 23	+ 0 59		64 42 20 54	20 89	+ 0 35
17	2 29 45 4		6 7 32 87	33 19	+ 0 32		64 39 28 47	28 19	— 0 28
18	2 30 59 6		6 12 45 52	45 80	+ 0 28		64 39 1 82	5 47	+ 3 65
20	2 33 21 8		6 23 9 24	9 71	+ 0 47		64 40 27 07	27 04	— 0 03
21	2 34 46 4		6 28 20 46	20 92	+ 0 46	C	64 42 10 85	11 06	+ 0 21
22	2 35 59 9		6 33 31 16	31 57	+ 0 41	SL	64 44 35 01	35 33	+ 0 32
2ᴗ	2 39 37 6		6 48 58 66	59 23	+ 0 57		64 56 4 84	4 21	— 0 63
26	2 40 48 1		6 54 6 20	6 57	+ 0 37		65 1 16 01	16 74	+ 0 73
J ne 8	2 54 26 7		7 59 2 13	2 20	+ 0 07		67 8 11 95	17 26	+ 5 31
14	2 59 22 6		8 27 38 37	38 25	— 0 12		68 40 54 09	59 99	+ 90
J ly 8	3 8 15 9		10 11 10 31	10 37	+ 0 06	NI	77 30 11 69	15 90	+ 4 21
9	3 8 14		10 15 5 50	5 54	+ 0 04		77 56 10 73	17 84	+ 7 11
20	3 5 54 3		10 56 7 61	7 27	— 0 34		82 53 30 79	37 99	+ 7 20
21	3 5 30 2		10 59 39 68	39 44	— 0 24		83 21 14 06	22 77	+ 8 71
Aug 17	2 40 15 9		12 20 48 92	48 2ᴗ	— 0 67		95 34 47 45	48 91	+ 1 46
25	2 25 30		12 37	41 11			98 42 57 90	59 12	+ 1 22
Sept 10	1 39 6 2		12 4 6 43	5 36	— 1 07		103 12 32 35	22 05	— 10 30

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MARS

1831									
Feb 20	4 51 56 9	C	2 50 33 88			C	72 28 18 47		
21	4 50 26 9		2 52 59 84				72 17 13 45		
22	4 48 56 0		2 55 25 14				72 6 13 25		
23	4 47 27 1		2 57 52 63				71 55 25 82		
2							71 34 0 81		
28	4 40 5 4		3 10 12 47				71 2 51 95		
Mar 4	4 34 19 0		3 20 11 32				70 22 5 92		
13	4 21 44 8		3 43 3 94				69 0 34 07		
May 22							65 44 9 50		
1832									
Jan 29	21 16 53 0		17 44 48 13				113 45 47 70		
Feb 3	21 13		18 6				113 50 14 29		
4	21 12 5 0		18 9 19 85				113 50 28 35		
5	21 11 18 4		18 12 29 18				113 50 28 73		
6	21 10 30 4		18 15 38 43				113 50 7 42		
8	21 8 49 0		18 21 57 30				113 48 56 19		
22	20 58 3 9		19 6 14 40				113 13 49 31		
24	20 56 30·6		19 12 33 82				113 5 5 22		
27	20 54 11 7		19 23 1 93				112 50 12 89		
28	20 ᴗ3 24 6		19 25 11 15				112 44 26 75		

Right Ascensions and North Polar Distances of the Center of Mars (Continued)

Mean Solar Time of Observation		Point Observed	A R from Observation	A R from N A	Error of N A	Point Observed	N P D from Observation	N P D from N A	Error of N A
1832							′	′	
Feb 29	20 52 36 5	C	19 28 19 85			C	112 39 11 44		
Mar 1	20 51 46 6		19 31 28 85				112 33 19 97		
2	20 50 59 1		19 34 37 48				112 27 16 66		
3	20 50 11 1		19 37 45 86				112 20 58 83		
4	20 49 23 2		19 40 54 33				112 14 29 33		
5	20 48 34 6		19 44 2 45				112 7 41 48		
6	20 47 46 0		19 47 10 19				112 0 44 93		
7	20 46 57 0		19 50 17 52				111 53 36 60		
11	20 43 43 3		20 2 45 78				111 22 42 49		
12	20 42 50 1		20 5 52 49				111 14 29 98		
13	20 41 59 9		20 8 58 72				111 6 1 70		
15	20 40 18 7		20 15 10 20				110 48 31 52		
19	20 36 52 8		20 27 30 12				110 11 6 67		
20	20 36 0 3		20 30 34 26				110 1 18 55		
27	20 29 46 8		20 51 55 48				108 47 4 53		
31	20 26 5 8		21 3 59 97				108 0 46 52		
April 1	20 25 10 0		21 9 0 29				107 48 45 93		
2	20 24 13 0		21 10 0 29				107 36 34 88		
3	20 23 15 9		21 12 59 45				107 24 14 52		
5	20 21 21 2		21 18 57 50				106 59 7 75		
6	20 20 23 2		21 21 55 82				106 42 25 16		
7	20 19 24 6		21 24 53 87				106 33 24 53		
12	20 14 26 2		21 39 38 65				105 26 30 82		
13	20 13 25 5		21 42 34 69				105 12 44 80		
14	20 12 25 0		21 45 30 02				103 58 51 48		
21	20 5 10 2		22 5 49 00				103 17 53 81		
30	19 55 23 2		22 31 30 00				101 0 26 06		
May 1	19 54 16 4		22 34 19 19				100 44 44 28		
2	19 53 8 6		22 37 8 03				100 28 56 79		
4	19 50 53 0		22 42 45 21				99 57 8 71		
5	19 49 45 7		22 45 33 97				99 41 4 56		
12	19 41 44 8		23 5 2 24				97 47 16 12		
14	19 39 17 5		23 10 33 11				97 14 20 11		
15	19 38 10 6		23 13 18 19				96 57 45 77		
16	19 36 58 1		23 16 2 83				96 41 12 00		
31	19 18 28 4		23 56 42 76				92 30 45 75		
June 9	19 6 58 5		0 20 38 52				89 59 31 41		
10	19 5 40 3		0 23 16 93				89 48 54 46		
11	19 4 21 8		0 25 54 81				89 26 24 79		
12	19 3 3 3		0 28 32 67				89 9 56 28		
13	19 1 44 7		0 31 10 54				88 53 24 49		
14	19 0 26 0		0 33 47 89				88 37 2 38		
15	18 59 6 7		0 36 25 19				88 20 40 97		
17	18 56 27 4		0 41 38 18				87 51 8 38		
22	18 49 42 1		0 54 34 69				86 27 46 72		
Nov 9	12 44 40 3		4 0 30 87				68 58 19 42		
15	12 11 47 2		3 51 11 51						
16	12 6 15 7		3 49 36 07				69 8 27 52		
17	12 0 13 7		3 47 28 56				69 10 19 45		
22	11 33 7 3		3 40 0 72				69 21 10 67		
29	10 55 21 1		3 29 41 83				69 37 30 65		
30	10 50 2 1		3 28 21 22				69 39 53 82		
Dec 4	10 29 24 7		3 23 26 32				69 48 30 14		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MARS *(Continued)*

M S l Tim f Ob t		P int Ob d	A R f m Ob ti	A. R f m N A	Err f N A	P int Ob rved	N P D fr m Ob rv ti	N P D fr m N A	Err f N A
1832								'	
De	5 10 24 22 1	C	3 22 19 79			C	69 50 34 08		
	6 10 19 25 4		3 21 16 19				69 52 24 00		
	7 10 14 26 4		3 20 15 58				69 54 10 64		
	12 9 50 33 2		3 16 1 14				70 1 25 87		
	13 9 45 56 4		3 15 20 07				70 2 33 21		
	14 9 41 22 6		3 14 42 37						
	15 9 36 52 7		3 14 8 21				70 4 12 89		
	16 9 31 25 8		3 13 37 59				70 4 49 57		
	17 9 28 2 4		3 13 10 02				70 5 20 30		
	18 9 23 43 9		3 12 46 30				70 5 38 38		
	20 9 15 14 0		3 12 9 63				70 5 47 61		
	21 9 11 4 4		3 11 55 05				70 5 34 88		
	22 9 6 58 5		3 11 44 72				70 5 18 15		
	24 8 58 56 0		3 11 34 27				70 4 8 73		
	25 8 54 59 8		3 11 33 84				70 3 17 91		
	26 8 51 6 4		3 11 36 93						
	27 8 47 17 3		3 11 43 82				70 1 12 01		
1833									
Jan	3 8 21 55 3		3 13 53 40				69 48 43 63		
	4 8 18 29 7		3 14 23 77				69 46 21 63		
	6 8 11 36 2		3 15 32 14				69 41 12 74		
	8 8 5 13 4		3 16 51 16				69 35 33 28		
	9 8 2 0 8		3 17 34 74				69 32 32 24		
	10 7 58 50 8		3 18 20 72				69 29 23 11		
	11 7 55 33 2		3 19 9 19				69 26 9 80		
	14 7 46 22 3		3 21 47 53				69 15 50 26		
	15 7 43 36 2		3 22 46 07				69 12 10 17		
	16 7 40 39 5		3 23 45 24				69 8 24 21		
	17 7 37 45 6		3 24 47 60				69 4 36 01		
	18 7 34 55 0		3 25 53 42				69 0 40 54		
	19 7 32 4 7		3 26 59 25				68 56 41 03		
	20 7 29 16 6		3 28 7 41				68 52 36 80		
	21 7 26 31 5		3 29 18 26				68 48 28 30		
	22 7 23 48 0		3 30 31 96				68 44 13 84		
	23 7 21 6 9		3 31 45 70				68 39 58 13		
	24 7 18 27 4		3 33 2 06				68 35 37 21		
	25 7 15 48 6		3 34 19 89						
	27 7 10 38 3		3 37 1 80				68 22 17 84		
	28 7 8 6 2		3 38 25 74				68 17 47 49		
	29 7 5 35 3		3 39 50 97				68 13 14 35		
	30 7 3 6 2		3 41 17 88				68 8 37 65		
	31 7 0 38 4		3 42 46 30				68 4 0 24		
Feb	1 6 58 12 0		3 44 16 10				67 59 22 00		
	2 6 55 48 1		3 45 48 49				67 54 43 49		
	4 6 51 3 7		3 48 56 47				67 45 20 00		
	5 6 48 44 3		3 50 33 10				67 40 39 23		
	6 6 46 25 3		3 52 10 38				67 35 57 40		
	8 6 41 52 6		3 55 28 75				67 26 33 99		
	9 6 39 37 6		3 57 11 35				67 21 53 41		
	10 6 37 24 9		3 58 54 05				67 17 12 48		
	11 6 35 12 1		4 0 37 96				67 12 34 34		
	12 6 33 1 6		4 2 23 97				67 7 57 00		
	13 6 30 52 3		4 4 10 84				67 3 20 67		
	14 6 28 43 6		4 5 58 07				66 58 44 56		
	15 6 26 36 6		4 7 47 23				66 54 11 23		
	16 6 24 30 8		4 9 37 51				66 49 38 66		
	17 6 22 26 0		4 11 29 21				66 45 8 52		
	18 6 20 22 4		4 13 21 71				66 40 45 65		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MARS (*Co tinued*)

	M an S lar T m f Ob rv ti	P int Ob er d	A R fr m Ob rv ti	A R f m N A	Erro f N A	P i t Ob d	N P D f m Ob rv ti	N P D f m N A	Err f N A
1833	m		m						
Feb 4		C				C	66 14 58 14		
25	6 6 27 0		4 27 0 06				66 10 52 67		
26							66 6 48 68		
27	6 2 37 2		4 31 2 83						
28	6 0 44 5		4 33 6 37				65 58 56 62		
Mar 1	5 58 50 9		4 35 8 99				65 55 6 90		
2	5 56 58 9		4 37 13 45				65 51 20 58		
3	5 55 8 0		4 39 18 88				65 47 39 92		
4	5 53 18 1		4 41 24 94				65 44 2 87		
6	5 49 40 2		4 45 40 64				65 37 6 81		
7	5 47 52 5		4 47 47 88				65 33 45 07		
8	5 46 5 7		4 49 57 05				65 30 30 50		
9	5 44 19 1		4 52 7 11				65 27 22 64		
10	5 42 33 5		4 54 17 97				65 24 16 99		
1835									
F b 1	9 29 22 1		6 13 57 31	56 58	— 0 73		62 49 49 91	38 [illegible]7	— 11 31
2	9 25 1 9		6 13 30 57	29 97	— 0 60		62 50 54 06	40 63	— 13 13
4	9 16 27 5		6 12 47 79	47 63	— 0 16		62 53 5 59	54 37	— 11 22
5	9 12 13 6		6 12 31 50	31 81	+ 0 31		62 54 17 61	5 60	— 12 01
7	9 4 1 7		6 12 10 99	10 72	— 0 27		62 56 46 16	35 47	— 10 69
10	8 52 2 3		6 12 4 82	4 79	— 0 03		63 0 50 39	36 42	— 13 97
11	8 48 15 9		6 12 9 59	9 50	— 0 09		63 2 13 32	0 66	— 12 66
12	8 44 29 2		6 12 17 62	17 43	— 0 19		63 3 38 30	26 58	— 11 72
13	8 40 44 5		6 12 28 87	28 58	— 0 29		63 5 5 91	54 18	— 11 73
14	8 37 1 3		6 12 42 59	42 88	+ 0 29		63 6 32 86	23 37	— 9 49
M r 9	7 24 27 6		6 30 38 54	38 39	— 0 15		63 48 25 11	19 [illegible]5	— [illegible] 36
1836									
J ly 18	20 40 19 2		4 28 9 90	9 54	— 0 36		68 28 43 84	40 88	— 2 96
19	20 39 19 2		4 31 4 83	4 55	— 0 28		68 21 39 63	35 68	— 3 [illegible]5
Aug 26	19 58 22 0		6 19 50 07	50 04	— 0 03				
Sept 9	19 41 7 5		6 57 44 13	43 56	— 0 57		66 39 53 01	45 97	— 7 04
11	19 38 30 3		7 2 59 07	59 29	+ 0 22		66 45 18 89	14 37	— 4 52
12	19 37 11 4		7 5 36 35	36 36	+ 0 01		66 48 20 05	11 27	— 8 78
13	19 35 49 6		7 8 12 34	12 68	+ 0 34		66 51 23 29	16 44	— 6 8
Oct 13	18 50 10 4		8 20 41 18	41 07	— 0 11		69 14 54 67	51 15	— 3 52
14	18 48 26 1		8 22 52 91	53 01	+ 0 10				
1837									
Jan 26	13 16 43 4		9 40 18 18	18 00	— 0 18		71 19 40 66	27 27	— 13 39
27	13 11 22 4		9 38 53 01	52 46	— 0 55		71 11 34 19	20 36	— 13 83
28	13 5 58 4		9 37 25 45	25 09	— 0 36		71 3 25 11	13 01	— 12 10
29	13 0 34 3		9 35 56 24	56 00	— 0 24		70 55 18 77	6 16	— 12 61
31	12 49 40 2		9 32 53 67	53 26	— 0 41		70 39 10 30	58 05	— 12 25
Feb 2	12 38 42 2		9 29 46 43	45 62	— 0 81		70 23 16 77	4 89	— 11 88
3	12 33 10 5		9 28 10 84	10 45	— 0 39		70 15 28 58	16 15	— 12 43
4	12 27 38 4		9 26 35 03	34 55	— 0 48		70 7 46 37	34 13	— 12 24
5	12 22 6 5		9 24 58 66	58 21	— 0 45		70 0 12 74	59 91	— 12 83
6	12 16 34 7		9 23 22 17	21 58	— 0 59		69 52 47 42	34 52	— 12 90
7	12 11 2 9		9 21 45 46	44 83	— 0 63		69 45 30 97	18 76	— 12 21
8	12 5 30 5		9 20 8 44	8 24	— 0 20		69 38 25 21	14 00	— 11 21
9	11 59 58 1		9 18 32 49	31 90	— 0 59		69 31 32 95	20 42	— 12 53
10	11 54 27 3		9 16 56 68	56 08	— 0 60		69 24 50 48	38 84	— 11 64
11	11 48 56 6		9 15 21 48	20 93	— 0 55		69 18 21 89	10 08	— 11 81
12	11 43 26 6		9 13 47 21	46 68	— 0 53		69 12 7 04	54 80	— 12 24

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MARS (Cont nued)

M S l Tim f Obs rv ti		P int Ob rved.	A R from Ob rv ti	A R fr m N A.	Err f N A	P l t Ob d	N P D f m Ob ti	N P D f m N A	Err f N A
1837			m						
F b	13 11 37 57 8	C	9 12 13 99	13 50	—0 49	C	69 6 4 32	53 53	—10 79
	14 11 32 29 6		9 10 41 96	41 46	—0 50		69 0 16 43	6 62	— 9 81
	15 11 27 3 7		9 9 11 37	10 83	—0 54		68 54 46 48	34 89	—11 59
	17 11 16 14 4		9 6 14 73	14 40	—0 33		68 44 27 85	17 65	—10 20
	18 11 10 53 8		9 4 49 42	48 87	—0 55		68 39 41 15	32 51	— 8 64
	19 11 5 34 7		9 3 25 69	25 19	—0 50		68 35 12 55	3 14	— 9 41
	26 10 29 25 9		8 54 46 47	45 70	—0 77		68 11 27 89	17 86	—10 03
	27 10 24 25 6		8 53 42 33	42 05	—0 28		68 9 8 35	59 37	— 8 98
	28 10 19 29 8		8 52 42 18	41 30	—0 88		68 7 5 40	56 96	— 8 44
M r	1 10 14 36 1		8 51 44 21	43 53	—0 68		68 5 18 11	10 54	— 7 57
	4 10 0 14 5		8 49 9 21	8 60	—0 61		68 1 32 18	24 90	— 7 28
	5 9 55 32 8		8 48 23 88	23 20	—0 68		68 0 47 20	40 27	— 6 93
	6 9 50 54 5		8 47 41 62	41 11	—0 51		68 0 16 99	10 26	— 6 73
	7 9 46 20 1		8 47 2 73	2 21	—0 2		68 0 1 08	54 73	— 6 35
	8 9 41 48 7		8 46 27 11	26 52	—0 59		68 0 0 06	53 65	— 6 41
	9 9 37 20 4		8 45 54 54	54 11	—0 43		68 0 12 46	6 69	— 5 77
	10 9 32 55 6		8 45 25 53	24 88	—0 65		68 0 39 97	33 68	— 6 29
	11 9 28 33 5		8 44 59 53	58 98	—0 55		68 1 20 09	14 53	— 5 56
	12 9 24 15 6		8 44 36 94	36 34	—0 60		68 2 15 16	8 72	— 6 44
	13 9 19 59 8		8 44 17 53	16 93	—0 60		68 3 22 18	15 97	— 6 21
	16 9 7 33 6		8 43 38 65	37 87	—0 78		68 7 56 12	52 49	— 3 63
	17 9 3 30 7		8 43 31 69	31 13	—0 56		68 9 53 01	48 57	— 4 44
	18 8 59 31 2		8 43 28 16	27 43	—0 73		68 12 1 28	56 16	— 5 12
1838									
Sept	28 20 17 59 1		8 47 42 56	4 60	+0 04		70 53 23 58	18 30	— 5 28
Oct	4 20 8 55 7		9 2 16 04	16 27	+0 23		71 47 41 71	36 64	— 07
	7 20 4 15 6		9 9 25 42	25 41	—0 01		72 15 55 43	49 45	— 5 98
1839									
Feb	12 14 34 38 0		12 3 33 24	32 95	—0 29		86 15 10 28	10 37	+ 0 09
	13 14 30 8 1		12 2 59 35	59 15	—0 20		86 10 17 93	17 38	— 0 55
	14		12 2	22 44			86 5 10 16	8 17	— 1 99
	16		12 1	0 28			85 54 4 91	2 58	— 2 33
	17		12 0	14 92			85 48 8 64	6 96	— 1 68
	18		11 59	26 73			85 41 57 54	56 87	— 0 67
	19 14 2 9 8		11 58 36 07	35 80	—0 27		85 35 34 35	32 83	— 1 52
	20 13 57 20 1		11 57 42 27	42 17	—0 10		85 28 57 02	55 26	— 1 76
	21		11 56	45 88			85 22 3 82	4 81	+ 0 99
	23 13 42 36 4		11 54 45 59	45 52	—0 07		85 7 49 31	47 40	— 1 91
	24 13 37 36 5		11 53 41 57	41 60	+0 03		85 0 22 19	21 79	— 0 40
	25 13 32 34 7		11 52 35 52	35 30	—0 22		84 52 47 84	45 88	— 1 96
	26		11 51	26 72			84 45 1 29	0 38	— 0 91
	27 13 22 23 8		11 50 16 15	15 92	—0 23		84 37 6 33	6 05	— 0 28
	28		11 49	3 02			84 29 2 65	3 69	+ 1 04
Mar	1 13 12 6 3		11 47 48 44	48 14	—0 30		84 20 53 03	54 24	+ 1 21
	2 13 6 52 2		11 46 31 35	31 37	+0 02		84 12 38 66	38 44	— 0 22
	3 13 1 38 0		11 45 12 92	12 72	—0 20		84 4 16 05	17 33	+ 1 28
	5 12 51 5 1		11 42 30 90	30 91	+0 01		83 47 21 79	22 63	+ 0 84
	6 12 45 45·5		11 41 7 73	7 57	—0 16		83 38 49 71	50 99	+ 1 28
	7 12 40 17 7		11 39 43 44	43 15	—0 29		83 30 18 34	17 78	— 0 56
	8 12 34		11 38	17 58			83 21 41 38	44 06	+ 2 68
	9 12 29 42 3		11 36 51 29	51 07	—0 22		83 13 9 84	10 84	+ 1 00
	10 12 24 19 4		11 35 24 06	23 78	—0 28		83 4 37 71	39 41	+ 1 70
	11 12 18 56 4		11 33 56 04	55 82	—0 22		82 56 8 91	10 72	+ 1 81
	12 12 13 30 7		11 32 27 6	27 44	—0 32		82 47 44 67	45 89	+ 1 22
	13 12 8 6 9		11 30 59 10	58 72	—0 38		82 39 25 01	26 08	+ 1 07
	14 12 2 43 0		11 29 30 19	29 92	—0 27		82 31 10 75	12 40	+ 1 65

Right Ascensions and North Polar Distances of the Center of Mars (Cont ued)

M S lar Tim f Ob ti		P int Ob d	A R f m Ob ti n.	A. R f m N A	Err f N A	P int Ob rv d	N P D f m Ob rv i n.	N P D f m N A	Err f N A
1839									
M 15	11 57 18 3	C	11 28 1 61	1 13	— 0 38	C	82 23 2 95	5 81	+ 2 86
16	11 51 54 4		11 26 32 95	32 60	— 0 35		82 15 5 27	7 34	+ 2 07
17	11 46 30 3		11 25 4 66	4 45	— 0 21		82 7 16 43	17 99	+ 1 56
18	11 41 7 2		11 23 37·27	36 87	— 0 40		81 59 36 14	38 78	+ 2 64
19	11 35		11 22	10 03			81 52 7 23	10 65	+ 3 42
21	11 24		11 19	19 21			81 37 47 36	50 89	+ 3 53
22	11 19 42 8		11 17 55 61	55 53	— 0·08		81 30 56 72	0 88	+ 4 16
23	11 14 25 2		11 16 33 62	33 24	— 0 38		81 24 22·22	25 16	+ 2 94
24	11 9 8 8		11 15 12 80	12 42	— 0 38		81 18 1 40	4 21	+ 2 81
25	11 3 53 6		11 13 53 52	53 24	— 0 28		81 11 55 46	58 79	+ 3 33
26	10 58 40 6		11 12 35 96	5 79	— 0 17		81 6 5 97	9 17	+ 3 20
27	10 53 29 6		11 11 20 64	20 21	— 0 43		81 0 34 06	35 82	+ 1 76
28	10 48 20 3		11 10 6 84	6 64	— 0 20		80 55 14 37	19 21	+ 4 84
29	10 43 12 8		11 8 55 33	55 10	— 0·23		80 50 19 77	19 83	+ 0 06
30	10 38 7 8		11 7 46 04	45 80	— 0 24		80 45 36 64	37 91	+ 1 27
31	10 33 5 2		11 6 39 19	38 79	— 0 40		80 41 11 27	13 78	+ 2 51
April 1	10 28		11 5	34 13			80 37 5 75	7 47	+ 1 72
2	10 23 6 7		11 4 32 19	31 90	— 0 29		80 33 16 77	19 39	+ 2 62
3	10 18 11 1		11 3 32 33	32 18	— 0 15		80 29 46 89	49 57	+ 2 68
4	10 13 18 3		11 2 35 39	35 03	— 0 36		80 26 34 41	38 10	+ 3 69
5	10 8 27 8		11 1 40 80	40 52	— 0 28		80 23 41 12	45 21	+ 4 09
6	10 3 40 4		11 0 49 02	48 72	— 0 30		80 21 6 80	10 87	+ 4 07
7	9 58 55 9		11 0 0 08	59 66	— 0 42	"	80 18 51 46	55 27	+ 3 81
8	9 54 13 6		10 59 13 81	13 41	— 0 40		80 16 56 33	58 35	+ 2 02
13	9 31 26 6		10 56 5·66	5 34	— 0 32		80 11 48 34	53 57	+ 5 23
14	9 27 1 7		10 55 36 86	36 51	— 0 35		80 11 42 84	44 79	+ 1 95
15	9 22 40 3		10 55 10 98	10 66	— 0 32		80 11 55 68	0 71	+ 5 03
16	9 18		10 54 48 02	47 75	— 0 27		80 12 26 58	31 54	+ 4 96
17	9 14 5 7		10 54 28 17	27 80	— 0 37		80 13 15 79	20 20	+ 4 41
18	9 9 53 1		10 54 11 31	10 81	— 0 50		80 14 22 76	26 43	+ 3 67
19	9 5 43 0		10 53 57 18	56 74	— 0 44	"	80 15 47 39	50 14	+ 2 7
20	9 1 36 2		10 53 46 13	45 59	— 0 54		80 17 27 52	30 90	+ 3 38
25	8 41 43 2		10 53 32 80	32 30	— 0 50		80 29 56 16	1 30	+ 5 14
M y 20	7 17 33 0		11 7 42 56	42 06	— 0 50		82 58 27 54	31 66	+ 4 12
21	7 14 37 4		11 8 42 94	42 58	— 0 36		83 6 52 25	57 68	+ 5 43
1841									
Mar 18	14 32						101 12 28 97	38 08	+ 9 11
19	14 27						101 11 1 98	7 66	+ 5 68
21	14 18						101 7 19 87	28 17	+ 8 30
22	14 14						101 5 11 66	19 19	+ 7 53
23	14 9						101 2 50 15	57 51	+ 7 36
25.	14 0						100 57 27 76	36 70	+ 8 94
27	13 51						100 51 16 13	26 69	+ 10 56
28	13 46						100 47 51 22	62 70	+ 11 48
29	13 43						100 44 17 38	29 04	+ 11 66
30	13 36						100 40 29 10	42 95	+ 13 85
April 1	13 27						100 32 25 91	37 39	+ 11 48
2	13 22 9 8		14 6 6 76	6 43	— 0 33		100 28 7 10	18 64	+ 11 54
3	13 17 8 7		14 5 1 40	1 03	— 0 37		100 23 38 34	49 58	+ 11 24
4	13 12 5 1		14 3 53 76	53 23	— 0 53		100 18 59 24	19 10 68	+ 11 44
7	12 56 41 2		14 0 17 35	16 66	— 0 69		100 4 3 89	18 75	+ 14 86
17	12 3 35 6		13 46 27 86	27 45	— 0 41		99 7 17 22	28 96	+ 11 74
18	11 58 11 4		13 44 59 67	59 19	— 0 48		99 1 13 19	28 41	+ 15 22
21	11 41 58 7		13 40 33 68	33 23	— 0 45		98 43 13 42	28 89	+ 15 47
22	11 36 34 6		13 39 5 38	4 80	— 0 58		98 37 18 04	32 79	+ 14 75
27	11 9 43 4		13 31 52 67	52 45	— 0 22		98 8 45 25	60 05	+ 14 80

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MARS *(Continued)*

M S lar T m f Ob rv ti	P int Ob rv d	A R f m Ob ti	A R fr m N A	E f N A	P i t Ob d	N P D fr m Ob ti	N P D f m N A	Erro f N A
1841						′		
M y 5 10 27 58 3	C	13 21 32 72	32 54	— 0 18	C	97 30 13 07	28 11	+ 15 04
7 10 17 52 3		13 19 18 17	17 90	— 0 27		97 22 31 84	47 32	+ 15 48
Ju ıe 10 7 55 3 5		13 10 8 98	8 57	— 0 41		97 52 33 22	57 69	+ 14 47
J ly 22 17 59 41 9		14 3 1 77						
A g 29 4 57 47 6		15 27 48 01						
30 4 56 26 9		15 30 23 73	23 60	— 0 13		110 43 9 20	64 81	+ 5 61
31 4 55 7 4		15 33 0 44	0 20	— 0 24		110 53 18 55	26 39	+ 7 84
Sept 9 4 43 53 5		15 57 13 76	13 60	— 0 16		112 12 7 83	16 46	+ 8 63
10 4 42 43 2		16 0 0 04	59 92	— 0 12		112 20 12 69	22 12	+ 9 43
14 4 38 12 0		16 11 14 78	14 39	— 0 39		112 51 10 22	14 67	+ 4 45
17 4 34 58 6		16 19 50 29	49 80	— 0 24		113 12 40 05	43 62	+ 3 57
20 4 31 52 6		16 28 33 28	33 08	— 0 20		113 32 30 77	39 88	+ 9 11
21 4 30 52 6		16 31 29 36	29 19	— 0 17		113 38 50 27	57 10	+ 6 83
23 4 28 54 1		16 37 24 11	23 86	— 0 25				
24 4 27 56 3		16 40 22 78	22 37	— 0 41		113 56 39 62	41 16	+ 1 54
25 4 26 59 2		16 43 22 09	21 66	— 0 43		114 2 8 49	12 70	+ 4 21
Oct 6 4 17 17 6		17 17 0 58	0 26	— 0 32		114 49 11 75	14 80	+ 3 05
7 4 16 28 3		17 20 7 95	7 61	— 0 34				
15 4 10 15 0		17 45 27 02	26 65	— 0 37				
16 4 9 31 4		17 48 39 47	38 76	— 0 71				
19 4 7 21 2		17 58 17 97	17 63	— 0 34				
Nov 16 3 48 30 4		19 29 48 20	47 80	— 0 40				
17 3 47 50 3		19 33 4 57	3 98	— 0 59				
18 3 47 10 3		19 36 20 80	20 02	— 0 78				
19 3 46 30 5		19 39 36 63	35 91	— 0 72				
20 3 45 48 6		19 42 52 22	51 54	— 0 68				
22 3 44 26 6		19 49 22 96	22 19	— 0 77				
23 3 43 44 7		19 52 37 46	37 17	— 0 29				
Dec 8 3 30 39 6		20 40 45 24	43 95	— 1 29				
1842								
M 26 1 37 44 5		1 51 13 23	12 72	— 0 51				
1843								
M y 7 14 22 23 6		17 22 38 52	37 43	— 1 09		114 5 48 54	6 9 18	+ 20 64
8 14 18 16 5		17 22 22 99	22 19	— 0 80		114 8 43 74	9 5 11	+ 21 37
9 14 14 0 8		17 22 4 36	3 66	— 0 70		114 11 43 66	12 0 72	+ 17 06
11 14 5 22 0		17 21 17 46	16 66	— 0 80		114 17 28 80	50 34	+ 21 54
12 14 0 57 0		17 20 48 93	48 22	— 0 71		114 20 21 63	43 97	+ 22 34
14 13 52 1 4		17 19 42 19	41 42	— 0 77		114 26 6 00	27 95	+ 21 95
30 12 32 58 6		17 3 33 17	31 97	— 1 20		115 5 12 52	38 19	+ 25 67
31 12 27 41 8		17 2 11 96	10 75	— 1 21		115 6 59 93	7 25 45	+ 25 52
June 2 12 17 3 1		16 59 24 69	23 53	— 1 16		115 10 19 54	41 22	+ 21 68
8 11 44 35 3		16 50 40 61	39 32	— 1 29		115 17 26 05	49 06	+ 23 01
9 11 39 20 6		16 49 12 07	10 76	— 1 31		115 18 12 30	36 98	+ 24 68
10 11 33 56 9		16 47 43 84	42 41	— 1 43		115 18 52 36	19 18 33	+ 25 97
17			45 52			115 20 57 50	21 21 07	+ 23 57
21 10 35 48 4		16 32 37 98	36 82	— 1 16		115 20 23 94	47 96	+ 24 02
24 10 20 24 3		16 29 10 80	9 44	— 1 36		115 19 29 32	52 92	+ 23 60
27 10 5 34 7		16 26 8 48	7 56	— 0 92		115 18 22 04	46 53	+ 24 49
28 10 0 43 9		16 25 14 26	13 10	— 1 16		115 18 2 47	23 74	+ 21 27
Aug 3 7 45 44 9		16 31 48 82	48 06	— 0 76		115 42 33 08	48 30	+ 15 22

Right Ascensions and North Polar Distances of the Center of Mars (Continued)

Mean Solar Time of Observation			Planet Observed	A R from Observation	A R from N A	Error of N A	Planet Observed	N P D from Observation	N P D from N A	Error of N A
1843										
Aug	7	7 35 7 4	C	16 36 55 49	54 87	— 0 62	C	115 50 10 04	24 13	+ 14 09
	13	7 20 18 5		16 45 54 32	53 52	— 0 80		116 2 2 01	13 90	+ 11 89
	14	7 18 10 6		16 47 32 66	31 80	— 0 86		116 3 57 68	11 42	+ 13 74
	23	6 59 9 2		17 3 56 38	55 90	— 0 48		116 20 16 32	27 25	+ 10 93
1844										
Dec	5	20 56 37 0		13 56 43 05	42 44	— 0 61		100 58 20 12	21 89	+ 1 77
	9	20 50 39 4		14 6 29 48	29 17	— 0 31		101 52 20 34	21 03	+ 0 69
1845										
Jan	5	20 12 8 6		15 14 20 52	19 98	— 0 54		107 17 56 73	58 20	+ 1 47
	6				54 68			107 28 27 77	29 87	+ 2 10
	9	20 6 45 0		15 24 41 40	40 68	— 0 72		107 59 18 96	20 36	+ 1 40
	10	20 5 19 8		15 27 17 04	16 52	— 0 52		108 9 20 81	21 81	+ 1 00
	12	20 2 43 4		15 32 29 59	29 02	— 0 57		108 29 0 39	1 25	+ 0 86
	14	20 0 7 5		15 37 43 20	42 56	— 0 64		108 48 4 92	8 76	+ 3 84
	15	19 58 45 2		15 40 20 32	19 74	— 0 58		108 57 27 22	31 31	+ 4 09
	23	19 48 21 5		16 1 27 03	26 36	— 0 67		110 7 17 14	21 61	+ 4 47
	24	19 47 4 4		16 4 6 26	5 84	— 0 42		110 15 22 53	26 80	+ 4 27
	26	19 44 31 5		16 9 25 79	25 52	— 0 27		110 31 5 29	10 64	+ 5 35
	28	19 41 59 5		16 14 46 75	46 25	— 0 50		110 46 14 09	18 26	+ 4 17
	30	19 39 28 3		16 20 8 29	7 73	— 0 56		111 0 46 86	49 48	+ 2 62
Feb	4	19 33 14 2		16 33 35 59	35 09	— 0 50				
	9	19 27 4 1		16 47 7 14	6 70	— 0 44		112 4 3 17	4 99	+ 1 82
	11	19 24 37 1		16 52 32 61	32 29	— 0 32		112 14 46 04	48 94	+ 2 90
	12	19 23 23 7		16 55 15 65	15 28	— 0 37		112 19 52 74	56 30	+ 3 56
	13	19 22 10 7		16 57 58 99	58 34	— 0 65		112 24 49 45	53 87	+ 4 42
	14	19 20 51 8		17 0 42 09	41 55	— 0 54		112 29 35 98	41 62	+ 64
	18	19 16 5 7		17 11 35 75	35 27	— 0 48		112 47 7 23	13 84	+ 6 61
	19	19 14 52 6		17 14 19 73	18 90	— 0 83		112 51 5 85	12 04	+ 6 19
	20	19 13 40 6		17 17 3 28	2 64	— 0 64		112 54 55 07	60 33	+ 5 26
	21	19 12 28 0		17 19 47 23	46 41	— 0 82		112 58 33 28	38 66	+ 5 38
	23	19 10 2 8		17 25 14 91	14 15	— 0 76		113 5 21 57	25 25	+ 3 68
	24	19 8 50 4		17 27 58 85	58 13	— 0 72		113 8 26 79	33 69	+ 6 90
	25	19 7 38 2		17 30 42 70	42 06	— 0 64		113 11 26 39	32 02	+ 5 63
	26	19 6 25 4		17 33 26 61	26 04	— 0 57		113 14 14 27	20 40	+ 6 13
Mar	2	19 1 35 7		17 44 22 43	21 94	— 0 49		113 23 49 01	54 10	+ 5 09
	3	19 0 23 7		17 47 6 51	5 82	— 0 69		113 25 45 40	52 72	+ 7 32
	5	18 57 58 6		17 52 34 18	33 47	— 0 71		113 29 14 77	20 23	+ 5 46
	6	18 56 45 9		17 55 17 84	17 17	— 0 67				
	7	18 55 33 0		17 58 1 41	0 77	— 0 64		113 31 59 81	68 32	+ 8 1
	9	18 53 7 0		18 3 28 30	27 63	— 0 67		113 34 10 47	17 23	+ 6 76
	10	18 51 54 1		18 6 11 49	10 91	— 0 58		113 35 0 05	7 10	+ 7 0
	11	18 50 40 6		18 8 54 72	54 02	— 0 70		113 35 41 85	47 31	+ 5 46
	12	18 49 26 9		18 11 37 79	36 98	— 0 81		113 36 9 18	17 89	+ 8 71
	18	18 42 3 3		18 27 51 93	51 19	— 0 74		113 35 53 56	61 52	+ 7 96
	20	18 39 34 1		18 33 15 16	14 40	— 0 76		113 34 34 84	41 21	+ 6 37
	23	18 35 58 0		18 41 18 14	17 54	— 0 60		113 31 24 20	32 22	+ 8 02
	24	18 34 31 9		18 43 58 76	58 12	— 0 64		113 30 2 52	11 21	+ 8 69
	26	18 31 59 8		18 49 19 16	18 48	— 0 68		113 26 54 83	62 83	+ 8 00
	31	18 25 33 5		19 2 34 75	34 17	— 0 58		113 16 34 42	41 62	+ 7 20
April	1	18 24 15 8		19 5 12 74	12 31	— 0 43		113 14 3 76	12 63	+ 8 87
July	22	14 16 59 6			50 33			106 59 39 39	52 71	+ 13 32
	25	14 4 43 3		22 18 21 78	21 80	+ 0 02		107 13 4 97	18 46	+ 13 49
	26	14 0 31 3		22 18 5 94	5 99	+ 0 05		107 18 0 13	10 27	+ 10 14
	27	13 56 16 6		22 17 47 00	47 09	+ 0 09		107 23 0 48	12 74	+ 12 26
	31	13 37 41 1		22 16 1 27	1 30	+ 0 03		107 44 42 97	55 32	+ 13 35

Right Ascensions and North Polar Distances of the Center of Mars (Continued)

Mean Sol Time of Obs		Pier in Obs'd	A R from Observation	A R from N A	Error of N A	Pier Observed	N P D from Observation	N P D from N A	Error of N A
1845								′	
Aug	1 13 34 18 6	C	2 15 27 77	27 56	— 0 21	C	107 50 27 64	39 92	+ 12 28
	7 13 6 26 9		22 11 10 52	10 63	+ 0 11		108 26 19 06	29 89	+ 10 83
	8 12 56 46 1		22 10 19 74	19 80	+ 0 06		108 32 21 33	31 81	+ 10 48
	12 12 42 16 4		22 6 38 84	38 69	— 0 15		108 55 59 45	56 8 70	+ 9 25
	16 12 22 31 9		22 2 36 42	36 57	+ 0 15		109 17 55 83	18 4 90	+ 9 07
	21 11 57 36 5		21 57 20 58	20 48	— 0 10		109 41 25 32	33 42	+ 8 10
	23 11 47 38 8		21 55 14 26	14 29	+ 0 03	N S	109 49 14 46	20 72	+ 6 26
	26 11 32 46 7		21 52 9 70	9 75	+ 0 05		109 58 54 10	59 68	+ 5 58
	27 11 27 51 4		21 51 10 21	10 23	+ 0 02		110 1 31 41	37 48	+ 6 07
	28 11 22 57 2		21 50 11 99	11 96	— 0 03		110 3 51 15	56 86	+ 5 71
	29 11 18 4 8		21 49 15 23	15 21	— 0 02		110 5 52 36	57 27	+ 4 91
	30 11 13 13 9		21 48 20 12	20 09	— 0 03		110 7 31 76	38 28	+ 6 51
	31 11 8 24 9		21 47 26 75	26 76	+ 0 01		110 8 54 22	59 39	+ 5 17
Sept	2 10 58 52 5		21 45 46 11	46 13	+ 0 02		110 10 36 73	41 47	+ 4 74
	10 10 22 22 8		21 40 43 42	43 01	— 0 41		110 3 53 09	55 14	+ 2 0
	11 10 18 1 8		21 40 17 90	17 85	— 0 05		110 1 34 19	34 52	+ 0 33
	12 10 13 43 8		21 39 55 90	55 74	— 0 16		109 58 54 69	54 94	+ 0 2
	13 10 9 28 9		21 39 36 83	36 73	— 0 10		109 55 56 05	56 59	+ 0 54
	14 10 5 17 4		21 39 20 92	20 80	— 0 12		109 52 40 12	39 77	— 0 35
	15 10 1 8 2		21 39 8 16	7 97	— 0 19		109 49 3 64	4 85	+ 1 21
	17 9 53 0 3		21 38 51 91	51 65	— 0 26		109 41 2 45	2 10	— 0 3
	19 9 45 4 5		21 38 47 62	47 77	+ 0 15		109 31 51 33	50 93	— 0 40
	20 9 41 11 4		21 38 50 71	50 49	— 0 22		109 26 51 82	50 62	— 1 20
	22 9 33 33 9		21 39 5 41	5 22	— 0 19		109 16 0 89	1 72	+ 0 83
	24 9 26 9 1		21 39 32 35	32 23	— 0 12		109 4 10 23	10 63	+ 0 40
	25 9 22 14 1		21 89 50 58	50 28	— 0 30		108 57 53 93	52 37	— 1 56
	27 9 15 24 7		21 40 35 62	35 40	— 0 22		108 44 34 58	31 81	— 2 77
	28 9 11 54 0		21 41 2 26	2 42	+ 0 16		108 37 33 44	30 15	— 3 29
	29 9 8 29 9		21 41 32 58	32 36	— 0 22		108 30 16 06	14 50	— 1 6
	30 9 5 8 3		21 42 5 15	5 16	+ 0 01		108 22 47 79	45 21	— 2 58
Oct	1 9 1 45 3	I L	21 42 41 26	40 85	— 0 41		108 15 6 15	2 46	— 3 69
	2 8 58 27 4		21 43 19 35	19 35	0 00		108 7 8 98	6 64	— 2 34
	3 8 55 12 8		21 44 0 70	0 61	— 0 09	C	107 59 1 29	58 57 93	— 3 36
	5 8 48 51 3		21 45 31 21	31 23	+ 0 02		107 42 6 35	3 06	— 3 29
	6 8 45 44 7		21 46 20 58	20 50	— 0 08		107 33 19 76	17 45	— 2 31
	7 8 42 40 6		21 47 12 51	12 33	— 0 18		107 24 21 56	20 18	— 1 38
	8 8 39 38 6		21 48 6 77	6 65	— 0 12		107 15 14 50	11 47	— 3 03
	9 8 36 39 3		21 49 3 56	3 41	— 0 15		107 5 54 31	51 60	— 2 71
	11 8 30 50 8		21 51 4 28	3 96	— 0 32		106 46 42 28	39 46	— 2 82
	15 8 19 31 8		21 55 31 85	31 63	— 0 22		106 6 15 38	11 96	— 3 42
	16 8 17 47 3		21 56 44 01	43 74	— 0 27		105 55 44 48	40 83	— 3 65
	17 8 14 4 9		21 57 58 05	57 77	— 0 28		105 45 5 26	0 40	— 4 86
	20 8 6 9 9		22 1 51 30	51 12	— 0 18		105 12 7 54	4 36	— 3 18
	22 8 1 2 1		22 4 35 86	35 56	— 0 30		104 49 28 33	22 99	— 5 34
	24 7 56 0 9		22 7 27 01	26 64	— 0 37		104 26 11 59	7 78	— 3 81
	25 7 53 32 4		22 8 54 88	54 58	— 0 30		104 14 25 60	17 78	— 7 82
	26 7 51 5 8		22 10 24 40	24 10	— 0 30		104 2 24 09	19 53	— 4 56
	27 7 48 40 7		22 11 55 39	55 11	— 0 28		103 50 18 30	13 32	— 4 98
	28 7 46 16 9		22 13 27 82	27 60	— 0 22		103 38 2 80	37 59 23	— 3 57
	30 7 41 34 1		22 16 36 82	36 87	+ 0 05		103 13 14 23	7 77	— 6 46
	31 7 40 13 2		22 18 13 84	13 58	— 0 26		103 0 37 83	30 68	— 7 15
Nov	1 7 37 57 0		22 19 51 90	51 61	— 0 29		102 47 50 51	46 25	— 4 26
	2 7 34 40 0		22 21 31 21	30 92	— 0 29		102 34 59 91	54 55	— 5 36
	3 7 32 24 3		22 23 11 62	11 50	— 0 12		102 21 59 12	55 84	— 3 28
	4 7 30 10 1		22 24 53 32	53 29	— 0 03		102 8 54 19	50 13	— 4 06
	5 7 27 56 9		22 26 36 55	36 26	— 0 29		101 55 42 22	37 64	— 4 58

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF MARS (C nt nue l)

M an S lar Tim f Ob i	P i Ob d.	A. R f m Ob ti	A R fr m N A	Err f N A	P int Ob d	N P D f m Ob ti	N P D f m N A	E f N A
1845								
N 6 7 25 44 8	I L	22 28 20 59	20 37	— 0 22	C	101 42 21 96	18 37	— 3 59
7 7 23 33 8		22 30 5 78	5 57	— 0 21		101 28 55 67	2 75	— 2 92
8 7 21 23 8		22 31 52 15	51 84	— 0 31		101 16 23 74	20 75	— 2 99
9 7 18 15 0		22 32 39 44	39 09	— 0 35		101 1 45 68	42 47	— 3 21
10 7 17 6 8		22 35 27 82	27 38	— 0 44		100 48 2 06	47 8 33	— 3 73
16 7 4 38 5		22 46 36 22	35 89	— 0 33		99 23 38 60	34 70	— 3 90
17 7 2 36 3		22 48 30 38	30 20	— 0 18		99 9 1 47	12 30	— 3 17
19 6 58 34 7		22 52 21 11	21 04	— 0 07		98 40 16 14	12 77	— 3 37
21 6 54 36 2		22 56 15 07	14 79	— 0 28		98 10 58 33	3 98	— 4 35
22 6 52 37 9		22 58 12 61	12 68	+ 0 07		97 56 12 07	7 82	— 4 25
24 6 48 43 2			10 51			97 26 26 73	21 90	— 4 83
26 6 44 51 2		23 6 11 24	10 92	— 0 32		96 56 23 93	18 93	— 5 00
27 6 42 56 1		23 8 12 61	12 08	— 0 53		96 41 14 92	11 31	— 3 61
29 6 39 7 6		23 12 16 62	16 23	— 0 39		96 10 48 4[illegible]	44 31	— 4 15
30 6 37 14 2		23 13 19 44	19 15	— 0 29		95 5 29 96	2 30	— 4 66
Dec 1 6 35 20 9		23 16 23 10	22 64	— 0 46		9 40 8 63	2 56	— 6 07
5 6 27 55 9		23 24 42 38	41 97	— 0 41		94 38 04	37 9 33	— 5 71
9 6 20 38 1		23 33 9 64	9 07	— 0 57		93 35 15 17	10 7	— 4 60
10 6 19 49 8		23 35 17 69	16 94	— 0 75		93 19 28 49	22 45	— 6 04
11 6 17 1 9		23 37 26 01	25 24	— 0 77		93 3 37 64	32 09	— 5 55
1847								
Mar 5 20 20 0 2	C	19 12 54 64	54 32	— 0 32		113 2 25 69	31 35	+ 5 66
7 20 18 17 3		19 19 4 54	4 12	— 0 42		112 53 13 36	20 20	+ 6 84
8 20 17 25 7		19 22 9 44	8 84	— 0 60		112 48 20 73	25 32	+ 4 59
9 20 16 33 7		19 25 14 06	13 48	— 0 58		112 43 9 64	17 63	+ 7 99
10 20 15 41 8		19 28 18 15	17 91	— 0 24		112 37 51 60	57 27	+ 5 67
11 20 14 50 2		19 31 22 60	22 19	— 0 41		112 32 16 28	24 29	+ 8 01
12 20 13 57 6		19 34 26 78	26 31	— 0 47		112 26 30 07	38 7[illegible]	+ 8 68
18 20 8 41 7		19 52 47 33	46 95	— 0 38		111 47 37 50	46 00	+ 8 50
19 20 7 45 9		19 55 49 73	49 51	— 0 22		111 40 28 10	34 77	+ 6 67
23 20 4 7 9		20 7 57 82	57 47	— 0 35		111 9 42 80	2 06	+ 9 26
26 20 1 21 9		20 17 0 95	0 59	— 0 36		110 44 39 44	48 93	+ 9 49
29 19 58 33 4		20 26 1 82	1 10	— 0 72		110 17 57 82	18 5 33	+ 7 51
Apr l 9 19 47 51 5		20 58 39 99	39 35	— 0 64		108 26 27 04	35 3	+ 8 49
11 19 45 50 5		21 4 31 73	31 05	— 0 68		108 4 2 43	12 02	+ 9 59
May 4 19 22 49 9		22 12 7 79	7 23	— 0 56		103 8 19 68	29 7	+ 9 89
12 18 51 22 7		22 32 10 02	9 90	— 0 12		101 12 36 16	46 15	+ 9 99
Jun 1 18 45 55 2		23 25 30 30	29 72	— 0 58		96 8 6 24	17 63	+ 11 39

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET VESTA

1833								
July 7 11 58	C	19 0 52 12	36 97					
8 11 53 42 3		18 59 34 28	36 39	+ 2 11				
1836								
Mar 11 12 52 13 5		12 10 9 52	11 72	+ 2 20	C	78 8 34 2	47 31	+ 12 79
12 12 47 25 4		12 9 17 54	20 00	+ 2 46		78 0 33 59	46 0[illegible]	+ 12 46
13 12 42 37 5		12 8 25 60	27 59	+ 1 99		77 52 36 99	50 22	+ 13 23
14 12 37 47 8		12 7 32 16	34 56	+ 2 40		77 44 47 91	0 47	+ 12 56
15 12 32 59 2		12 6 38 42	40 93	+ 2 51		77 37 4 10	17 45	+ 13 35
16 12 28 9 2		12 5 44 51	46 81	+ 2 30		77 29 27 80	41 7[illegible]	+ 13 99
17 12 23 19 1		12 4 49 77	52 31	+ 2 54		77 22 1 35	14 2[illegible]	+ 12 90

Right Ascensions and North Polar Distances of the Planet Vesta (Continued)

Date	M S lar Tim f Ob i	P int Ob d	A R f m Ob rv tl	A R fr m N A	E f N A	P l t Ob d	N l D f m Ob rv l	N P D f m N A	Err f N A
1836			m						
Mar 20	12 8 47 4	C	12 2 5 05	7 15	+ 2 10	C	77 0 33 13	46 10	+ 12 97
21	12 3 55 6		12 1 9 40	11 86	+ 2 46		76 53 42 96	56 88	+ 13 92
22	11 59 4 5		12 0 14 29	16 58	+ 2 29		76 47 6 74	18 58	+ 11 84
25	11 44 31 8		11 57 28 87	31 66	+ 2 79		76 28 23 81	34 82	+ 11 01
26	11 39 42 1		11 56 34 76	37 24	+ 2 48		76 22 34 25	45 35	+ 11 10
28	11 30 3 0		11 54 47 25	49 75	+ 2 50		76 11 35 95	46 67	+ 10 72
29	11 25 14 5		11 53 54 11	56 72	+ 2 61		76 6 27 36	38 46	+ 11 10
Ap l 1	11 10 52 0		11 51 19 30	21 91	+ 2 61		75 52 26 88	39 14	+ 12 26
2	11 6 6 5		11 50 29 37	31 86	+ 2 49		75 48 18 19	29 18	+ 10 99
5	10 51 55 1		11 49 5 02	7 52	+ 2 50		75 37 17 54	31 35	+ 13 81
6	10 47 13 1		11 47 19 16	21 47	+ 2 31		75 34 11 91	23 32	+ 11 41
7	10 42 32 3		11 46 34 11	36 60	+ 2 49		75 31 19 14	31 14	+ 12 00
8	10 37 52 7		11 45 50 56	52 90	+ 2 34		75 28 44 01	54 93	+ 10 92
9	10 33 14 5		11 45 8 05	10 46	+ 2 41		75 26 23 73	34 71	+ 10 98
10	10 28 37 5		11 44 26 92	29 33	+ 2 41		75 24 19 39	30 60	+ 11 21
11	10 24 1 7		11 43 47 05	49 55	+ 2 50		75 22 31 48	42 56	+ 11 08
12	10 19 27 9		11 43 8 74	11 18	+ 2 44		75 20 59 92	10 71	+ 10 79
13	10 14 55 0		11 42 31 72	34 24	+ 2 52		75 19 43 52	55 06	+ 11 54
14	10 10 23 8		11 41 56 42	58 81	+ 2 39		75 18 45 78	55 53	+ 9 75
15	10 5 53 9		11 41 22 37	24 89	+ 2 52		75 18 2 06	12 08	+ 10 02
16	10 1 26 4		11 40 50 35	52 54	+ 2 19		75 17 34 86	44 66	+ 9 80
17	9 56 59 6		11 40 19 39				75 17 22 50		
18	9 52 34 7		11 39 50 31				75 17 28 46		
19	9 48 11 4		11 39 22 77				75 17 47 67		
20	9 43 50 0		11 38 57 18				75 18 22 47		
22	9 35 15 2		11 38 10 77				75 20 20 49		
23	9 30 59·0		11 37 50 11				75 21 42 50		
26	9 18						75 27 16 51		
27	9 14 6 5		11 36 45 21				75 29 34 97		
28	9 9 59 1		11 36 33 34				75 32 8 00		
1837									
Aug 27	12 51 56 7		23 15 14 52	16 15	+ 1 63		106 3 37 20	20 31	— 16 89
28	12 47 9 6		23 14 22 13	24 39	+ 2 26		106 11 42 23	26 07	— 16 16
29	12 42 21 5		23 13 30 21	32 04	+ 1 83		106 19 43 53	26 88	— 16 65
Sept 13	11 29 41 5		22 59 56 73	58 61	+ 1 88		108 3 37 92	23 75	— 14 17
14	11 25 3 3		22 59 4 39	6 00	+ 1 61		108 9 8 16	53 01	— 15 15
21	10 51 45 4		22 53 16 73	18 74	+ 2 01		108 41 18 05	4 37	— 13 68
22	10 47 4 0		22 52 31 02	32 86	+ 1 84		108 44 57 82	44 55	— 13 27
23	10 42 23 6		22 51 46 33	48 09	+ 1 76		108 48 23 17	10 47	— 12 70
24	10 37 44 3		22 51 2 68	4 50	+ 1 82		108 51 34 51	21 97	— 12 54
27	10 24 12 6		22 48 59 38	0 98	+ 1 60		108 59 42 15	30 68	— 11 47
1838									
Dec 24			6 37 47 52						
29	12 0 57 6		6 32 2 70	2 69	— 0 01			56 12 00	
31	11 50 50 8		6 29 47 46	47 56	+ 0 10		67 48	52 33	
1839									
Jan 12	10 50 42 3		6 16 47 20	47 42	+ 0 22		67 6 46 87	7 6 94	+ 20 07
13	10 45 47 0		6 15 47 47	47 44	— 0 03		67 3 33 41	3 51 67	+ 18 26
17	10 26 15 0		6 11 59 27	59 47	+ 0 20		66 50 54 82	51 14 30	+ 19 48
18	10 21 25 6		6 11 5 62	5 78	+ 0 16		66 47 52 35	48 11 13	+ 18 78
19	10 16 38 6		6 10 13 53	13 59	+ 0 06		66 44 49 90	45 10 20	+ 20 30
1843									
Feb 8	12 31 49 3		9 44 46 42	47 90	+ 1 48		68 37 35 50	37 57 79	+ 22 29
9	12 25 54 2		9 42 47 04	48 36	+ 1 32		68 29 47 94	30 5 89	+ 17 95
10	12 20 58 8		9 41 47 31	48 51	+ 1 20		68 22 1 37	22 19 42	+ 18 05
11	12 16 2 6		9 40 46 77	48 40	+ 1 63		68 14 22 52	14 38 93	+ 16 41
13	12 6 10 6		9 38 46 11	47 73	+ 1 62		67 59 19 82	59 37 63	+ 17 81

Right Ascensions and North Polar Distances of the Planet Vesta (Continued)

Month	Day	Mean Solar Time of Observation	Point Observed	AR from Observation	AR from N A	Error of N A	Point Observed	NPD from Observation	NPD from N A	Error of N A
1843										
Feb	16	11 51 21 8	C	9 35 45 20	46 97	+ 1 77	C	67 37 4 94	38 2 26	+ 16 32
	17	11 46 26 2		9 34 45 38	47 10	+ 1 72		67 30 51 74	31 7 34	+ 15 60
	18	11 41 30 8		9 33 45 78	47 54	+ 1 76		67 24 6 43	24 21 6	+ 1 13
	20	11 31 41 6		9 31 48 21	49 73	+ 1 52		67 11 3 32	11 18 84	+ 15 52
	21	11 26 49 0						67 4 46 57	5 2 62	+ 16 05
	22	11 21 55 6		9 29 52 75	54 18	+ 1 43		66 58 44 28	8 56 91	+ 12 63
	23	11 17 2 7		9 28 56 12	57 55	+ 1 43		66 52 47 42	53 2 13	+ 14 71
	24	11 12 10 9		9 28 0 17	1 55	+ 1 38		66 47 4 67	47 18 51	+ 13 84
	25	11 7 20 0		9 27 5 12	6 54	+ 1 42		66 41 31 78	41 46 31	+ 14 53
	27	10 57 41 7		9 25 17 89	19 48	+ 1 59		66 31 4 83	31 17 26	+ 12 43
Mar	2	10 43 22 1		9 22 45 85	47 40	+ 1 55		66 16 50 36	17 4 77	+ 14 41
	3	10 38 37 8		9 21 57 64	59 26	+ 1 62		66 12 34 18	12 45 47	+ 11 29
	4	10 33 55 5		9 21 11 12	12 47	+ 1 35		66 8 25 20	8 38 82	+ 13 62
	5	10 29 14 5		9 20 25 59	27 10	+ 1 51		66 4 30 41	4 44 88	+ 14 47
	6	10 24 34 9		9 19 41 79	43 24	+ 1 45		66 0 49 66	1 3 63	+ 13 97
	7							6 57 21 19	57 35 19	+ 14 00
	8	10 16 20 3		9 19 18 99	20 18	+ 1 19		65 54 6 23	54 19 44	+ 13 21
	10							65 48 14 23	48 26 07	+ 11 84
1844										
July	23	12 18 3 0		20 24 28 62	32 14	+ 3 52		113 38 86	37 39 76	— 26 10
	27	11 58 26 0		20 20 35 30	38 90	+ 3 60		111 6 28 17	6 4 86	— 23 31
Aug	14	10 31 59 0		20 4 51 24	54 66	+ 3 42		115 49 6 58	48 49 01	— 17 57
	16	10 22 45 9		20 3 29 62	32 75	+ 3 13		115 57 23 74	57 4 66	— 19 08
	17	10 18 11 1		20 2 50 83	54 21	+ 3 38		116 1 16 54	0 57 13	— 19 41
	19	10 9 7 9		20 1 39 00	42 22	+ 3 22		116 8 25 05	8 11 41	— 13 64
	24	9 47 0 4		19 59 10 68				116 23 38 10		
	26	9 38 23 5		19 58 24 35				116 28 32 00		
1845										
Nov	27	12 14 5 3		4 40 17 96	18 49	+ 0 53		74 27	31 48	
	29	12 4 3 9		4 38 6 45	7 94	+ 1 49		4 27 26 25	43 41	+ 17 16
Dec	4	11 38 57 7		4 32 38 26	39 53	+ 1 27		74 27 8 70	2 ?0	+ 16 80
	17	10 34 27 6		4 19 12 30	13 31	+ 1 01		74 19 44 51	20 1 17	+ 16 66
	18	10 29 35 4		4 18 15 96	17 27	+ 1 31		74 18 43 91	59 71	+ 15 80
	19	10 24 44 7		4 17 21 14	22 38	+ 1 24		74 17 37 5	53 98	+ 16 43
	21	10 15 7 9		4 1 35 14	36 31	+ 1 17		74 15 13 97	9 60	+ 15 63
	29	9 37 33 1		4 9 27 45	28 83	+ 1 38		74 2 36 11	51 68	+ 15 57
	30	9 32 58 9		4 8 48 57	49 95	+ 1 38		74 0 41 79	56 12	+ 14 33
	31	9 28 26 2		4 8 11 40	12 78	+ 1 38		73 58 43 28	55 93	+ 12 6
1846										
Jan	2	9 19 24 6		4 7 2 27	3 58	+ 1 31		73 54 27 46	41 59	+ 14 13
	11	8 40		4 2				73 31 35 40	49 38	+ 13 98
	13	8 31 57 1		4 2 49-98	51 07	+ 1 09		73 25 39 74	55 69	+ 15 95
	14	8 27 50 3		4 2 37 93	39 02	+ 1 09		73 22 37 50	52 45	+ 14 95
	16	8 19 40 3		4 2 19 57	20 36	+ 0 79		73 16 19 63	33 66	- 14 03
	17	8 15 37 8		4 2 12 72	13 77	+ 1 05		73 13 2 55	18 13	+ 15 58
	18	8 11 37 5		4 2 8 17	8 96	+ 0 79		73 9 45 12	58 71	+ 13 59
	19	8 7 37 9		4 2 5 01	5 94	+ 0 93		73 6 18 68	35 38	+ 16 70
	23	7 52 0 5		4 2 10 80	11 77	+ 0 97		72 52 12 91	25 03	+ 12 12
	26	7 40 35 3		4 2 33 68	34 61	+ 0 93		72 40 56 07	70 36	+ 14 29
	27	7 36 50 9		4 2 44 79	45 67	+ 0 88		72 37 5 30	18 88	+ 13 58
	28	7 33 7 1		4 2 57 52	58 46	+ 0 94		72 33 8 67	24 36	+ 15 69
	29	7 29 26 0		4 3 12 31	12 93	+ 0 62		72 29 13 79	26 74	+ 12 95
Feb	1	7 18 30 2		4 4 5 36	6 36	+ 1 00		72 17 4 99	16 85	+ 11 86
	2	7 14 55 9		4 4 26 69	27 44	+ 0 75		72 12 54 60	68 24	+ 13 64

Right Ascensions and North Polar Distances of the Planet Vesta *(Continued)*

Mean Sidereal Time of Observation		Point Observed	A R from Observation	A R from N A	Error of N A	Point Observed	N P D from Observation	N P D from N A	Error of N A
1846							′	′	
Feb 3	7 11 22.6	C	4 4 49.11	50.11	+ 1.00	C	72 8 45.19	57.09	+ 11.90
4	7 8 51.1		4 5 13.45	14.40	+ 0.95		72 4 31.91	43.52	+ 11.61
5	7 4 20.5		4 5 39.06	40.23	+ 1.17		72 0 16.26	27.70	+ 11.44
6	7 0 42.0		4 6 6.58	7.60	+ 1.02		71 55 56.80	69.69	+ 12.89
9	6 50 35.3		4 7 37.82	38.73	+ 0.91		71 42 52.09	63.47	+ 11.38
10	6 47 12.5		4 8 11.04	12.06	+ 1.02		71 38 25.41	37.76	+ 12.35
11	6 43 51.2		4 8 45.88	46.83	+ 0.95		71 33 59.12	70.31	+ 11.19
12	6 40 31.4		4 9 22.04	23.04	+ 1.00		71 29 29.74	41.42	+ 11.68
13	6 37 12.9		4 9 59.63	60.62	+ 0.99		71 24 59.70	71.04	+ 11.34
1847									
M 31	12 37 19.0		13 11 27.42	31.40	+ 3.98		83 42 28.03	47.70	+ 19.67
April 2	12 27 40.2		13 9 40.33	44.46	+ 4.13		83 29 38.30	57.02	+ 18.72
3	12 22 0.0		13 8 46.22	50.29	+ 4.07		83 23 24.49	43.72	+ 19.23
6	12 8 18.5		13 6 1.79	5.78	+ 3.99		83 5 39.87	57.99	+ 18.12
7	12 3 37.0		13 5 6.34	10.53	+ 4.19		83 0 5.47	22.56	+ 17.09
9	11 53 45.1		13 3 15.77	19.95	+ 4.18		82 49 30.27	44.62	+ 14.35
10	11 48 53.9		13 2 20.55	24.77	+ 4.22		82 44 26.21	43.03	+ 16.82
13	11 34 22.9		12 59 36.48	40.62	+ 4.14		82 30 35.31	53.22	+ 17.91
14	11 29 33.5		12 58 42.42	46.67	+ 4.25		82 26 25.12	42.91	+ 17.79
21	10 56 4.0		12 52 43.41	47.44	+ 4.03		82 3 56.98	4 12.09	+ 15.11
22	10 51 20.2		12 51 55.56	59.66	+ 4.10		82 1 42.96	59.23	+ 16.27
29	10 18 48.7		12 46 54.27	58.09	+ 3.82		81 53 34.38	46.94	+ 12.56
May 3	10 0 42.5		12 44 31.89	35.77	+ 3.88		81 54 37.59	50.03	+ 12.44
4	9 56 15.3		12 44 0.15	3.96	+ 3.81		81 55 32.99	44.47	+ 11.48
11	9 25 4.1		12 41 3.05	6.84	+ 3.79		82 8 56.49	9 6.79	+ 10.30
20	8 48 41.3		12 39 20.00	23.35	+ 3.35		82 43 7.74	16.96	+ 9.22
21	8 44 42.9		12 39 17.24	20.67	+ 3.43		82 48 0.84	9.72	+ 8.88
22	8 40 45.8		12 39 16.49	19.78	+ 3.29		82 53 6.00	14.55	+ 8.55

Right Ascensions and North Polar Distances of the Planet Juno

1833									
April 27	12 57	C	15 20	19 59.74		C	92 48 21.24	17.40	− 3.84
28	12 53 10.5		15 19 16.68	13.73	− 2.95		92 42 28.67	26.70	− 1.97
29	12 48 28.1		15 18 29.99	27.29	− 2.70		92 36 41.96	40.40	− 1.56
May 2	12 34 18.7		15 16 8.84	6.17	− 2.67		92 19 53.28	49.30	− 3.98
8	12 5 56.4		15 11 20.33	17.24	− 3.09				
9	12 1 12.1		15 10 31.45	28.68	− 2.77				
10	11 56 27.0		15 9 43.39	40.14	− 3.25		92 39 6.49	57.80	− 8.69
11	11 51 42.9		15 8 54.28	51.65	− 2.63		92 34 29.99	20.60	− 9.39
12	11 46 59.8		15 8 6.82	3.26	− 3.56				
13	11 42 15.8		15 7 18.38	15.03	− 3.35				
1835									
Dec 21	12 48 40.6		6 47 15.92	12.53	− 3.39		90 5 0.96	5 20.58	+ 19.62
24	12 34 18.4		6 44 40.33	36.60	− 3.73		89 59 20.91	59 41.72	+ 20.81
25	12 29 29.6		6 43 47.34	43.82	− 3.52		89 56 50.32	57 10.04	+ 19.72
26	12 24 40.7		6 42 54.45	50.57	− 3.88		89 53 57.68	54 19.06	+ 21.38
27	12 19 51.2		6 42 0.41	57.08	− 3.33		89 50 50.03	51 9.48	+ 19.45
28	12 12 0.0		6 41 7.13	3.53	− 3.60		89 47 20.27	47 41.08	+ 20.81
30	12 5 22.9		6 39 19.45	15.99	− 3.46		89 39 27.64	39 47.91	+ 20.27
1836									
Jan 2	11 50 55.7		6 36 39.36	35.77	− 3.59		89 25 22.68	25 44.07	+ 21.39
3	11 46 6.8		6 35 46.55	42.98	− 3.57		89 20 4.60	20 28.12	+ 23.52

Right Ascensions and North Polar Distances of the Planet Juno (Cont i d)

Date	M an S lar Tim f Ob rv ti	I l t Ob rved	A R fr m Obs t	A R fr m N A	Erro f N A	P int Ob rv d	N P D f m Ob rv i	N P D from N A	E f N A
1836 Jan 6	11 31 44 1	C	6 33 11 25	7 62	— 3 63	O	89 2 41 14	3 1 0	+ 20 36
7	11 26 57 7		6 32 20 57	17 08	— 3 49		88 ₅6 17 9	56 40 92	+ 22 97
8	11 22 12 4		6 31 30 89	27 30	— 3 59		88 50	5 17	
11	11 8 0 7		6 29 6 84	3 30	— 3 54		88 28 29 33	28 1 63	+ 22 30
13	10 58 39 0		6 27 36 25	32 43	— 3 82		88 13 15 42	13 3 37	+ 19 95
14	10 53 58 6		6 26 52 38	48 77	— 3 61		88 5 19 39	5 38 47	+ 19 08
16	10 44 43 2		6 25 28 83	25 30	— 3 53		87 49	49 9 91	
24	10 8 43 4		6 20 54 73	51 11	— 3 62		86 36 32 12	36 3 41	+ 21 29
31	9 38 42 7		6 18 24 98	21 71	— 3 27		85 27 40 44	28 2 15	+ 22 01
Feb 1	9 34 30 0		6 18 10 90	7 77	— 3 13		8 17 38 01	17 8 36	+ 20 35
2	9 30 22 9		6 17 58 61	55 75	— 2 86		8 7 28 82	7 52 03	+ 23 21
1837 April 11	12 27 41 2		13 46 49 29	44 94	— 4 35		89 53 43 80	40 48	— 3 41
12	12 22 58 3		13 46 1 96	57 85	— 4 11		89 47 22 81	18 43	— 4 38
18	11 54 38 7		13 41 17 56	14 29	— 3 27		89 3 5 33	61 75	— 3 8
23	11 31 7 5		13 37 25 15	21 34	— 3 81		88 31 23 01	20 14	— 2 87
27			13 34	21 02			88 7 42 10	31 82	— 7 28
1839 Oct. 15	11 49		1 24 16 19	17 95	+ 1 76		94 22 1 30	21 47 19	— 14 11
16	11 45 17 0		1 23 37 51	39 14	+ 1 63		94 34 40 63	27 07	— 13 56
17	11 41 21 8		1 22 58 61	60 32	+ 1 71		94 47 10 1	46 54 97	— 15 54
1845 Feb 7	12 23 34 1		9 34 34 26	37 10	+ 2 84		86 34 24 15	34 7 08	+ 32 93
9	12 13 59 1		9 32 51 07	53 95	+ 2 88		86 1₅ 11 76	1₅ 41 87	+ 30 11
10	12 9 2 5		9 31 59 83	2 48	+ 2 65		86 5 24 30	3₅	+ 31 05
12	11 59 37 8		9 30 17 25	20 20	+ 2 95		85	46 7 34	
13	11 54 51 5		9 29 26 56	29 49	+ 2 93		85 35 36 93	36 7 07	+ 30 14
14	11 50 5 9		9 28 36 38	39 19	+ 2 81		85 2₅ 31 79	26 3 34	+ 31 5
15	11 45 20 0		9 27 46 38	49 34	+ 2 96		85 15 25 88	1₅ 6 77	+ 30 89
16	11 40 34 8		9 26 57 08	0 03	+ 2 95		85 5 17 65	5 48 08	+ 30 43
17	11 35 50 5		9 26 8 44	11 30	+ 2 86		84 55 6 4	37 63	+ 31 09
19	11 26 32 7		9 24 32 90	35 86	+ 2 96		84 34 42 41	35 11 07	+ 31 66
22	11 12 19 0		9 22 15 79	18 52	+ 2 73		84 4 9 29	4 3)	+ 30 26
24	11 2 59 9		9 20 48 65	51 50	+ 2 85		83 43 52 66	44 23 33	+ 30 67
26	10 53 45 6		9 19 25 86	28 59	+ 2 73		83 23 4 33	24 17 24	+ 31 31
27	10 49 10 1		9 18 46 10	48 80	+ 2 70		83 13 48 4	14 19 20	+ 30 7
28	10 44 35 3		9 18 7 42	10 16	+ 2 74		83 3 54 96	4 2 08	+ 30 12
Mar 3	10 30 58 9		9 16 18 59	21 65	+ 3 06		82 34 38 99	3₅ 10 51	+ 31 52
4	10 26 29 3		9 15 45 11	48 04	+ 2 93		82 25 10 48	25 36 42	+ 25 94
6	10 17 33 9		9 14 41 73	44 98	+ 3 25		82 6 20 00	6 46 4₅	+ 26 45
8	10 8 44 7		9 13 44 11	47 60	+ 3 49		81 47 50 44	48 23 42	+ 32 98
9	10 4 22 7		9 13 17 80	21 11	+ 3 31		81 38 2 64	39 22 80	+ 30 16
10	10 0 2 1		9 12 53 13	56 11	+ 2 98		81 30 0 09	30 29 95	+ 29 86
11	9 55 42 9		9 12 29 80	32 63	+ 2 83		81 21 18 30	21 45 04	+ 26 74
12	9 51 25 3		9 12 7 87	10 71	+ 2 84		81 12 36 40	13 8 42	+ 32 02
1846 April 29	12 25 46 2		14 55 11 04	10 88	— 0 16		91 39 36 55	42 90	+ 6 3
30	12 21 2 5		14 54 22 96	23 07	+ 0 11		91 33 53 30	56 78	+ 3 48
May 1	12 16 18 2		14 53 34 91	35 12	+ 0 21		91 28 14 83	16 22	+ 1 39
2	12 11 34 2		14 52 46 66	47 05	+ 0 39		91 22 42 21	41 66	— 0 5
3	12 6 50 3		14 51 58 56	58 92	+ 0 36		91 15		
4	12 2 6 2		14 51 10 38	10 77	+ 0 39		91 11		
5	11 57 22 4		14 50 22 08	22 64	+ 0 56		91 6 33 63	35 94	+ 2 31
7	11 47 54 7		14 48 46 12	46 63	+ 0 51		90 56 25 66	25 84	+ 0 18
8	11 43 11 0		14 47 58 45	58 81	+ 0 36		90 51 28 60	31 54	+ 2 94
9	11 38 27 6		14 47 10 49	11 20	+ 0 71		90 46 40 38	44 63	+ 4 25

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET JUNO (Continued)

	Mean Sid. Time of Obs.	Point Obs'd	A.R. from Observation	A.R. from N.A.	Error of N.A.	Point Observed	N.P.D. from Observation	N.P.D. from N.A.	Error of N.A.
1846									
May 11	11 29 1 5	C	14 45 36 07	36 67	+ 0 60	C	90 37 29 79	33 83	+ 4 04
14	11 14 54 7		14 43 16 75	17 32	+ 0 57		90 24 46 45	47 45	+ 1 00
15	11 10 13 4		14 42 30 96	31 67	+ 0 71		90 20 44 10	48 55	+ 4 45
1847									
July 13	11 38 34 9		19 2 35 86	38 96	+ 3 10		94 55 20 92	54 55 23	— 25 69
19	11 9 46 2		18 57 21 62	24 62	+ 3 00		95 17 41 63	17 13 99	— 27 64
20	11 4 59 3		18 56 30 57	33 49	+ 2 92		95 21 47 44	21 24 08	— 23 36

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET PALLAS

	Mean Sid. Time of Obs.	Point Obs'd	A.R. from Observation	A.R. from N.A.	Error of N.A.	Point Observed	N.P.D. from Observation	N.P.D. from N.A.	Error of N.A.
1832									
Sept 24	11 27 39 3	C	23 41 55 03	53 59	— 1 44	C	9[illegible] 59 12 29	58 30 90	— 41 39
25	11 22 58 5		23 41 10 03	8 34	— 1 69		96 13 23 40	12 46 40	— 37 00
Oct 1	10 54 58 7		23 36 44 78	43 60	— 1 18		97 37 3 21	36 24 90	— 38 31
1834									
Jan 25	12 32 31 6		8 50 57 33	16 74	+ 19 41		114 8 39 78	44 24	+ 4 46
26	12 27 51 4		8 50 12 76	31 98	+ 19 22		113 55 9 18	12 79	+ 3 61
27	12 23 10 6		8 49 27 67	46 86	+ 19 19		113 41 1 46	5 94	+ 4 48
28	12 18 29 0		8 48 42 67	1 47	+ 18 80		113 26 19 47	23 69	+ 4 22
29	12 13 48 7		8 47 56 54	15 90	+ 19 36		113 11 5 13	6 30	+ 1 17
30	12 9 6 1		8 47 10 82	30 26	+ 19 44		112 55 10 10	14 63	+ 4 53
31	12 4 23 4		8 46 25 24	44 61	+ 19 37		112 38 42 18	46 75	+ 4 7
Feb 1	11 59 43 6		8 45 40 10	59 00	+ 18 90		112 21 39 16	45 85	+ 6 69
2	11 55 2 5		8 44 54 25	13 5	+ 19 30		112 4 4 62	10 27	+ 5 65
3	11 50 21 6		8 44 8 90	28 33	+ 19 43		111 45 54 24	62 16	+ 7 [illegible]2
4	11 4[illegible] 40 7		8 43 24 05	43 44	+ 19 39		111 27 12 90	20 68	+ 7 78
6	11 36 20 2		8 41 55 77	14 90	+ 19 13		110 47		
8	11 27 2 7		8 40 29 32	48 65	+ 19 33		110 7 14 75	21 72	+ 6 97
10	11 17 47 2		8 39 [illegible]88	25 33	+ 19 45		109 24 16 89	2[illegible] 48	+ 8 [illegible]9
11	11 13 18 6		8 38 25 72	44 95	+ 19 23		109 2 8 37	16 15	+ 7 78
12	11 8 44 8		8 37 46 48	5 47	+ 18 99		108 39 32 58	41 40	+ 8 82
13	11 4 2 1		8 37 8 01	27 22	+ 19 21		108 17		
14	10 59 29 1		8 36 30 88	49 95	+ 19 07		107 53 11 19	17 90	+ 6 71
15	10 54 [illegible]7 9		8 35 54 85	13 90	+ 19 05		107 29 20 75	32 06	+ 11 31
18	10 41 39 9		8 34 14 36	33 25	+ 18 89		106 16 2 64	12 01	+ 9 37
19	10 37 13 4		8 33 43 83	2 41	+ 18 [illegible]8		105 51 1 98	8 83	+ 6 85
20	10 32 38 4		8 33 14 30	33 03	+ 18 73		105 25 43 39	49 51	+ 6 1[illegible]
21	10 28 14 8		8 32 46 37	5 15	+ 18 78			15 51	
22	10 23 50 4		8 32 20 14	38 80	+ 18 66		104 34 21 15	28 15	+ 7 00
23	10 19 31 4		8 31 54 89	13 99	+ 19 10		104 8 23 27	28 88	+ 5 61
24	10 15 12 7		8 31 32 22	0 79	+ 18 57		103 42 12 61	19 44	+ 6 83
25	10 10 56 0		8 31 10 95	29 26	+ 18 31		103 15 54 19	59 33	+ 5 14
26	10 6 40 0		8 30 51 05	9 37	+ 18 32		102 49 28 40	30 46	+ 2 06
27	10 2 25 8		8 30 32 90	51 23	+ 18 33		102 22 51 98	55 58	+ 3 60
28	9 58 13 7		8 30 16 53	35 18	+ 18 65		101 56 11 17	1[illegible] 11	+ 3 94
Mar 1	9 54 2 7		8 30 2 04	20 13	+ 18 09		101 29 29 70	30 43	+ 0 73
2	9 49 54 4		8 29 49 21	7 21	+ 18 00		101 2 41 35	42 68	+ 1 33
3	9 45 49 3		8 29 38 41	56 13	+ 17 72		100 35 53 19	53 12	— 0 07
4	9 41 41 8		8 29 29 23	46 86	+ 17 63		100 9 3 29	3 16	— 0 13
1835									
June 18	11 11 17 4		16 56 16 23	23 13	+ 6 90				
19	11 6 33 2		16 55 28 27	35 48	+ 7 21				
1836									
Aug 17	11 13 55 3		20 58 27 79	29 43	+ 1 64		78 46 28 90	3 13	— 25 77

Right Ascensions and North Polar Distances of the Planet Pallas (Contin d)

M an S lar Tim f Ob rv ti		P int Ob d	A R f m Ob rv ti	A R f m N A	Err f N A	P l t Ob d	N P D f m Ob rv ti	N l D f m N A	Err f N A
1836									
S pt 10	9 24 53 9	C	20 43 46 11	47 47	+ 1 36	C	83 23 1 03	22 30 89	— 30 14
1837									
Oct 13	12 48 29 5		2 18 4 00	7 74	+ 3 74		108 25 48 99	25 ?5 33	— 23 66
16	12 35 32 4		2 15 54 80	58 13	+ 3 33		109 14 57 86	42 69	— 15 17
23	12 2 36 2		2 10 29 23	32 95	+ 3 72		111 0 57 21	43 98	— 13 23
25	11 53 7 6		2 8 52 42	56 18	+ 3 76		111 28 33 03	18 94	— 14 09
1839									
M 25	13 6 23 0		13 16 43 01	5 77	+ 22 76		77 45 38 14	43 71	+ 5 57
27	12 57 9 2		13 15 20 64	43 28	+ 22 64		77 3 52 60	58 97	+ 6 37
28	12 52 31 5		13 14 38 47	1 11	+ 22 64		76 43 53 39	26 17	
30	12 43 13 6		13 13 12 33	35 19	+ 22 86		76 3 0 40	4 43	+ 4 03
31	12 38 34 0		13 12 28 70	51 57	+ 22 87		75 43 11 49	17 10	+ 5 61
Ap l 4	12 19 53 6		13 9 31 06	54 17	+ 23 11		74 27 1 44	5 66	+ 4 22
5	12 15 12 7		13 8 46 53	9 39	+ 22 86		74 8 47 22	50 99	+ 3 77
6	12 10 32 6		13 8 1 98	24 59	+ 22 61		73 50 54 43	7 08	+ 2 6
7	12 5 52 2		13 7 17 15	39 80	+ 22 65		73 33 21 78	24 42	+ 2 64
8	12 1 11 6		13 6 32 45	55 14	+ 22 69		73 16 12 70	13 78	+ 1 08
13	11 37 52 7		13 2 53 05	15 48	+ 22 43		71 56 10 18	9 93	— 0 25
14	11 33 14 5		13 2 10 27	32 74	+ 22 47		71 41 21 51	21 88	+ 0 37
15	11 28 36 9		13 1 28 22	50 52	+ 22 30		71 26 59 36	58 92	— 0 44
16	11 23 59 5		13 0 46 61	8 94	+ 22 33		71 13 2 29	1 40	— 0 89
17	11 19 22 8		13 0 5 84	28 21	+ 22 37		70 59 32 21	32 01	— 0 20
18	11 14 46 8		12 59 25 60	47 77	+ 22 17		70 46 2 43	22 85	— 2 8
19	11 10 11 6		12 58 46 23	8 30	+ 22 07		70 33 43 57	42 17	— 1 40
20	11 5 37 5		12 58 7 75	29 69	+ 21 94		70 21 29 34	27 36	— 1 98
27	10 34 3 0		12 54 4 52	25 96	+ 21 44		69 7 53 63	43 89	— 9 74
28	10 29 39 9		12 53 33 90	55 37	+ 21 47		68 59 4 24	8 53 43	— 10 81
29	10 25 12 0		12 53 4 81	25 94	+ 21 13		68 50 39 29	27 74	— 11 55
1844									
May 10	12 46						64 59 41 88		
12	12 36						64 44 59 37		
13	12 31 21 9		15 57 54 13				64 38 34 36		
14	12 26 24 9		15 57 3 37				64 32 8 39		
18	12 6						64 10 28 86		
1845									
A g 27	9 27 27 0		19 50 26 10	24 93	— 1 17		78 10 3 04	9 48 10	— 14 94
29	9 18 42 7		19 49 33 52	32·56	— 0 96		78 33 35 86	33 18 54	— 17 32
1846									
Sept 24	12 28 52 7		0 41 48 69	45 90	— 2 79		98 44 10 04	43 36 73	— 33 31
25	12 24 13 1		0 41 4 66	1 84	— 2 82		99 0 6 18	59 24 60	— 41 58
26	12 19 32 6		0 40 20 13	17 40	— 2 73		99 15 49 49	15 9 41	— 40 08
28	12 10 11 0		0 38 49 98	47 25	— 2 73		99 47 8 87	46 26 87	— 42 00
29	12 5 29 8		0 38 4 29	1 66	— 2 63		100 2 39 38	1 58 29	— 41 09
Oct 2	11 51 24 9		0 35 46 60	43 63	— 2 97		100 48 34 98	47 55 18	— 39 80
8	11 23 12 6		0 31 8 82	6 09	— 2 73				
13	10 59 47 6		0 27 22 51	19·83	— 2 68		103 25 11 63	24 30 52	— 41 11
24	10 9 5 3		0 19 54 16	51 41	— 2 75		105 34 29 98	33 47 67	— 42 31
26	10 0 3 0		0 18 43 50	40 94	— 2 56		105 54 26 15	53 44 99	— 41 16

Right Ascensions and North Polar Distances of the Planet Ceres

1832									
Oct 23	12 38 8 6	C	2 46 56 33	56 75	+ 0 42	C	85 40 55 17	59 10	+ 3 93
24	12 33 20 5		2 46 4 14	4 63	+ 0 49		85 43 20 57	24 20	+ 3 63

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE PLANET CERES (C nt n ed)

M an S l T m f Ob rv n.		P intOb rv d.	A R fr m Ob t	A R f m N A	Err f N A	P in Ob- d	N P D f m Ob ti	N P D f m N A	Err f N A
1832	m								
O t 2ǝ	12 26 32 8	C	2 45 11 56	11 93	+ 0 37	C	85 45 40 31	46 50	+ 6 19
26	12 23 43 2		2 44 18 26	18 77	+ 0 51		85 47 57 81	2 90	+ 5 09
27	12 19 33 8		2 43 24 68	25 09	+ 0 41		85 50 11 89	15 90	+ 4 01
29	12 13 13 1		2 41 36 06	36 57	+ 0 51		85 4 23 05	28 20	+ 5 15
30	12 4 23 1		2 40 41 24	41 86	+ 0 62		85 56 20 00	27 00	+ 7 00
31	11 59 32 6		2 39 46 26	46 93	+ 0 67		85 58 14 61	20 50	+ 5 89
N v 1	11 54 42 9		2 38 51 43	51 78	+ 0 35		86 0 2 85	8 80	+ 5 95
2	11 49 50 4		2 37 56 16	56 54	+ 0 38		86 1 44 79	51 50	+ 6 71
3	11 44 59 9		2 37 0 78	1 26	+ 0 48		86 3 24 31	28 10	+ 3 79
4	11 40 8 8		2 36 5 51	5 99	+ 0 48		86 4 55 59	58 70	+ 3 11
5	11 35 17 5		2 35 10 31	10 82	+ 0 51		86 6 18 88	22 90	+ 4 02
12	11 0 28 9		2 28 50 76	51 26	+ 0 50		86 12 55 02	1 30	+ 6 ⁹8
1834									
Feb 10	13 5 42 1		10 27 18 61	19 11	+ 0 50		63 30 31 04	39 36	+ 8 32
11	13 1 4 8		10 26 28 64	29 06	+ 0 42		63 22 53 83	61 72	+ 7 89
12	12 56 19 8		10 25 37 78	38 32	+ 0 54		63 15 23 88	32 23	+ 8 35
14	12 46 34 9		10 23 54 58	54 88	+ 0 30		63 0 50 86	59 83	+ 8 97
15	12 41 47 6		10 23 1 98	2 38	+ 0 40		62 53 49 37	58 00	+ 8 63
17	12 32 8 1		10 21 15 5ǝ	16 07	+ 0 52		62 40 16 60	2ǝ 17	+ 8 7
18	12 27 20 5		10 20 21 82	22 49	+ 0 67		62 33 45 52	55 44	+ 9 92
19	12 22 30 0		10 19 27 89	28 66	+ 0 77		62 30		
20	12 17 40 8		10 18 33 99	34 72	+ 0 73		62 21 21 99	31 26	+ ⁹ 2ɩ
21	12 12 51 5		10 17 40 28	40 67	+ 0 39		62 15 ⁹9 86	37 37	+ 7 1
22	12 7 59 3		10 16 46 14	46 66	+ 0 52		62 9 48 23	56 45	+ 8 22
23	12 3 11 5		10 15 52 07	52 76	+ 0 69		62 4 19 80	28 48	⊦ 8 68
26	11 48 44 0		10 13 11 79	12 18	+ 0 39		61 49 19 50	25 63	+ 6 13
27	11 43 55 1		10 12 18 91	19 32	ǀ 0 41		61 44 44 55	52 60	⊣ 8 05
Mar 1	11 34 18 3		10 10 34 30	35 00	+ 0 70		61 36 24 10	29 93	+ 83
2	11 29 31 9		10 9 43 14	43 67	+ 0 53		61 32 34 17	40 74	+ 6 57
3	11 24 47 7		10 8 52 59	53 02	+ 0 43		61 28 57 80	66 46	⊦ 8 66
183ǝ									
M y 24	13 22 48 5		17 29 33 44	34 41	+ 0 97		111 52 17 78	3 31	— 14 47
26	13 13 13 3		17 27 51 66	53 28	+ 1 62		111 57 35 41	22 20	— 13 21
27	13 8 25 6		17 27 0 39	1 36	+ 0 97		112 0 15 23	0·34	— 14 89
28	13 3 38 1		17 26 7 87	8 55	+ 0 68		112 2 55 18	40 09	— 15 09
June 1	12 45 16 5		17 2 28 65	29 88	+ 1 23		112 13 24 22	9 92	— 14 30
18	11 21 7		17 8	3 01			112 55 12 79	54 57 80	— 14 99
19	11 16 15		17 7	5 76			112 57 28 86	14 46	— 14 40
1836									
Sept 12	12 1 0 3		23 28 10 79	10 76	— 0 04		110 44 55 15	48 50	— 6 6ǝ
Oct 1	10 31 16 5		23 13 7 18	7 00	— 0 18		111 42 18 31	10 25	— 8 06
3	10 22 3 4		23 11 45 90	45 63	— 0 27		111 44 6 49	1 31	— 5 18
6	10 8 21 6		23 9 50 94	50 99	+ 0 05		111 45 22 54	15 72	— 6 82
7	10 3 49 8		23 9 14 92	14 90	— 0 02		111 45 26 13	20 70	— 5 43
8	9 59 19 8		23 8 40 05				111 45 12 57		
1837									
Dec 17	11 13 40 6		4 59 17 27	18 39	+ 1 12		67 37		
18	11 8 45 8		4 57 17 05	17 88	+ 0 83		67 35 39 52	58 36	+ 18 84
1839									
Mar 30	12 59 44 9		13 29 46 40	44 80	— 1 60		82 34 30 42	10 67	— 19 75
31	12 55 0 0		13 28 57 44	55 85	— 1 59		82 30 12 75	29 53 24	— 19 51
Ap l 2	12 45 28 9		13 27 17 45	16 21	— 1 24		82 21 58 80	39 31	— 19 49
4	12 35 55 7		13 25 35 76	34 54	— 1 22		82 14 14 77	13 55 49	— 19 28
5	12 31 8 3		13 24 44 69	43 12	— 1 57		82 10 35 95	15 82	— 20 13

Ri h Ascensi s and Nor h Polar Distances of the Planet Ceri s (C nt d)

M an S l Tim f Ob l		P l tOb d	A R f m Ob l	A R f m N A	E f N A	P l Ob rv d	N P D f m Obs' rv l	N P D from N A	E ro f N A
1839							′		
Ap l	6 12 26 21 0	C	13 23 3 00	51 34	— 1 66	C	82 7 5ɹ	6 44 89	— 20 66
	7 12 21 33 4		13 23 0 94	59 32	— 1 62		82 3 42 80	23 12	— 19 68
	8 12 16 45 3		13 2 8 0	7 13	— 1 7		82 0 33 68	10 24	— 23 44
	13 11 52 44 8		13 17 47 01	45 51	— 1 50		81 46 58 68	38 38	— 20 20
	14 11 47 56 8		13 16 55 03	3 52	— 1 51		81 44 48 26	28 26	— 20 00
	15 11 43 9 7		13 16 3 44	1 81	— 1 63		81 42 48 6ɹ	29 0	— 19 15
	16 11 38 22 3		13 15 11 76	10 40	— 1 36		81 41 0 39	40 42 21	— 18 18
	17 11 33 35 7		13 14 21 10	19 39	— 1 71		81 39 27 06	6 6	— 20 41
	18 11 28 49 4		13 13 30 46	28 71	— 1 71				
	19 11 24 3 5		13 12 40 37	38 79	— 1 58		81 36 49 66	31 10	— 18 47
	20 11 19 18 5		13 11 50 93	49 34	— 1 59		81 35 50 51	31 6	— 18 98
	27 10 46 21 6		13 6 24 78	23 35	— 1 43		81 34 41 13	20 38	— 20 75
	29 10 37 4 8		13 4 59 54	58 11	— 1 43		81 36 11 74	3 1 63	— 20 11
M y	1 10 27 52 3		13 3 38 36	36 99	— 1 37		81 38 33 38	12 11	— 21 24
1813									
J	27 12 1 30 6		8 27 4 39	8 71	+ 4 3		58 43 11 02	36 73	+ 2 71
	29 11 51 41 7		8 25 6 49	10 49	+ 4 00		58 31 28 6	5ɹ 1	+ 26 80
	31 11 41 52 1		8 23 9 50	13 21	+ 3 71		8 20 32 77	ɹ7 67	+ 21 90
Feb	3 11 27 13 3		8 20 17 23	20 75	+ 3 52		58 5 3 18	ɹ(97	+ 21 49
	8 11 3 1 8		8 15 44 28	47 75	+ 3 47		57 44 35 72	ɹ5 ɹ7	+ 19 8
	13 10 39 16 1		8 11 37 37	40 85	+ 3 48		57 28 40 10	29 0 31	+ 20 21
	14 10 34 33 6		8 10 51 78	55 30	+ 3 2		57 26 6 94	2 73	+ 18 79
	15 10 29 53 6		8 10 7 26	11 16	+ 3 90		57 23 43 43	21 3 11	+ 19 71
	16 10 25 15 1		8 9 24 40	28 46	+ 4 06		7 21 32 46	52 0	+ 20 04
	17 10 20 38 3		8 8 43 61	47 30	+ 3 69		57 19 32 78	53 75	+ 20 97
	18 10 16 2 3		8 8 3 45	7 64	+ 4 19		57 17 47 76	18 6 49	+ 18 73
	19 10 11 29 8		8 7 26 14	29 55	+ 3 41		57 16 11 56	30 82	+ 19 26
	20 10 6 56 7		8 6 49 31	53 14	+ 3 83		57 14 48 08	15 6 6	+ 18 57
	21 10 2 27 0		8 6 15 12	18·39	+ 3 27		7 13 35 ɹ3	53 75	+ 18 22
184									
A g	21 12 23 27 2		22 23 15 56	21 06	+ 8 50		11 57 57 13	11 28	— 45 8
	23 12 13 52 7		22 21 32 51	41 23	+ 8 72		116 9 1ɹ 58	8 26 0	— 48 99
	26 11 59 30 1		22 18 57 38	98	+ 8 60		116 2 2 32	24 13 79	— 48 53
	27 11 54 42 3		22 18 5 52	14 20	+ 8 68		116 29 57 24	10 75	— 46 49
	28 11 49 54 6		22 17 13 84	22 49	+ 8 6		116 34 44 07	33 7 88	— 46 19
	29 11 45 7 4		22 16 22 31	30 03	+ 8 62		116 39 21 64	38 34 87	— 46 77
	31 11 35 38 6		22 14 39 89	48 45	+ 8 56		116 48 2 72	47 17 1	— 45 18
Sept	2 11 26 0 3		22 12 58 35	7 22	+ 8 87		116 56 1 87	55 17 12	— 44 75
	10 10 48 10 2		22 6 35 15	43 88	+ 8 73		117 20 20 38	19 39 50	— 40 88
	11 10 43 30 6		22 5 50 ɹ1	59 25	+ 8 74		117 22 31 76	21 49·61	42 15
	12 10 38 50 5		22 5 6 73	15 50	+ 8 77		117 24 31 43	23 47 85	— 43 58
	17 10 15 47 4		22 1 42 80	51 36	+ 8 56		117 31 22 06	30 42 97	— 39 09
	19 10 6 41 7		22 0 28 33	37 20	+ 8 87		117 32 42 87	7 ɹ9	— 35 8
1846									
Nov	18 11 58 37 9		3 48 19 23	29 63	+ 10 40		76 49 58 18	18 81	— 30 37
	19 11 53 43 2		3 47 20 39	30 86	+ 10 47				
	30 10 59 50 1		3 36 40 15	50 35	+ 10 20		76 44 8 66	43 27 49	— 41 17
Dec	9 10 16 34 2		3 28 45 76	55 54	+ 9 78		76 33 24 20	32 43 92	— 40 28
	11 10 7 7 2		3 27 10 60	20 8	+ 9 98		76 30 11 45	29 29 21	— 42 24
	12 10 2 56 1		3 26 25 43	34 8	+ 9 42		6 28 24 77	27 44 36	— 40 41
	18 9 34 43 5		3 22 17 25	27 40	+ 10 15		76 16 5 49	15 26 76	— 38 73
	19 9 30 12 4		3 21 41 68	51 03	+ 9 35		76 13 46 28	13 5 35	— 40 93

Right Ascensions and North Polar Distances of the Center of Jupiter

Mean Solar Time of Observation		Part of Limb Observed	AR from Observation	AR from N A	Error of N A	Point Observed	N P D from Observation	N P D from N A	Error of N A
1831			m						″
M	1 22 9 23 4	C	20 46 19 34			C	108 26 25 01		
	3 2 3 31 1		20 48 19 32				108 19 41 69		
	5 21 57 38 7		20 50 18 98				108 11 4 48		
Aug	23 11 9 2 2		21 14 6 83				107 7 48 33		
	26 10 55 47 8		21 12 39 90				107 14 26 50		
	28 10 47 0 6		21 11 44 25				107 18 37 50		
	29 10 42 36 9		21 11 16 51						
	30 10 38 13 9		21 10 49 25				107 22 44 86		
Sept	1 10 29 30 2		21 9 56·21				107 26 36 15		
	2 10 25 7 8		21 9 30 78				107 28 31 30		
	4 10 16 25 8		21 8 40 28				107 31 12 72		
	9 9 54 49 9		21 6 43 85				107 40 36 25		
	11 9 46 15 8		21 6 1 13				107 43 32 63		
	13 9 37 43 8		21 5 21 22				107 46 23 48		
	15 9 29 14 5		21 4 43 49				107 49 5 67		
	17 9 20 48 2		21 4 8 93				107 51 30 84		
	20 9 8 13 6		21 3 21 89				107 54 36 42		
	22 8 59 55 0		21 2 54 06				107 56 31 82		
	24 8 51 37 3		21 2 29 12				107 58 6 38		
	29 8 31 9 6		21 1 40 79						
	30 8 27 4 0		21 1 31 12				108 1 35 71		
Oct	2 8 19 1 3		21 1 20 26				108 2 16 41		
	3 8 1[illegible] 0 5		21 1 15 29				108 2 33 29		
	6						108 3 13 48		
	8 7 55 7 6		21 1 1 98						
	14 7 31 43 0		21 1 12·75						
	16 7 24 2 8		21 1 24 52				108 0 51 11		
	20 7 8 44 5		21 1 49 6[illegible]						
	21 7 4 59 6		21 2 0 79				107 57 39 82		
	22 7 1 13 8		21 2 10·87				107 56 46 89		
	23 6 57 29 4		21 2 22 43				107 55 54 92		
	25 6 50 0 7		21 2 45 63				107 54 1 10		
	30 6 31 33 1		21 3 57 91				107 48 16 96		
	31 6 27 55 2		21 4 15 95				107 46 59 28		
Nov	1 6 24 16 3		21 4 33 13				107 45 38 73		
	3 6 17 1 7		21 5 10 14				107 42 45 97		
	6 6 6 15 7		21 6 12 06				107 38 11 67		
	9 5 55 34 8		21 7 19 14				107 32 50 88		
Dec	11 4 7 21 4		21 24 57 55				106 10 12 36		
1832									
May	12 20 9 52 0		23 33 18 31				94 3 55 89		
	14 20 3 16 6		23 34 35 11				93 56 6 43		
	15 19 59 59 2		23 35 13 84				93 52 13 55		
	16 19 56 41 8		23 35 52 63				93 48 26 82		
	17 19 53 22 4		23 36 29 50				93 44 42 60		
	26 19 23 10 0		23 41 40 99				93 13 8 32		
	31 19 6 9 1		23 44 17 82				92 57 23 70		
June	9 18 34 57 0		23 48 31 73				92 32 39 88		
	10 18 31 26 1		23 48 57 16				92 30 12 30		
	11 18 27 54 9		23 49 21 92				92 27 46 18		
	12 18 24 23 2		23 49 46 29				92 25 27 53		
	13 18 20 51 0	1 & 2	23 50 9 73				92 23 7 96		
	14 18 17 18 1		23 50 32 93				92 20 57 89		

Right Ascensions and North Polar Distances of the Center of Jupiter (C nt nu d)

M an Solar Tim f Ob rv ti		P int Observed	A. R from Obs rv ti	A R from N A	Erro f N A	P in Ob ed	N P D fr m Ob l	N P D f m N A	E f N A
1832									
J e 15	18 13 44 5	1 & 2	23 50 55 44			C	92 18 48 01		
17	18 6 35 3		23 51 37 89				92 14 43 78		
Sept 22	11 29 38 6		23 36 11 54				94 18 33 99		
24	11 21 0 1		23 35 14 73				94 24 43 67		
25	11 16 34 2		23 34 45 20				94 27 48 33		
26	11 12 10 1		23 34 16 79				94 30 48 99		
27	11 7 46 2		23 33 48 74				94 33 48 02		
Oct 1	10 50 12 5		23 31 57 81				94 45 21 70		
8	10 19 41 0		23 28 58 51				95 3 52 36		
11	10 6 43 4		23 27 47 88				95 10 58 93		
12	10 2 24 6		23 27 25 02				95 13 15 48		
13	9 58 6 6		23 27 3 71				95 15 27 30		
14	9 53 50 5		23 26 42 55				95 17 32 ɔl		
19	9 32 29 6		23 25 1 70				95 27 14 52		
20	9 24 3 5		23 24 26 26				95 30 36 04		
22	9 19 51 2		23 24 9 64				95 32 12 44		
23	9 15 38 9		23 23 53 42				95 33 42 61		
24	9 11 27 2		23 23 37 76				95 35 8 88		
25	9 7 17 1		23 23 22 88				95 36 29 53		
26	9 3 6 6		23 23 8 67				95 37 45 67		
27	8 58 57 2		23 22 55 21				95 38 59 91		
28	8 54 48 8		23 22 42 98				95 40 4 40		
29	8 50 40 1		23 22 30 25				95 41 7 77		
30	8 46 33 1		23 22 18 93				95 42 6 36		
31	8 42 27 0		23 22 8 66				95 42 5ɔ 15		
Nov 2	8 34 15 6		3 21 49 18				95 44 29 07		
4	8 26 8 2		23 21 33 43				95 45 42 98		
5	8 22 4 7		23 21 26 00				95 46 10 30		
9	8 6 1 0		23 21 5 95				95 47 19 81		
10	8 2 1 9		23 21 2 57				95 47 24 90		
11	7 58 2 8		23 20 59 05				95 47 20 96		
12	7 54 5 5		23 20 58 18				95 47 15 93		
15	7 42 17 3		23 20 57 57				95 46 33 75		
16	7 38 22 8		23 20 58 76				95 46 9 46		
17	7 34 28 8		23 21 1 00				95 45 38 37		
18	7 30 35 7		23 21 3 76				95 45 4 43		
19	7 26 43 4		23 21 7 36				95 44 24 71		
21	7 19 1 9		23 21 17 04				95 42 50 97		
22	7 15 10 7		23 21 22 59				95 41 55 47		
23	7 11 21 7		23 21 29 41				95 40 57 42		
26	7 3 45 2		23 21 44 63				95 38 45 33		
29	6 48 43 6		23 22 24 56				95 33 25 20		
30	6 44 57 4		23 22 36 47				95 31 55 05		
Dec 4	6 30 7 9		23 23 30 81				95 25 0 06		
6	6 22 49 2		23 24 1 80				95 21 8 46		
7	6 19 7 6		23 24 18 46				95 17 3 32		
9	6 11 51 2		23 24 53 83						
10	6 8 14 3		23 25 12 69						
11	6 4 37 6		23 25 31 72						
12	6 1 1 5		23 25 52 05				95 7 43 13		
13	5 57 26 5		23 26 12 62				95 5 17 64		
15	5 50 17 6		23 26 56 23						
16	5 46 44 0		23 27 18 51				94 57 25 89		
17	5 43 10 9		23 27 41 17				94 54 44 02		
19	5 36 6 7		23 28 30 21				94 49 1 96		

Right Ascensions and North Polar Distances of the Center of Jupiter (Cont nu d)

M an S lar Tim f Obs tl		P i tOb- d	A R from Ob rv tl	A R f m N A	E f N A	P i t Ol d	N P D fr m Obs l	N P D fr m N A.	E f N A
1832									
D c 20	5 32 37 1	1 & 2	23 28 55 47			C	94 46 5 91		
24	5 18 39 2		23 30 41 45				94 33 43 14		
1833									
J e 29	19 24 53 9		1 56 31 07				79 21 57 72		
July 8	18 54 35 3		2 1 36 25				78 56 3 88		
12	18 40 54 1		2 3 39 19				78 45 52 83		
13	18 37 27 9		2 4 8 39				78 43 48 11		
Oct 13	12 32 49 5		2 1 13 44				79 16 34 76		
14	12 28 23 3		2 0 43 38				79 18 14 30		
15	12 23 57 1		2 0 13 11				79 21 57 63		
20	12 1 44 4		1 57 39 19				79 35 43 14		
22	11 52 51 6		1 56 38 07				79 41 15 50		
23	11 48 2 0		1 56 7 13				79 44 1 87		
Nov 9	10 33 7 1		1 47 38 66				80 28 54 09		
17	9 58 12 3		1 44 9 94				80 46 45 43		
19	9 49 33 5		1 43 23 55				80 50 44 13		
20	9 45 14 7		1 42 59 88				80 52 37 89		
21	9 40 57 1		1 42 37 39				80 54 28 63		
22	8 36 38 9		1 42 16 28				80 56 15 05		
23	9 32 22 8		1 41 55 81				80 57 59 96		
Dec 2	8 54 21 0		1 39 17 11				81 10 32 87		
4	8 46 2 0		1 38 49 37				81 12 32 82		
5	8 41 53 0		1 38 36 73				81 13 27 41		
6	8 37 45 0		1 38 25 00				81 14 17 05		
7	8 33 37 9		1 38 13 63				81 14 58 95		
8	8 29 31 3		1 38 2 92				81 15 45 43		
10	8 21 20 3		1 37 43 55				81 16 54 49		
11	8 17 17 2		1 37 36 20				81 17 19 95		
14	8 5 9 5		1 37 16 15				81 18 17 77		
18	7 48 59 8		1 37 0 14				81 18 29 70		
19	7 45 0 0		1 36 58 43				81 18 20 09		
20	7 41 8 2		1 36 57 17				81 18 8 37		
22	7 33 23 0		1 36 56 91				81 17 28 27		
24	7 25 34 3		1 37 0 17				81 16 25 76		
25	7 1 42 6		1 37 2 79				81 15 55 24		
26	7 17 48 7		1 37 6 33				81 15 11 74		
27	7 13 57 2		1 37 10 68				81 14 28 62		
29	7 6 16 8		1 37 22 24				81 12 44 56		
30	7 2 27 4		1 37 28 69				81 11 46 50		
31	6 58 38 2		1 37 35 57				81 10 44 20		
1834									
Jan 10	6 21 13 9	C	1 39 30 44	30 59	+ 0 15				
14	6 6 36 9	1 & 2	2 40 36 93	36 98	+ 0 05		80 48 45 64	42 65	— 2 99
19	5 48 35 9	C	2 42 15 55	15 63	+ 0 08		80 37 51 32	46 10	— 5 22
1835									
Γeb 2	7 10 54 6	1 & 2	3 59 2 78	3 14	+ 0 36		70 5 36 82	33 42	— 3 40
4	7 3 14 8		3 59 15 50	16 21	+ 0 71		70 4 30 31	26 60	— 3 71
6	6 55 39 4		3 59 32 22	32 60	+ 0 38		70 3 15 11	10 43	— 4 68
7	6 51 53 7		3 59 41 59	42 04	+ 0 45		70 2 32 70	28 91	— 3 71
8	6 48 7 8		3 59 51 85	52 28	+ 0 43		70 1 48 85	45 16	— 3 69
9	6 44 23 4		4 0 2 94	3 31	+ 0 37		70 1 4 55	59 09	— 5 46
10	6 40 38 8		4 0 14 99	15 19	+ 0 20		70 0 16 36	10 86	— 5 50
11	6 36 53 9		4 0 27 69	27 94	+ 0 25		69 59 24 46	20 23	— 4 23
Sept 26	18 39 3 0		6 59 33 67	33 71	+ 0 04		67 22 53 86	51 36	— 2 50

Right Ascensions and North Polar Distances of the Center of Jupiter (Continued)

Date	Mean Solar Time of Observation	Point Observed	A R from Observation	A R from N A	Error of N A	Point Observed	N P D from Observation	N P D from N A	Error of N A
1835	m		m						
Sept 29	18 29 20 0	1 & 2	7 0 57 87	57 69	— 0 18	C	67 24 40 10	36 22	— 3 88
Dec 21	12 55 14 9	C	6 53 51 03	51 48	+ 0 45		67 4 58 62	57 41	— 1 21
24	12 41 46 9	1 & 2	6 52 10 10	10 26	+ 0 16		67 2 25 59	23 63	— 1 96
25	12 37 16 8		6 51 35 74	36 05	+ 0 31		67 1 35 64	32 63	— 3 01
26	12 32 46 6		6 51 1 58	1 65	+ 0 07		67 0 45 98	41 8	— 4 13
27	12 28 15 6		6 50 26 90	27 08	+ 0 18		66 59 53 56	51 32	— 2 24
28	12 23 45 7		6 49 52 43	52 36	— 0 07		66 59 3 92	1 18	— 2 74
30	12 14 44 5		6 48 42 54	42 61	+ 0 07		66 59 54 66	57 22 01	
1836									
Jan 2	12 1 12 0		6 46 57 33	57 60	+ 0 27		66 54 56 38	56 56	+ 0 18
6	11 43 9 0		6 44 37 85	37 99	+ 0 14		66 51 52 83	49 84	— 2 99
7	11 38 38 4		6 44 3 14	3 29	+ 0 15		66 51 5 93	4 77	— 1 16
8	11 34 8 3	C	6 43 28 57	28 75	+ 0 18		66 50 22 28	20 20	— 2 08
9	11 29 38 4	1 & 2	6 42 54 34	54 39	+ 0 05		66 49 37 31	36 53	— 0 78
11	11 20 37 9		6 41 46 14	46 25	+ 0 11		66 48 11 81	11 25	— 0 56
13	11 11 39 4		6 40 39 09	39 12	+ 0 03		66 46 49 58	48 77	— 0 81
14	11 7 9 7		6 40 6 08	5 99	— 0 09		66 46 10 96	8 66	— 2 30
16	10 58 12 8		6 39 0 08	0 71	+ 0 63		66 44 52 39	50 84	— 1 5[illegible]
19	10 44 50 6		6 37 25 43	25 65	+ 0 22		66 43 5 56	0 23	— 5 33
20	10 40 24 0		6 36 54 52	54 84	+ 0 32		66 42 28 95	24 94	— 4 01
24	10 22 41 9	C	6 34	56 47			66 40 14 38	12 38	— 2 00
31	9 52 6 8	1 & 2	6 31 51 27	51 29	+ 0 02		66 36 53 48	52 31	— 1 17
Feb 1	9 47 46 8		6 31 27 27	27 39	+ 0 12		66 36 29 04	26 97	— 2 07
2	9 43 27 4		6 31 3 90	4 17	+ 0 27		66 36 2 16	2 49	+ 0 33
3	9 39 9 4		6 30 41 60	41 65	+ 0 05		66 35 40 23	38 78	— 1 45
4	9 34 51 7		6 30 19 84	19 84	0 00		66 35 16 22	15 79	— 0 43
5	9 30 34 5		6 29 58 75	58 75	0 00		66 34 54 85	53 60	— 1 25
7	9 22 3 6		6 29 18 81	18 79	— 0 02		66 34 13 25	11 49	— 1 76
8	9 17 48 5		6 29 0 09	59 92	— 0 17		66 33 53 45	51 54	— 1 91
10	9 9 20 9		6 28 24 60	24 52	— 0 08		66 33 16 03	13 79	— 2 24
11	9 5 8 9		6 28 8 03	8 00	— 0 03		66 32 57 38	55 98	— 1 40
13	8 56 46 3		6 27 37 10	37 36	+ 0 26		66 32 24 88	22 58	— 2 30
14	8 52 36 9		6 27 23 24	23 26	+ 0 02		66 32 8 28	6 92	— 1 36
15	8 48 27 2		6 27 9 76	9 98	+ 0 22		66 31 54 68	51 88	— 2 80
16	8 44 19 0		6 26 57 69	57 54	— 0 15		66 31 39 28	37 49	— 1 79
17	8 40 11 5		6 26 45 92	45 95	+ 0 03		66 31 27 36	23 64	— 3 72
18	8 36 5 0		6 26 35 06	35 18	+ 0 12		66 31 14 75	10 56	— 4 19
21	8 23 50 5		6 26 8 13	8 00	— 0 13		66 30 39 23	35 12	— 4 11
23	8 15 44 9		6 25 54 10	54 14	+ 0 04		66 30 14 91	14 51	— 0 40
26	8 3 42 6		6 25 39 63	39 84	+ 0 21		66 29 51 22	48 20	— 3 02
27	7 59 43 6		6 25 36 69	36 82	+ 0 13		66 29 41 90	40 59	— 1 31
Mar 14	6 57 55 1	C	6 26 43 43	43 37	— 0 06		66 28 57 47	57 62	+ 0 15
17	6 46 43 8		6 27 19 37	19 45	+ 0 08		66 29 8 88	6 14	— 2 74
18	6 43 1 2		6 27 32 89	33 08	+ 0 19		66 29 9 88	10 15	+ 0 27
19	6 39 20 2		6 27 47 77	47 50	— 0 27				
June 15	1 50 53 8	1 & 2	7 25 30 59	30 09	— 0 50		67 41 0 63	7 25	+ 6 62
Sept 9	21 27 1 2	C	8 43 54 63	54 42	— 0 21		71 23 45 49	42 37	— 3 12
12	21 17 34 2		8 46 16 02	15 92	— 0 10		71 32 26 23	24 77	— 1 46
20	20 52 8 8		8 52 19 45	18 96	— 0 49		71 55 15 17	13 16	— 2 01
Oct. 2	20 13 17 3		9 0 39 90	39 61	— 0 29		72 27 38 85	39 48	+ 0 63
3	20 10 0 2		9 1 18 98	18 69	— 0 29		72 30 15 00	14 13	— 0 87
6	20 0 7 5		9 3 13 54	13 30	— 0 24		72 37 50 50	49 40	— 1 10
12	19 40 4 2		9 6 49 94	49 94	0 00		72 52 17 48	16 79	— 0 69

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF JUPITER *(Continued)*

Mean Solar Time of Observation		Point Observed	A R from Observation	A R from N A	Error of N A	Point Observed	N P D from Observation	N P D from N A	Error of N A
1836								′	
Oct	13 19 36 46 0	C	9 7 24 46	24 35	— 0 11	C	72 54 38 01	35 31	— 2 70
	14 19 33 24 3		9 7 58 53	58 22	— 0 31		72 56 53 50	51 97	— 1 53
	19 19 16 21 1		9 10 40 39	39 89	— 0 50		73 7 49 39	45 08	— 4 31
1837									
Jan	26 12 43 19 7	1 & 2	9 6 49·00	48 30	— 0 70		72 29 17 19	14 28	— 2 91
	27 12 38 52 4		9 6 17 72	16 88	— 0 84		72 26 52 30	49 97	— 2 33
	28 12 34 24 4		9 5 46 19	45 35	— 0 84		72 24 26 78	25 65	— 1 13
	29 12 29 57 4		9 5 14 30	13 67	— 0 63		72 22 1 94	1 41	— 0 53
	31 12 21 1 9		9 4 10 71	10 03	— 0 68		72 17 14 91	13 05	— 1 36
Feb	2 12 12 7 1	C	9 3 6 95	6 18	— 0 77		72 12 31 93	27 25	— 4 68
	3 12 7 38 2	1 & 2	9 2 35 13	34 24	— 0 89		72 10 7 90	4 98	— 2 92
	4 12 3 10 6		9 2 3 31	2 33	— 0 98		72 7 46 41	43 40	— 3 01
	5 11 58 42 8		9 1 31 10	30 45	— 0 65		72 5 24 76	22 56	— 2 20
	6 11 54 16 4		9 0 59 56	58 65	— 0 91		72 3 6 21	2 67	— 3 54
	7 11 49 48 8		9 0 27 79	26 95	— 0 84		72 0 45 05	43 78	— 1 27
	8 11 45 21 5		8 59 56 18	55 37	— 0 81		71 58 28 81	26 04	— 2 77
	9 11 40 53 7		8 59 24 85	23 93	— 0 92		71 56 12 74	9 58	— 3 16
	10 11 36 27 1		8 58 53 50	52 67	— 0 83		71 53 56 72	54 36	— 2 36
	11 11 31 59 2		8 58 22 30	21 59	— 0 71		71 51 45 08	40 57	— 4 51
	12 11 27 33 5		8 57 51 39	50 75	— 0 64		71 49 29 75	28 37	— 1 38
	13 11 23 6 8		8 57 21 05	20 11	— 0 94		71 47 20 16	17 60	— 2 56
	14 11 18 40 9		8 56 50 52	49 74	— 0 78		71 45 10 51	8 66	— 1 85
	15 11 14 14 9		8 56 20 46	19 62	— 0 84		71 43 4 26	1 35	— 2 91
	17 11 5 23 8		8 55 21 05	20 39	— 0 66		71 38 54 87	52 34	— 2 53
	18 11 0 58 4	C	8 54 52 10	51 27	— 0 83		71 36 54 33	50 78	— 3 55
	19 10 56 33 7	1 & 2	8 54 23 22	22 51	— 0 71		71 34 54 09	51 25	— 2 84
	20 10 2 9 7	C	8 53 54 95	54 15	— 0 80		71 32 53 92	53 78	— 0 14
	21 10 47 45 5		8 53 26 69	26 19	— 0 50		71 31 3 21	30 58 44	— 4 77
	26 10 25 53 7		8 51 13 59	12 92	— 0 67		71 21 58 08	56 26	— 1 82
	27 10 21 32 3		8 50 48 41	47 74	— 0 67		71 20 17 47	15 10	— 2 37
1838									
Mar	3 12 18 52 0	1 & 2	11 3 17 57	16 43	— 1 14		82 21 9 39	7 17	— 2 22
	5 12 10 3 2		11 2 19 56	18 47	— 1 09		82 15 2 86	14 59 07	— 3 79
	7 12 1 13 9		11 1 21 61	20 53	— 1 08		82 8 55 82	53 29	— 2 53
	8 11 56 48 8		11 0 52 76	51 62	— 1 14		82 5 54 40	51 57	— 2 83
	9 11 52 24 0	C	11 0 23 60	22 75	— 0 85		82 2 52 76	50 82	— 1 94
	10 11 47 59 5	1 & 2	10 59 55 04	54 00	— 1 04		81 59 54 75	51 14	— 3 61
	11 11 43 35 4		10 59 26 40	25 33	— 1 07		81 56 56 11	52 63	— 3 48
	12 11 39 10 6		10 58 57 70	56 78	— 0 92		81 53 58 69	55 42	— 3 27
	13 11 34 46 5	C	10 58 29 56	28 38	— 1 18		81 51 2 96	50 59 66	— 3 30
	14 11 30 22 4	1 & 2	10 58 1 19	0 15	— 1 04		81 48 9 95	5 50	— 4 45
	15 11 25 58 3		10 57 33 33	32 15	— 1 18		81 45 16 75	12 97	— 3 78
	16 11 21 34 9		10 57 5 32	4 29	— 1 03		81 42 25 62	22 25	— 3 37
	17 11 17 11 6		10 56 37 68	36 68	— 1 00		81 39 37 58	33 38	— 4 20
	18 11 12 48 2		10 56 10 39	9 31	— 1 08		81 36 48 31	46 56	— 1 75
	23 10 50 56 3		10 53 57 73	56 69	— 1 04		81 23 29 76	26 02	— 3 74
	24 10 46 35 0		10 53 32 15	31 15	— 1 00		81 20 56 81	53 41	— 3 40
	25 10 42 14 4		10 53 6 99	5 96	— 1 03		81 18 27 22	23 49	— 3 73
April	2 10 7 41 6		10 50 1 30	59 98	— 1 32		81 0 18 56	14 39	— 4 17
	21 8 47 57 0	C	10 44 58 09	57 24	— 0 85		80 32 38 50	38 40	— 0 10
Nov	23 20 34 50 1		12 45 23 01	22 30	— 0 71		93 35 51 35	50 04	— 1 31
Dec	10 19 38 1 8		12 55 27 12	26 72	— 0 40		94 36 14 47	13 49	— 0 98
1839									
Mar	25 12 47 33 7	1 & 2	12 57 50 67	49 82	— 0 85		94 27 14 61	15 69	+ 1 08
	26 12 43 10 5		12 57 23 12	22 32	— 0 80		94 24 18 23	19 97	+ 1 74

Right Ascensions and North Polar Distances of the Center of Jupiter (Continued)

Mean Solar Time of Observation	Parts Observed	A R from Observation	A R from N A	Error of N A	Parts Observed	N P D from Observation	N P D from N A	Error of N A
1839 m								
Mar 27 12 38 47 1	1 & 2	12 56 55 43	54 62	— 0 81	C	94 21 22 87	23 45	+ 0 58
28 12 34 23 7		12 56 27 65	26 75	— 0 90		94 18	26 25	
29 12 29 59 5		12 55 59 51	58 75	— 0 76		94 15 27 11	28 59	+ 1 48
30 12 25 35 6		12 55 31 50	30 63	— 0 87		94 12 31 56	30 59	— 0 97
31 12 21 11 6		12 55 3 35	2 43	— 0 92		94 9 32 10	32 11	+ 0 01
Ap l 2 12 12 23 4	C	12 54 6 50	5 6	— 0 74		94 3 34 39	34 77	+ 0 38
3 12 7 58 9		12 53 38 18	37 38	— 0 80		94 0 35 18	36 05	+ 0 87
4 12 3 35 2		12 53 9 93	8 96	— 0 97		93 57 38 31	37 56	— 0 75
5 11 59 10 3	1 & 2	12 52 41 47	40 54	— 0 93		93 54 37 12	39 30	+ 2 18
6 11 54 46 3	C	12 52 13 12	12 13	— 0 99		93 51 41 35	41 51	+ 0 16
7 11 50 22 4	1 & 2	12 51 44 82	43 76	— 1 06		93 48 44 20	44 33	+ 0 13
8 11 45 57 9		12 51 16 27	15 42	— 0 85		93 45 47 33	47 84	+ 0 1
11 11 32 46 6		12 49 51 86	50 98	— 0 88		93 37 1 68	3 27	+ 1 [illegible]
13 11 23 58 8		12 48 56 29	55 30	— 0 99		93 31 16 72	19 20	+ 2 48
14 11 19 35 1		12 48 28 71	27 73	— 0 98		93 28 28 81	29 32	+ 0 51
15 11 15 12 4		12 48 1 46	0 35	— 1 11		93 25 38 65	38 57	— 0 08
16 11 10 49 2		12 47 34 09	33 18	— 0 91		93 22 53 24	4 33	+ 1 0[illegible]
17 11 6 26 3		12 47 7 23	6 29	— 0 94		93 20 7 15	9 2	+ 2 37
18 11 2 3 9		12 46 40 60	39 61	— 0 99		93 17 24 85	26 58	+ 1 73
20 10 53 19 9		12 45 48 07	47 08	— 0 99		93 12 6 28	7 18	+ 0 90
25 10 31 34 7		12 43 42 30	41 38	— 0 92		92 59 29 44	29 37	— 0 07
27 10 22 55 2		12 42 54 50	53 68	— 0 82		92 54 44 17	44 72	+ 0 55
28 10 18 36 2		12 42 31 40	30 41	— 0 99		92 52 27 05	26 53	— 0 52
29 10 14 16 4		12 42 8 51	7 57	— 0 94		92 50 10 82	11 36	+ 0 54
May 1 10 5 41 6		12 41 23 97	23 27	— 0 70		92 45 51 28	50 29	— 0 99
2 10 1 24 2	C	12 41 2 67	1 78	— 0 89		92 43 43 95	44 62	+ 0 67
4 9 52 49 7	1 & 2	12 40 21 16	20 28	— 0 88		92 39 44 12	43 04	— 1 08
7 9 40 4 6		12 39 22 68	21 73	— 0 95		92 34 6 51	6 47	— 0 04
8 9 36 50 5		12 39 4 21	3 26	— 0 95		92 32 21 23	21 41	+ 0 18
9 9 31 36 7		12 38 46 15	45 33	— 0 82		92 30 39 61	39 99	+ 0 38
10 9 27 23 5		12 38 28 90	27 95	— 0 95		92 29 2 44	2 35	— 0 09
20 8 45 43 2	C	12 36 7 32	6 9	— 0 73		92 16 25 20	24 16	— 1 04
21 8 41 36 7	1 & 2	12 35 56 54	55 84	— 0 70		92 15 31 29	30 91	— 0 38
24 8 29 20 2		12 35 27 84	27 40	— 0 44		92 13 15 53	16 50	+ 0 97
25 8 25 16 6		12 35 20 04	19 19	— 0 85		92 12 41 66	40 15	— 1 51
1840								
J 23 8 21 7 9	C	12 28 30 50	29 82	— 0·68		103 26 57 48	27 0 68	+ 3 20
1841								
J e 26 10 25 44 6		16 44 20 07	19 83	— 0 24		111 42 44 62	47 40	+ 2 78
Aug 24 6 25 15 9		16 35 47 81	47 67	— 0 14				
29 6 6 52 7		16 37 4 47	4 45	— 0 02		111 41 25 04	27 76	+ 2 72
30 6 3 14 0		16 37 22 33	21 99	— 0 34		111 42 14 38	13 57	— 0 81
31 5 59 37 5		16 37 40 31	40 23	— 0 08		111 43 1 04	0 49	— 0 5
S pt 10 5 23 57 5		16 41 21 00	20 94	— 0 06		111 51 47 00	51 72	+ 4 72
13 5 13 28 8		16 42 40 46	40 24	— 0 22		111 54 46 99	50 70	+ 3 71
14 5 9 59 4		16 43 8 29	7 99	— 0 30		111 55 49 86	51 93	+ 2 07
20 4 49 24 2		16 46 7 72	7 60	— 0 12		112 2 10 33	15·16	+ 4 83
21 4 46 0 3		16 46 39 73	39 69	— 0 04		112 3 19 65	21 29	+ 1 64
23 4 39 13 8		16 47 45 58	45 59	+ 0 01				
24 4 35 2 0		16 48 19 76	19 92	— 0 16				
25 4 32 30 5		16 48 54 32	53 85	— 0 47		112 7 49 83	51 01	+ 1 18
Oct 6 3 56 9 1		16 55 48 61	48 12	— 0 49		112 20 39 09	40 62	+ 1 53
7 3 52 53 4		16 56 29 17	28 88	— 0 29				
19 3 14 27 0		17 5 15 04	14 68	— 0 46				

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF JUPITER (C nt ued)

M an S l Tim f Ob ti n.	P nt Ob d.	A R f m Ob l	A R from N A	Erro f N A	P i Ob d	N P D fr m Ob ti	N P D f m N A	Erro f N A
1841								
Oct 26 2 52 29 2	C	17 10 49 74	49 53	— 0 21	C			
Nov 16 1 48 15 9		17 29 13 93	13 86	— 0 07				
18 1 42 15 7		17 31 5 71	5 43	— 0 28				
19 1 39 16 1		17 32 2 21	1 54	— 0 67				
22 1 30 17 5		17 34 51 81	51 17	— 0 64				
23 1 27 18 0		17 35 48 31	48 11	— 0 20				
1842								
Feb 14 21 17 4 6		18 56 44 90	45 17	+ 0 27		112 45 17 29	18 60	+ 1 31
Ap l 3 18 40 57 8		19 28 46 52	14 59					
6 18 30 57 8		19 30 34 38	34 44	+ 0 06		111 51 8 66	10 79	+ 2 13
11 18 13 17 2		19 32 33 34	33 45	+ 0 11		111 47 26 02	27 52	+ 1 50
12 18 9 42 3		19 32 51 87	55 18	+ 0 31		111 46 46 26	47 01	+ 0 75
15 17 8 56 2		19 33 56 04	56 01	— 0 03		111 44 50 95	54 14	+ 3 19
June 23			2 87		N	112 12 5 31	7 10	+ 1 79
July 9 12 8 34 8		19 17 35 39	35 09	— 0 30	C	112 30 59 85	31 2 36	+ 2 51
13 11 50 29 4		19 15 23 57	23 09	— 0 48		112 35 34 51	37 55	+ 3 04
19 11 23 39 7		19 12 7 45	7 54	+ 0 09		112 42 8 12	9 55	+ 1 43
22 11 10 17 1		19 10 32 19	32 20	+ 0 01		112 45 13 11	14 82	+ 1 71
A g 8 9 55 28 8		19 2 34 68	33 99	— 0 69		112 59 49 98	50 81	+ 0 83
Sept 2 8 10 53 6		18 56 15 44	14 95	— 0 49		113 10 55 36	53 87	— 1 49
4 8 2 52 4		18 56 5 85	5 56	— 0 29		113 11 16 61	14 74	— 1 87
16 7 15 54 8		18 56 19 29	19 18	— 0 11		113 11 39 72	39 72	0 00
17 7 12 6 4		18 56 26 22	25 69	— 0 53		113 11 34 45	34 24	— 0 21
23 6 49 25 9		18 57 22 39	21 91	— 0 48		113 10 37 14	36 79	— 0 35
27 6 34 35 8		18 58 15 87	15 36	— 0 52		113 9 33 57	34 98	+ 1 41
Oct 1 6 20 8 2		18 59 21 97	21 33	— 0 64		113 8 15 13	13 76	— 1 37
4 6 9 8 0		19 0 19 35	18 87	— 0 48		113 6 59 93	59 81	— 0 12
5 6 5 32 3		19 0 39 67	39 56	— 0 11		113 6 32 09	32 64	+ 0 55
6 6 1 57 4		19 1 0 97	0 99	+ 0 02		113 6 1 92	4 17	+ 2 25
1843								
M 31 20 52 30 3		21 27 53 96	54 06	+ 0 10		105 37 11 57	12 55	+ 0 98
Apr l 5 20 36 30 4			34 22			105 20 26 54	29 56	+ 3 02
10 20 20 20 2		21 35 4 26	4 25	— 0 01		105 4 18 24	22 87	+ 4 63
11 20 17 3 7		21 35 44 72	44 98	+ 0 26		105 1 12 10	14 40	+ 2 30
12 20 13 49 5		21 36 25 18	25 29	+ 0 11		104 58 5 35	7 64	+ 2 29
18 19 54 5 8		21 40 17 61	17 73	+ 0 12		104 40 3 38	5 45	+ 2 07
27 19 23 57 9		21 45 34 16	34 08	— 0 08		101 15 20 72	22 71	+ 1 99
28 19 20 34 5		21 46 6 73	6 68	— 0 05		101 12 46 72	49 69	+ 2 97
Aug 23 11 31 45 4		21 37 18 10	18 45	+ 0 35		105 24 49 81	50 35	+ 0 54
Sept 5 10 34 30 6		21 31 8 47	8 44	— 0 03		105 55 21 68	24 42	+ 2 74
8 10 21 25 3		21 29 51 86	51 91	+ 0 05		106 1 31 03	32 37	+ 1 34
9 10 17 6 1		21 29 27 22	27 28	+ 0 06		106 3 27 72	29 54	+ 1 82
13 9 59 49 0		21 27 53 83	53 86	+ 0 03		106 10 48 10	49 16	+ 1 06
14 9 55 31 3		21 27 31 78	31 85	+ 0 07		106 12 31 72	31 53	— 0 19
22 9 21 30 8		21 24 57 44	57 69	+ 0 25				
23 9 17 18 7		21 24 41 35	41 34	— 0 01		106 25 25 00	25 27	+ 0 27
24 9 13 6 3		21 24 25 75	25 70	— 0 05		106 26 32 13	34 09	+ 1 96
26 9 4 45 8		21 23 56 50	56 54	+ 0 04		106 28 40 01	40 86	+ 0 85
30 8 48 13 6		21 23 7 38	6 98	— 0 40		106 32 7 19	10 44	+ 3 25

Right Ascensions and North Polar Distances of the Center of Jupiter (Continued)

Date	Mean Solar Time of Observation	Point Observed	A. R. from Observation	A. R. from N. A.	Error of N. A.	Point Observed	N. P. D. from Observation	N. P. D. from N. A.	Error of N. A.
1843									
Oct. 1	8 44 6.5	C	21 22 56.59	56.45	−0.14	C	106 32 51.52	53.58	+2.06
2	8 40 0.5		21 22 46.79	46.71	−0.08		106 33 32.87	32.95	+0.08
3	8 35 53.6		21 22 37.72	37.69	−0.03		106 34 6.48	8.63	+2.15
4	8 31 51.8		21 22 29.69	29.46	−0.23		106 34 38.81	40.53	+1.72
5	8 27 48.8		21 22 21.88	21.99	+0.11		106 35 7.01	8.75	+1.74
12	7 59 46.9		21 21 51.74	51.56	−0.18		106 36 38.39	41.15	+3.06
13	7 55 49.3		21 21 50.49	50.36	−0.13		106 36 36.89	39.73	+2.84
15	7 47 57.1		21 21 50.50	50.32	−0.18		106 36 22.22	24.98	+2.76
18	7 36 16.1		21 21 56.66	56.19	−0.47		106 35 31.57	34.70	+3.13
19	7 32 23.0		21 21 59.80	59.75	−0.05		106 35 9.11	10.42	+1.31
22	7 20 51.0		21 22 15.36	15.14	−0.22		106 33 34.62	35.19	+0.57
23	7 17 2.8		21 22 21.96	21.85	−0.11		106 32 52.33	55.98	+3.65
24	7 13 11.0		21 22 29.64	29.34	−0.30		106 32 10.56	13.09	+2.53
25	7 9 25.8		21 22 37.77	37.62	−0.15		106 31 26.46	26.45	−0.01
Nov. 2	6 39 35.0		21 24 12.06	11.62	−0.44		106 23 0.51	2.48	+1.97
Dec. 9				49.86			104 57 51.32		
1844									
Jan. 26	1 58 46.6		22 17 47.10	46.93	−0.17		101 37 21.99	24.62	+2.63
28	1 52 38.9		22 19 31.78	31.62	−0.16				
29	1 49 35.1		22 20 24.62	24.18	−0.44				
Feb. 2	1 37 22.7			55.63					
April 22	21 29 27.5		23 34 40.62	40.30	−0.32		93 52 54.56	5.87	+1.31
24	21 24 38.3		23 36 13.13	13.44	+0.31		93 43 14.16	1.06	+0.90
30	21 4 4.9		23 40 46.48	46.31	−0.17		93 14 50.63	54.43	+3.80
May 1	21 0 53.3		23 41 30.58	30.78	+0.20		93 10 15.45	17.72	+2.27
2	20 57 41.4		23 42 15.05	14.94	−0.11		93 5 40.16	42.82	+2.66
3	20 54 29.4		23 42 58.94	58.83	−0.11		93 1 7.50	9.94	+2.44
9	20 35 9.5		23 47 14.99	15.44	+0.45		92 34 35.97	36.44	+0.47
Sept 17	12 13 32.3		0 0 44.45	44.32	−0.13		91 41 0.49	0.01	−0.48
21	11 55 52.9		23 58 47.53	47.21	−0.32		91 53 50.96	51.64	+0.68
22	11 51 27.2		23 58 18.09	17.86	−0.23				
23	11 47 1.6		23 57 48.60	48.54	−0.06		92 0 14.86	15.23	+0.37
24	11 42 36.3		23 57 19.56	19.30	−0.26		92 3 25.24	25.95	+0.71
25	11 38 11.4		23 56 50.03	50.00	−0.03		92 6 36.67	35.90	−0.77
26	11 33 46.3		23 56 21.00	20.82	−0.18		92 9 43.45	44.97	+1.52
28	11 24 56.6		23 55 22.81	22.81	0.00		92 16 0.60	15 59.26	−1.34
29	11 20 32.4		23 54 54.03	54.00	−0.03		92 19 6.21	4.33	−1.88
30	11 16 7.7		23 54 25.33	25.36	+0.03		92 22 8.97	7.88	−1.09
Oct 1	11 11 43.8		23 53 57.33	56.90	−0.43		92 25 9.60	9.79	+0.19
2	11 7 20.1		23 53 28.83	28.64	−0.19		92 28 8.31	10.13	+1.82
3	11 2 57.1		23 53 0.32	0.72	+0.40		92 31 6.45	7.89	+1.44
10	10 32 16.8		23 49 52.67	52.41	−0.26		92 50 45.24	48.27	+3.03
14	10 14 54.3		23 48 13.64	13.04	−0.60		93 0 56.84	59.35	+2.51
18	9 57 38.6		23 46 41.09	41.13	+0.04		93 10 10.27	14.99	+4.72
19	9 53 21.9		23 46 20.16	19.46	−0.70		93 12 22.69	24.56	+1.87
21	9 44 48.6		23 45 38.53	37.74	−0.79		93 16 29.39	31.85	+2.46
22	9 40 30.9		23 45 17.83	17.77	−0.06		93 18 25.79	29.42	+3.63
23	9 36 16.6		23 44 58.81	58.34	−0.47		93 20 17.79	22.92	+5.13
24	9 32 0.3		23 44 39.58	39.52	−0.06		93 22 8.73	12.06	+3.33
25	9 27 48.2		23 44 21.73	21.31	−0.42		93 23 55.54	56.99	+1.45
26	9 23 34.5		23 44 4.02	3.72	−0.30		93 25 32.64	37.58	+4.94
27	9 19 22.3		23 43 47.53	46.76	−0.77		93 27 11.95	13.83	+1.88

RIGHT ASCENSIONS AND NORTH POLAR DI TANCES OF THE CENTER OF JUPITER (C ntinued)

M S lar Tim f Ob i		P i t Ob ed	A R fr m Ob ti	A R f m N A	Err f N A	P i t Ob rv d	N P D from Ob vati n.	N P D fr m N A	Err f N A
1844									
O t	28 9 15 9·8	C	23 43 30 94	30 50	— 0 44	C	93 28 44 39	45 63	+ 1 24
	29 9 10 ٥8 4		23 43 15 33	14 80	— 0 53		93 30 10 59	13 03	+ 2 44
	30 9 6 47 3		23 43 0 14	5J 79	— 0 35		93 31 33 12	35 79	+ 2 67
	31 9 2 36 5		23 42 45 70	45 47	— 0 23		93 32 53 70	53 91	+ 0 21
Nov	2 8 54 18 7		23 42 19 26	18 83	— 0 43		93 35 13 23	16 18	+ 2 95
	3 8 50 10 4		23 42 6 95	6 57	— 0 38		93 36 16 93	20 20	+ 3 27
	4 8 46 3 0		23 41 55 47	55 00	— 0 47		93 37 15 65	19 57	+ 3 92
	5 8 41 56 1		23 41 44 48	44 14	— 0 34		93 38 9 28	14 03	+ 4 75
	6 8 37 50 3		23 41 34 42	34 00	— 0 42		93 39 0 02	3 62	+ 3 60
	8			15 92			93 40 25 17	28 07	+ 2 90
	9 8 25 36 6		23 41 8 32	7 98	— 0 34		93 40 58 81	2 90	+ 4 09
	10 8 21 34 2		23 41 1 22	0 78	— 0 44		93 41 29 49	32 66	+ 3 17
	11 8 17 31 8		23 40 54 60	54 33	— 0 27		93 41 54 92	57 56	+ 2 64
	12 8 13 29 7		23 40 49 08	48 63	— 0 45		93 42 13 31	17 38	+ 4 07
	13 8 9 29 2		23 40 44 15	43 68	— 0 47		93 42 28 33	32 28	+ 3 95
	14 8 ٥ 29 2		23 40 40 26	39 50	— 0 76		93 42 37 15	42 15	+ ٥ 00
	15 8 1 29 3		23 40 36 47	36 07	— 0 40		93 42 42 48	46 98	+ 4 50
	16 7 57 30 6		23 40 33 80	33 42	— 0 38		93 42 42 70	46 84	+ 4 14
	17 7 53 32 9		23 40 32 01	31 52	— 0 49		93 42 38 67	41 63	+ 2 96
	18 7 49 35 4		23 40 30 76	30 42	— 0 34		93 42 26 37	31 41	+ 5 04
	19 7 45 39 6		23 40 30 43	29 99	— 0 44		93 42 13 58	16 24	+ 2 66
	20 7 41 45 9		23 40 30 75	30 36	— 0 39		93 41 52 09	56 09	+ 4 00
	21 7 37 49 1		23 40 32 03	31 51	— 0 52		93 41 27 8	30 98	+ 3 40
	22 7 33 55 3		23 40 35 82	33 39	— 0 43		93 40 59 19	61 01	+ 1 82
	27 7 14 36 8		23 40 54 57	54 15	— 0 42		93 37 13 34	17 61	+ 4 27
	28 7 10 47 2		23 41 0 90	0 55	— 0 3٥		93 36 16 48	18 41	+ 1 93
	30 7 3 10 2		23 41 15 92	15 57	— 0 35		93 34 3 4٥	5 53	+ 2 08
De	4 6 48 4 8		23 41 55 01	54 38	— 0 63		93 28 42 19	12 9٥	+ 0 76
	5 6 44 20 4		23 42 6 46	٥ 89	— 0 57		93 27 9 44	10 63	+ 1 19
	6 6 40 3٥ 7		23 42 18 63	18 14	— 0 19		93 25 35 15	33 61	— 1 ٥4
184٥									
Ju	2 21 7 56 3		1 53 47 55	47 42	— 0 13		79 30 49 89	49 02	— 0 87
	3 21 4 53 9		1 54 34 87	34 74	— 0 13		79 26 36 0	34 73	— 1 77
	6 20 55 20 1		1 56 55 34	55 15	— 0 19		79 14 2 43	4 60	+ 2 17
	8 20 49 0 2		1 58 27 26	27 39	+ 0 13		79 5 55 07	55 57	+ 0 50
	9 20 45 50 4		1 59 13 42	13 09	— 0 33		79 1 54 35	54 41	+ 0 06
	11 20 39 28 6		2 0 43 83	43 63	— 0 20		78 53 59 09	59 02	— 0 07
	12 20 36 17 2		2 1 28 49	28 44	— 0 05		78 50 4 54	4 69	+ 0 15
	16 20 23 29 6		2 4 24 75	24 60	— 0 15		78 34 52 91	51 07	— 1 84
	27 19 47 49 5		2 12 1 22	0 94	— 0 28		77 56 22 07	21 72	— 0 35
July	1 19 34 40 2		2 14 35 73	35 49	— 0 24		77 43 40 50	40 13	— 0 37
	2 19 31 21 8		2 15 13 10	13 05	— 0 05		77 40 37 90	36 62	— 1 28
	11 19 1 15 5		2 20 30 70	30 79	+ 0 09		77 15 12 18	11 44	— 0 74
	14 18 51 4 8		2 22 8 07	7 97	— 0 10		77 7 34 78	35 46	+ 0 68
	20 18 30 29 7		2 25 8 28	8 25	— 0 03		76 53 45 40	45 47	+ 0 07
	21 18 27 1 6		2 25 36 43	36 39	— 0 04		76 51 34 81	37 91	+ 3 10
Aug	22 16 30 33 2		2 34 58 73	58 65	— 0 08		76 12 58 28	٥6 00	— 2 28
Oct.	20 12 23 52 5	1 & 2	2 20 15 35	1٥ 28	— 0 07		77 33 16 15	17 39	+ 1 24
	23 12 10 34 1		2 18 42 30	42 4٥	+ 0 15		77 41 2 81	2 14	— 0 67
	24 12 6 5 4		2 18 11 39	11 22	— 0 17		77 43 36 84	38 32	+ 1 48
	25 12 1 38 0		2 17 40 17	39 90	— 0 27		77 46 14 59	14 94	+ 0 35
	26 11 57 11 2	1 L	2 17 8 64	8 46	— 0 18		77 48 53 27	51 79	— 1 48
	27 11 52 43 8	1 & 2	2 16 37 15	37 01	— 0 14		77 51 30 01	28 74	— 1 27
	28 11 48 16 0		2 16 5 53	5 49	— 0 04		77 54 4 40	5 74	+ 1 34
	30 11 39 19 9	1 L	2 15 2 70	2 50	— 0 20		77 59 19 53	19 36	— 0 17

Right Ascensions and North Polar Distances of the Center of Jupiter (Continued)

Date	Mean Solar Time of Observation	Limb Observed	A R from Observation	A R from N A	Error of N A	Limb Observed	N P D from Observation	N P D from N A	Error of N A
1845									
Nov 1	11 30 26 3	1 & 2	2 13 59 78	59 65	−0 13	C	78 4 36 69	31 1	− 5 1
2	11 25 59 4		2 13 28 70	28 36	−0 34		78 7 9 20	6 58	− 2 62
3	11 21 32 1		2 12 57 33	57 19	−0 14		78 9 41 26	41 00	− 3 26
4	11 17 5 5		2 12 26 28	26 16	−0 12		78 12 17 63	14 50	− 3 13
5	11 12 38 8		2 11 55 56	55 30	−0 26		78 14 48 5	47 09	− 1 46
7	11 3 45 8	C	2 10 53 97	54 18	+0 21		78 19 49 00	48 72	− 0 28
8	10 59 20 0	1 & 2	2 10 23 95	23 97	+0 02		78 22 18 65	17 33	− 1 32
9	10 54 54 0		2 9 53 94	54 00	+0 06		78 24 45 37	41 61	− 0 76
16	10 24 1 0	1 L	2 6 33 51	33 41	−0 10		78 41 4 60	3 78	− 0 82
17	10 19 39 7	1 & 2	2 6 6 44	6 32	−0 12		78 43 14 46	14 89	+ 0 43
18	10 15 15 7	1 L	2 5 39 87	39 62	−0 25		78 4[illegible] [illegible]	23 7	− 0 96
19	10 10 55 3	C	2 5 13 50	1[illegible] 40	−0 10		78 47 30 09	29 6	− 0 14
24	9 49 10 8	1 I	2 3	9 89			78 7 17 59	17 51	− 0 08
25	9 44 53 5	1 & 2	2 2 46 96	46 80	−0 16		78 59 8 65	6 01	− 2 64
26	9 40 35 2		2 2 21 46	21 31	−0 15		79 0 51 37	51 17	− 0 0
28	9 32 2 1	2 I	2 1 40 91	41 14	+0 23		79 4 9 27	11 16	+ 1 89
29	9 27 43 7	1 & 2	2 1 20 17	20 19	+0 02		79 47 43	4[illegible]3	− 1 50
30	9 23 27 8		2 1 0 69	0 50	−0 19		79 7 18 62	17 14	− 1 48
Dec 1	9 19 12 9	C	2 0 41 27	41 17	−0 10		79 8 44 01	44 68	+ 0 67
5	9 2 19 0	1 & 2	1 59 30 2	30 59	+0 07		79 13 59 26	56 76	− 2 50
9	8 45 38 1	2 L	1 58 31 50	31 37	−0 13		79 18 5 46	5 33	− 0 13
10	8 41 29 1		1 58 18 60	18 43	−0 17		79 19 0 57	57 19	− 3 38
11	8 37 19 5	1 & 2	1 58 6 43	6 20	−0 23		79 19 47 81	44 99	− 2 82
12	8 33 13 6	2 L	1 57 55 03	54 74	−0 29		79 20 29 85	28 59	− 1 26
17	8 12 47 3	1 & 2	1 57 8 94	8 90	−0 04		79 23 4 26	2 63	− 1 63
18	8 8 44 3		1 57 2 14	2 05	−0 09		79 23 21 98	20 58	− 1 40
19	8 4 42 2		1 56 56 01	55 97	−0 04		79 23 34 71	34 22	− 0 49
21	7 56 41 3		1 56 46 25	46 18	−0 07		79 23 50 06	48 32	− 1 74
22	7 52 39 7	1 L	1 56 42 53	42 47	−0 06		79 23 51 02	49 57	− 1 45
28	7 29 0 5	1 & 2	1 56 37 05	36 85	−0 20		79 22 20 48	20 05	− 0 43
29	7 25 6 3		1 56 38 92	38 70	−0 22		79 21 50 39	52 04	+ 1 6
30	7 21 13 6		1 56 41 52	41 34	−0 18		79 21 16 41	15 90	− 0 51
31	7 17 21 3		1 56 44 90	44 76	−0 14		79 20 38 20	37 64	− 0 56
1846									
Jan 2	7 9 38 1		1 56 54 11	54 01	−0 10		79 19 8 64	6 71	− 1 93
3	7 5 47 9	C	1 56 59 80	59 80	0 00		79 18 17 66	15 27	− 2 39
4	7 1 59 5	1 & 2	1 57 6 65	6 40	−0 25		79 17 18 99	19 64	+ 0 65
6	6 54 22 4		1 57 22 00	21 90	−0 10		79 15 16 28	15 70	− 0 58
10	6 39 18 9	1 L	1 58 2 37	2 04	−0 33		79 10 18 43	18 91	+ 0 48
11	6 35 34 4	1 & 2	1 58 14 10	13 98	−0 12		79 8 55 14	54 73	− 0 41
12	6 31 51 6		1 58 26 82	26 6	−0 17		79 7 27 36	26 56	− 0 80
13	6 28 7 7		1 58 40 15	40 05	−0 10		79 5 55 40	54 52	− 0 88
14	6 24 27 0	C	1 58 54 35	54 17	−0 18		79 4 20 12	18 70	− 1 42
15	6 20 46 3		1 59 9 35	9 03	−0 32		79 2 38 81	39 09	+ 0 28
16	6 17 5 6	1 & 2	1 59 24 71	24 60	−0 11		79 0 57 33	55 62	− 1 71
19	6 6 8 7		2 0 15 80	15 62	−0 18		78 55 24 00	23 27	− 0 73
April 1	1 2 8 6 1	C	2 45 25 18	25 31	+0 13		74 53 46 73	45 03	− 1 70
July 7	21 13 29 7		4 16 23 11	23 10	−0 01		69 25 54 86	50 41	− 4 45
8	21 10 25 3		4 17 14 67	14 80	+0 13		69 23 44 13	42 44	− 1 69
26	20 14 16 2	1 & 2	4 31 54 78	54 66	−0 12		68 50 19 07	17 25	− 1 82
29	20 4 44 0	C	4 34 10 30	10 25	−0 05		68 4 41 93	37 43	− 4 50
30	20 1 31 9	1 & 2	4 34 54 50	54 64	+0 14		68 44 11 12	7 50	− 3 62
Aug 17	19 2 45 2		4 46 55 82	55 89	+0 07		68 21 49 87	47 14	− 2 73
23	18 42 31 8		4 50 18 85	18 87	+0 02		68 16 13 88	11 88	− 2 00
25	18 35 43 0	C	4 51 21 57	21 78	+0 21		68 14 35 20	31 93	− 3 27

Right Ascensions and North Polar Distances of the Center of Jupiter (C ntinued)

	M an S l Tim f Ob rv ti	P int Ob-ed	A R f m Ob ti	A R fr m N A	Err f N A	P int Ob rv d	N P D fr m Ob rv ti	N P D f m N A	E f N A
1846									
A g	26 18 32 57 2	C	4 51 52 21	52 29	+ 0 08	C	68 13 46 67	44 13	— 2 54
No	30 12 5 31 0	1 & 2	4 42 31 78	31 68	— 0 10		68 29 55 51	51 26	— 4 25
Dec	2 11 56 31 2		4 41 22 25	22 17	— 0 08		68 31 49 60	46 11	— 3 49
	7 11 33 56 9	C	4 38 28 79	28 54	— 0 25		68 36 39 41	37 93	— 1 48
	8 11 29 26 6		4 37 53 99	53 81	— 0 18		68 37 36 93	36 90	— 0 03
	9 11 24 56 7		4 37 19 45	19 65	+ 0 20		68 38 35 71	3 28	— 0 43
	10 11 20 26 9		4 36 45 35	45 42	+ 0 07		68 39 35 68	33 98	— 1 70
	11 11 15 56 4		4 36 11 15	11 42	+ 0 27		68 40 33 60	32 56	— 1 04
	12 11 11 26 8		4 35 37 42	37 59	+ 0 17		68 41 32 62	30 93	— 1 69
	14 11 2 28 2		4 34 30 35	30 69	+ 0 34		68 43 29 95	26 83	— 3 12
	19 10 40 8 1		4 31 48 89	48 99	+ 0 10		68 48 10 89	9 80	— 1 09
	22 10 26 48 0	1 & 2	4 30 16 48	16 78	+ 0 30		68 50 55 05	52 21	— 2 84
1847									
Jan	4 9 29 57 8	1 L	4 24 34 00	34 28	+ 0 28		69 0 53 34	50 31	— 3 03
	5 9 25 41 6	C	4 24 12 33	12 43	+ 0 10		69 1 28 80	27 06	— 1 74
	6 9 21 25 0		4 23 51 25	51 32	+ 0 07		69 2 5 65	2 30	— 3 35
	7 9 17 8 8		4 23 30 65	30 93	+ 0 28		69 2 38 86	36 01	— 2 85
	11 9 0 11 4		4 22 16 83	16 89	+ 0 06		69 4 38 13	33 99	— 4 14
	12 8 55 58 9		4 22 0 13	0 32	+ 0 19		69 5 1 47	59 14	— 2 33
	13 8 51 47 4		4 21 44 48	44 54	+ 0 06		69 5 27 19	22 52	— 4 67
	15 8 43 26 0		4 21 15 09	15 40	+ 0 31		69 6 7 40	3 74	— 3 66
	16 8 39 17 4		4 21 1 90	2 07	+ 0 17		69 6 25 19	21 53	— 3 66
	18 8 31 0 9		4 20 37 67	37 91	+ 0 24		69 6 53 43	51 32	— 2 11
	19 8 26 54 0		4 20 26 83	27 09	+ 0 26		69 7 6 54	3 24	— 3 30
	20 8 22 47 8		4 20 16 71	17 10	+ 0 39		69 7 1ᴗ 04	13 23	— 1 81
	21 8 18 43 7		4 20 7 87	7 96	+ 0 09		69 7 23 14	21 17	— 1 97
	23 8 10 36 2		4 19 52 08	52 26	+ 0 18		69 7 34 53	31 05	— 3 48
	25 8 2 31 6		4 19 39 68	39 99	+ 0 31		69 7 36 68	32 88	— 3 80
	26 7 58 31 0		4 19 34 98	35 15	+ 0 17		69 7 32 88	30 67	— 2 1
	27 7 54 31 1		4 19 30 87	31 15	+ 0 28		69 7 29 48	26 45	— 3 03
	28 7 50 32 4		4 19 27 74	28 02	+ 0 28		69 7 22 82	20 16	— 2 66
	29 7 46 34 3		4 19 25 57	25 77	+ 0 20		69 7 13 87	11 88	— 1 99
	30 7 42 37 1		4 19 24 23	24 35	+ 0 12		69 7 3 14	1 49	— 1 65
Feb	1 7 34 45 1		4 19 24 03	24 09	+ 0 06		69 6 39 38	34 57	— 4 81
	4 7 23 3 3		4 19 30 03	31 10	+ 0 07		69 5 45 14	39 20	— 5 94
	5 7 19 10 7		4 19 33 70	33 79	+ 0 09		69 5 22 77	16 79	— 5 98
	6 7 15 19 5		4 19 38 15	38 32	+ 0 17		69 4 56 32	52 28	— 4 04
	11 6 56 15 4		4 20 13 64	13 64	0 00		69 2 25 13	20 89	— 4 24
	13 6 48 43 6		4 20 33 69	33 61	— 0 08		69 1 11 97	7 05	— 4 92
	15 6 41 15 0		4 20 56 98	56 81	— 0 17		68 59 49 84	45 84	— 4 00
	16 6 37 31 7		4 21 9 60	9 64	+ 0 04		68 59 7 11	2 55	— 4 56
	17 6 33 49 5		4 21 23 30	23 30	0 00		68 58 21 79	17 50	— 4 29
	18 6 30 8 1		4 21 37 90	37 73	— 0 17		68 57 36 11	30 73	— 5 38
	19 6 26 27 4		4 21 53 13	52 95	— 0 18		68 56 47 29	42 18	— 5 11
May	14 1 52 3 4		5 17 54 58	54 93	+ 0 35		67 9 22 29	16 93	— 36
	21 1 31 8 2		5 24 31 38	31 90	+ 0 52		67 2 22 7ᴗ	20 74	— 2 01

Right Ascensions and North Polar Distances of the Center of Saturn

1831									
Mar	5 11 8 38 4	C	9 59 32 05			C	75 56 45 18		
	6 11 4 26 1		9 59 15 68				75 55 9 76		
	8 10 55 59 4		9 58 40 58				75 52 6 38		

Right Asc nsions and North Polar Distances of the Center of Saturn (Contin ed)

M S lar Tim f Ob ti		P int Ob ed	A R f m Ob ti	A R f m N A	Err f N A	P l t Ob d	N P D fr m Ob ti	N l D f N A	E f N A
1831	m		m						
M 9	10 51 46 7	C	9 58 23 84			C	75 50 35 45		
10	10 47 34 0		9 58 7 04				75 49 8 14		
11	10 43 21 9		9 57 50 78						
12	10 39 9 4		9 57 34 02				75 46 10 17		
13	10 34 57 9		9 57 18 42				75 44 48 89		
16	10 22 25 6		9 56 33 83				75 40 42 49		
18	10 14 2 7		9 56 2 72				75 38 12 58		
19	10 9 52 9		9 55 48 63				75 36 8 76		
20	10 5 42 2		9 55 33 82				75 35 39 32		
21							75 34 11 20		
23	9 53 13 4		9 54 52 70						
25	9 44 56 2		9 54 27 25						
28							75 2 56 91		
29	9 28 25 0		9 53 39 81				75 24 9 63		
30	9 24 17 4		9 53 27 93				75 24 6 34		
Apr l 1	9 16 5 2		9 53 7 66				7 22 23 56		
2	9 11 59 1		9 52 57 19				75 21 35 08		
3	9 7 53 8		9 52 47 77				75 20 46 27		
5	8 59 43 3		9 52 29 07				75 19 18 87		
6	8 55 39 2		9 52 20 79				75 18 37 81		
9	8 43 28 8		9 51 57 77				75 16 46 0		
10							75 16 16 55		
11	8 35 22 8		9 51 43 73				7 15 46 43		
13	8 27 17 6		9 51 30 56						
14	8 23 16 9		9 51 25 87						
15	8 19 15 8		9 51 20 59						
16	8 15 15 6		9 51 16 03						
20	7 59 17 5		9 51 1 56				75 12 5 87		
21	7 55 18 4		9 50 58 41				75 12 44 47		
22							75 12 37 97		
23	7 47 21 7		9 50 53 47				75 12 3ر 02		
25	7 39 28 3		9 50 51 76				75 12 34 16		
26	7 35 31 9		9 50 1 28				75 12 36 46		
27	7 31 36 1		9 50 51 41						
28	7 27 40 6		9 50 51 85				75 12 50 42		
29	7 23 45 1		9 50 52 23				75 13 0 62		
30	7 19 50 4		9 50 53 46				75 13 13 82		
May 1	7 15 55 2		9 50 54 11				75 13 28 89		
2	7 12 1 2		9 50 55 99				75 13 42 38		
3	7 8 8 0		9 50 58 72				75 13 58 78		
4	7 4 14 6		9 51 1 36				75 14 20 38		
6	7 56 29 0		9 51 7 56				75 16 7 20		
9							75 17 36 47		
10	6 41 1 9		9 51 26 31				75 18 3 32		
13	6 29 34 4		9 51 44 40				75 19 54 08		
14	6 25 45 2		9 51 51 23				75 20 36 29		
16	6 18 7 1		9 52 4 79				75 22 3 78		
17	6 14 18 9		9 52 12 54				75 22 51 24		
1832									
Mar 11	11 35 20 2		10 52 52 83				80 33 26 05		
13	11 26 48 5		10 52 20 29				80 29 49 16		
14	11 22 35 2		10 52 3 52				80 28 3 43		
15	11 18 21 9		10 51 45 65				80 26 17 36		
16	11 14 8 8		10 51 28 43				80 24 35 44		
17	11 9 58 1		10 51 9 76				80 22 51 88		
19	10 1 34 4		10 50 37 00				80 19 32 62		
22	10 48 56 5		10 49 47 96				80 14 39 60		

Right Ascensions and North Polar Distances of the Center of Saturn (Continued)

Mean Solar Time of Observation	Pier at Observed	A R from Observation	A R from N A	Error of N A	Pier at Observed	N P D from Observation	N P D from N A	Error of N A
1832							″	
Mar 23 10 44 45.7	C	10 49 32.35			C	80 13 5.87		
24 10 40 34.2		10 49 16.44				80 11 31.97		
25 10 36 23.1		10 49 1.05				80 10 1.21		
26 10 32 12.6		10 48 46.66				80 8 29.46		
27 10 28 0.9		10 48 30.49				80 7 2.00		
28 10 23 50.3		10 48 15.61				80 5 34.72		
29 10 19 39.6		10 48 1.20				80 4 9.54		
30 10 1 29.7		10 47 46.87				80 2 46.41		
31 10 11 19.6		10 47 32.65				80 1 25.54		
April 1 10 7 9.8		10 47 19.07				80 0 5.77		
2 10 3 0.1		10 47 5.63				79 58 48.67		
3 9 58 51.0		10 46 52.25				79 57 32.85		
4 9 54 42.0		10 46 39.17				79 56 20.00		
5 9 50 33.4		10 46 26.11						
6 9 46 22.2		10 46 14.65				79 53 55.54		
7 9 42 14.0		10 46 2.28				79 52 46.07		
10 9 29 57.1		10 45 26.57				79 49 37.27		
11 9 25 50.4		10 45 15.43				79 48 37.86		
12 9 21 43.2		10 45 5.41				79 47 42.96		
13 9 17 36.4		10 44 54.62				79 46 44.08		
14 9 13 31.3		10 44 44.69				79 45 54.16		
21 8 44 57.9		10 43 45.37				79 40 57.06		
22 8 40 55.0		10 43 38.28				79 40 7.84		
23 8 36 52.6		10 43 30.94				79 39 37.48		
24 8 32 50.3		10 43 24.65				79 39 5.57		
26 8 24 47.1		10 43 12.87				79 38 13.01		
27 8 20 4 1		10 43 8.00				79 37 50.19		
28 8 16 43.8		10 43 2.72				79 37 27.94		
29 8 12 43.5		10 42 57.93				79 37 10.21		
30 8 8 43.0		10 42 53.89				79 36 55.14		
May 3 7 56 45.2		10 42 44.18				79 36 19.64		
4 7 52 46.4		10 42 40.77				79 36 14.04		
5 7 48 48.3		10 42 38.29				79 36 8.71		
6 7 44 51.6		10 42 37.21				79 36 8.11		
9 7 32 58.6		10 42 32.54				79 36 14.41		
11 7 25 7.7		10 42 32.49				79 36 35.76		
12 7 21 11.9		10 42 33.02				79 36 49.44		
14 7 13 22.0		10 42 35.52				79 37 20.84		
15 7 9 29.0		10 42 37.58				79 37 42.02		
16 7 5 34.9		10 42 39.66				79 38 1.02		
17 7 1 40.9		10 42 41.54				79 38 28.25		
18 6 57 48.5		10 42 44.22				79 37 56.06		
19 6 53 55.9		10 42 47.63				79 37 56.80		
20 6 50 2.5		10 42 51.12				79 38 21.30		
21 6 46 11.0		10 42 55.04				79 38 21.85		
1833.								
Mar 13 12 20 21.0		11 45 0.35				85 40 57.31		
14 12 16 8.2		11 44 43.28				85 38 59.32		
15 12 11 55.5		11 44 25.98				85 37 4.77		
16 12 7 41.9		11 44 8.40						
17 12 3 28.7		11 43 51.23				85 33 13.86		
18 11 9 15.0		11 43 33.92				85 31 19.65		
19 11 55 1.9		11 43 16.12				85 29 24.57		
20 11 50 49.1		11 42 59.21				85 27 32.48		
21 11 46 36.0		11 42 42.67				85 25 38.79		
22 11 42 22.5		11 42 24.82				85 23 45.78		
23 11 38 10.0		11 42 7.79				85 21 55.06		

Right Ascensions and North Polar Distances of the Center of Saturn *(Cont nued)*

	M an S la Tim f Ob ti	P int Ob-rved	A R fr m Ob ti	A R from N A	Err f N A	P int Ob-d	N P D from Ob ti	N P D f m N A	Err f N A
1833			m					′	
Mar	25 11 29 44 3	C	11 41 33 83			C	85 18 24 32		
	26 11 25 31 5		11 41 16 84				85 16 25 16		
	27 11 21 19 1		11 41 0·03				85 14 37 74		
	28 11 17 6 4		11 40 43 43				85 12 51·21		
	29 11 12 53 9		11 40 26 87				85 12 14 90		
	30 11 8 41 3		11 40 10 33				85 9 19 50		
	31 11 4 29 3		11 39 54 08				85 7 37 48		
Apr l	1 11 0 17 4		11 39 37 96				85 5 54 00		
	2 10 56 5 4		11 39 21 77				85 4 15 24		
	3 10 51 53 9		11 39 6 05				85 2 37 44		
	4 10 47 42 8		11 38 50·24				85 0 58 91		
	5 10 43 30 5		11 38 34 94				84 59 22 49		
	6 10 39 19 2		11 38 19 41				84 57 46 88		
	8 10 30 57 7		11 37 49 27				84 54 43 59		
	13 10 10 8		11 36 37 73				84 47 30 2		
	14 10 5 57 3		11 36 24 07				84 46 7 10		
	16 9 57 37 5		11 35 57 54				84 43 31 42		
	17 9 53 29 9						84 42 15 67		
	18 9 49 21 8		11 35 31 79				84 41 1 14		
	19 9 45 13 9		11 35 19 44				84 39 49 22		
	20 9 41 5 1		11 35 7 43				84 38 40 02		
	21 9 36 57 3		11 34 56 10				84 37 34 72		
	22 9 32 50 6		11 34 44·24				84 36 27 90		
	23 9 28 43 4		11 34 33 12				84 35 20 56		
	24 9 24 36 7		11 34 22 38				84 34 21 33		
	25 9 20 30 1		11 34 11 54				84 33 22 17		
	26 9 16 24 4		11 34 1 29				84 32 21 56		
	27 9 12 18 5		11 33 51 44				84 31 33 05		
	30 9 0 2 6		11 33 23 56				84 29 2 68		
May	2 8 51 53 8		11 33 6 41				84 27 35 79		
	4 8 43 46 5		11 3 50 86				84 26 18 0		
1835									
Apnl	6 12 21 5 7		13 18 28 20	28 19	— 0 01		95 17 35 71	54 90	+ 19 19
	7 12 16 52 7		13 18 11 20	11 13	— 0 07		95 1ט ט0 76	16 9 79	+ 19 03
	10 12 4 13 6		13 17 19 75	19 79	+ 0 04		95 10 34·74	55 78	+ 21·04
	11 12 0 0·6		13 17 2 35	2 66	+ 0 31		95 8 51 43	9 11·62	+ 20 19
	13 11 51 34 9		13 16 28 56	28 44	— 0 12		95 5 26 03	44 ט4	+ 18 1
	14 11 47 21 9		13 16 11 34	11 36	⊦ 0 02		95 3 42 32	4 1 64	+ 19 32
	15 11 43 9 3		13 15 54 27	54 30	+ 0 03		95 1 59 32	2 19·20	+ 19 88
	16 11 38 56 1		13 15 37 22	37 27	+ 0 05		95 0 19 10	37 35	+ 18·25
	17 11 34 43 1		13 15 20·07	20 31	+ 0 24		94 58 36 09	56 13	⊣ 20 04
	18 11 30 30 8		13 15 3 23	3 40	+ 0 17		94 56 57 35	57 1 56	+ 18 21
	19 11 26 18 5		13 14 46 67	46 56	— 0 01		94 55 16 50	35·67	+ 19 17
	20 11 22 5 2		13 14 29 52	29 80	+ 0 28		94 53 36 87	56 64	+ 19 77
	23 11 9 27 3		13 13 39 84	40 06	+ 0 22		94 48 4 ·28	49 4 47	+ 19 19
	25 11 1 3 4		13 13 7 16	7 41	+ 0 25		94 45 34 46	54 64	+ 20 18
	26 10 56 51 6			51·27			94 43 59 29	44 21 34	+ 22 05
	27 10 52 39 4		13 12 35 11	35 28	+ 0 17		94 42 28 79	49 14	+ 20 35
	30 10 40 4 7		13 11 48 02	48 18	+ 0 16		94 37 57 71	38 19 73	+ 22 02
M y	2 10 31 42 9		13 11 17 38	17 59	+ 0 21		94 35 7·02	26·65	+ 19 63
	3 10 27 31 9		13 11 2 18	2 59	+ 0 41		94 33 42 24	34 2 30	+ 20 06
	4 10 23 20·6		13 10 47 47	47 76	+ 0 29		94 32 20 56	39 35	+ 18 79
	6 10 14 59 9		13 10 18 31	18 73	+ 0 42		94 29 37 67	58 29	+ 20 62
	7 10 10 50 4		13 10 4 04	4 54	+ 0 50		94 28 20 86	39 96	+ 19 10
	9 10 2 30 3		13 9 36 59	36 83	+ 0 24		94 25 48 65	26 8 45	+ 19 80
	11 9 54 12 0		13 9 9·67	10 01	+ 0 34		94 23 23 71	43 42	+ 19 71

Right Ascensions and North Polar Distances of the Center of Saturn (Continued.)

Date		Mean Solar Time of Observation	Point Observed	A R from Observation	A R from N A	Error of N A	Point Observed	N P D from Observation	N P D from N A	Error of N A
1835										
May	16	9 33 30 1	C	13 8 6 95	7 33	+ 0 38	C	94 17 53 19	18 12 36	+ 19 17
	17	9 29 23 0		13 7 55 56	55 58	+ 0 02		94 16 53 50	17 11 65	+ 18 15
	19	9 21 8 2		13 7 32 63	32 93	+ 0 32		94 14 56 65	15 16 13	+ 19 48
	20	9 17 1 1		13 7 21 64	22 04	+ 0 40		94 14 2 30	21 34	+ 19 04
	23	9 4 43 0		13 6 51 04	51 14	+ 0 10		94 11 31 15	49 25	+ 18 10
	24	9 0 37 3		13 6 41 14	41 45	+ 0 31		94 10 44 21	11 2 71	+ 18 50
	28	8 44 17 2		13 6 5 83	5 82	— 0 01		94 7 59 38	8 17 84	+ 18 46
1836										
Apl	13	12 37 21 5		14 5 21 56	21 60	+ 0 04		99 48 33 81	53 35	+ 19 54
	14	12 33 8 6		14 5 4 47	4 54	+ 0 07		99 47 0 61	19 82	+ 19 21
	15	12 28 55 0		14 4 47 23	47 40	+ 0 17		99 45 25 99	46 15	+ 20 16
	16	12 24 42 4		14 4 30 29	30 20	— 0 09		99 43 51 99	44 12 42	+ 20 43
	17	12 20 29 0		14 4 12 89	12 95	+ 0 06		99 42 18 50	38 74	+ 20 24
	19	12 12 3 0		14 3 38 20	38 33	+ 0 13		99 39 10 92	31 65	+ 20 73
	20	12 7 49 7		14 3 20 97	21 00	+ 0 03		99 37 38 60	58 26	+ 19 66
	22	11 59 23 4		14 2 46 34	46 27	— 0 07		99 35 31 20	34 52 13	+ 20 93
	23	11 55 9 8		14 2 28 86	28 90	+ 0 04		99 33 0 25	19 52	+ 19 27
	24	11 50 57 2		14 2 11 59	11 55	— 0 04		99 31 26 41	47 29	+ 20 88
	26	11 42 32 7		14 1 36 90	36 92	+ 0 02		99 28 24 24	44 04	+ 19 80
	28	11 34 4 4		14 1 2 32	2 43	+ 0 11		99 25 22 13	42 53	+ 20 40
	29	11 29 50 6		14 0 45 15	45 27	+ 0 12		99 23 50 68	24 12 55	+ 21 87
May	1	11 21 25 3		14 0 10 91	11 13	+ 0 22		99 20 53 79	21 14 52	+ 20 73
	4	11 8 47 2		13 59 20 85	20 58	— 0 27		99 16 31 85	53 40	+ 21 55
	5	11 4 35 2		13 59 4 03	3 94	— 0 09		99 15 6 13	28 03	+ 21 90
	7	10 56 10 3		13 58 31 13	30 98	— 0 15		99 12 19 62	39 87	+ 20 25
	8	10 51 58 4		13 8 14 95	14 69	— 0 26		99 10 57 47	11 17 22	+ 19 75
	9	10 47 44 9		13 57 58 60	8 54	— 0 06		99 9 35 35	55 41	+ 20 06
	11	10 39 22 5		13 57 26 68	26 70	+ 0 02		99 6 56 58	15 16	+ 18 58
	15	10 22 38 2		13 56 25 19	24 97	— 0 22		99 1 47 62	2 8 94	+ 21 32
	18	10 10 5 2		13 55 40 63	40 73	+ 0 10		98 58 13 44	33 11	+ 19 67
	19	10 5 55 1		13 55 26 35	26 41	+ 0 06		98 57 4 62	23 99	+ 19 37
	23	9 49 17 0		13 54 31 37	31 43	+ 0 06		98 52 43 15	2 34	+ 19·19
	28	9 28 34 1		13 53 28 28	28 28	0 00		98 37 50 45	11 47	+ 21 02
June	10	8 35 17 1		13 51 17 72	17 86	+ 0 14		98 38 43 02	4 18	+ 21 16
	11	8 31 13 9		13 51 10 34	10 05	— 0 29		98 38 13 48	35 64	+ 22 16
	12	8 27 9 8		13 51 2 68	2 57	— 0 11		98 37 47 76	9 08	+ 21 32
	13	8 23 6 8		13 50 55 73	55 43	— 0 30		98 37 25 33	44 51	+ 19 18
	14	8 19 4 4		13 50 48 89	48 65	— 0 24		98 37 0 72	22 02	+ 21 30
	17	8 6 58 7		13 50 30 38	30 35	— 0 03		98 36 7 11	27 15	+ 20 04
	20	7 52 41 2		13 50 15 29	15 22	— 0 07		98 35 30 90	51 05	+ 20 15
	28	7 23 3 8		13 49 51 06	50 80	— 0 26		98 35 27 23	47 38	+ 20 15
	30	7 15 9 5		13 49 48 69	48 35	— 0 34		98 35 46 83	7 66	+ 20 83
July	2	7 7 16 5		13 49 47 61	47 38	— 0 23				
	4	6 59 25 3		13 49 48 16	47 86	— 0 30				
1837										
Mar	2	16 19 23 2		15 1 27 46	27 26	— 0 20		104 35 46 31	6 65	+ 20 34
	8	15 55 26 9		15 1 6 60	6 17	— 0 43		104 33 1 55	19 87	+ 18 32
May	1	12 11 35 7		14 49 32 0	31 85	— 0 65		103 36 18 42	36 71	+ 18 29
	2	12 7 22 1		14 49 14 53	14 13	— 0 40		103 34 59 01	18 04	+ 19 03
	3	12 3 8 3		14 47 56 67	56 39	— 0 28		103 33 39 96	59 68	+ 19 72
	4	11 58 54 6		14 48 39 01	38 63	— 0 38		103 32 20 66	41 20	+ 20 54
	11	11 29 19 9		14 46 35 43	34 91	— 0 52		103 23 21 76	42 02	+ 20 26
	12	11 25 6 6		14 46 17 91	17 39	— 0 52		103 22 7 24	26 73	+ 19 49
	14	11 16 40 0		14 45 43 12	42 61	— 0 51				
	15	11 12 27 7		14 45 25 98	25 36	— 0 62				

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF SATURN *(C ntinued)*

M S l Tim f Ob tl					P l tOb rved	A R fr m Ob rv tl	A R fr m N A	Err f N A	P l t Ob d	N P D f m Obs rv tl	N P D f m N A	Err f N A
1837										′		
M y	30	10	9	26 3	C	14 41 23 17	22 83	— 0 34	C	103 1 41 95	0 67	+ 18 72
July	11	7	18	13 1		14 35 17 05	16 71	— 0 34		102 42 45 29	3 18	+ 17 89
A g	8	5	29	53 4		14 37 3 82	3 12	— 0 70		102 58 55 49	15 57	+ 20 08
1838												
M y	10	12	24	23 7		15 36 55 10	54 59	— 0 51		107 0 36 98	53 57	+ 16 [illegible]9
	11	12	20	9 5		15 36 37 23	36 58	— 0 65		106 59 35 68	52 78	+ 17 10
	12	12	15	56 0		15 36 19 13	18 49	— 0 64		106 58 33 39	52 02	+ 18 63
	14	12	7	27 8		15 35 42 55	42 28	— 0 27		106 56 33 51	50 44	+ 16 93
	17	11	54	46 1		15 34 48 41	47 73	— 0 68		106 53 32 75	48 86	+ 16 11
	18	11	50	31 8		15 34 30 17	29 56	— 0 61		106 53 32 35	48 59	+ 16 24
	20	11	42	4 1		15 33 53 93	53 25	— 0 68		106 50 33 03	48 77	+ 15 74
	22	11	33	36 1		15 33 17 69	17 07	— 0 62		106 48 33 67	50 10	+ 16 43
	23	11	29	22 1		15 32 59 49	59 05	— 0 44		106 47 3[illegible] 01	51 23	+ 16 22
1839												
M y	3	13	45	31 6		16 29 43 11	42 24	— 0 87		109 50 31 82	48 3[illegible]	+ 16 53
June	23	10	10	4 9		16 14 45 40	44 36	— 1 04		109 18 16 02	31 68	+ 1[illegible] 66
1840												
J ly	31	8	20	5 2		16 57 17 95	17 09	— 0 86		111 14 51 75	7 32	+ 15 7
1841												
S pt	14	6	12	8 8		17 45 27 90	27 22	— 0 68		112 33 17 39	32 02	+ 14 63
	17	6	0	41 5		17 46 47 58	46 85	— 0 73		112 33 55 07	7 [illegible]6	+ 12 49
	20	5	49	17 5		17 46 10 94	10 20	— 0 74		112 34 27 97	43 83	+ 1 86
	24	5	34	10 2		17 46 47 58	47 00	— 0 58		112 35 2[illegible] 54	33 21	+ 7 67
	25	5	30	24 6		17 46 57 85	57 20	— 0 65		112 35 3[illegible] 64	45 07	+ 10 03
Oct	4	4	56	50 4		17 48 47 07	46 47	— 0 60				
	6	4	49	32 0		17 49 15 37	14 91	— 0 46				
	7	4	45	45 8		17 49 30 32	29 66	— 0 66				
1842												
Apı l	6	18	1	51 1		19 1 22 56	21 77	— 0 78		112 6 18 04	33 [illegible]2	+ 1 48
	11	17	42	41 6		19 1 52 74	51 93	— 0 81		112 5 39 31	53 93	+ 14 62
July	9	11	37	11 0		18 46 15 32	14 09	— 1 23		112 30 9 48	24 69	+ 15 21
	13	11	20	11 5		18 45 0 50	59 42	— 1 08		112 31 54 24	8 95	+ 14 71
	19	10	54	48 9		18 43 11 63	10 52	— 1 11		112 34 26 82	39 70	+ 12 88
	20	10	50	34 1		18 42 53 71	52 85	— 0 86		112 34 49 12	4 06	+ 14 94
	22	10	42	7 6		18 42 19 07	18 01	— 1 06		112 35 38 90	[illegible]2 00	+ 13 10
Sept	2	7	48	58 9		18 34 17 07	16 23	— 0 84		112 47 52 53	4 [illegible]9	+ 12 06
	11	7	13	16 5		18 33 57 38	56 84	— 0·54		112 49 13 56	25 58	+ 12 02
	16	6	53	40 7		18 34 1 55	0 83	— 0 72		112 49 47 23	58 07	+ 10 84
	23	6	26	32 4		18 34 24 98	24 15	— 0 83				
1843												
July	22	11	35	39 3		19 35 2 31	1 89	— 0 42		114 40 52 68	3 39	+ 10 71
Aug	23	9	21	21 2		19 26 31 51	31 06	— 0 45		112 2 1 37	13 50	+ 12 13
Sept	13	7	55	52 1		19 23 36 27	35 63	— 0 64	”	112 9 38 04	48 23	+ 10 19
	14		51	51 6		19 23 32 06	31 48	— 0 58		112 9 50 10	0 90	+ 10 80
	18	7	35	56 0		19 23 19 78	19 00	— 0 78		112 10 32 48	43 65	+ 11 17
	30	6	48	47 9		19 23 22 37	21 78	— 0 59		112 11 20 34	29 81	+ 9 47
Oct.	2	6	41	1 8		19 23 28 61	28 17	— 0 44		112 11 13 10	25 43	+ 12 33
	3	6	37	9 8		19 23 32 33	31 99	— 0 34		112 11 9 80	22 00	+ 12 20
	4	6	33	18 3		19 23 36 68	36 24	— 0 44		112 11 6 62	17 66	+ 11 04

Right Ascensions and North Polar Distances of the Center of Saturn (Continued)

Mean Solar Time of Observation	Point Observed	A R from Observation	A R from N A	Error of N A	Point Observed	N P D from Observation	N P D from N A	Error of N A
1844								
July 23 12 20 21 1	C	20 26 47 09	46 23	−0 86	C	109 45 23 67	36 48	+ 12 81
27 12 3 24 9		20 25 34 22	33 33	−0 89		109 49 58 07	9 21	+ 11 14
Aug 5 11 25 19 2		20 22 51 24	50 29	−0 95		109 59 54 67	7 92	+ 13 25
14 10 47 20 3		20 20 14 91	13 97	−0 94		110 9 14 43	28 61	+ 14 18
16 10 38 55 5		20 19 41 86	40 78	−1 08		110 11 12 79	25 83	+ 13 04
19 10 26 18 3		20 18 53 47	52 47	−1 00		110 14 5 22	15 70	+ 10 48
20 10 22 7 5		20 18 37 73	36 77	−0 96		110 14 57 97	10 65	+ 12 68
23 10 9 34 7		20 17 51 96	51 01	−0 95		110 17 37 92	50 11	+ 12 19
26 9 57 4 1		20 17 7 95	7 39	−0 56		110 20 9 48	21 21	+ 11 73
30 9 40 25 3		20 16 13 90	12 88	−1 02		110 23 17 62	28 75	+ 11 13
Sept 10 8 55 7 0		20 14 8 65	7 75	−0 90		110 30 24 98	35 99	+ 11 01
11 8 51 0 1		20 13 59 27	58 36	−0 91		110 30 55 08	7 80	+ 12 72
12 8 46 53 7		20 13 50 32	49 35	−0 97		110 31 26 80	38 44	+ 11 64
17 8 26 36 2		20 13 10 49	9 73	−0 76		110 33 42 66	53 10	+ 10 44
18 8 22 33 8		20 13 3 71	2 94	−0 77		110 34 5 09	16 17	+ 11 08
21 8 10 27 8		20 12 45 67	44 89	−0 78		110 35 5 38	18 00	+ 12 62
22 8 6 27 6		20 12 40 62	39 63	−0 99		110 35 23 17	36 01	+ 12 84
24 7 58 25 8		20 12 31 46	30 36	−1 10		110 35 56 39	8 31	+ 11 92
25 7 4 25 4		20 12 27 10	26 29	−0 81		110 36 10 19	22 45	+ 12 26
26 7 50 26 1		20 12 23 53	22 67	−0 86		110 36 22 94	35 37	+ 12 43
27 7 46 26 8		20 12 20 19	19 41	−0 78		110 36 34 95	46 90	+ 11 95
28 7 42 28 0		20 12 17 29	16 57	−0 72		110 36 44 22	57 15	+ 12 93
29 7 38 30 0		20 12 14 76	14 14	−0 62		110 36 54 78	6 09	+ 11 31
30 7 34 31 7		20 12 12 70	12 12	−0 58		110 37 3 78	13 74	+ 9 96
Oct 1 7 30 33 8		20 12 11 42	10 50	−0 92		110 37 10 90	20 12	+ 9 22
2 7 26 37 1		20 12 10 36	9 29	−1 07		110 37 13 00	25 18	+ 12 18
3 7 22 40 0		20 12 9 25	8 49	−0 76		110 37 17 70	28 86	+ 11 16
6 7 10 52 1		20 12 9 24	8 61	−0 63		110 37 19 95	32 03	+ 12 08
8 7 3 2 9		20 12 11 51	10 74	−0 77		110 37 14 81	27 54	+ 12 73
10 6 55 14 6		20 12 15 21	14 57	−0 64		110 37 7 11	17 69	+ 10 58
12 6 47 27 0		20 12 20 72	20 14	−0 58		110 36 50 84	2 48	+ 11 64
14 6 39 43 5		20 12 27 87	27 28	−0 59		110 36 30 49	41 97	+ 11 48
15 6 35 51 9		20 12 32 26	31 48	−0 78		110 36 17 68	29 74	+ 12 06
18 6 24 19 3		20 12 47 21	46 62	−0 59		110 35 32 95	45 02	+ 12 07
19 6 20 29 1		20 12 53 04	52 50	−0 54		110 35 16 65	27 55	+ 10 90
21 6 12 50 5		20 13 6 31	5 47	−0 84		110 34 38 53	48 57	+ 10 04
22 6 9 1 6		20 13 13 41	12 64	−0 77		110 34 14 55	27 07	+ 12 52
23 6 5 12 9		20 13 21 05	20 08	−0 97		110 33 50 96	4 40	+ 13 44
24 6 1 24 9		20 13 28 74	27 99	−0 75		110 33 30 15	40 31	+ 10 16
2 5 57 37 5		20 13 37 10	36 31	−0 79		110 33 3 35	16 28	+ 12 93
26 5 53 50 0		20 13 45 76	45 03	−0 73		110 32 38 37	48 30	+ 9 93
27 5 50 3 4		20 13 54 86	54 13	−0 73		110 32 8 82	20 43	+ 11 61
1845								
Aug 1 12 34 39 9		21 15 39 36	37 74	−1 62		107 3 26 51	37 22	+ 10 71
8 12 5 5 0		21 13 35 27	33 86	−1 41		107 13 21 70	32 53	+ 10 83
12 11 48 11 1		21 12 24 38	22 81	−1 57		107 18 58 69	8 26	+ 9 57
16 11 31 16 2		21 11 13 31	12 30	−1 01		107 24 26 90	37 43	+ 10 53
21 11 10 10 8		21 9 47 11	45 81	−1 30		107 31 4 42	16 31	+ 11 89
23 11 1 45 0		21 9 12 93	11 92	−1 01		107 33 40 16	51 08	+ 10 92
26 10 49 7 7		21 8 23 49	22 10	−1 39		107 37 26 96	37 03	+ 11 07
27 10 44 55 5		21 8 7 21	5 82	−1 39		107 38 40 05	50 50	+ 10 45
28 10 40 43 0		21 7 50 87	49 64	−1 23		107 39 55 04	3 12	+ 8 08
29 10 36 31 5		21 7 34 95	33 68	−1 27		107 41 4 83	14 64	+ 9 81
30 10 32 19 7		21 7 19 17	17 89	−1 28		107 42 15 76	25 23	+ 9 47
31 10 28 6 9		21 7 3 58	2 29	−1 29		107 43 25 77	34 77	+ 9 00

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF SATURN (Continued)

Mean Solar Time of Observation		Point Observed	R A from Observation	R A from N A	Error of N A	Point Observed	N P D from Observation	N P D from N A	Error of N A
1845			m						
Sept	2 10 19 45.6	C	21 6 32.86	31.69	−1.17	C	107 45 42.28	50.51	+8.23
	11 9 42 17.1		21 4 27.02	25.59	−1.43		107 54 52.69	1.38	+8.69
	12 9 38 7.7		21 4 14.02	12.91	−1.11		107 55 47.69	54.98	+7.29
	13 9 33 59.3		21 4 1.49	0.51	−0.98		107 56 39.91	49.30	+9.39
	14 9 29 51.8		21 3 49.52	48.39	−1.13		107 57 33.12	41.18	+8.06
	17 9 17 29.3		21 3 15.10	13.87	−1.23		107 59 58.18	8.12	+9.94
	19 9 9 16.2		21 2 53.36	52.40	−0.96		108 1 29.24	38.67	+9.43
	20 9 5 10.5		21 2 43.55	42.16	−1.39		108 2 9.62	21.69	+12.07
	22 8 56 59.3		21 2 24.02	22.67	−1.35		108 3 32.68	43.11	+10.43
	24 8 48 49.4		21 2 6.01	4.54	−1.47		108 4 47.96	58.33	+10.37
	25 8 44 44.7		21 1 57.14	56.00	−1.14		108 5 24.33	33.59	+9.26
	27 8 36 36.8		21 1 41.42	39.97	−1.45		108 6 31.36	39.15	+7.79
	28 8 32 33.9		21 1 33.43	32.52	−0.91		108 6 57.96	9.43	+11.47
	29 8 28 30.5		21 1 26.64	25.43	−1.21		108 7 28.45	39.03	+10.58
	30 8 24 28.0		21 1 19.82	18.71	−1.11		108 7 55.67	5.08	+9.41
Oct	1 8 20 25.0		21 1 13.59	12.38	−1.21		108 8 22.99	30.35	+7.36
	2 8 16 23.0		21 1 7.44	6.40	−1.04		108 8 44.83	53.88	+9.05
	3 8 12 20.7		21 1 1.92	0.82	−1.10		108 9 6.55	15.81	+9.26
	5 8 4 19.8		21 0 51.84	50.84	−1.00		108 9 46.73	54.41	+7.68
	8 7 52 20.1		21 0 39.79	38.79	−1.00		108 10 32.01	39.60	+7.59
	9 7 48 20.6		21 0 36.36	35.57	−0.79		108 10 42.11	51.19	+9.08
	15 7 24 35.2		21 0 25.69	24.69	−1.00		108 11 14.77	24.65	+9.88
	17 7 16 42.2		21 0 25.39	24.29	−1.10		108 11 14.04	21.95	+7.91
	20 7 4 56.5		21 0 27.82	26.73	−1.09		108 10 54.98	5.31	+10.33
	21 7 1 2.7		21 0 29.51	28.36	−1.15		108 10 45.80	55.81	+10.01
	23 6 53 15.2		21 0 33.87	32.86	−1.01		108 10 21.81	32.23	+10.42
	24 6 49 23.2		21 0 36.87	35.74	−1.13		108 10 6.61	17.78	+11.17
	25 6 45 30.4		21 0 40.13	38.99	−1.14		108 9 51.92	1.61	+9.69
	26 6 41 38.4		21 0 43.81	42.68	−1.13		108 9 34.87	43.75	+8.88
	27 6 37 45.5		21 0 48.00	46.77	−1.23		108 9 14.89	24.12	+9.23
	28 6 33 53.9		21 0 52.44	51.26	−1.18		108 8 52.38	2.68	+10.30
	31 6 22 20.7		21 1 8.27	7.20	−1.07		108 7 39.26	48.23	+8.97
Nov	1 6 18 32.9		21 1 14.40	13.32	−1.08		108 7 10.52	20.95	+10.43
	2 6 14 43.5		21 1 21.01	19.85	−1.16		108 6 40.71	51.00	+10.29
	3 6 10 53.2		21 1 27.64	26.77	−0.87		108 6 9.78	18.29	+8.51
	4 6 7 5.9		21 1 35.02	34.13	−0.89		108 5 35.09	44.91	+9.82
	5 6 3 17.8		21 1 43.10	42.15	−0.95		108 5 1.06	9.86	+8.80
	6 5 59 30.0		21 1 51.04	49.98	−1.06		108 4 21.21	31.50	+10.29
	8 5 51 55.5		21 2 8.69	7.40	−1.29		108 3 3.80	14.51	+10.71
1846									
Aug	26 11 41 23.5		21 59 10.96	9.26	−1.70		104 1 21.75	34.46	+12.71
	28 11 32 17.4		21 58 36.33	34.84	−1.49		104 4 34.26	44.29	+10.03
Sept	4 11 2 47.9		21 56 38.40	36.87	−1.53		104 15 14.84	26.17	+11.33
	9 10 41 47.5		21 55 17.63	16.15	−1.48		104 22 27.34	37.31	+9.97
	10 10 37 35.7		21 55 2.00	0.48	−1.52		104 23 50.57	60.33	+9.76
	11 10 33 25.3		21 54 46.61	44.98	−1.63		104 25 11.55	22.12	+10.57
	15 10 16 41.2		21 53 46.34	44.84	−1.50		104 30 26.55	36.90	+10.35
	18 10 4 11.1		21 53 3.43	1.91	−1.52		104 34 7.73	18.70	+10.97
	22 9 47 33.8		21 52 9.51	8.07	−1.44		104 38 42.67	53.43	+10.76
	24 9 39 16.4		21 51 44.25	42.71	−1.54		104 40 49.89	1.26	+11.37
	25 9 35 8.2		21 51 31.85	30.44	−1.41		104 41 51.97	2.67	+10.70
	26 9 31 0.3		21 51 20.15	18.47	−1.68		104 42 52.30	2.43	+10.13
	28 9 22 45.5		21 50 56.87	55.44	−1.43		104 44 47.01	56.77	+9.76
	29 9 18 38.8		21 50 45.87	44.36	−1.51		104 45 40.57	51.32	+10.75
Oct	1 9 10 36.3		21 50 24.61	23.13	−1.48		104 47 24.21	35.06	+10.85

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF SATURN (Co tinued)

M S l Tim f Ob tl		I l t Ob d	A R f m Ob rv tl n.	A R f m N A	Err f N A	I l t Ob d	N P D fr m Ob rv tl	N P D f m N A	Err f N A
1846	m		m						"
Oct 5	8 54 3 3	C	21 49 45 96	44 54	—1 42	C	104 50 30 36	40 34	+ 9 98
6	8 40 58 5		21 49 37 19	35 7ᴊ	—1 44		104 51 13 61	22 04	+ 8 43
7	8 45 54 3		21 49 28 76	27 27	—1 49		104 51 52 24	1 76	+ 9 52
8	8 41 50 3		21 49 20 85	19 15	—1 70		104 52 30 21	39 57	+ 9 36
13	8 21 35 7		21 48 45 23	43 88	—1 35		104 55 10 87	19 20	+ 8 33
14	8 17 33 6		21 48 39 29	37 90	—1 39		104 55 35 59	45 09	+ 9 50
15	8 13 32 2		21 48 33 81	32 38	—1 43		104 56 0 70	8 71	+ 8 01
23	7 41 34 1		21 48 2 94	1 43	—1 51		104 57 56 77	5 90	+ 9 13
24	7 37 36 3		21 48 0 79	59 34	—1 45		104 58 1 85	11 08	+ 9 23
26	7 29 41 6		21 47 57 75	56 35	—1 40		104 58 5 6	15 21	+ 9 56
29	7 17 52 0		21 47 6 25	4 8	—1 40		104 57 55 96	5 60	+ 9 64
30	7 13 56 5		21 47 ᴊ6 51	55 16	—1 35		104 ᴊ7 ᴅ0 68	58 25	+ 7 57
31	7 10 1 1		21 47 57 26	5ᴊ 8	—1 41		104 7 40 83	48 81	+ 7 98
N v 2	7 2 12 5		21 47 9 76	58 47	—1 29		104 57 14 76	23 69	+ 8 93
4	6 54 25 0		21 48 4 07	2 66	—1 41		104 56 41 84	50 21	+ 8 37
6	6 46 39 1		21 48 9 93	8 49	—1 44		104 6 0 41	8 34	+ 7 93
7	6 42 46 6		21 48 13 38	11 98	—1 40		104 55 36 14	44 37	+ 8 23
9	6 35 3 0		21 48 21 66	20 20	—1 46		104 54 40 68	50 11	+ 9 43
10	6 31 12 0		21 48 26 29	24 88	—1 41		104 54 12 17	19 89	+ 7 72
1847									
S pt 17	10 59 9 6		22 43 16 46	14 6	—1 81		100 19 24 51	33 83	+ 9 32
18	10 54 57 4		22 43 0 13	58 49	—1 64		100 21 1 39	10 34	+ 8 9
20	10 46 34 0		22 42 28 41	26 68	—1 73		100 24 9 99	19 43	+ 9 41
Oct 7	9 35 44 4		22 38 28 63	26 76	—1 87		100 47 8 28	15 87	+ 7 9
8	9 31 36 7		22 38 16 8	14 79	—2 06		100 48 12 65	21 63	+ 8 98
11	9 19 14 9		22 37 42 4	40 61	—1 93		100 51 20 02	27 2ᴊ	+ 7 27
15	9 2 49 9		22 37 1 17	59 3	—1 82		100 54 59 32	6 66	+ 7 34
16	8 58 44 6		22 36 51 74	49 8ᴊ	—1 89		100 55 48 82	56 30	+ 7 48
19	8 46 30 1		22 36 24 93	23 29	—1 64		100 58 4 12	12 24	+ 8 12
20	8 42 26 0		22 36 16 63	15 11	—1 52		100 58 43 29	53 22	+ 9 93
26	8 18 9 3		22 35 35 18	33 45	—1 73		101 2 4 86	12 42	+ 7 6
Nov 4	7 42 8 4		22 34 57 49	55 82	—1 67		101 4 30 39	36 77	+ 6 38
ᴊ	7 38 10 4		22 34 55 32	53 56	—1 76		101 4 33 03	41 03	+ 8 10
6	7 34 12 6		22 34 53 49	51 66	—1 83		101 4 35 15	42 91	+ 7 76
8	7 26 18 1		22 34 50 88	49 10	—1 78		101 4 30 47	39 56	+ 9 09
9	7 22 21		22 34 50 08	48 39	—1 69		101 4 28 43	34 37	+ 5 94
10	7 18 25 5		22 34 49 86	48 11	—1 75		101 4 19 65	26 70	+ 7 05
15	6 58 50 4		22 34 54 44	52 59	—1 85		101 3 5 13	13 01	+ 7 88
16	6 ᴊ4 56 3		22 34 56 40	54 68	—1 72		101 2 43 69	51 13	+ 7 44
19	6 43 17 2		22 35 4 97	3 33	—1 64		101 1 21 98	31 53	+ 9 5
20	6 39 25 1		22 35 8 71	7 01	—1 70		101 0 52 3	0 29	+ 7 76

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF GEORGIAN

1831									
Aug 10	11 46 6 9	C	21 0 2 43			C			
23	10 53 59 6		20 58 1 56				107 55 30 69		
30	10 24 27 4		20 57 0 49				107 59 38 01		
Sept 1	10 16 18 7		20 56 43 60				108 0 48 58		
2	10 12 14 5		20 56 35 29				108 1 20 81		
4	10 4 6 8		20 56 19·24				108 2 25 25		
7	9 51 55 4		20 55 55 68				108 3 57 61		
11	9 35 42 8		20 55 26 38				108 5 55 49		

Right Ascensions and North Polar Distances of the Center of Georgian (Continued)

Mean Solar Time of Observation		Point Observed	A R from Observation	A R from N A	Error of N A	Point Observed	N P D from Observation	N P D from N A	Error of N A
1831								″	
Sept 15	9 19 24 4	C	20 54 51 81			C	108 8 30 66		
Oct 2	8 11 13 5		20 53 31 56				108 13 9 89		
3	8 7 14 2		20 53 27 67				108 13 23 18		
6	7 55 16 4		20 53 17 63				108 14 0 89		
7	7 51 18 1		20 53 15 18				108 14 18 50		
8	7 47 19 2		20 53 12 30						
14	7 23 31 8		20 53 0 24						
16	7 15 40 9		20 53 1 00				108 15 0 86		
21	6 55 55 9		20 52 55 47						
22	6 52 0 2		20 52 55 80				108 14 58 96		
23	6 48 5 1		20 52 56 61				108 14 56 38		
25	6 40 14 2		20 52 57 57				108 14 46 79		
1832									
Aug 28	10 46 17 5		21 13 59 93						
Sept 11	9 49 21 2		21 12 5 52				106 56 35 05		
15	9 33 9 2		21 11 36 96				106 58 35 27		
19	9 16 58 9		21 11 10 92				107 0 30 44		
22	9 4 52 9		21 10 52 09				107 1 49 43		
24	8 56 49 5		21 10 40 55				107 2 37 12		
25	8 52 47 6		21 10 35 00				107 3 58 84		
27	8 44 45 1		21 10 24 67				107 4 42 97		
30	8 32 45 1		21 10 9 64				107 5 41 68		
Oct 7	8 4 43 1		21 9 42 03				107 6 31 43		
12	7 44 49 4		21 9 27 56				107 7 27 56		
14	7 36 53 4		21 9 23 13				107 7 44 56		
23	7 1 20 0		21 9 12 68				107 8 11 40		
26	6 49 38 2		21 9 12 84				107 8 2 81		
27	6 45 47 0		21 9 13 50				107 7 59 45		
28	6 41 41 8		21 9 14 50				107 7 3 53		
29	6 37 46 6		21 9 14 89				107 7 46 04		
Nov 3	6 18 14 7		21 9 22 34				107 7 8 15		
5	6 10 27 1		21 9 26 78				107 6 41 98		
9	5 54 54 8		21 9 28 34				107 5 45 54		
10	5 51 2 0		21 9 41 18				107 5 28 52		
1833									
Aug 29	10 59 44 0		21 30 27 07				105 33 18 40		
Sept 10	10 11 12 0		21 29 6 47				105 39 19 19		
11	10 7 15 7		21 29 6 64				105 39 18 15		
13	9 58 39 4		21 28 22 06				105 43 4 56		
15	9 50 33 1		21 28 7 17				105 44 15 11		
17	9 42 26 7		21 27 52 50				105 45 22 28		
18	9 38 23 9		21 27 45 60				105 45 53 94		
20	9 30 18 1		21 27 31 45				105 46 56 33		
21	9 26 16 4		21 27 24 73				105 47 26 87		
30	8 50 2 2		21 26 31 11				105 51 27 09		
Oct 2	8 41 57 3		21 26 21 24				105 52 11 77		
4	8 33 55 9		21 26 11 53				105 52 54 58		
6	8 25 54 0		21 26 2 71				105 53 31 95		
7	8 21 55 4		21 25 58 05				105 53 50 75		
14	7 53 58 9		21 25 33 95				105 55 32 83		
15	7 50 0 1		21 25 31 09				105 55 42 86		
16	7 46 2 4		21 25 29 00				105 55 52 95		
17	7 42 3 6		21 25 26 57				105 56 4 40		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF GEORGIAN (*Continued*)

M m S l T f Ob t		L l Ob d	A R fr m Ob	A R f m N A	Err f N A	P l Ob rv d	N P D from Ob rv ti n	N P D fr m N A	E f N A
1833								′	
O t	22 7 22 69	C	21 25 17 70			C	105 56 33 83		
	25 7 10 23 5		21 25 14 55				105 56 42 10		
1835									
S pt	15 10 21 40)		22 0 26 30	29 36	+ 3 06		103 2 25 73	20 15	— 5 58
	18 10 12 29 6		22 0 2 41	5 40	+ 2 99		103 4 31 40	25 83	— 5 57
	20 10 4 22 9		21 59 46 89	49 93	+ 3 04		103 8 51 90	46 57	— 5 33
1836									
S pt	16 10 33 18 2		22 16 0 62	4 22	+ 3 60		101 37 30 57	21 99	— 8 58
	3 10 4 51 0		22 15 5 11	8 74	+ 3 63		101 42 35 24	26 30	— 8 94
Oct	1 J 32 2C 9		22 14 7 93	11 51	+ 3 58		101 47 43 76	36 20	— 7 56
	3 9 24 22 0		22 13 54 96	58 32	+ 3 36		101 48 53 72	46 33	— 7 39
	(9 12 15 C		22 13 35 99	39 76	+ 3 77		101 50 33 44	25 74	— 7 70
	7 9 8 14 2		22 13 30 22	33 81	+ 3 59		101 51 2 99	67 21	— 5 78
	8 J 4 11 3		22 13 24 49	28 01	+ 3 52		101 51 34 22	27 80	— 6 42
	10 8 6 9 1		22 13 13 40	16 85	+ 3 45		101 52 35 61	26 48	— 9 13
	11 8 2 7 9		22 13 7 90	11 49	+ 3 59		101 53 3 66	54 56	— 9 10
	12 8 48 6 4		22 13 2 60	6 30	+ 3 70		101 53 29 69	21 76	— 7 93
	13 8 44 6 2		22 12 57 72	1 26	+ 3 54		101 53 55 94	47 93	— 8 01
	14 8 40 5 3		22 12 52 90	56 39	+ 3 49		101 54 21 43	13 13	— 8 30
	15 8 36 4 8		22 12 48 43	51 67	+ 3 24		101 54 45 15	37 45	— 7 70
1837									
A g	28 12 7 20 8		22 34 28 67	32 89	+ 4 22		99 51 39 65	27 23	—12 42
	2J 12 3 18 0		22 34 19 78	23 91	+ 4 13		99 52 33 86	20 30	—13 56
Sept	13 11 2 5 5		22 32 6 16	10 41	+ 4 25		100 5 33 23	21 17	—12 06
	14 10 58 1 0		22 31 57 58	1 79	+ 4 21		100 6 23 27	10 96	—12 31
	21 10 29 31 7		22 30 59 38	3 25	+ 3 87		100 12 0 52	47 86	—12 66
	22 10 2 27 9		22 30 51 50	55 16	+ 3 66		100 12 45 45	34 04	—11 41
	23 10 1 24 0		22 30 43 32	47 18	+ 3 86		100 13 31 55	19 70	—11 85
	24 10 17 20 3		22 30 35 38	39 27	+ 3 89		100 14 16 25	4 75	—11 50
	27 10 5 9·0		22 30 12 10	16 12	+ 4 02		100 16 29 15	16 32	—12 83
1838									
Sept	4 11 55 14 3		22 48 57 89	2 29	+ 4 40		98 25 9 04	53 69	—15 35
	29 10 13 24 1		22 45 24 72	29 07	+ 4 35		98 46 23 10	9 15	—13 95
O t	7 9 40 58 3		22 44 25 97	30 45	+ 4 48		98 52 4 98	51 46	—13 52
	8 9 36 53 2		22 44 19 31	23 63	+ 4 32		98 52 45 43	31 09	—14 34
	10 9 28 50 3		22 44 5 85	10 35	+ 4 50		98 53 59 88	47 89	—11 99
	11 9 24 47 9		22 43 59 49	3 90	+ 4 41		98 54 41 70	25 06	—16 64
	12 9 20 4 6		22 43 53 20	57 56	+ 4 36		98 55 16 42	1 40	—15 02
1839									
S pt	13 11 34 49 0		23 3 1 92	6 76	+ 4 84				
1843									
Oct	15 10 24 52 6		23 59 11 71	18 29	+ 6 58		90 55 52 72	17 26	—35 46
	17 10 16 50 5		23 58 55 34	2 47	+ 7 13		90 57 36 67	3 46	—33 21
	18 10 12 42 9		23 58 48 08	54 68	+ 6 60		90 58 23 40	52 35	—31 05
	1J 10 8 38 8		23 58 39 85	46 98	+ 7 13		90 59 10 42	40 60	—29 82
	22 9 56 27 8		23 58 17 39	24 44	+ 7 05		91 1 32 69	58 13	—34 56
	23 J 52 18 7		23 58 10 09	17 12	+ 7 03		91 2 19 38	44 15	—35 23
1844									
Sept	17 12 31 0 4		0 18 15 40	23 04	+ 7 64		88 50 58 51	18 43	—40 08
	21 12 14 41 8		0 17 40 57	48 09	+ 7 52		88 54 43 01	5 50	—37 51
	22 12 10 37 1		0 17 31 74	39 28	+ 7 54		88 55 39 72	2 60	—37 12
	23 12 6 32 5		0 17 22 68	30 47	+ 7 79		88 56 38 61	59 74	—38 87
	24 12 2 27 9		0 17 14 09	21 64	+ 7 55		88 57 34 24	56 90	—37 34
	25 11 58 22 8		0 17 4 91	12 80	+ 7 89		88 58 33 24	54 14	—39·10
	8 11 46 8 7		0 16 38 34	46 25	+ 7 89		89 1 25 32	45 61	—39 71

Right Ascensions and North Polar Distances of the Center of Georgian (Continued)

	Mean Sidereal Time of Observation	Limb Observed	A R from Observation	A R from N A	Error of N A	Limb Observed	N P D from Observation	N P D from N A	Error of N A
1844 Sept 29	11 42 4 3	C	0 16 29 57	37 40	+ 7 83	C	89 2 24 00	42 04	— 41 36
30	11 37 59 4		0 16 20 68	28 57	+ 7 89		89 3 20 51	39 63	— 10 88
Oct 1	11 33 55 2		0 16 12 21	19 73	+ 7 2		89 4 15 69	36 11	— 39 28
2	11 29 50 8		0 16 3 27	10 91	+ 7 64		89 5 12 02	33 16	— 38 8
3	11 25 47 1		0 15 54 62	2 13	+ 7 51		89 6 7 92	29 35	— 38 57
10	10 57 12 8		0 14 53 73	1 38	+ 7 65		89 12 37 41	59 12	— 38 29
19	10 20 36 6		0 13 39 37	46 98	+ 7 61		89 20 32 25	52 36	— 39 89
21	10 12 29 4		0 13 23 80	31 25	+ 7 45		89 22 11 79	31 85	— 39 91
22	10 8 25 5		0 13 15 92	23 51	+ 7 59		89 22 58 70	20 69	— 38 01
24	10 0 18 6		0 13 0 89	8 33	+ 7 44		89 24 35 01	56 14	— 38 60
25	9 56 15 1		0 12 53 39	0 78	+ 7 39		89 25 22 57	43 29	— 39 28
26	9 52 11 7		0 12 45 96	53 55	+ 7 59		89 26 8 67	29 1	— 39 16
27	9 48 8 8		0 12 38 81	46 31	+ 7 50		89 26 53 87	11 51	— 38 93
29	9 40 2 9		0 12 24 66	32 13	+ 7 47		89 28 23 28	43 73	— 39 5
30	9 36 0 1		0 12 17 73	25 22	+ 7 49		89 29 6 00	26 98	— 39 02
31	9 31 57 5		0 12 10 91	18 42	+ 7 51		89 29 48 30	9 41	— 38 89
Nov 2	9 23 51 8		0 11 57 59	5 18	+ 7 59		89 31 11 26	31 88	— 39 38
3	9 19 49 2		0 11 51 21	58 75	+ 7 54		89 31 50 76	11 84	— 38 92
4	9 15 47 2		0 11 45 17	52 43	+ 7 26		89 32 28 96	50 99	— 37 97
5	9 11 44 8		0 11 38 62	46 25	+ 7 63		89 33 4 92	29 25	— 35 67
6	9 7 43 3		0 11 32 87	40 21	+ 7 34		89 33 44 93	6 60	— 38 33
9	8 55 38 9		0 11 15 50	22 91	+ 7 41		89 35 31 40	53 03	— 38 37
10	8 51 38 0		0 11 10 16	17 42	+ 7 26		89 36 5 30	26 18	— 39 12
11	8 47 36 9		0 11 4 68	12 09	+ 7 11		89 36 38 42	9 16	— 39 26
12	8 43 35 1		0 10 59 43	6 89	+ 7 46		89 37 8 72	30 73	— 37 99
13	8 39 34 6		0 10 54 42	1 86	+ 7 44		89 37 38 43	1 31	— 37 12
14	8 35 33 6		0 10 49 65	56 97	+ 7 32		89 38 7 7	30 89	— 36 86
15	8 31 32 4		0 10 44 73	52 24	+ 7 51		89 38 36 74	59 37	— 37 37
16	8 27 32 4		0 10 40 26	47 67	+ 7 41		89 39 4 28	26 8	— 37 43
17	8 23 32 0		0 10 36 05	43 26	+ 7 21		89 39 30 67	53 25	— 37 42
18	8 19 31 3		0 10 31 61	39 01	+ 7 40		89 39 55 0	18 14	— 37 36
22	8 3 32 9		0 10 16 24	23 66	+ 7 42		89 41 26 94	48 85	— 38 09
27	7 43 37 9		0 10 0 92	8 32	+ 7 40		89 42 51 36	16 40	— 31 96
28	7 39 39 8		0 9 58 32	5 78	+ 7 46		89 43 7 39	30 46	— 36 93
29	7 35 41 4		0 9 56 11	3 41	+ 7 30		89 43 21 72	43 41	— 38 31
30	7 31 44 1		0 9 53 90	1 22	+ 7 32		89 43 32 23	55 07	— 37 16
Dec 2	7 23 47 3		0 9 50 10	57 38	+ 7 28		89 43 50 55	15 01	— 35 54
3	7 19 50 8		0 9 48 53	55 73	+ 7 20		89 44 1 97	23 19	— 38 78
4	7 15 52 5		0 9 47 16	54 28	+ 7 12		89 44 7 67	30 07	— 37 60
6	7 7 58 3		0 9 44 62	51 90	+ 7 28		89 44 19 61	40 34	— 39 27
1845 Sept 24	12 18 37 1		0 32 28 75	37 01	+ 8 26		87 17 41 26	58 57	— 12 69
25	12 14 32 5		0 32 20 09	28 21	+ 8 12		87 18 38 69	55 2	— 43 14
26	12 10 28 1		0 32 11 35	19 38	+ 8 03		87 19 34 41	51 98	— 42 43
28	12 2 16 5		0 31 53 68	1 63	+ 7 95		87 21 30 74	45 72	— 45 02
29	11 58 13 7		0 31 44 69	52 75	+ 8 06		87 22 26 07	42 66	— 43 41
30	11 54 8 8		0 31 35 70	43 84	+ 8 14		87 23 23 89	39 59	— 44 30
Oct 1	11 50 4 4		0 31 26 94	34 97	+ 8 03		87 24 19 76	36 53	— 43 23
2	11 45 59 6		0 31 17 94	26 05	+ 8 11		87 25 15 08	32 74	— 42 34
3	11 41 55 4		0 31 9 55	17 16	+ 7 61		87 26 12 40	30 25	— 42 15
7	11 25 26 0		0 30 33 66	41 69	+ 8 03		87 29 57 36	16 46	— 40 90
15	10 52 59 7		0 29 24 24	32 11	+ 7 87		87 37 21 52	38 36	— 43 16
20	10 32 37 6		0 28 42 17	50 15	+ 7 98		87 41 45 10	3 32	— 41 78
23	10 20 25 5		0 28 17 65	25 83	+ 8 18		87 44 18 73	36 66	— 42 07
24	10 16 21 7		0 28 9 75	17 86	+ 8 11		87 45 9 37	26 68	— 42 69

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF GEORGIAN (*C ntinued*)

M S lar Tim f Ob ti	P int Ob ed	A R fr m Ob t	A R f m N A	Err f N A	P i t Ob d	N P D fr m Ob rv ti	N P D f m N A	Err f N A
1845								
Oct. 25 10 12 17 7	C	0 28 1 94	9 97	+ 8 03	C	87 4 56 86	16 15	— 40 71
26 10 8 15 5		0 27 54 33	2 17	+ 7 84		87 46 46 31	5 08	— 41 23
27 10 4 10 6		0 27 46 55	54 47	+ 7 92		87 47 34 99	53 32	— 41 67
28 10 0 7 0		0 27 38 83	46 86	+ 8 03		87 48 23 16	40 96	— 4 20
Nov 1 9 43 [illegible]3 9		0 27 9 67	17 52	+ 7 85		87 51 26 48	44 48	— 42 00
2 9 39 50 6		0 27 2 46	10 34	+ 7 88		87 52 11 39	28 52	— 42 87
4 9 31 45 0		0 26 48 49	56 50	+ 8 01		87 53 36 31	54 30	— 42 01
5 9 27 42 4		0 26 41 88	49 77	+ 7 89		87 54 19 37	35 94	— 43 43
6 9 23 40 0		0 26 3 10	43 17	+ 8 07		87 54 57 34	16 80	— 40 54
7 9 19 37 5		0 26 28 57	36 69	+ 8 12		87 55 30 29	56 84	— 42 45
15 8 47 24 2		0 25 41 84	49 64	+ 7 80		88 0 26 21	44 68	— 41 53
16 8 43 23 1		0 25 36 56	44 40	+ 7 84		88 0 57 50	16 44	— 41 06
17 8 39 21 4		0 25 31 04	39 31	+ 8 27		88 1 27 09	47 15	— 39 94
2[illegible] 8 7 19 6		0 24 56 49	4 26	+ 7 77		88 4 57 68	15 55	— 42 13
Dec 6 7 23 34 0		0 24 26 06	33 91	+ 7 85		88 7 47 68	5 22	— 42 46
9 7 11 41 9		0 24 21 49	29 3[illegible]	+ 7 86		88 8 9 20	26 67	— 42 53
10 7 8 44 8		0 24 20 48	28 21	+ 7 73		88 8 13 51	31 35	— 42 16
11 7 3 48 1		0 24 19 66	27 28	+ 7 62		88 8 17 77	34 97	— 42 80
17 6 40 11 2		0 24 17 6[illegible]	25 52	+ 7 87		88 8 13 45	30 53	— 42 92
19 6 32 20 0		0 24 18 68	26 46	+ 7 78		88 7 59 70	19 34	— 40 36
21 6 24 30 6		0 24 20 38	28 15	+ 7 77		88 7 45 26	3 16	— 42 10
23 6 16 40 9		0 24 22 82	30 59	+ 7 77		88 7 23 95	42 14	— 41 81
1846								
Sept 24 12 34 50 6		0 47 47 60	56 18	+ 8 58		85 38 20 [illegible]2	36 33	— 44 19
25 12 30 46 3		0 47 38 86	47 44	+ 8 58		85 39 16 18	31 71	— 44 47
26 12 26 41 4		0 47 30 07	38 68	+ 8 61		85 40 12 18	27 23	— 44 95
28 12 18 31 9		0 47 12 32	21 02	+ 8 70		85 42 4 46	18 61	— 4 85
29 12 14 27 4		0 47 3 49	12 16	+ 8 67		85 43 0 40	14 68	— 45 72
Oct 1 12 6 18 5		0 46 45 66	54 38	+ 8 72		85 44 53 69	7 41	— 46 28
2 12 2 13 1		0 46 36 56	45 45	+ 8 89		85 45 48 34	3 75	— 44 59
5 11 49 58 8		0 46 10 05	18 64	+ 8 59		85 48 37 04	52 86	— 44 18
8 11 37 44 6		0 45 43 21	51 82	+ 8 61		85 51 26 69	41 77	— 44 92
9 11 33 39·7		0 45 34 05	42 89	+ 8 84		85 52 23 14	37 95	— 45 19
13 11 17 20 7		0 44 58 53	7 32	+ 8 79		8[illegible] 56 5 76	21 13	— 44 63
15 11 9 11 2		0 44 41 14	49 69	+ 8 55		85 57 55 47	11 59	— 43 88
24 10 32 31 2		0 43 23 86	32 60	+ 8 74		86 5 56 74	12 58	— 44 16
26 10 24 23 1		0 43 7 48	16 15	+ 8 67		86 7 39 56	54 74	— 44 82
29 10 12 11 0		0 42 43 31	52 07	+ 8 76		86 10 8 66	23 99	— 44 67
30 10 8 7 6		0 42 35 58	44 23	+ 8 65		86 10 57 01	12 61	— 44 40
Nov 2 10 55 56 6		0 42 12 53	21 21	+ 8 68		86 13 18 74	34 64	— 44 10
3 10 51 53 4		0 42 5 12	13 73	+ 8 61		86 14 6 51	20 68	— 45 83
4 10 47 49 9		0 41 57 81	6 39	+ 8 58		86 14 50 88	6 01	— 44 87
7 10 35 41 2		0 41 36 22	44 93	+ 8 71		86 17 2 48	17 76	— 44 72
10 10 23 33 3		0 41 16 03	24 53	+ 8 50		86 19 7 84	22 57	— 4 27
18 10 51 17 3		0 40 27 22	35 80	+ 8 58		86 24 3 05	17 72	— 4[illegible] 33
20 10 43 14 5		0 40 16 40	25 03	+ 8 63		86 25 6 40	22 25	— 44 1
30 10 3 11 7		0 39 32 17	40 69	+ 8 52		86 29 28 43	43 70	— 44 73
Dec 7 10 35 18 6		0 39 11 33	19 72	+ 8 39		86 31 24 73	40 44	— 44 29
8 10 31 20 4		0 39 8 97	17 43	+ 8 46		86 31 35 97	52 60	— 43 37
9 10 27 22 9		0 39 6 92	15 32	+ 8 40		86 31 46 73	3 56	— 43 17
12 10 15 29 4		0 39 1 66	10 09	+ 8 43		86 32 13 16	29 40	— 43 76
14 10 7 35 3		0 38 59 24	7 54	+ 8 30		86 32 25 89	40 68	— 45 21
1847								
Oct 7 11 58 9 1		1 1 16 74	25 85	+ 9 11		84 11 57 18	8 61	— 48 57

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE CENTER OF GEORGIAN (*Cont ued*)

M S l Tim f Ob rv t	P int Ob rv d	A R f m Ob tl	A R fr m N A	Err f N A	l i t Ob d	N P D f m Ob rv t	N l D fr m N A	Err f N A
1847						′ ″		
Oct 15 11 25 30 0	C	1 0 4 63	13 74	+ 9 11	C	84 19 21 96	33 07	— 48 89
18 11 13 15 4		0 59 37 72	46 95	+ 9 23		84 22 7 37	17 68	— 49 69
20 11 5 6 1		0 59 20 14	29 22	+ 9 08		84 23 56 04	6 29	— 49 75
25 10 44 43 0		0 58 36 56	45 76	+ 9 20		84 28	32 4	
Nov 4 10 4 2 2		0 57 14 51	23 59	+ 9 08		84 36 42 39	52 79	— 49 60
9 9 43 44 9		0 56 36 71	45 78	+ 9 07		84 40 29 78	41 19	— 48 59
10 9 39 41 8		0 56 29 38	38 54	+ 9 16		84 41 13 45	24 82	— 48 63
11 9 35 38 6		0 56 22 23	31 42	+ 9 19		84 41 55 82	7 68	— 48 14
15 9 19 28 0		0 55 55 17	64 14	+ 8 97		84 44 39 57	1 46	— 48 11
16 9 15 25 6		0 55 48 79	57 63	+ 8 84		84 45 18 81	30 33	— 48 48

APPARENT RIGHT ASCENSIONS AND DECLINATIONS OF THE COMLTS OF JAN 1840 AND OF JAN 1845 AS OBSERVED AT MADRAS

1840 J y 4th at 5 A M s w N b lous appearance between a d β Oph uch but ıt became obscured by twıl ght bef r I ld b ıng t l c pe to be r po t
J u y 5th t 5 A M the me ppe e as y steıd y b t w s aga unsucc s f l ı observı g ts appeaı ce with ι telescope t the s sted ey t ppe d t be a C m t with a tail abo t 3 l g d ected f om the S
Jaı u y 6th h v g adj sted the 5 feet Adrom t c to act as a Equato l seveı al observatio s f tl e C met weıe made as f ll ws

M dras M an Tim f Ob rv ti	Appar t Right A nsi	Appare t D llnati	N f Ob rv ti	R f r-	C mp ed ith
1840		′			
Ja 6 17 7 12	17 37 30	+ 2 3	4		Ophıuch
7 17 15 2	17 43 11	+ 1 49	5	*b*	γ Opl uchı
8 17 24 1	17 49 9	+ 1 36	10		Oph u hı and *p* Ophıuch
10 17 17 56	18 0 48	+ 1 7	6	*d*	*k* Oph ucl
1 17 26 37	18 11 6	+ 0 30	5		*k* Ophı h
13 17 22 36	18 16 0	+ 0 16	5		*k* Oph ucl
14 17 26 41	18 20 51	+ 0 1	10		*d* S rpe tıs
16 17 23 48	18 30 32	— 0 32	7	*f*	ı Se p t s nd 5 Aqu l e P 176
18 17 24 28	18 40 0	— 1 8	11	*g*	η Serpent s d Serpe tıs
23 17 27 1	19 0 50	— 2 30	2	*h*	*p* Ophıuch and *e* Ophıuchı
25 17 18 40	19 8 57	— 3 0	6	ı	*l* Aquılæ and λ Aq læ
28 17 22 18	19 20 27	— 3 44	9	*k*	ı Aquılæ and Aquılæ

1845 J n ry 4th t 7 P M a C m t vas seen towards the S utl west w th a tail of about 4 long dırecte l *from* the Sun b t b fore a st um nt could be adjusted for ıts observatıon ıt had become obs ured by clouds which skırted the horızon n tl at d re t
January 5th hav g dju ted the 5 f et Ach om t c as n Altıtude and A ımuth ınstrument the place of the Comet was observed as follows The ta l of the Comet appeared abo t 5 lo g

Notes to the above references

Vıs bl th gh th twıl ght
b The C m t pp ar d as y te d y ı h ps l ttl b ıght t ıs vıs bl ın b ad tw lıght to o dınary yesıght
Th C m t pp ar d as y t d y th t th u l us ıs bette d fin d
d Th C m t pp ared b t l ttl ıf t ll alte d
e Th C m t pp ars p tty n arly the m as b f
f Th C m t d t l b t m h tail b t ıs ther m c mp ct ın figur than when l t e n
g Th C m t is n essa ıly y f t by as f M nl ght.
h Th C m t nsıd n g th p s f th M ıs t m ch fainte th wh last t w ppears mo compact than heretof e
Th C m t pp ars faınte th wh last b erv d tw thsta dıng th t th aır is ery cl
k Th M rning b autıfully cl d th C met the b ght th n n th 25th

APPARENT RIGHT ASCENSIONS AND DECLINATIONS OF THE COMET OF JANUARY 1845 (*Continued*)

Madras Mean Time of Observation				Apparent Right Ascension			Apparent Declination			No. of Observations	Ref.	Compared with
1845												
J. 5	6	47	31	22	5	7	—44	49	10	15		Eridani, Gruis and β Gruis
6	6	48	33	22	18	6	—44	49	20	15		Eridani and β Gruis
7	6	53	13	22	30	35	—44	42	45	10		Gruis and β Gruis
8	6	52	15	22	42	38	—44	27	39	10		Gruis and β Gruis
9	6	46	23	22	54	31	—44	12	16	5		β Gruis
10	6	46	4	23	6	25	—43	50	29	5		β Gruis
11	6	51	23	23	17	45	—43	21	15	5		β Gruis
12	6	42	27	23	28	46	—42	53	54	5		β Gruis
13	7	0	17	23	39	38	—42	21	49	4		Fomalhaut
14	6	50	23	23	49	52	—41	43	40	10		Phoenicis
15	6	47	12	23	59	42	—41	6	30	5		α Phoenicis
16	6	35	14	0	9	4	—40	24	30	5		Phoenicis
17	6	50	54	0	18	29	—39	40	57	5		Phoenicis
18	6	40	47	0	27	3	—38	56	38	5		Phoenicis
19	6	43	27	0	35	24	—38	8	58	5		Phoenicis
21	7	17	20	0	51	12	—36	30	56	11	a	Phoenicis
22	6	56	17	0	58	50	—35	46	43	6		χ Phoenicis
23	6	40	36	1	5	54	—34	53	44	6		χ Phoenicis
24	6	40	49	1	12	28	—34	2	44	6		χ Phoenicis
25	7	12	16	1	18	55	—33	9	44	7		χ Phoenicis
26	6	46	5	1	25	2	—32	22	44	6		χ Phoenicis
27	6	59	42	1	30	57	—31	33	43	6		χ Phoenicis
28	7	15	38									
29	6	58	2	1	42	10	—29	58	31	12		χ Phoenicis and Phoenicis
30	6	50	47	1	47	21	—29	9	5	6		Phoenicis
31	7	3	3	1	52	18	—28	21	55	6		Phoenicis
Feb. 1	6	53	43	1	57	16	—27	34	55	6		Phoenicis
3	6	57	46	2	6	21	—26	2	55	6		Phoenicis
4	6	56	22	2	10	53	—25	26	56	10		Phoenicis and τ^3 Eridani
5	6	55	41	2	15	13	—24	44	56	5		Eridani
6	6	53	9	2	19	1	—24	1	56	5		Eridani
7	7	0	19	2	23	4	—23	21	56	10		Eridani
8	6	55	26	2	26	51	—22	39	56	6		Eridani
9	6	54	1	2	30	28	—21	59	26	10		Eridani
10	6	59	26	2	33	52	—21	24	26	8		Eridani
11	7	2	6	2	37	21	—20	47	56	5		Eridani
12	7	1	44	2	40	48	—20	10	56	5		Eridani
13	6	57	4	2	44	2	—19	30	56	5		Eridani
14	7	3	43	2	47	14	—18	53	56	5		Eridani
15	7	7	11	2	50	18	—18	21	56	5		Eridani
16	6	57	23	2	53	7	—17	45	56	5	b	Eridani
17	7	6	52	2	56	10	—17	12	56	5		Eridani
18	7	3	9	2	59	5	—16	36	56	5		τ^3 Eridani
19	7	6	11	3	1	56	—16	5	0	10		Eridani and Eridani
20	7	0	1	3	4	29	—15	34	56	5		τ^3 Eridani
21	7	1	8	3	7	18	—15	2	30	10		Eridani and ξ Eridani
23	7	8	40	3	12	15	—14	7	56	5		Eridani
24	7	6	35	3	14	44	—13	38	56	5		Eridani
25	7	22	37	3	17	23	—13	12	30	10		τ^3 Eridani and ξ Eridani

a The Comet having now ... d t p ... wh ... t pl ... ld b ... b rv d w th the ... f t A ... m ... djust d as an Eq at ... al th ... b ... t ... s f m this d te c nsist ... f th ... d t m ... t n f diff ... f Right Ascensions and Declinations betw ... th Comet ... d ... Star w th whi h t has b en compared.

b During th past m ... th th Comet has g dually b ... me m ... c c ntr ted ... pp ... anc and ... tl ... s me p p ... t n l ss bright ... O this ... ve ing it had b ... m ... ery faint as s ... n with ... p w ... f 60

M dras M an Tim f Ob tl					Appar t Right As nsi			Apparent Declin tl			N f Ob rv tl	R f	C mp d witl
1845													
F b	26	7	9	39	3	19	37	—12	44	4	5	b	ξ Er d ı
	27	7	16	4	3	22	3	—12	19	4	5	b	ξ Er d n
	28	7	11	57	3	24	19	—11	53	4	5	b	ξ E ıdan
Mar	1	7	11	35	3	26	44	—11	27	4	5	b	ξ F ıdan
	2	7	13	6	3	28	49	—11	1	4	5	b	ξ E d
	3	7	7	47	3	31	3	—10	37	4	5	b	ξ E d
	4	7	10	23	3	33	7	—10	14	4	5	b	ξ E da
	5	7	26	9	3	35	24	— 9	52	4	5		ξ E d n
	6	7	11	27	3	37	23	— 9	29	4	5		ξ E dani
	7	7	20	8	3	39	7	— 9	5	4	5		ξ E d
	8	7	43	8	3	41	47	— 8	46	4	5	d	ξ E da
	9	7	23	13	3	43	27	— 8	25	4	5	d	ξ End ı
	10	7	32	15	3	45	43	— 8	2	4	5	d	ξ E d
	11	7	3	15	3	47	29	— 7	43	4	5	d	ξ E dam

Obs rv d by f th N t Assistants (*S h*)
d S with t m diffi lty with ut light in th fi ld Th last thr b v t ons w m d by tm ti g tl t m at wl ch tl Com t h d rr d t th nt f th fi ld f th T l p s t was t f t t dm t f tl fi ld b g illumin t d in th l ght t d gr

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POSITION OF THE ECLIPTIC FROM THE MADRAS SOLAR OBSERVATIONS

Th nvestigation of the pos ti n of the Ecl pt c f om the observations of the Sun in the years 1831 1832 and 1833 as given in Vols I and II of the M dras Res lt a e by e son of the err neous d v n of the Mural Circle—necessarily to some extent in error wl h ende s t necessary that I sh uld here fu sh the amended ecomputation

The mp ove ne ts made n the Naut cal Almanac how ver si 1833 havi g endered it c nvenient to adopt a more comprehen ve meth d f comput t on than had p e ously been empl yed I had tho ght t suffic ent he e for these three years to furnish only th me ded esults and for the pe iod since elapsed to furn sh th details of the comput tions—thus

D te	*Ob erv tions f th S to the Equ nox*		*Ob ervat ons f tl S t tl S lst*	
	N Ob e ti ns	R f Eq P int	N Ob rv ti	M an Obli i ity Jan ary 1 183
1831	36	+ 0 223	69	23 27 39 37
1832	98	+ 0 074	73	23 27 41 10
1833	77	+ 0 174	80	23 27 39 26

Since th s pe d the computation has been performed w th referenc to the method of *Normal Pl ces* which consists of tl e com par son of *all* the observations with the pla es fiom the N ut cal Alm ac the errors of A R and N P D thus deduced re p operly grouped and c nverted to erro s f E l ptic Polai D st nce * ass mi g these errors to ai se from an erroneous pos t of the ecl pt c ass med in the N t c l Alma c they may be represent d by x + c s Sun s lo g + y × in S in s long + z wh ch quat s mmed ately lead to the solut on of the problem as w ll best appear from the e amples which now follow

* By th d f P f Airy T bl

M n en f the Su A R d N P D as te p l ted f m th N ut c l Almanacs t g ther w th the c rresp nd g rs n th E l pt c P lar D tar ce

M an D y		E h R	N Ob f	L l N P D	N Ob f	Err l E llptl P D
J n ry	—	—	—	— 0 556	17	—
Γ b ry	16	— 0 401	22	+ 1 906	27	— 0 217
M h	16	— 0 674	31	+ 1 186	28	— 2 915
Ap l	18	— 0 475	16	+ 0 001	28	— 2 516
M y	16	— 0 526	24	+ 0 018	26	— 1 808
J	17	— 0 305	10	+ 0 284	17	+ 0 138
J ly	17	— 0 244	14	— 1 198	22	— 0 586
A gu t	1υ	— 0 477	8	— 0 591	17	+ 1 672
S pt mber	17	— 0 290	17	— 0 009	19	+ 1 715
O t b	16	— 0 176	18	+ 1 628	18	+ 2 484
Nov mbe	17	— 0 154	17	+ 0 3 5	20	+ 0 883
D mb	17	— 0 228	20	— 0 198	23	— 0 070

Ass m g the en n E l pt c P lar D stance to be rep esented by the form la x × C s Sun s longitude + y × S n S s l g t d + z we get

(I)	Jan y	—	— ″	=	—	—	—	w =	—
	Γeb ary	16	— 0 217	=	+ 0 8379	— 0 5459 y	+ z	v =	12
	March	16	— 2 915	=	+ 0 9962 x	— 0 0874 y	+	=	1υ
(II)	Apnl	18	— 2 516	=	+ 0 8870 x	+ 0 4617 y	+	=	10
	M y	16	— 1 808	=	+ 0 5788	+ 0 81 5 y	+	v =	12
	J ne	17	+ 0 138	=	+ 0 0814 x	+ 0 9967 y	+ z	=	6
(III)	July	17	— 0 586	=	— 0 4057 x	+ 0 9140 y	+ z	w =	9
	August	15	+ 1 672	=	— 0 7848	+ 0 6198 y	+ z	w =	υ
	S ptemb r	17	+ 1 71υ	=	— 0 9938	+ 0 1112 y	+	v =	9
(IV)	Oct ber	16	+ 2 484	=	— 0 9260 x	— 0 3776 y	+ z	=	9
	November	17	+ 0 883	=	— 0 5845 x	— 0 8114 y	+ z	w =	9
	December	17	— 0 070	=	— 0 0929	— 0 9957 y	+	=	11

Altenng th we ghts (w) so as to render the nu nbers in ea h quarter the same and carrying out the mult pl catio

	″			′			″
I	— 2 604	=	+ 10 0 48 x	— 6 5508 y	+ 12		
	— 43 725	=	+ 14 9430 x	— 1 3110 y	+ 15		— 46 329 = + 24 9978 x — 7 8618 y + 27 z
II	— 25 160	=	+ 8 8700 x	+ 4 6170 y	+ 10		
	— 19 888	=	+ 6 3668 x	+ 8 9705 y	+ 11		— 44 220 = + 15 7252 x + 19 5677 y + 27
	+ 0 828	=	+ 0 4884	+ 5 9802 y	+ 6		
III	— 6 446	=	— 4 4627 x	+ 10 0540 y	+ 11	z	
	+ 10 032	=	— 4 7088 x	+ 3 7188 y	+ 6		+ 20 736 = — 19 1095 x + 14 8848 y + 27
	+ 17 150	=	— 9 9380 x	+ 1 1120 y	+ 10	z	
IV	+ 22 356	=	— 8 3340 x	— 3 3984 y	+ 9		
	+ 7 947	=	— 5 2605 x	— 7 3026 y	+ 9		+ 29 673 = — 14 4306 x — 19 6623 y + 27
	— 0 630	=	— 0 8361 x	— 8 9613 y	+ 9		

I + II + III + IV — 40 140 = + 7 1829 + 6 9284 y + 108

(I + II) — (III + IV) — 140 958 = + 74 2631 x + 16 4834 y

(I + IV) — (II + III) + 6 828 = + 13 9υ15 x — 61 9766 y

= — 1 784 ″ y = — 0 512 = — 0 220 ′

Mean errors of the Su s A R nd N P D as i terp lated fi m the N ut cal Almanacs t gether with the co respond g ei o s in the E l pt c Polar D st nce

M an D y		Err in A R	N Ob f	Erro i N P D	N Ob f	Err in E lipti l D
		"		"		"
J nu ry	16	— 0 374	26	+ 0 852	24	— 0 116
F br y	15	— 0 421	29	+ 1 229	25	— 0 919
M h	16	— 0 282	30	+ 1 223	28	— 0 555
Ap l	16	— 0 311	30	+ 1 424	29	— 0 337
M y	18	— 0 158	23	+ 0 975	24	+ 0 438
J e	14	— 0 317	17	+ 0 125	18	— 0 103
July	15	— 0 432	13	— 0 448	22	+ 0 5 2
A gust	19	— 0 162	6	— 1 040	13	— 0 175
September	20	— 0 091	17	— 0 571	14	+ 0 020
Octob	15	— 0 150	20	+ 1 229	18	+ 1 970
November	17	— 0 360	13	+ 1 121	15	+ 2 318
De mb	15	— 0 312	13	— 1 208	16	— 0 988

Assum ng the e ror n Ecl ptic Polar Distance to be represented by the form la $x \times$ Cos S s long tude $+ y \times$ Sin Sun s lo g t de + we get

(I)	J nuary	16	— 0 116	=	+ 0 4263		— 0 9046	y	+	z	w	=	12
	F br ry	15	— 0 919	=	+ 0 8258		— 0 5640	y	+	z	w	=	14
	March	16	— 0 555	=	+ 0 9972	x	— 0 0744	y	+		w	=	11
(II)	Apr l	16	— 0 337	=	+ 0 8966	x	+ 0 4428	y	+		w	=	15
	M y	18	+ 0 438	=	+ 0 5405	x	+ 0 8413	y	+		w	=	12
	J e	14	— 0 103	=	+ 0 1190	x	+ 0 9929	y	+		w	=	9
(III)	J ly	15	+ 0 552	=	— 0 3862	x	+ 0 9224	y	+	z		=	8
	August	19	— 0 175	=	— 0 8313	x	+ 0 5558	y	+		w	=	4
	Sept mber	20	+ 0 020	=	— 0 9989	x	+ 0 04C8	y	+		w	=	8
(IV)	Oct ber	15	+ 1 970	=	— 0 9275	x	— 0 3738	y	+		w	=	9
	N v mbe	17	+ 2 318	=	— 0 5736	x	— 0 8191	y	+		w	=	7
	December	15	— 0 998	=	— 0 1146	x	— 0 9934	y	+		w	=	7

Alt g the w ghts (w) so as to render the numbe s n each q arte the s me d carryi g ut the mult pl cat o

	"							"
I	— 1 160	= + 4 2630 x	— 9 0460 y	+ 10				— 15 900 = + 22 4930 x — 15 4300 y + 30
	— 9 190	= + 8 2580 x	— 5 6400 y	+ 10				
	— 5 550	= + 9 9720 x	— 0 7440 y	+ 10				
II	— 3 707	= + 9 8626 x	+ 4 8708 y	+ 11				— 0 254 = + 16 3386 x + 22 2199 y + 30 z
	+ 4 380	= + 5 4050 x	+ 8 4130 y	+ 10				
	— 0 927	= + 1 0710 x	+ 8 9361 y	+ 9				
III	+ 6 624	= — 4 6344 x	+ 11 0688 y	+ 12				+ 5 814 = — 21 6090 x + 14 96.2 y + 30
	— 1 050	= — 4 9878 x	+ 3 3348 y	+ 6				
	+ 0 240	= — 11 9868 x	+ 0 5616 y	+ 12				
IV	+ 23 640	= — 11 1300 x	— 4 4856 y	+ 12				+ 35 610 = — 17 3238 x — 20 7981 y + 30
	+ 20 862	= — 5 1624 x	— 7 3719 y	+ 9				
	— 8 892	= — 1 0314 x	— 8 9406 y	+ 9				

I + II + III + IV + 25 270 = — 0 1012 x + 0 9570 y + 120

(I + II) — (III + IV) — 57 578 = + 77 7644 x + 12 6228 y

(I + IV) — (II + III) + 14 150 = + 10 4396 x — 73 4132 y

x = — 0 693 y = — 0 291 " = + 0 212

Mean errors of the Sun's A.R. and N.P.D. as interpolated from the Nautical Almanacs, together with the corresponding errors in Ecliptic Polar Distance.

Month Day		Error in A.R. (s)	No. of Obs.	Error in N.P.D. (″)	No. of Obs.	Error in Ecliptic P.D.
January	17	— 0.294	22	+ 0.517	26	— 0.287
February	13	— 0.204	22	+ 1.146	23	+ 0.089
March	14	— 0.203	19	+ 0.565	31	— 0.685
April	17	— 0.110	26	— 0.586	29	— 1.132
May	15	— 0.347	10	— 0.743	22	— 1.934
June	15	— 0.050	22	— 0.016	25	— 0.048
July	15	— 0.377	15	— 0.475	24	+ 0.390
August	17	— 0.224	13	+ 0.172	17	+ 1.246
September	18	— 0.171	18	— 0.206	25	+ 0.827
October	14	— 0.335	4	+ 0.132	16	+ 1.995
November	24	— 0.410	2	— 1.557	9	— 0.370
December	22	— 0.326	9	— 2.518	14	— 2.[illegible]24

Assuming the error in Ecliptic Polar Distance to be represented by the formula $x \times$ Cos. Sun's longitude $+ y \times$ Sin. Sun's longitude $+ z$, we get

$$
\begin{array}{llrl}
 & \text{January } 17 & -0.287 = +0.4545\,x - 0.8907\,y + z & w = 12 \\
\text{(I)} & \text{February } 13 & +0.089 = +0.8134\,x - 0.5816\,y + z & w = 11 \\
 & \text{March } 14 & -0.685 = +0.9936\,x - 0.1132\,y + z & w = 12 \\
 & \text{April } 17 & -1.132 = +0.8909\,x + 0.4542\,y + z & w = 14 \\
\text{(II)} & \text{May } 15 & -1.934 = +0.5857\,x + 0.8105\,y + z & w = 7 \\
 & \text{June } 15 & -0.048 = +0.1068\,x + 0.9943\,y + z & w = 12 \\
 & \text{July } 15 & +0.390 = -0.3821\,x + 0.9241\,y + z & w = 9 \\
\text{(III)} & \text{August } 17 & +1.246 = -0.8097\,x + 0.5868\,y + z & w = 7 \\
 & \text{September } 18 & +0.827 = -0.9963\,x + 0.0857\,y + z & w = 10 \\
 & \text{October } 14 & +1.995 = -0.9354\,x - 0.3535\,y + z & w = 3 \\
\text{(IV)} & \text{November } 24 & -0.370 = -0.4720\,x - 0.8816\,y + z & w = 2 \\
 & \text{December } 22 & -2.524 = +0.0046\,x - 1.0000\,y + z & w = 5
\end{array}
$$

Altering the weights (w) so as to render the numbers in each quarter the same, and carrying out the multiplications,

$$
\begin{array}{lll}
 & -2.583 = +4.0905\,x - 8.0163\,y + 9\,z & \\
\text{I} & +0.712 = +6.5072\,x - 4.6528\,y + 8\,z & -8.036 = +19.5401\,x - 13.6879\,y + 26\,z \\
 & -6.165 = +8.9424\,x - 1.0188\,y + 9\,z & \\
 & -11.320 = +8.9090\,x + 4.5420\,y + 10\,z & \\
\text{II} & -11.604 = +3.5142\,x + 4.8630\,y + 6\,z & -23.404 = +13.4912\,x + 19.3480\,y + 26\,z \\
 & -0.480 = +1.0680\,x + 9.9430\,y + 10\,z & \\
 & +3.510 = -3.4389\,x + 8.3169\,y + 9\,z & \\
\text{III} & +8.722 = -5.6679\,x + 4.1076\,y + 7\,z & +20.502 = -19.0698\,x + 13.2815\,y + 26\,z \\
 & +8.270 = -9.9630\,x + 0.8570\,y + 10\,z & \\
 & +15.960 = -7.4832\,x - 2.8280\,y + 8\,z & \\
\text{IV} & -2.220 = -2.8320\,x - 5.2896\,y + 6\,z & -16.684 = -10.2600\,x - 20.1176\,y + 26\,z \\
 & -30.288 = +0.0552\,x - 12.0000\,y + 12\,z &
\end{array}
$$

$$
\begin{array}{ll}
\text{I} + \text{II} + \text{III} + \text{IV} & -27.486 = +3.7015\,x - 1.1760\,y + 104\,z \\
(\text{I} + \text{II}) - (\text{III} + \text{IV}) & -35.394 = +62.3611\,x + 12.4962\,y \\
(\text{I} + \text{IV}) - (\text{II} + \text{III}) & -21.682 = +14.8587\,x - 66.4350\,y
\end{array}
$$

$$x = -0''.606 \qquad y = +0''.191 \qquad z = -0''.240$$

Mean err rs of the S s A R d N P D as terpol ted from th N ut c l Alma cs t g thei w th the co sponding r ors the Ecl pt c P lar D t e

M an D y		E i A R	N Ob f	Err i N P D	N Ob f	E i E li,tl P D
Ja y	17	— 0 274	23	— 0 194	23	— 0 921
F b ua y	14	— 0 419	25	+ 0 302	28	— 1 769
Mar h	17	— 0 355	24	+ 1 066	25	— 1 137
Ap l	14	— 0 380	19	+ 1 578	21	— 0 613
M y	17	— 0 502	20	+ 0 935	23	— 0 774
Ju e	15	— 0 296	11	— 0 621	19	— 0 818
July	15	— 0 277	17	— 0 889	25	— 0 252
A g st	12	— 0 422	5	— 0 489	17	+ 1 439
S pt mber	15	— 0 262	12	+ 0 011	15	+ 1 5 8
O tober	15	— 0 130	17	— 1 086	19	+ 1 384
N vember	13	— 0 379	8	— 0 307	10	+ 1 148
D mb i	17	— 0 284	17	+ 0 230	16	+ 0 3 9

Ass m ng the err in Ecl ptic P l i Distance to be represe ted by th f rmul $x \times$ Cos S n s longitude + $y \times$ S n Su s lo g tude + we get

(I)	J ary	17	— 0 924	=	+ 0 4 06 x	—	0 8927 y	+			=	11
	F br ry	14	— 1 769	=	+ 0 8210 x	—	0 5709 y	+		w	=	13
	Ma ch	17	— 1 137	=	+ 0 9978 x	—	0 0657 y	+		w	=	12
(II)	Ap l	14	— 0 613	=	+ 0 9146 x	+	0 4043 y	+		v	=	10
	M y	17	— 0 774	=	+ 0 5614 x	+	0 8276 y	+		w	=	11
	J n	15	— 0 818	=	+ 0 1109 x	+	0 9938 y	+	z	w	=	7
(III)	J ly	15	— 0 252	=	— 0 3784 x	+	0 9256 y	+		w	=	10
	Aug st	12	+ 1 439	=	— 0 7551 x	+	0 6556 y	+		w	=	4
	S ptember	15	+ 1 558	=	— 0 9901 x	+	0 1403 y	+	z	w	=	7
(IV)	Oct be	15	+ 1 384	=	— 0 9306 x	—	0 3660 y	+			=	9
	Novemb r	13	+ 1 148	=	— 0 6363 x	—	0 7714 y	+		w	=	4
	De ember	17	+ 0 379	=	— 0 0880 x	—	0 9961 y	+		w	=	8

Alte g tl e we ghts (w) so as to render the numbers n each quarter the same d car y ng o t the multipl cat on

I	— 7 392	=	+ 3 6048 x	—	7 1416 y	+	8	— 35 315 = + 20 7950 x — 13 4419 y + 27
	— 17 690	=	+ 8 2100 x	—	5 7090 y	+	10	
	— 10 233	=	+ 8 9802 x	—	6 5913 y	+	9	
II	— 6 130	=	+ 9 1460 x	+	4 0430 y	+	10	— 19 596 = + 15 5363 x + 19 2756 y + 27
	— 7 740	=	+ 5 6140 x	+	8 2760 y	+	10	
	— 5 726	=	+ 0 7763 x	+	6 9566 y	+	7	
III	— 3 276	=	— 4 9192 x	+	12 0328 y	+	13	+ 17 941 = — 17 6056 x + 16 5735 y + 27
	+ 7 195	=	— 3 7755 x	+	3 2780 y	+	5	
	+ 14 022	=	— 8 9109 x	+	1 2627 y	+	9	
IV	+ 15 224	=	— 10 2366 x	—	4 0260 y	+	11	+ 25 133 = — 14 3861 x — 18 8401 y + 27
	+ 5 740	=	— 3 1815 x	—	3 8570 y	+	5	
	+ 4 169	=	— 0 9680 x	—	10 9571 y	+	11	

I + II + III + IV — 11 837 = + 4 3396 x + 3 5671 y + 108

(I + II) — (III + IV) — 97 985 = + 68 3230 x + 8 1003 y

(I + IV) — (II + III) — 8 527 = + 8 4782 x — 68 1311 y

x = — 1 428 y = — 0 052 = — 0 051

M n e s of th S A R i d N P D as i te p l ted f m th N ut al Alm ac together w th the corresp nd ng err s i the L l pt c Pol D st n

M D y		Err i A R	N Ob f	Erro in N P D	N Ob f	Er in Ecl pti P D
J n ry	17	− 0 453	21	+ 1 188	24	− 0 038
F b u y	15	− 0 389	24	+ 1 910	26	− 0 124
M h	17	− 0 637	23	+ 2 724	29	− 1 290
Ap l	14	− 0 562	17	+ 1 883	22	− 1 325
M y	13	− 0 496	16	+ 1 748	22	− 0 149
J	21	− 0 247	8	− 0 086	15	− 0 111
J ly	18	− 0 266	8	− 0 597	21	+ 0 081
A g st	11	− 0 495	6	− 0 320	13	+ 1 883
S ptemb	22	− 0 477	9	+ 0 321	14	+ 3 142
O t bei	14	− 0 308	13	+ 1 277	17	+ 2 907
Novemb	23	− 0 148	12	− 0 805	13	− 0 350
D mb	—	− 0 366	17	—	—	—

A um ng the e n Lcl pt c Polar D stance to be rep esented by the form la x × Cos S n s longit de + y × S Sun s l ngitude + ve get

(I)	January	17	− 0 038	=	+ 0 4467 x	− 0 8947 y	+ z	w =	11
	Γ bru y	15	− 0 124	=	+ 0 8286 x	− 0 5599 y	+	w =	12
	M r h	17	− 1 290	=	+ 0 9976 x	− 0 0698 y	+ z	w =	13
(II)	Ap l	14	− 1 325	=	+ 0 8946 x	+ 0 4470 y	+	w =	10
	M y	13	− 0 149	=	+ 0 6189 x	+ 0 7855 y	+	w =	9
	J ne	21	− 0 111	=	+ 0 0151 x	+ 0 9999 y	+	w =	5
(III)	July	18	+ 0 081	=	− 0 4208 x	+ 0 9072 y	+	w =	6
	A gust	11	+ 1 883	=	− 0 7412 x	+ 0 6713 y	+	w =	4
	September	22	+ 3 142	=	− 0 9997 x	+ 0 0253 y	+	w =	5
(IV)	O t b	14	+ 2 907	=	− 0 9383 x	− 0 3458 y	+	w =	7
	N vemb r	23	− 0 350	=	− 0 4947 x	− 0 8691 y	+ z	w =	6
	December	—	—	=	—	— —	—	w	

Altering the weights (w) so as to render the numbers in each quarter the same and carrying out the multipl cat on

I	− 0 266	=	+ 3 1269 x	− 6 2629 y	+ 7		
	− 0 992	=	+ 6 6288 x	− 4 4792 y	+ 8	− 12 868 = + 18 7341 x − 11 3703 y + 24	
	− 11 610	=	+ 8 9784 x	− 0 6282 y	+ 9		
II	− 13 2 0	=	+ 8 9450 x	+ 4 4700 y	+ 10		
	− 1 341	=	+ 5 5701 x	+ 7 0695 y	+ 9	− 15 146 = + 14 5906 x + 16 5390 y + 24	
	− 0 555	=	+ 0 0755 x	+ 4 9995 y	+ 5		
III	+ 0 729	=	− 3 7872 x	+ 8 1648 y	+ 9		
	+ 13 181	=	− 5 1884 x	+ 4 6991 y	+ 7	+ 39 046 = − 16 9732 x + 13 0663 y + 24	
	+ 25 136	=	− 7 9976 x	+ 0 2024 y	+ 8		
IV	+ 37 791	=	− 12 1979 x	− 4 4954 y	+ 13	+ 33 941 = − 17 6396 x − 14 0555 y + 24	
	− 3 850	=	− 5 4417 x	− 9 5601 y	+ 11		

I + II + III + IV   + 44 973 = − 1 2881 x + 4 1795 y + 96

(I + II) − (III + IV)   − 101 001 = + 67 9375 x + 6 1579 y

(I + IV) − (II + III)   − 2 827 = + 3 4771 x + 55 0311 y

x = − 1 483 y = − 0 042   = + 0 450

Mean e s of the Sun s A R and N P D as terpolated f om the Na t al Alm acs t g ther w th the co r spond ng rror n the Ecl pt c P lar D t ce

M on D y		Err i A R	N Ob f	Err i N P D	N Ob f	Err in E lipti P D
J ry	17	— 0 274	23	— 0 194	23	— 0 924
F b y	14	— 0 419	25	+ 0 302	28	— 1 769
Mar h	17	— 0 355	24	+ 1 066	25	— 1 137
Ap l	14	— 0 380	19	+ 1 578	21	— 0 613
M y	17	— 0 502	20	+ 0 935	23	— 0 774
J	15	— 0 296	11	— 0 621	19	— 0 818
J ly	15	— 0 277	17	— 0 889	25	— 0 252
A g st	12	— 0 422	5	— 0 489	17	+ 1 439
S ptemb r	15	— 0 262	12	+ 0 011	15	+ 1 558
O tob	15	— 0 430	17	— 1 086	19	+ 1 384
N vembe	13	— 0 379	8	— 0 307	10	+ 1 148
D mb	17	— 0 284	17	+ 0 230	16	+ 0 3 9

Assum ng the e o Ecl pti P l i D stance to be rep ese ted by the f rm la $x \times$ C S n s l gitude + $y \times$ S n Sun s l g tude + we g t

(I)	J y	17	— 0 924	=	+ 0 4506	x	— 0 8927	y	+	o	=	11
	F b y	14	— 1 769	=	+ 0 8210	x	— 0 5709	y	+	w	=	13
	M r h	17	— 1 137	=	+ 0 9978	x	— 0 0657	y	+	w	=	12
(II)	Ap l	14	— 0 613	=	+ 0 9146	x	+ 0 4043	y	+		=	10
	M y	17	— 0 774	=	+ 0 5614	x	+ 0 8276	y	+	w	=	11
	J	15	— 0 818	=	+ 0 1109	x	+ 0 9938	y	+	w	=	7
(III)	J ly	15	— 0 252	=	— 0 3784	x	+ 0 9256	y	+	w	=	10
	A g st	12	+ 1 439	=	— 0 7551	x	+ 0 6556	y	+	w	=	4
	S ptember	15	+ 1 558	=	— 0 9901	x	+ 0 1403	y	+	w	=	7
(IV)	O t b	15	+ 1 384	=	— 0 9306	x	— 0 3660	y	+	w	=	9
	N vembe	13	+ 1 148	=	— 0 6363	x	— 0 7714	y	+	w	=	4
	December	17	+ 0 379	=	— 0 0880	x	— 0 9961	y	+	w	=	8

Alter g the w ghts (w) so as to rend r the umbe ea h qua ter the same d carry g out the multipl t

I	— 7 39	=	+ 3 6048	x	— 7 1416	y	+ 8				
	— 17 690	=	+ 8 2100	x	— 5 7090	y	+ 10	— 35 315 = + 20 79 0 x — 13 4419 y + 27			
	— 10 233	=	+ 8 9802	x	— 6 5913	y	+ 9				
II	— 6 130	=	+ 9 1460	x	+ 4 0430	y	+ 10				
	— 7 740	=	+ 5 6140	x	+ 8 2760	y	+ 10	— 19 596 = + 15 5363 x + 19 2756 y + 27 z			
	— 5 726	=	+ 0 7763	x	+ 6 9566	y	+ 7				
III	— 3 276	=	— 4 9192	x	+ 12 0328	y	+ 13				
	+ 7 195	=	— 3 7755	x	+ 3 2780	y	+ 5	+ 17 941 = — 17 6056 x + 16 5735 y + 27			
	+ 14 022	=	— 8 9109	x	+ 1 2627	y	+ 9				
IV	+ 15 224	=	— 10 2366	x	— 4 0260	y	+ 11				
	+ 5 740	=	— 3 1815	x	— 3 8570	y	+ 5	+ 25 133 = — 14 3861 x — 18 8401 y + 27 z			
	+ 4 169	=	— 0 9680	x	— 10 9571	y	+ 11				

I + II + III + IV — 11 837 = + 4 3396 x + 3 5671 y + 108

(I + II) — (III + IV) — 97 985 = + 68 3230 x + 8 1003 y

(I + IV) — (II + III) — 8 527 = + 8 4782 x — 68 1311 y

x = — 1 428 y = — 0 052 = — 0 051

M n s f th S A R and N P D as nt rp l ted fr m the N utical Alman c together with the correspo d g errors th E l ptic P l D stance

M D y		Err i A R	N Ob f	E in N P D	N Ob f	Erro in Ecliptic P D
J n ry	17	— 0 453	21	+ 1 188	24	— 0 038
F b ry	15	— 0 389	24	+ 1 910	26	— 0 124
Ma ch	17	— 0 637	23	+ 2 724	29	— 1 290
Ap l	14	— 0 562	17	+ 1 883	22	— 1 325
M y	13	— 0 496	16	+ 1 748	22	— 0 149
J e	21	— 0 247	8	— 0 086	15	— 0 111
J ly	18	— 0 266	8	— 0 597	21	+ 0 081
A g st	11	— 0 495	6	— 0 320	13	+ 1 883
S ptemb	22	— 0 477	9	+ 0 321	14	+ 3 142
O tob	14	— 0 308	13	+ 1 277	17	+ 2 907
N vemb r	23	— 0 148	12	— 0 805	13	— 0 350
D c mb	—	— 0 366	17	—	—	—

Assuming the o E l ptic Polar Distance to be epresent d by the formula $x \times$ Cos Sun s longitude $+ y \times$ S n Sun s l gitude + we get

(I)	J nua y	17	— 0 038	=	+ 0 4467	x	— 0 8947	y	+		w	=	11
	Γ b y	15	— 0 124	=	+ 0 8286	x	— 0 5599	y	+		w	=	12
	March	17	— 1 290	=	+ 0 9976	x	— 0 0698	y	+	z	w	=	13
(II)	Ap l	14	— 1 325	=	+ 0 8946	x	+ 0 4470	y	+		w	=	10
	May	13	— 0 149	=	+ 0 6189	x	+ 0 7855	y	+		w	=	9
	J ne	21	— 0 111	=	+ 0 0151	x	+ 0 9999	y	+	z	w	=	5
(III)	July	18	+ 0 081	=	— 0 4208	x	+ 0 9072	y	+		w	=	6
	August	11	+ 1 883	=	— 0 7412	x	+ 0 6713	y	+			=	4
	S ptember	22	+ 3 142	=	— 0 9997	x	+ 0 0253	y	+		w	=	5
(IV)	Oct be	14	+ 2 907	=	— 0 9383	x	— 0 3458	y	+		w	=	7
	Noven ber	23	— 0 350	=	— 0 4947	x	— 0 8691	y	+	z	w	=	6
	December	—	—	=	—		—	—		—	w		

Altering the we gl ts (w) so as to render the numbers in each quarter the same a d carrying out the multiplicat on

I	— 0 266	=	+ 3 1269	x	— 6 2629	y	+	7	z	— 12 868″ = + 18 7341 x — 11 3703 y + 24 z
	— 0 992	=	+ 6 6288	x	— 4 4792	y	+	8	z	
	— 11 610	=	+ 8 9784	x	— 0 6282	y	+	9	z	
II	— 13 250	=	+ 8 9450	x	+ 4 4700	y	+	10	z	— 15 146 = + 14 5906 x + 16 5390 y + 24 z
	— 1 341	=	+ 5 5701	x	+ 7 069	y	+	9	z	
	— 0 555	=	+ 0 0755	x	+ 4 9995	y	+	5	z	
III	+ 0 729	=	— 3 7872	x	+ 8 1648	y	+	9	z	+ 39 046 = — 16 9732 x + 13 0663 y + 24 z
	+ 13 181	=	— 5 1884	x	+ 4 6991	y	+	7	z	
	+ 25 136	=	— 7 9976	x	+ 0 2024	y	+	8	z	
IV	+ 37 791	=	— 12 1979	x	— 4 4954	y	+	13	z	+ 33 941 = — 17 6396 x — 14 0555 y + 24 z
	— 3 850	=	— 5 4417	x	— 9 5601	y	+	11	z	

I + II + III + IV	+ 44 973″	=	— 1 2881	x	+ 4 1795	y	+ 96 z
(I + II) — (III + IV)	— 101 001	=	+ 67 9375	x	+ 6 1579	y	
(I + IV) — (II + III)	— 2 827	=	+ 3 4771	x	+ 55 0311	y	

$x = -\ 1\ 483''$ $\quad y = -\ 0\ 042''$ $\quad = +\ 0\ 450''$

M an e r s f th S A R d N P D as terp lated fr m th N ut c l Alman c t geth w th the c rresponding err rs n the E l pt c P la D stance

M an D y		Err A R	N Ob f	Erro in N P D	N Ob f	Err in Eclipti P D
J ary	19	— 0 434	21	+ 1 906	15	+ 0 633
F b ary	16	— 0 504	25	+ 1 193	26	— 1 393
M h	16	— 0 463	28	+ 0 236	29	— 2 538
April	12	— 0 299	10	— 0 233	22	— 1 866
M y	19	— 0 211	12	+ 0 793	27	+ 0 111
J n	14	— 0 255	6	+ 0 869	19	+ 0·684
J ly	15	— 0 233	3	— 0 357	19	+ 0 184
A gust	14	— 0 570	1	+ 0 422	18	+ 3 056
S pt mber	20	— 0 318	4	+ 0 384	17	+ 2 250
O t be	15	— 0 395	13	+ 0 469	19	+ 2 623
N vember	20	— 0 475	2	— 0 435	11	+ 1 077
D mber	13	— 0 560	4	+ 0 228	16	+ 0 720

Ass m g the error n E lipt c P lar D stance t be repr sent d by the formula $x \times$ Cos S s l g t de $+ y \times$ S S s l gitude + we get

(I)	January	19	+ 0 633	= + 0 4743 x	— 0 8803 y	+ z	w =	9
	F b ry	16	— 1 393	= + 0 8358 x	— 0 5490 y	+	=	13
	March	16	— 2 538	= + 0 9973 x	— 0 0738 y	+	w =	14
(II)	April	12	— 1 866	= + 0 9245 x	+ 0 3811 y	+	w =	7
	M y	19	+ 0 111	= + 0 5260 x	+ 0 8505 y	+	w =	8
	June	14	+ 0 684	= + 0 1193 x	+ 0 9929 y	+	w =	5
(III)	July	15	+ 0 184	= — 0 3864 x	+ 0 9223 y	+	w =	3
	A gust	14	+ 3 056	= — 0 7821 x	+ 0 6232 y	+	w =	1
	S ptember	20	+ 2 250	= — 0 9989 x	+ 0 0468 y	+	w =	3
(IV)	Oct ber	15	+ 2 623	= — 0 9274 x	— 0 3741 y	+	w =	8
	N vember	20	+ 1 077	= — 0 5292 x	— 0 8486 y	+ z	w =	2
	December	13	+ 0 720	= — 0 1498 x	— 0 9887 y	+	w =	3

Altering the we ghts (w) so as to e der the numbers in ea h q arter the same and a ry g t the mult pl cat on

I	+ 3 165	= + 2 3715 x	— 4 4015 y	+ 5	— 26 890 = + 16 2005 x — 8 8349 y + 20
	— 9 751	= + 5 8506 x	— 3 8430 y	+ 7	
	— 20 304	= + 7 9784 x	— 0 5904 y	+ 8	
II	— 13 062	= + 6 4715 x	+ 2 6677 y	+ 7	— 8 754 = + 11 2760 x + 14 4362 y + 20
	+ 0 888	= + 4 2080 x	+ 6 8040 y	+ 8	
	+ 3 420	= + 0 5965 x	+ 4 9645 y	+ 5	
III	+ 1 656	= — 3 4776 x	+ 8 3007 y	+ 9	+ 28 018 = — 14 0319 x + 9 9683 y + 20
	+ 6 112	= — 1 5642 x	+ 1 2464 y	+ 2	
	+ 20 250	= — 8 9901 x	+ 0 4212 y	+ 9	
IV	+ 31 476	= — 11 1288 x	— 4 4892 y	+ 12	+ 38 307 = — 13 4654 x — 11 9782 y + 20
	+ 3 231	= — 1 5876 x	— 2 5455 y	+ 3	
	+ 3 600	= — 0 7490 x	— 4 9435 y	+ 5 z	

I + II + III + IV	+ 30 681	= — 0 0208 x	+ 3 5914 y	+ 80
(I + II) — (III + IV)	— 101 969	= + 54 9738 x	+ 7 6112 y	
(I + IV) — (II + III)	— 7 847	= + 5 4210 x	— 45 2176 y	

x = — 1 848 y = — 0 051 z = + 0 384

Me rr r f th S A R nd N P D s terp l t d f m th N tic l Alman t gether w th the co esp d g erro s th Ecl pt P lar D tan e

M D y	Err i A R	N f Ob	E in N P D	N f Ob	Erro i E llpti P D
J ary	— 0 514	11	+ 0 294	22	— 1 011
F b ary	— 0 453	14	+ 1 258	25	— 1 015
M h	— 0 564	5	+ 0 984	27	— 2 435
Apnl	— 0 400	10	+ 0 392	22	— 1 800
M y	— 0 157	8	+ 0 248	21	— 0 227
J	— 0 098	18	+ 0 621	19	+ 0 536
J ly	—	—	— 0 822	19	—
A g st	+ 0 140	4	— 1 021	14	— 1 641
S ptembe	— 0 059	12	— 2 243	19	— 1 712
O t b	— 0 100	1	— 1 461	8	— 0 809
N mber	— 0 273	3	— 0 509	17	+ 0 398
D mber	— 0 320	3	— 0 377	16	+ 0 021

A m g the erro n Ecl pt Polar Dıstance to be represented by tl e fo mula x × C s S n s long tude + y × S S n s l gıt de + w get

(I)	J nuary	15	— 1 011	=	+ 0 4229 x	— 0 9062 y	+	w	=	7
	Feb ry	13	— 1 015	=	+ 0 8136 x	— 0 5814 y	+	w	=	9
	M h	13	— 2 435	=	+ 0 9915 x	— 0 1299 y	+	v	=	4
(II)	Apr l	15	— 1 800	=	+ 0 9054 x	+ 0 4245 y	+	v	=	7
	May	21	— 0 227	=	+ 0 5002 x	+ 0 8659 y	+	w	=	6
	June	13	+ 0 536	=	+ 0 1392 x	+ 0 9903 y	+	w	=	9
(III)	J ly	—	—		—	—				—
	August	17	— 1 641	=	— 0 8100 x	+ 0 5864 y	+		=	3
	September	15	— 1 712	=	— 0 9908 x	+ 0 1357 y	+	w	=	7
(IV)	October	17	— 0 809	=	— 0 9156 x	— 0 4022 y	+	w	=	1
	November	19	+ 0 398	=	— 0 5473 x	— 0 8369 y	+	w	=	3
	December	10	+ 0 021	=	— 0 2059 x	— 0 9786 y	+		=	2

Alter ng the we ghts (w) so as to render the numbers n ea h qua ter the same and carrying out the mult pl cat on

I	— 5 055	=	+ 2 1145 x	— 4 6310 y	+ 5	— 19 465 = + 10 7842 x — 8 9905 y + 15
	— 7 105	=	+ 5 6952 x	— 4 0698 y	+ 7	
	— 7 305	=	+ 2 9745 x	— 0 3897 y	+ 3	
II	— 9 000	=	+ 4 5270 x	+ 2 1225 y	+ 5	— 6 692 = + 7 3630 x + 11 5279 y + 15
	— 0 908	=	+ 2 0008 x	+ 3 4636 y	+ 4	
	+ 3 216	=	+ 0 8352 x	+ 5 9418 y	+ 6	
III	—		—	—	—	— 25 325 = — 13 9580 x + 4 2890 y + 15
	— 8 205	=	— 4 0500 x	+ 2 9320 y	+ 5	
	— 17 120	=	— 9 9080 x	+ 1 3570 y	+ 10	
IV	— 2 427	=	— 2 7468 x	— 1 2066 y	+ 3	+ 0 464 = — 7 6074 x — 11 9579 y + 15
	+ 2 786	=	— 3 8311 x	— 5 8583 y	+ 7	
	+ 0 105	=	— 1 0295 x	— 4 8930 y	+ 5	

I + II + III + IV	— 51 018	=	— 3 4182 x	— 5 1315 y + 60
(I + II) — (III + IV)	— 1 296	=	+ 39 7126 x	+ 10 2063 y
(I + IV) — (II + III)	+ 13 016	=	+ 9 7718 x	— 36 7653 y

x = + 0 055 y = — 0 339 = — 0 876

Me n er ors f th S s A R d N P D s terp l ted f om the Naut cal Alm nac t g th r with th c respo d g errors m the E l pti P lar D t c

M D y		Err i A R	N Ob f	Err i N P D	N Ob f	Err m E lipt P D
J u ry	—	—	—	+ 0 705	22	—
F b ary	—	—	—	+ 1 944	27	—
Mar h	22	+ 0 040	2	+ 1 991	28	+ 2 064
Ap l	17	+ 0 094	7	+ 2 312	29	+ 2 657
M y	16	— 0 205	16	+ 0 765	24	+ 0 036
J	18	+ 0 012	8	+ 0 717	16	+ 0 721
J ly	16	— 0 041	7	+ 0 132	15	+ 0 226
A gu t	8	+ 0 170	1	— 1 662	14	— 2 310
S pt mber	21	— 0 290	2	— 0 489	14	+ 1 283
O t be	16	— 0 089	12	— 0 052	16	+ 0 443
N vember	20	— 0 050	4	— 0 480	14	— 0 307
D cemb	17	— 0 179	15	— 0 508	20	— 0 413

Ass m g the rr r m E liptic P lar D stance to be ep esented by th f rmula $x \times$ Cos S long t de $+ y \times$ S S s l ngit de + w g t

(I)	J ary	—	—	=	—		—		—				
	F br ary	—	—	=	—		—		—				
	March	22	+ 2 064	=	+ 0 9998	x	+ 0 0215	y	+	w	=	2
(II)	Ap l	17	+ 2 657	=	+ 0 8924	x	+ 0 4511	y	+	w	=	6
	M y	16	+ 0 036	=	+ 0 5745	x	+ 0 8185	y	+	w	=	10
	June	18	+ 0 721	=	+ 0 0602	x	+ 0 9982	y	+	w	=	5
(III)	J ly	16	+ 0 226	=	— 0 3947	x	+ 0 9188	y	+		=	5
	A gust	8	— 2 310	=	— 0 7102	x	+ 0 7040	y	+	w	=	1
	S ptember	21	+ 1 283	=	— 0 9993	x	+ 0 0378	y	+	w	=	2
(IV)	O t b r	16	+ 0 443	=	— 0 9239	x	— 0 3827	y	+	w	=	7
	November	20	— 0 307	=	— 0 5363	x	— 0 8440	y	+	w	=	3
	December	17	— 0 413	=	— 0 0872	x	— 0 9962	y	+	w	=	9

Alter g the w ghts (w) so as to render the n mbers in each quart r the sa ne and carry g out the mult pl cat

I	+ 24 768	=	+ 11 9976	x	+ 0 2580	y	+	12		+ 24 768 = + 11 9976 x + 0 2580 y + 12 z
II	+ 10 628	=	+ 3 5696	x	+ 1 8044	y	+	4		
	+ 0 180	=	+ 2 8725	x	+ 4 0925	y	+	5		+ 12 971 = + 6 6227 x + 8 8915 y + 12
	+ 2 163	=	+ 0 1806	x	+ 2 9946	y	+	3		
III	+ 1 582	=	— 2 7629	x	+ 6 4316	y	+	7	z	
	— 4 620	=	— 1 4204	x	+ 1 4080	y	+	2		+ 0 811 = — 7 1812 x + 7 9530 y + 12
	+ 3 849	=	— 2 9979	x	+ 0 1134	y	+	3		
IV	+ 1 772	=	— 3 6956	x	— 1 5308	y	+	4		
	— 0 614	=	— 1 0726	x	— 1 6880	y	+	2		— 1 320 = — 5 2914 x — 9 1960 y + 12
	— 2 478	=	— 0 5232	x	— 5 9772	y	+	6		

I + II + III + IV	+ 37 230	=	+ 6 1477	x	+ 7 9065	y	+	48
(I + II) — (III + IV)	+ 38 248	=	+ 31 0929	x	+ 10 3925	y		
(I + IV) — (II + III)	+ 9 666	=	+ 7 2647	x	— 25 7825	y		

x = + 1 238 y = — 0 025 = + 0 621

Means of the Sun's A R and N P D as interpolated from the Nautical Almanac together with the corresponding errors in the Ecliptic Polar Distance

Month and Day		Error in A R	No of Obs	Error in N P D	No of Obs	Error in Ecliptic P D
January	18	— 0.094	10	+ 1.249	18	+ 0.964
February	14	— 0.034	17	+ 2.002	26	+ 1.721
March	15	+ 0.002	6	+ 1.474	25	+ 1.366
April	20	+ 0.090	5	+ 3.042	25	+ 3.312
May	17	— 0.221	11	+ 2.256	24	+ 1.441
June	14	+ 0.065	10	+ 1.663	24	+ 1.711
July	—	—	—	+ 0.680	17	—
August	—	—	—	+ 0.197	18	—
September	16	— 0.065	2	+ 1.014	18	+ 1.317
October	18	+ 0.114	5	+ 0.043	18	— 0.581
November	18	+ 0.072	11	+ 0.467	19	+ 0.208
December	21	+ 0.046	11	+ 0.002	18	— 0.003

Assuming the error of Ecliptic Polar Distance to be represented by the formula $x \times$ Cos Sun's longitude $+ y \times$ Sin Sun's longitude $+ z$ we get

(I)	January	18	$+0''.964 = +0.4633\,x - 0.8862\,y + z$	$w =$	6
	February	14	$+1.721 = +0.8190 \quad - 0.5738\,y + z$	$w =$	10
	March	15	$+1.366 = +0.9946\,x - 0.1034\,y + z$	$w =$	5
(II)	April	20	$+3.312 = +0.8701\,x + 0.4929\,y + z$	$=$	3
	May	17	$+1.441 = +0.5640\,x + 0.8258\,y + z$	$w =$	7
	June	14	$+1.711 = +0.1305\,x + 0.9114\,y + z$	$w =$	8
(III)	July	—	— = — — —		
	August	—	— = — — —		
	September	16	$+1.317 = -0.9919\,x + 0.1268\,y + z$	$w =$	2
(IV)	October	18	$-0.581 = -0.9118\,x - 0.4107\,y + z$	$w =$	4
	November	18	$+0.208 = -0.5690\,x - 0.8223\,y + z$	$w =$	7
	December	21	$-0.003 = -0.0206\,x - 0.9998\,y + z$	$w =$	7

Altering the weights (w) so as to render the numbers in each quarter the same and carrying out the multiplications

$$\text{I}\left\{\begin{array}{l} +5.784 = +2.7798 \quad -5.3172\,y + 6 \\ +13.768 = +6.5520\,x - 4.5904\,y + 8 \\ +5.464 = +3.9784\,x - 0.4136\,y + 4 \end{array}\right\} + 25.016 = +13.3102\,x - 10.3212\,y + 18$$

$$\text{II}\left\{\begin{array}{l} +9.936 = +2.6103\,x + 1.4787\,y + 3 \\ +10.087 = +3.9480\,x + 5.7806\,y + 7 \\ +13.688 = +1.0440\,x + 7.2912\,y + 8 \end{array}\right\} + 33.711 = +7.6023\,x + 14.5505\,y + 18$$

$$\text{III}\left\{\begin{array}{l} — \\ +23.706 = -17.8542\,x + 2.2824\,y + 18 \end{array}\right\} + 23.706 = -17.8542 \quad + 2.2824\,y + 18$$

$$\text{IV}\left\{\begin{array}{l} -2.324 = -3.6472\,x - 1.6428\,y + 4 \\ +1.456 = -3.9830\,x - 5.7561\,y + 7 \\ -0.021 = -0.1442\,x - 6.9986\,y + 7\,z \end{array}\right\} - 0.889 = -7.7744 \quad - 14.3975\,y + 18$$

$$\begin{array}{lcl} \text{I} + \text{II} + \text{III} + \text{IV} & +81.544 = & -4.7161\,x - 7.8858\,y + 72 \\ (\text{I} + \text{II}) - (\text{III} + \text{IV}) & +35.910 = & +46.5411 \quad + 16.3444\,y \\ (\text{I} + \text{IV}) - (\text{II} + \text{III}) & -33.290 = & +15.7877 \quad - 41.5516\,y \end{array}$$

$$x = +0''.433 \qquad y = +0.965 \qquad z = +1.266$$

Mean rr rs f the Sun A R d N P D as terp lat d f om the Nautic l Alm a t g the w th th c re pond g errors n the Ecl pt P l D ta

Mean D y		E in A R	N Ob f	Err i N P D	N Ob f	E i Eclipti P D
J u y	16	+ 0 012	23	+ 0 483	22	+ 0 505
F bru ry	17	+ 0 046	20	+ 2 025	24	+ 2 132
M h	16	+ 0 057	24	+ 1 639	30	+ 1 844
April	18	+ 0 083	18	+ 1 839	29	+ 2 154
M y	16	+ 0 010	16	+ 0 770	24	+ 0 781
J e	15	+ 0 113	16	+ 0 518	21	+ 0 588
J ly	15	+ 0 055	10	— 0 504	17	— 0 623
A gu t	11	— 0 036	8	+ 0 903	22	+ 1 019
S pt mb r	18	+ 0 181	20	+ 0 421	24	— 0 690
O t b	21	+ 0 155	15	+ 0 372	18	— 0 469
N v mb	19	— 0 033	18	+ 0 505	22	+ 0 599
D mb	8	+ 0 164	7	+ 0 108	12	— 0 122

Assum ng the err n E lipt P l r D stance to be rep esent d by th fo m l x × Cos Sun s lo g t de + y × S n S n longit de + we get

(I)	J u y	16	+ 0 505	=	+ 0 4271 x	—	0 9042 y	+ z		w	=	11
	F b ry	17	+ 2 132	=	+ 0 8456 x	—	0 5339 y	+		w	=	11
	March	16	+ 1 844	=	+ 0 9973 x	—	0 0735 y	+		w	=	13
(II)	April	18	+ 2 154	=	+ 0 8805 x	+	0 4741 y	+		w	=	11
	M y	16	+ 0 781	=	+ 0 5676 x	+	0 8233 y	+		w	=	10
	J e	15	+ 0 588	=	+ 0 1028 x	+	0 9947 y	+		w	=	8
(III)	J ly	15	— 0 623	=	— 0 3872 x	+	0 9220 y	+		w	=	6
	A g t	11	+ 1 019	=	— 0 7501 x	+	0 6613 y	+			=	6
	S pt mber	18	— 0 690	=	— 0 9968 x	+	0 0802 y	+		w	=	11
(IV)	O t b r	21	— 0 469	=	— 0 8831 x	—	0 4692 y	+		w	=	8
	N mb	19	+ 0 599	=	— 0 5434 x	—	0 8395 y	+		w	=	10
	D mb r	8	— 0 122	=	— 0 9363 x	—	0 9717 y	+		w	=	4

Alt g the w ghts ( ) so s to render the mbers ea l q t r the same d c rry g ut tl e m lt pl at on

I	+ 3 535	=	+ 2 9897 x	— 6 3294 y	+ 7		
	+ 17 056	=	+ 6 7648 x	— 4 2712 y	+ 8	z	+ 35 343 = + 17 7329 x — 11 1886 y + 23
	+ 14 752	=	+ 7 9784 x	— 0 5880 y	+ 8		
II	+ 17 232	=	+ 7 0440 x	+ 3 7924 y	+ 8	z	
	+ 6 248	=	+ 4 5408 x	+ 6 5864 y	+ 8		+ 27 596 = + 12 3044 x + 17 3421 y + 23
	+ 4 116	=	+ 0 7196 x	+ 6 9629 y	+ 7	z	
III	— 3 738	=	— 2 3232	+ 5 5320 y	+ 6		
	+ 6 114	=	— 4 5006 x	+ 3 9678 y	+ 6		— 5 214 = — 17 7886 x + 10 3820 y + 23
	— 7 590	=	— 10 9648	+ 0 8822 y	+ 11		
IV	— 3 752	=	— 7 0448 x	— 3 7536 y	+ 8		
	+ 5 990	=	— 5 4340 x	— 8 3950 y	+ 10		+ 1 628 = — 13 6603 x — 17 0071 y + 23
	— 0 610	=	— 1 1815 x	— 4 8585 y	+ 5		

I + II + III + IV	+ 59 353	=	— 1 4116	— 0 4716 y	+ 92
(I + II) — (III + IV)	+ 66 525	=	+ 61 4862 x	+ 12 7786 y	
(I + IV) — (II + III)	+ 14 589	=	+ 9 5568	— 55 9198 y	

x = + 1 096 y = — 0 074 = + 0 662

M ı s f the S n s A R and N P D as t rp l ted f om the N ut l Alman t gether w th the rresp d g er th E l t P l r Distan

M an D y	E ı R	N Ol f	Er ı N P D	N Ob f	Err E llp P D
J y 19	— 0 038	23	— 0 156	24	— 0 262
I b y 15	+ 0 182	23	+ 0 620	26	+ 1 489
Mar l 16	+ 0 339	25	+ 0 323	25	+ 2 313
Ap l 16	+ 0 172	31	+ 0 553	30	+ 1 437
M y 19	+ 0 004	21	+ 0 154	26	+ 0 154
J 13	+ 0 308	17	+ 0 030	22	+ 0 289
J ly 15	+ 0 170	18	— 0 652	26	— 1 030
A g t 16	+ 0 246	14	— 1 000	23	— 2 118
S pt mber 18	+ 0 224	17	— 0 808	24	— 2 072
O t l 17	+ 0 183	18	— 1 110	19	— 17 8
N b 15	— 0 059	20	— 0 035	19	+ 0 178
D c ml 15	— 0 033	10	— 2 477	11	— 2 448

Assumı g tl e rro Ecl ptıc Polaı Dı tanc t be rep ese ted by the formula, $x \times$ C s Sun s l ng t de $+ y \times$ S Su l g tud + we get

(I)	J nuary	19	— 0 262	=	+ 0 4866	x	—	0 8736	y	+		w	=	12
	Γ bru y	15	+ 1 489	=	+ 0 8361	x	—	0 5485	y	+		w	=	13
	M r l	16	+ 2 313	=	+ 0 9970	x	—	0 0776	y	+	z	w	=	13
(II)	Apr l	16	+ 1 437	=	+ 0 8979	x	+	0 4402	y	+		w	=	15
	M y	19	+ 0 154	=	+ 0 5262	x	+	0 8503	y	+		w	=	11
	J ıe	13	+ 0 289	=	+ 0 1386	x	+	0 9903	y	+		w	=	10
(III)	J ly	15	— 1 030	=	— 0 3835	x	+	0 9235	y	+		w	=	10
	A g t	16	— 2 118	=	— 0 8004	x	+	0 5995	y	+	z	w	=	9
	S ı tember	18	— 2 072	=	— 0 9964	x	+	0 0843	y	+		w	=	10
(IV)	Octol	17	— 17 8	=	— 0 9153	x	—	0 4028	y	+		w	=	9
	Nov mb	15	+ 0 178	=	— 0 6046	x	—	0 7965	y	+		w	=	10
	D cer b r	15	— 2 448	=	— 0 1178	x	—	0 9930	y	+		w	=	5

Altcı ng the we gl ts (w) so as to render the numbers n ea h quarter the s me nd ca yıng t th multıpl cat o

I	— 2 C 0	=	+ 4 8660	x	—	8 7360	y	+	10		}	+ 39 202 = + 25 0301 x — 1 6231 y + 32 z
	+ 16 379	=	+ 9 1971	x	—	6 033	y	+	11			
	+ 2 413	=	+ 10 9670	x	—	0 8 36	y	+	11			
II	+ 18 681	=	+ 11 6727	x	+	5 7226	y	+	13	z	}	+ 22 822 = + 18 1821 x + 23 1383 y + 32 z
	+ 1 40	=	+ 2620	x	+	8 5030	y	+	10			
	+ 2 C01	=	+ 1 2474	x	+	8 9127	y	+	9			
III	— 11 330	=	— 4 2185	x	+	10 1685	y	+	11		}	— 55 302 = — 23 1829 + 17 0808 y + 32 z
	— 21 180	=	— 8 0040	x	+	5 9950	y	+	10			
	— 22 792	=	— 10 9604	x	+	0 9273	y	+	11			
IV	— 22 8 4	=	— 11 8989	x	—	5 2364	y	+	13		}	— 39 856 = — 20 4655 x — 21 5489 y + 32 z
	— 2 314	=	— 7 8 98	x	—	10 3545	y	+	13			
	— 11 688	=	— 0 7068	x	—	5 9580	y	+	6			

I + II + III + IV	— 33 134	=	— 0 4362	x	+ 3 0471	y	+ 128 z
(I + II) — (III + IV)	+ 157 182	=	+ 86 8606	x	+ 11 9833	y	
(I + IV) — (II + III)	+ 31 826	=	+ 9 5654	x	— 77 3911	y	

$x = + 1 83$ $y = - 0 184$ $z = - 0{\cdot}248$

M of th S A R d N P D a t p l t d f m th N t c l Alm t g th w tl th c e po d g e r s tl E lpt Pl D t

M an D y		Err i A R	N Ob f	Err i N P D	N Ob f	Err i E llp P D
J y	17	+ 0 120	20	— 0 885	24	— 0 544
F b y	15	— 0 063	22	+ 0 277	22	— 0 052
M l	16	+ 0 009	28	+ 0 208	28	+ 0 244
Ap il	15	+ 0 046	21	+ 0 898	30	+ 1 085
M y	15	+ 0 176	21	+ 0 170	25	+ 0 782
J	14	+ 0 300	11	— 0 472	23	— 0 240
J ly	15	+ 0 354	10	— 0 611	19	— 1 403
A t	18	+ 0 150	9	— 1 516	22	— 2 163
S pt mbe	17	— 0 062	8	— 2 059	16	— 1 524
O t b	18	+ 0 014	14	— 0 952	17	— 0 961
N mbe	9	— 0 022	8	+ 0 800	10	+ 0 8 6
D mb	15	+ 0 030	6	+ 1 743	3	+ 1 717

Assum g the erro E l ptic P lar Distanc to be r prese t d by the f la x × Cos S s long t d + y × S n Sun s lo g t de + z we get

(I)	J y	17	— 0 544	=	+ 0 4514 x	— 0 8923 y	+	z	w =	11
	F b ry	15	— 0 052	=	+ 0 8315 x	— 0 556 y	+	z	w =	11
	Mar h	16	+ 0 244	=	+ 0 9967 x	— 0 0817 y	+	z	w =	14
(II)	Ap l	15	+ 1 085	=	+ 0 9072 x	+ 0 4208 y	+	z	w =	12
	M y	15	+ 0 782	=	+ 0 5878 x	+ 0 8090 y	+	z	w =	11
	J n	14	— 0 240	=	+ 0 1262 x	+ 0 9920 y	+	z	w =	7
(III)	J ly	15	— 1 403	=	— 0 3797 x	+ 0 9251 y	+	z	w =	7
	A gust	18	— 2 163	=	— 0 8178 x	+ 0 5755 y	+	z	w =	6
	S ptembe	17	— 1 524	=	— 0 9944 x	+ 0 1054 y	+	z	w =	5
(IV)	O t b	18	— 0 961	=	— 0 9100 x	— 0 4147 y	+	z	w =	8
	N v mbe	9	+ 0 856	=	— 0 6881 x	— 0 7256 y	+	z	w =	4
	D ember	15	+ 1 717	=	— 0 1224 x	— 0 9925 y	+	z	w =	2

Alter g the we ghts (w) so as t render tl e mbers each q arte the sam d c ry g o t the mult pl t

I	— 4 352	=	+ 3 6112 x	— 7 1384 y	+ 8 z		
	— 0 416	=	+ 6 6520 x	— 4 4448 y	+ 8 z	— 2 572 =	+ 19 233 x — 12 3185 y + 25 z
	+ 2 196	=	+ 8 9703 x	— 0 7353 y	+ 9 z		
II	+ 10 850	=	+ 9 0720 x	+ 4 2080 y	+ 10 z		
	+ 7 038	=	+ 5 2902 x	+ 7 2810 y	+ 9 z	+ 16 448 =	+ 15 1194 x + 1 4410 y + 25 z
	— 1 440	=	+ 0 7572 x	+ 9 20 y	+ 6 z		
III	— 12 627	=	— 3 4173 x	+ 8 3259 y	+ 9 z		
	— 17 304	=	— 6 5424 x	+ 4 6040 y	+ 8 z	— 42 123 =	— 17 9149 x + 13 7731 y + 25 z
	— 12 192	=	— 7 9552 x	+ 0 8432 y	+ 8 z		
IV	— 13 454	=	— 12 7400 x	— 5 8058 y	+ 14 z		
	+ 5 992	=	— 4 8167 x	— 5 0792 y	+ 7 z	— 0 594 =	— 18 0463 x — 14 8550 y + 25 z
	+ 6 868	=	— 0 4896 x	— 3 9700 y	+ 4 z		

I + II + III + IV — 28 841 = — 1 6083 x + 4 0406 y + 100 z

(I + II) — (III + IV) + 56 593 = + 70 3141 x + 6 2044 y

(I + IV) — (II + III) + 22 509 = + 3 9827 x — 58 3876 y

x = + 0 834 y = — 0 329 z = — 0 262

M f tl S A R d N P D as nte p lat d f om th N ut l Almanac t g th r w th the orresp d g err th l l t l l D t

M D y		D A R	N Ob f	Err in N P D	N Ob f	E Ecl ptl P D
J y	15	— 0 210	20	+ 0 352	20	— 0 174
F l y	16	— 0 037	12	+ 1 470	15	+ 1 197
M h	16	+ 0 015	20	+ 1 349	24	+ 1 3 9
A l	16	+ 0 062	18	+ 1 458	20	+ 1 692
M y	16	+ 0 174	16	+ 0 252	20	+ 0 842
J	11	+ 0 302	6	+ 0 677	14	+ 0 998
July	16	+ 0 330	8	— 0 275	15	— 1 017
A t	17	— 0 110	6	— 1 003	15	— 0 418
S t ml	14	+ 0 212	4	— 0 360	13	— 1 570
O t b	15	— 0 009	8	+ 1 032	17	+ 1 006
N e be	13	— 0 040	4	+ 1 963	11	+ 2 045
D l	17	+ 0 104	5	+ 1 965	6	+ 1 905

As t er or n Ecl pt c P l r D stance to be rep esented by th f rmul $x \times$ Cos S s l g t de $+ y \times$ S S n s l t le $+ z$ ve get

(I)	J y	15	— 0 174	=	+ 0 4157	x	— 0 9095	y	+	w	=	10
	F b uary	16	+ 1 197	=	+ 0 8388	x	— 0 5444	y	+	w	=	6
	Ma ch	16	+ 1 329	=	+ 0 9963	x	— 0 0857	y	+		=	11
(II)	A l	16	+ 1 692	=	+ 0 9016	x	+ 0 4326	y	+	w	=	9
	M y	16	+ 0 842	=	+ 0 5774	x	+ 0 8165	y	+	w	=	9
	J ne	11	+ 0 998	=	+ 0 1794	x	+ 0 9838	y	+		=	4
(III)	J ly	16	— 1 017	=	— 0 3915	x	+ 0 9202	y	+		=	5
	A u t	17	— 0 418	=	— 0 8059	x	+ 0 5920	y	+	w	=	4
	Se tember	14	— 1 570	=	— 0 9817	x	+ 0 1599	y	+	w	=	3
(IV)	Octob r	1	+ 1 006	=	— 0 9317	x	— 0 3632	y	+		=	5
	N ve ber	13	+ 2 045	=	— 0 6388	x	— 0 7694	y	+		=	3
	Dec mb	17	+ 1 905	=	— 0 0912	x	— 0 9958	y	+		=	3

Alte ing t e weights (w) so as to render the numbers each q arter the same and carrying out the mult pl c tio

I	— 1 218	=	+ 2 9099 x	— 6 366 y	+ 7	z	+ 14 202	=	+ 14 2355 x — 9 2297 y + 19
	+ 4 788	=	+ 3 3552 x	— 2 1776 y	+ 4				
	+ 10 032	=	+ 7 9704 x	— 0 6856 y	+ 8				
II	+ 13 36	=	+ 7 2128 x	+ 3 4608 y	+ 8		+ 23 266	=	+ 12 3702 x + 12 9442 y + 19
	+ 6 736	=	+ 4 6192 x	+ 6 5320 y	+ 8				
	+ 2 991	=	+ 0 382 x	+ 2 9514 y	+ 3				
III	— 7 119	=	— 2 740 x	+ 6 4414 y	+ 7		— 19 047	=	— 13 4985 x + 10 9528 y + 19
	— 2 508	=	— 4 8354 x	+ 3 5520 y	+ 6				
	— 9 420	=	— 9226 x	+ 0 9594 y	+ 6				
IV	+ 9 054	=	— 8 38 3 x	— 3 2688 y	+ 9		+ 28 804	=	— 12 0363 x — 12 0948 y + 19
	+ 10 22	=	— 3 1940 x	— 3 8470 y	+ 5				
	+ 9 2	=	— 0 4560 x	— 4 9790 y	+ 5				

I + II + III + IV	+ 47 225	=	+ 1 0719 x + 2 5725 y + 76 z
(I + II) — (III + IV)	+ 27 711	=	+ 52 1395 x + 4 8565 y
(I + IV) — (II + III)	+ 38 787	=	+ 3 3285 x — 45 2216 y

x = + 0 607″ y = — 0 813″   = + 0 640″

C ll tın th ve l v lu f ɷ ɹ and t as f llows

		ɹ		E r Eq I
1831	— 1 33	— 0 81	— 1 205	— 0 223
1832	— 0 44	+ 0 92	+ 0 730	— 0 074
1833	— 0 84	— 0 93	— 0 410	— 0 174
1834	Tl T ans t I	t um nt was und	paı	
1835	— 1 84	— 0 512	— 0 220	— 0 297
1836	— 0 693	— 0 291	+ 0 212	— 0 115
1837	— 0 606	+ 0 191	— 0 240	— 0 101
1838	— 1 428	— 0 062	— 0 051	— 0 238
1839	— 1 483	— 0 042	+ 0 450	— 0 247
1840	— 1 848	— 0 051	+ 0 384	— 0 308
1811	+ 0 055	— 0 339	— 0 8 6	+ 0 009
184	+ 1 238	— 0 02	+ 0 621	+ 0 206
1843	+ 0 433	+ 0 9f5	+ 1 266	+ 0 0 2
1844	+ 1 096	— 0 074	+ 0 662	+ 0 183
1845	+ 1 83	— 0 184	— 0 248	+ 0 306
1846	+ 0 834	— 0 29	— 0 262	+ 0 13J
1847	+ 0 (07	— 0 813	+ 0 610	+ 0 101

I wl l p ts t f tl tı l l E l ptc P l D t tl t tl R ght A s f ll tl St s ı tl t + ——ı——s as gı n th l t l m l d d Γ Eq P

Γ n tl val s of ɹ w btan tl ct to be apply l t th bl qu ty s n d n tl Na t l Al l l t l l nt tl am unt by whı h th bl quıty d du d f m tl N th n o S tl S l ı dff f om tle caıı lt— tl t (Obl +) ıs btaın d fı m tl N rtl m S l t and (Obl —) f n the Soutl eın S lst c obs v t

Th s lts fa as a ds tl p t f th Equıno tı l P nt m y n w—f as ı wl l w ll e ı ntly ıl l—l tly p t d to tw las m ly tl s f n tl b t s f 1831 to 1841 b tl ı lud l l tl l 184 d up t tl d f 1847 I tl f g p tm t b ll t d tl t tle ed pl f tl l q t l l t b f n t tl t d pt d ın tl tr t f tl G w l C t l e for tl y 1810 n tl Cat l gu ll tl l ıı t d wn t tl d f the y 1811 w bu lt d t ıs t tl Eq t l P t as n d tl C t l ı tl t V l VI d tl ı edın olum l v r p t ı th s c nd gı p l w ve —th b ata f 1842 d up t tl p t t e—tl l tcı ı t n f Cl k E o has b n ff t d w tl f n to tl Appar nt Pl s f 6 St s (l t d f th 100) vl ıl g v n th N ut al Al vı ll St b tw n+45 a d—2 of D l at n l n ıt s q l f l tı t d te m tl f tl Eq t l P t as un d th o t u tı n f Vol VI nd t do tl sa ue l tl Na t l Alman C t l gu ı 1842 1843 1844 184 1846 nd 1847 f th f ı n r w l ve as f ll ws

Correctı n to be appl ed to the Madıas Determınatıons of Rıght Ascensıon Vols I—V I by reason of a wıong assumptıon f the place of the Equınox

	s
1831	— 0 223
1832	— 0 074
1833	— 0 174
1834	Th T an t I t u nent was unde p rs
1835	— 0 297
1836	— 0 115
1837	— 0 101
1838	— 0 238
1839	— 0 247
1840	— 0 308
1841	+ 0 009
M an	— 0 177 (A)

F tl d P d w l

Corr tions aue to th Naut cal Almanac Catalogues and to the Determinat ons f A R at Madras for the period 184 —1847

	1842	+ 0 206
	1843	+ 0 072
	1844	+ 0 183
	184	+ 0 306
	1846	+ 0 139
	1847	+ 0 101
(B) M		+ 0 168

F n tl f T t bs rv t ıs w l l hav p v d vaıl bl n th fir t quarte f tl y 1842 d tl thı d quat f 1843 t ld p l ap l be n a ll to l tt d tl o lts f tl y alt tl f m th p ınd d to d j t to th qu y t would l abl tl at w gl t h ld b ttach d to tl l ults p p tı t th umb f b t b t n l b t on f l x ınn t f tl b t ns l mputat ns I m l d t b h th t th larg am unts f dı t ı t w tl l tl t P l Eq t tl p t f th al b than t d fl y n mb f b t ll d tl lts f 184 aı l 1843 b tt l tl n w uld nly h b n dı t b d to th am unt 0 03 and th ll (f w lt t tl o l s lts w ull t tl as lte th m an bov tw hund dth f d f t

I le t l ll t ı tl lts A a d B tl ı l e f tl 65 Star al dy allud d t h b n b ught p fr m V l VI f tl y 181 1843 1844 184 1846 1847 p tı ly mpl y g th nn l p ns and p p m tı tl d ı a d w tl tl m an ı lac s g v tl Naut l Almana wh t pp ar th t

V l VI — 08 = N A

V l VI — 098 = N A₄₃

V l VI — 10 = N A

V l VI — 108 = N A₄₅

V l VI — 116 = N A₄₆

V l VI — 130 = N A

If l owe r tl o result A be ac ed t d th t tl d t m t f A R ın V l VI quı th t —0 17 n th t as tl al o lu of V l VI w ll tı d d of m l f tı nu h as—th p p m tı mpl y d b g g up th C ta l g ı f on 183 (b ıı, derived f n th C tal gu s f 1800 and 183) will h quı orr tı t th an unt $-\frac{}{36}$ — 0048 ı l tl a cumulated ult w ll stand thus

(V l VI + 033) — 082 = N A₄₃ = V l VI— 049

(V l VI + 038) — 098 = N A = V l VI— 060

(V l VI + 043) — 102 = N A = V l VI— 059

(V l VI + 048) — 108 = N A₄₅ = V l VI— 060

(V l VI + 053) — 116 = N A₄₆ = V l VI— 063

(V l VI + 0 8) — 130 = N A = V l VI— 072

O t app tl whole tl at tl R ght A s f th fix d Sta g n ın th N ut al Alm ac s fr m 184 t 1847 rr ı nd t tl d v d f m V l n VI when d ced by tl n t t—0 06s d qu tly th t th d t rmın tı f A R t M l as s ı e 1843 (wl ı l l av b en co puted w tl f t th N ut l Al C tal g) q ır th rr tı + 0 06 t l ı them t tl l quınoctıal po nt efe l to ın tl C talo of fi d Sta v n V lum VI and with f t tl rr t tl po nt t pı a s

F m A Th t tl t Eq x ıs p nted by V l VI — 17ı

F B That tl t u Equ x s p nt d by V l VI + 108

D rr n t t thus am nt I b l ev m l b y nd tl lım t xh b t d by tl b rv tı ns m d E p nd t has ost n cons l ble l b u and nıı ty t rd v ur to e l out tl c us th lt f my quın tl t th b v tı s s far a any on b is n d y t f t y te but th t tl ults f m d ff t b diff t W tl tl u ta ty l anging imp ta t ult *I p p f tl p e t t d tl t tl pl f tl f x d St g I l I I q t on*—0 10 *t f th d pla f th Eq ct l p t l g d tl Pl t j Ob t — n f m r w ll th p t l m —tl t tl ob t n p t tl t f tl j* 181 *l k w q c r t th t f*—0 10 *b t th t f ll tl b r t is d b q t t tl t d t tl Eq t l p t l b gl tl j m d*

A g d tl values f j tl Obl q ty u ed tl alcul t n th Alm n h m m d u lt l du g tl pe l 1835—1847 w n y t nc t k th m (— 1°0′) wl nce t pp r th t tl Obl qu ty m l y d tl N ut l Alm l ul ti n l uld b di nun l l 0 1 0′ Fu lly f m w l n that th b t t th N tl n S l t t M l l b t Obliquity (O + 091) a d tl at tho m de at th S i tl n S l t exl b t an Obliquity (O — 091) O pr se t tl t Obl quity

OBSERVATIONS OF THE FIXED STARS

———— () ————

IN vol VI of the Madras Astronomical Results is given the places of above eleven thousand Stars which had been observed at Madras during the period 1830 1840 together with the re observed places of several of these during the years 1841 1842 all being reduced to January 1st 1835 or about the middle period of observation Satisfied that in point of *quantity* the Madras Catalogue contained as much as for the present could be considered useful I have during the last three years principally confined myself to the observation of a small Catalogue only having in view to satisfy the more rigid conditions of *quality* than could be expected from the necessarily limited number of observations of the larger Catalogue

In the early volumes of the Madras Results I had estimated the mean error of a single observation as far as concerns the observer —under ordinary circumstances to amount to 0 07 seconds of time and the error of a single observation of Declination was estimated at about 0 7— these estimations having been confirmed by the experience of Astronomers generally it becomes a question of deep interest as to what causes may be attributed the large discrepancies which are often met with between catalogues of different but not very distant epochs emanating from the same Observatory and observed with the same Instruments —A mere glance at page XI (preface to the Nautical Almanac 1845) renders the suspicion strong —that in the reduction of the mean places from observation at one epoch to that of another something more than Annual Precession and Annual Proper Motion must be taken into account in several instances the total neglect of the proper motion will to some extent account for want of accordance of results whereas in others nothing short of a variable amount of proper motion can reconcile discordances —With this by way of motive I at once determined on the continued and careful observations of the Stars forming the Nautical Almanac Catalogue or rather such of them (97 in number) as were visible at Madras

On comparing the Madras Catalogue (Vol VI) with the recently published Greenwich Catalogue for 1840 — differences were met with much too large to be charged upon either the Instruments or Observers hence the necessity that the places of these Stars should be re examined and they have accordingly —to the extent of three or four observations of each—again been re-observed —In addition to these I have re observed all Stars in which an annual Proper Motion exceeding a quarter of a second of space has been noticed by Piazzi or has resulted from a comparison of Piazzi with the Madras Catalogue moreover the places of several Stars in the Brisbane Catalogue for 1825 reduced to 1835 (brought forward by ten years *Precession only* —which differed above five seconds from the Madras

Catalogue —these too have been re observed in order to settle the question as to—whether these ascertained differ ences arose from error in the B Catalogue or if they were the result of accumulated Proper Motion —these several motives have influenced me in the choice of a plan for observing during the period embraced by the present Catalogues viz 1843-1847 the observations may not improperly be separated into two classes the first being the permanent observations or those of the Nautical Almanac Stars and the others the Subsidiary observations—thus

PERMANENT OBSERVATIONS

The 97 Stars forming the Permanent Catalogue have been arranged in order of their Declination as being there by better suited for comparison —the figures in the second column express the number of observations in the years 1843 1844 1845 1846 and 1847 respectively and opposite to these in the third column are the corresponding mean results—in which it must be noted that *the Right Ascensions reckon from the equinox a sumed n the Nautical Alman ac Catalogues*

On comparing the Right Ascensions of Stars for the years 1843 1847 as brought up from the Catalogue given in vol VI with the places given in the Nautical Almanacs for those years it appears that the equinoctial point assumed in the one differs from that referred to in the other by 0 10 or the Right Ascensions from Vol VI—0 10 repre sents the Nautical Almanac places or to render our present Catalogue comparable with volume VI this reduction (0 10) must be employed and hence the places set down in the fourth column (viz Vol VI—0 10)

The fifth column of each page contains the places from the Greenwich Catalogue of 1439 Stars for 1840 which have been brought forward to 1845 by supplying five times the amount of the Precessions there given this is true at least as far as and including Columbæ for the Stars situated to the South of this which are not vi ible at Green wich the N A places have been filled in

The next following columns containing the differences of each Catalogue from Greenwich and of the one from the other explain their own meaning

MEAN PLACES

OF

NINETY SEVEN PRINCIPAL FIXED STARS,

FROM

OBSERVATIONS MADE AT THE MADRAS OBSERVATORY

IN THE YEARS 1843—1847

REDUCED TO JANUARY 1 1845

AND

COMPARED WITH THE RESULTS OF FORMER YEARS &c

NAMES	N O	MEAN RIGH A CEN ION J NUA Y — O 843— 47	Mean	V VI —0 10 II	Gre nw (840) III	DIFFERENCES — III—I	III—II	I—II
		h m s	s	s	s	s	s	s
	13	20 17 23 41						
	9	25 65						
λ Ursæ M noris	15	22 99	23 01	22 18	23 64	+ 0 63	+ 1 46	+ 0 83
	16	22 03						
	22	20 96						
	—	1 3 ——						
	49	35 62						
α Ursæ Minoris	76	34 77	34 63	33 57	34 74	+ 0 11	+ 1 17	+ 1 06
	61	35 86						
	33	32 27						
	23	6 25 62 51						
	53	59 35						
51 Cephei	53	60 33	60 41	59 62	59 89	— 0 52	+ 0 27	+ 0 79
	43	60 18						
	32	59 67						
	4	18 22 21 53						
	11	19 58						
δ Ursæ Minoris	13	20 62	20 25	20 34	20 04	— 0 21	— 0 30	— 0 09
	26	19 21						
	37	20 32						
	2	17 2 4 70						
	14	3 30						
Ursæ Minoris	6	4 23	3 81	2 91	3 62	— 0 19	+ 0 71	+ 0 90
	5	3 45						
	3	3 35						
	5	15 49 44 09						
	9	43 65						
ζ Ursæ Minoris	11	43 58	43 60	43 12	43 40	— 0 20	+ 0 28	+ 0 48
	3	43 28						
	3	43 39						
	6	23 33 3 06						
	22	2 13						
γ Cephei	9	1 75	2 18	1 90	2 14	— 0 04	+ 0 24	+ 0 28
	10	2 03						
	7	1 94						
	11	14 51 13 75						
	24	13 33						
β Ursæ Minoris	7	13 47	13 53	12 51	13 47	— 0 06	+ 0 96	+ 1 02
	14	13 33						
	11	13 75						
	12	21 26 38 26						
	32	38 30						
β Cephei	23	38 33	38 31	38 10	38 25	— 0 06	+ 0 15	+ 0 21
	21	38 17						
	12	38 48						
	46	10 54 6 77						
	74	6 78						
α Ursæ Majoris	68	6 85	6 78	6 54	6 87	+ 0 09	+ 0 33	+ 0 24
	70	6 65						
	52	6 87						

NAMES	N Obs	ME N DECL NATION ANU RY 4 O 184 —1 47	M I	V VI II	G W (0) III	D FFERENCES III—I	III—II	I—II
	14	+ 88 50 44 34						
	13	42 14						
λ Ursæ Minoris	16	42 76	42 99	40 93	42 77	— 0 22	+ 1 84	+ 2 06
	7	42 07						
	21	43 66						
	33	+ 88 28 59 14						
	37	58 71						
Ursæ Minoris	40	58 76	58 67	58 90	58 79	+ 0 12	— 0 11	— 0 23
	62	58 46						
	31	58 20						
	23	+ 87 15 34 97						
	51	33 64						
51 Cephei	54	33 73	33 68	34 68	33 89	+ 0 21	— 0 79	— 1 00
	42	33 56						
	36	32 52						
	4	+ 86 35 40 67						
	10	39 43						
δ Ursæ Minoris	12	40 36	39 87	41 23	40 64	+ 0 77	— 0 59	— 1 36
	4	39 28						
	9	39 59						
	3	+ 82 16 57 64						
	13	58 49						
Ursæ Minoris	6	57 45	57 42	56 06	57 48	+ 0 06	+ 1 42	+ 1 36
	5	56 35						
	3	57 15						
	6	+ 78 16 5 41						
	9	5 76						
ζ Ursæ Minoris	10	6 86	5 95	5 45	6 17	+ 0 22	+ 0 72	+ 0 50
	3	5 57						
	3	6 13						
	6	+ 76 46 3 74						
	23	2 46						
γ Cephei	9	2 88	2 94	2 21	2 14	— 0 80	— 0 07	+ 0 73
	10	2 75						
	7	2 85						
	13	+ 74 47 20 03						
	25	19 77						
β Ursæ Minoris	7	20 2	19 82	17 52	20 20	+ 0 38	+ 2 68	+ 2 30
	14	19 29						
	12	19 81						
	12	+ 69 52 52 51						
	34	52 05						
β Cephei	24	53 03	52 34	52 71	51 90	— 0 44	— 0 81	— 0 37
	21	52 16						
	12	51 97						
	46	+ 62 35 10 72						
	72	11 26						
Ursæ Majoris	71	11 35	11 10	10 70	11 02	— 0 08	+ 0 32	+ 0 40
	71	11 35						
	51	10 83						

NAMES	N Obs	MEAN RIGH SCENSION J NUARY 8 — Obs in 1843—1847	M an' I	V VI —0 0 II	Grs nw (040) II	DIFFERENCES III—I	III—II	I—II
		h m s	s	s	s	s	s	s
	29	21 14 52 49						
	35	52 47						
α Cephei	32	52 49	52 47	52 22	52 39	— 0 08	+ 0 17	+ 0 25
	38	52 41						
	19	52 49						
	—	16 21 ——						
	17	54 16						
η Draconis	3	54 14	54 08	54 18	54 20	+ 0 12	+ 0 02	— 0 10
	6	53 95						
	3	54 07						
	34	0 31 44 77						
	45	44 83						
α Cassiopeæ	23	44 63	44 68	44 56	44 76	+ 0 08	+ 0 20	+ 0 12
	31	44 56						
	12	44 62						
	39	11 45 39 10						
	62	39 03						
γ Ursæ Majoris	57	39 15	39 06	39 03	38 95	— 0 11	— 0 08	+ 0 03
	57	38 96						
	40	39 07						
	5	17 26 55 99						
	20	55 97						
β Draconis	6	56 01	55 89	56 20	55 93	+ 0 04	— 0 27	— 0 31
	7	55 67						
	8	55 79						
	32	9 22 27 47						
	12	27 42						
θ Ursæ Majoris	44	27 46	27 42	27 25	27 22	— 0 20	— 0 03	+ 0 17
	32	27 31						
	21	27 43						
	12	17 53 0 55						
	22	0 48						
γ Draconis	26	0 45	0 44	0 39	0 45	+ 0 01	+ 0 06	+ 0 05
	8	0 32						
	12	0 41						
	37	13 41 25 72						
	41	25 54						
η Ursæ Majoris	34	25 58	25 62	25 34	25 41	— 0 21	+ 0 07	+ 0 28
	44	25 46						
	25	25 79						
	35	3 13 17 18						
	50	17 18						
α Persei	47	17 09	17 08	16 94	17 07	— 0 01	+ 0 13	+ 0 14
	23	17 01						
	35	16 96						
	53	8 48 34 16						
	68	34 05						
Ursæ Majoris	64	34 10	34 07	33 97	33 79	— 0 28	— 0 18	+ 0 10
	71	33 94						
	48	34 09						

NAMES	N Obs	MEAN E LINATI N J NU RY Obs —18 7	M I	V VI II	G CH (18 0) I	D FFEREN ES III—I	III—II	I—II
Cephei	33 35 3° 38 19	+ 61 55 48 59 47 69 48 76 47 78 47 25	48 01	49 21	49 01	+ 1 00	— 0 20	— 1 21
η Draconis	— 17 4 6 3	+ 61 51 —— 58 00 58 47 57 84 56 82	57 78	57 77	58 30	+ 0 52	+ 0 53	+ 0 01
Cassiopeæ	33 43 23 32 14	+ 55 41 10 47 10 45 10 81 10 42 10 42	10 51	10 02	11 39	+ 0 88	+ 1 37	+ 0 49
γ Ursæ Majoris	39 60 57 59 41	+ 54 33 24 53 24 79 24 97 24 47 23 82	24 52	25 82	23 40	— 1 12	— 2 42	— 1 30
β Draconis	5 19 6 7 9	+ 52 25 6 33 6 59 6 60 6 72 5 90	6 43	6 96	6 00	— 0 43	— 0 96	— 0 53
θ Ursæ Majoris	32 12 41 32 26	+ 52 22 49 37 48 88 48 29 48 56 47 87	48 59	48 40	47 36	— 1 23	— 1 04	+ 0 19
γ Draconis	13 23 23 10 12	+ 51 30 34 35 33 95 34 23 33 52 33 39	33 89	33 90	33 87	— 0 02	— 0 03	— 0 01
η Ursæ Majoris	38 38 34 45 27	+ 50 5 19 83 19 58 20 01 19 80 19 68	19 78	20 10	19 45	— 0 33	— 0 65	— 0 32
Persei	38 50 47 20 32	+ 49 18 14 53 14 17 14 67 14 33 13 75	14 29	14 27	14 39	+ 0 10	+ 0 12	+ 0 02
Ursæ Majoris	48 73 67 75 52	+ 48 38 43 07 43 59 43 96 43 94 44 08	43 73	44 57	45 92	+ 2 19	+ 1 35	— 0 84

NAMES	N O	M N RI H CEN ION ANUA Y — OBS TI IN 843— 0 7	MEAN I	V VI —0 10 II	NW (84) III	D ENCES — III—I	III—II	I—II
		h m s	s	s	s	s	s	s
	28	5 5 14 89						
	36	14 88						
Aur gæ	20	14 83	14 83	14 63	14 77	— 0 06	+ 0 14	+ 0 20
	26	14 75						
	23	14 79						
	36	20 36 8 90						
	68	8 91						
Cygni	67	8 89	8 88	8 97	8 86	— 0 02	— 0 11	— 0 09
	69	8 86						
	50	8 83						
	44	12 48 46 14						
	47	46 06						
12 Canum Ven	51	46 13	46 07	46 34	46 13	+ 0 06	— 0 21	— 0 27
	48	45 98						
	18	46 05						
	35	18 31 41 39						
	70	41 39						
Ly æ	62	41 36	41 36	41 36	41 27	— 0 09	— 0 09	0 00
	49	41 32						
	39	41 36						
	23	20 59 57 25						
	28	57 24						
61[1] Cygni	13	57 15	57 16	57 41	57 19	+ 0 03	— 0 22	— 0 25
	23	57 04						
	17	57 10						
	21	18 44 21 34						
	30	21 47						
β Lyræ	26	21 39	21 39	21 57	21 40	+ 0 01	— 0 17	— 0 18
	23	21 35						
	13	21 39						
	39	7 24 42 15						
	79	42 07						
Geminorum	73	42 07	42 07	42 00	42 14	+ 0 07	+ 0 14	+ 0 07
	68	42 00						
	49	42 04						
	29	21 6 20 45						
	35	20 48						
ζ Cygni	17	20 37	20 41	20 39	20 44	+ 0 03	+ 0 05	+ 0 02
	35	20 33						
	19	20 40						
	45	5 16 29 85						
	65	29 82						
β Tauri	54	29 80	29 79	29 70	29 79	0 00	+ 0 09	+ 0 09
	35	29 74						
	43	29 76						
	34	7 35 49 47						
	88	49 39						
β Geminorum	91	49 26	49 36	49 39	49 38	+ 0 02	— 0 01	— 0 03
	78	49 32						
	54	49 38						

N MES	N Obs	M N DE L N TION J NU RY: Obs 18 —1 47	M AN I	V VI II	G W (4) III	DIFFERENCE: III—I	III—II	I—II
	29	+ 45 49 59 43						
	38	59 27						
Aurıgæ	19	58 99	58 94	60 40	61 19	+ 2 25	+ 0 79	— 1 46
	25	59 00						
	23	58 00						
	54	+ 44 43 43 63						
	64	44 52						
Cygnı	69	44 89	44 30	45 37	44 38	+ 0 08	— 0 99	— 1 07
	79	44 44						
	51	44 04						
	43	+ 39 9 23 52						
	41	24 18						
12 Canum Ven	52	24 09	23 94	23 89	23 59	— 0 35	— 0 30	+ 0 05
	47	24 15						
	17	23 78						
	55	+ 38 38 33 24						
	72	33 53						
Lyræ	69	33 48	33 30	31 81	31 70	— 1 60	— 0 11	+ 1 49
	53	33 43						
	34	32 84						
	26	+ 37 59 24 33						
	30	23 86						
61^1 Cyg ı	11	23 88	24 15	23 80	25 02	+ 0 87	+ 1 22	+ 0 35
	23	24 29						
	18	24 37						
	12	+ 33 11 9 00						
	30	10 05						
β Lyræ	26	9 81	9 71	8 30	10 51	+ 0 80	+ 2 21	+ 1 41
	25	10 19						
	14	9 48						
	37	+ 32 13 20 82						
	64	19 56						
Gemınorum	74	19 48	19 73	19 83	19 92	+ 0 19	+ 0 09	— 0 10
	68	19 40						
	51	19 40						
	31	+ 29 35 38 07						
	36	37 98						
ζ Cygnı	16	38 06	37 85	36 98	38 28	+ 0 43	+ 1 30	+ 0 87
	34	37 73						
	19	37 42						
	44	+ 28 28 13 77						
	59	13 28						
β Taur	55	13 88	13 53	13 45	13 74	+ 0 21	+ 0 29	+ 0 08
	40	13 62						
	42	13 10						
	32	+ 28 23 43 21						
	65	42 89						
β Gemınorum	82	42 48	42 61	42 64	42 45	— 0 16	— 0 19	— 0 03
	79	42 38						
	55	42 10						

NAMES	N O	ME N R GH OEN O J NU RY 4 — OBS 1846—1847	MEA I	V VI —0 10 II	G NW (840) II	DI FERENCES — III—I	III—II	I—II
		h m s	s	s	s	s	s	s
	36	0 0 23 07						
	57	23 12						
α Andromedæ	68	23 09	23 07	23 12	23 06	— 0 01	— 0 06	— 0 05
	53	23 01						
	23	23 05						
	15	14 38 13 05						
	32	12 99						
ε Bootis	26	12 98	12 97	13 04	13 01	+ 0 04	— 0 03	— 0 07
	27	12 88						
	18	12 93						
	12	15 28 7 54						
	54	7 55						
α Cor Bor	53	7 50	7 48	7 53	7 47	— 0 01	— 0 06	— 0 05
	32	7 41						
	16	7 42						
	57	9 37 2 58						
	73	2 51						
ε Leonis	65	2 56	2 59	2 57	2 55	— 0 04	— 0 02	+ 0 02
	79	2 60						
	53	2 69						
	36	3 38 16 76						
	59	16 78						
η Tauri	39	16 79	16 75	16 71	16 77	+ 0 02	+ 0 06	+ 0 04
	39	16 73						
	26	16 68						
	39	1 58 26 77						
	58	26 81						
α Arietis	37	26 77	26 74	26 78	26 69	— 0 05	— 0 09	— 0 04
	41	26 66						
	20	26 71						
	40	6 13 4 98						
	69	34 90						
μ Geminorum	58	34 86	34 88	34 86	34 87	— 0 01	+ 0 01	+ 0 02
	40	34 82						
	47	34 84						
	38	7 10 51 71						
	56	51 65						
δ Geminorum	62	51 61	51 64	51 62	51 64	0 00	+ 0 02	+ 0 02
	53	51 59						
	38	51 62						
	42	11 5 51 54						
	74	51 40						
δ Leonis	60	51 41	51 40	51 82	51 32	— 0 08	— 0 50	— 0 42
	66	51 32						
	47	51 34						
	34	14 8 35 56						
	81	35 59						
α Bootis	61	35 53	35 52	35 45	35 54	+ 0 02	+ 0 09	+ 0 07
	52	35 46						
	28	35 47						

NAMES	N Obs	ME N L N U Y				D FE N		
		Obs 8 —1 7	Mea I	V VI II	W (1 0) I	I —I	III—II	I—II
α Andromedæ	39 45 69 61 27	+ 28 14 5 15 5 12 4 60 4 79 4 17	4 77	5 79	5 33	+ 0 56	— 0 46	— 1 02
Bootis	15 31 24 28 18	+ 27 43 50 73 50 75 50 59 51 07 49 97	50 62	50 37	50 10	— 0 52	— 0 27	+ 0 5
α Cor Bor	11 48 52 30 17	+ 27 14 23 01 24 05 23 57 23 68 23 38	23 54	23 10	23 40	— 0 14	+ 0 30	+ 0 44
Leon s	57 74 60 79 57	+ 24 29 7 39 7 08 6 74 6 74 6 47	6 88	6 99	5 81	— 1 07	— 1 18	— 0 11
ι Taur	34 55 40 38 23	+ 23 37 17 15 16 47 16 79 16 66 15 74	16 56	17 79	15 98	— 0 58	— 1 81	— 1 23
α Arietis	14 53 30 4[illegible] 1	+ 22 43 36 73 3[illegible] 69 36 28 36 50 35 45	36 33	36 61	36 42	+ 0 09	— 0 19	— 0 28
μ Geminorum	40 46 60 51 47	+ 22 35 14 47 14 93 14 16 13 94 13 67	14 23	15 00	13 99	— 0 24	— 1 01	— 0 77
δ Geminorum	37 43 60 53 39	+ 22 15 44 33 44 20 43 97 43 48 43 14	43 82	43 78	43 34	— 0 48	— 0 44	+ 0 04
δ Leonis	43 64 61 68 49	+ 21 22 20 30 21 09 20 39 20 68 19 88	20 47	20 90	19 73	— 0 74	— 1 17	— 0 43
Booti	38 82 67 58 26	+ 19 59 31 49 31 32 30 82 30 96 30 77	31 07	30 29	30 77	— 0 30	+ 0 48	+ 0 78

N MES	N O	ME N RIGH EN ION J NUARY 4 — OBS TI 4 — 847	MEAN I	V VI —0 10 II	GRE WI (84) III	DIFFERENCE III—I	III—II	I—II
		h m s	s	s	s	s	s	s
	38	13 47 18 27						
	41	18 19						
η Bootis	31	18 18	18 17	18 33	18 21	+ 0 04	— 0 12	— 0 16
	31	18 08						
	26	18 15						
	44	4 27 1 92						
	73	1 92						
Tauri	76	1 93	1 89	1 83	1 88	— 0 01	+ 0 05	+ 0 06
	69	1 85						
	38	1 84						
	38	11 41 9 05						
	82	8 95						
β Leonis	64	8 96	8 97	8 98	8 92	— 0 05	— 0 06	— 0 01
	53	8 95						
	41	8 92						
	20	17 7 34 82						
	33	34 92						
Hercul s	27	34 82	34 85	34 74	34 83	— 0 02	+ 0 09	+ 0 11
	22	34 80						
	21	34 91						
	38	22 57 2 49						
	52	2 52						
Pegasi	58	2 56	2 50	2 59	2 52	+ 0 02	— 0 07	— 0 09
	63	2 48						
	26	2 45						
	38	0 5 15 53						
	45	15 52						
γ Pegasi	38	15 53	15 49	15 69	15 53	+ 0 04	— 0 16	— 0 20
	40	15 42						
	16	15 47						
	20	18 58 17 27						
	27	17 20						
ζ Aqu læ	20	17 12	17 17	17 18	17 11	— 0 06	— 0 07	— 0 01
	24	17 11						
	10	17 17						
	60	10 0 6 74						
	110	6 71						
Leonis	91	6 71	6 69	6 75	6 78	+ 0 09	+ 0 03	— 0 06
	87	6 59						
	59	6 68						
	16	17 27 44 51						
	27	44 47						
Ophiuchi	43	44 47	44 46	44 46	44 37	— 0 09	— 0 09	0 00
	34	44 40						
	16	44 44						
	39	19 38 53 46						
	31	53 42						
γ Aquilæ	47	53 39	53 42	53 43	53 33	— 0 09	— 0 10	— 0 01
	60	53 41						
	39	53 42						

NAMES	N Obs.	MEAN DECLIN ON ANU RY 84 Obs 843—18 7	M I	V VI II	G W (840) I I	DIFFERENCES III—I	III—II	I—II
			′					
	38	+ 19 10 37 59						
	36	37 75						
η Bootis	32	37 24	37 46	38 46	38 81	+ 1 35	+ 0 35	— 1 00
	40	37 48						
	26	37 22						
	48	+ 16 11 32 63						
	70	32 32						
Tau	91	32 06	32 48	31 24	33 50	+ 1 02	+ 2 26	+ 1 24
	74	32 86						
	40	32 52						
	39	+ 15 26 18 16						
	62	19 32						
β Leonis	67	19 14	18 81	19 97	18 22	— 0 59	— 1 75	— 1 16
	56	19 03						
	42	18 39						
	13	+ 14 34 18 90						
	31	19 28						
Herculis	24	17 93	18 33	18 85	16 93	— 1 40	— 1 92	— 0 52
	18	18 14						
	22	17 39						
	40	+ 14 22 21 92						
	55	22 65						
Pegasi	55	22 94	22 47	22 85	20 92	— 1 55	— 1 93	— 0 38
	56	22 82						
	27	22 04						
	38	+ 14 19 19 06						
	47	18 82						
γ Pegasi	40	18 43	18 64	19 95	17 70	— 0 94	— 2 25	— 1 31
	41	18 83						
	11	18 04						
	18	+ 13 38 13 95						
	27	15 43						
ζ Aquilæ	20	15 73	15 17	15 03	15 27	+ 0 10	+ 0 24	+ 0 14
	23	15 94						
	10	14 82						
	61	+ 12 43 22 22						
	93	22 19						
Leonis	86	21 64	21 87	21 75	20 11	— 1 76	— 1 64	+ 0 12
	85	22 08						
	63	21 20						
	14	+ 12 40 40 93						
	21	40 20						
Ophiuchi	33	39 74	40 28	40 60	39 78	— 0 50	— 0 82	— 0 32
	29	40 49						
	18	40 04						
	33	+ 10 14 23 68						
	30	24 29						
γ Aquilæ	45	23 57	23 74	23 61	23 03	— 0 71	— 0 58	+ 0 13
	59	23 80						
	34	23 34						

NAMES	N Obs	ME N I H O N IO J NU RY — Obs 1843—1847	M I	V VI —0 0 I	Grs nw (8 0) III	D FF R N S — III—I	III—II	I—II
		h m s	s	s	s	s	s	s
	41	22 33 43 91						
	50	43 92						
ζ Pegasi	42	43 94	43 91	43 94	43 89	— 0 02	— 0 05	— 0 03
	37	43 87						
	6	43 91						
	30	21 36 34 36						
	42	34 35						
Pegasi	28	34 36	34 36	34 37	34 32	— 0 04	— 0 05	— 0 01
	45	34 34						
	25	34 37						
	49	19 43 13 16						
	63	13 18						
α Aquilæ	70	13 16	13 17	13 17	13 13	— 0 04	— 0 04	0 00
	79	13 18						
	54	13 19						
	45	5 46 46 91						
	80	46 89						
α Orionis	88	46 87	46 88	46 79	46 85	— 0 03	+ 0 06	+ 0 09
	61	46 84						
	57	46 87						
	50	8 38 33 90						
	74	33 83						
θ Hydræ	69	33 87	33 87	33 86	33 85	— 0 02	— 0 01	+ 0 01
	65	33 87						
	44	33 89						
	10	15 36 38 22						
	42	38 16						
α Serpentis	45	38 13	38 15	38 14	38 06	— 0 09	— 0 08	+ 0 01
	30	38 09						
	11	38 17						
	29	19 47 41 88						
	32	41 92						
β Aquilæ	22	41 92	41 93	41 90	41 84	— 0 09	— 0 06	+ 0 03
	24	41 92						
	17	42 00						
	41	7 31 11 16						
	94	11 13						
α Canis Minoris	98	11 14	11 14	11 09	10 99	— 0 15	— 0 10	+ 0 05
	80	11 14						
	58	11 15						
	32	23 31 58 69						
	22	58 74						
Piscium	26	58 79	58 76	58 71	58 59	— 0 17	— 0 12	+ 0 05
	27	58 78						
	10	58 82						
	31	2 54 10 92						
	55	10 97						
α Ceti	53	11 00	10 97	10 90	10 95	— 0 02	+ 0 05	+ 0 07
	35	10 97						
	33	11 01						

NAMES	N Obs	M L N				D		
		Obs − 7	M	V V	W (1 0)	II −	I I—II	−
	43	+ 10 1 26 12						
	51	26 58						
ζ Peg	33	26 69	26 28	26 26	25 91	— 0 37	— 0 35	+ 0 02
	1	26 78						
	5	25 22						
	31	+ 9 10 1 51						
	45	1 27						
Pegası	21	1 44	1 22	1 45	1 34	+ 0 12	— 0 11	— 0 23
	46	1 34						
	29	0 54						
	60	+ 8 27 48 53						
	61	48 76						
Aqu lӕ	68	48 11	48 3	47 94	46 03	— 2 32	— 1 91	+ 0 41
	85	48 57						
	58	47 80						
	46	+ 7 22 23 66						
	68	22 65						
Orıon s	82	22 50	22 74	23 07	21 15	— 1 59	— 1 92	— 0 33
	66	22 64						
	54	22 23						
	51	+ 6 59 1 95						
	69	2 24						
Hyd æ	72	1 62	1 67	2 17	0 96	— 0 71	— 1 21	— 0 50
	66	1 46						
	46	1 10						
	10	+ 6 55 2 81						
	41	3 46						
Se pe tıs	42	3 12	3 17	2 23	1 75	— 1 42	— 0 48	+ 0 94
	29	3 44						
	12	3 04						
	29	+ 6 1 25 39						
	34	26 36						
β Aq læ	22	26 47	26 09	27 14	25 52	— 0 57	— 1 62	— 1 05
	24	26 38						
	16	25 86						
	39	+ 5 37 6 05						
	72	5 20						
Can s M norıs	88	4 87	5 37	2 86	3 77	— 1 60	+ 0 91	+ 2 51
	79	5 45						
	57	5 26						
	34	+ 4 47 12 86						
	21	14 29						
Pıscıum	26	13 33	13 41	12 91	11 3[illegible]	— 2 09	— 1 59	+ 0 50
	27	13 68						
	12	12 90						
	33	+ 3 28 42 31						
	58	42 40						
Cet	48	42 8	42 08	42 31	41 08	— 1 00	— 1 23	— 0 23
	40	42 21						
	33	41 20						

D

NAMES	N	M N R G S N ON U — O 4 — 847	Mea I	V VI —0 1 I	G w ( ) I	D FF E — III—	III—II	I—II
		h m s	s	s	s		s	
	22	19 17 41 09						
	23	41 10						
δ Aquilæ	24	40 99	41 04	41 03	40 79	— 0 25	— 0 24	+ 0 01
	22	40 96						
	15	41 04						
	38	2 35 16 45						
	49	16 49						
γ Ceti	40	16 47	16 48	16 26	16 45	— 0 03	+ 0 19	+ 0 22
	29	16 46						
	24	16 51						
	25	5 24 5 40						
	32	5 42						
δ Orio s	30	5 43	5 44	5 34	5 37	— 0 07	+ 0 03	+ 0 10
	27	5 45						
	24	5 48						
	22	21 57 49 27						
	16	49 28						
Aqu ri	22	49 31	49 31	49 22	49 17	— 0 14	— 0 05	+ 0 09
	25	49 31						
	10	49 36						
	20	5 28 21 04						
	29	21 05						
Orio is	24	21 06	21 07	20 89	20 95	— 0 12	+ 0 06	+ 0 18
	24	21 10						
	22	21 09						
	7	16 6 13 62						
	23	13 72						
δ Opl iuchi	13	13 65	13 68	13 71	13 59	— 0 09	— 0 12	— 0 03
	13	13 66						
	4	13 75						
	13	21 23 23 83						
	8	3 80						
β Aqua i	37	23 85	23 86	23 73	23 62	— 0 24	— 0 11	+ 0 13
	21	23 86						
	23	23 94						
	19	9 19 58 35						
	83	58 35						
α Hydræ	33	58 38	58 39	58 28	58 15	— 0 24	— 0 13	+ 0 11
	59	58 43						
	29	58 43						
	21	5 7 5 37						
	35	5 56						
β Orionis	59	5 54	5 53	5 40	5 40	— 0 13	0 00	+ 0 13
	42	5 57						
	28	5 59						
	10	15 8 40 41						
	21	40 48						
β Libræ	23	40 44	40 47	40 36	40 31	— 0 16	— 0 05	+ 0 11
	20	40 46						
	15	40 55						

N MES	N O	ME N DE L N N J U RY 84 Obs 3—1847	M I	V VI II	(8 0) I	D ERENCE III—I	III—II	I—II
	22	+ 2 48 37 77						
	19	38 92						
δ Aquilæ	25	38 49	38 32	38 71	36 60	— 1 72	— 2 11	— 0 39
	22	38 43						
	15	37 97						
	37	+ 2 34 47 44						
	49	47 43						
γ Ceti	43	46 47	46 40	48 15	45 72	— 0 68	— 2 43	— 1 75
	33	46 93						
	24	45 74						
	25	— 0 25 7 00						
	32	7 38						
δ O ion s	30	8 05	7 81	7 78	8 30	— 0 49	— 0 52	— 0 03
	26	8 06						
	25	8 57						
	23	— 1 4 11 95						
	14	11 30						
Aquar i	21	12 67	12 07	10 61	14 18	— 2 11	— 3 57	— 1 46
	28	12 05						
	8	12 37						
	14	— 1 18 19 96						
	28	20 17						
O ionis	24	20 77	20 40	20 97	21 75	— 1 35	— 0 78	+ 0 57
	27	20 18						
	21	20 94						
	7	— 3 17 26 02						
	22	25 02						
δ Ophiuchi	16	26 07	25 55	25 09	26 00	— 0 45	— 0 91	— 0 46
	13	24 86						
	4	25 77						
	14	— 6 14 59 20						
	5	58 78						
β Aqu rii	32	59 53	59 27	59 26	59 90	— 0 63	— 0 64	— 0 01
	22	59 09						
	22	59 77						
	17	— 7 59 21 20						
	56	21 48						
Hydræ	30	22 57	21 89	22 02	23 54	— 1 65	— 1 52	+ 0 13
	60	21 94						
	29	22 26						
	24	— 8 23 5 82						
	35	6 03						
β Orionis	60	6 32	6 40	6 43	8 24	— 1 84	— 1 81	+ 0 03
	47	6 69						
	33	7 12						
	11	— 8 48 23 88						
	23	23 69						
β Libræ	23	23 98	23 73	23 75	24 93	— 1 20	— 1 18	+ 0 02
	18	23 12						
	14	23 96						

NAMES	N O	M N G O 1 3–1 7	M I	V V – I	G w (0) I	FF EN I–I	II –II	I–II
		h m s	s	s	s			s
	41	1 16 16 69						
	41	16 69						
θ Cet	38	16 74	16 71	16 69	16 56	— 0 1	— 0 13	+ 0 02
	35	16 68						
	13	16 75						
	45	13 17 2 14						
	87	2 16						
V rgınıs	76	2 19	2 20	2 08	2 00	— 0 20	— 0 08	+ 0 12
	60	2 24						
	32	2 27						
	21	20 9 27 12						
	20	27 14						
Capr cornı	28	27 17	27 19	26 93	26 90	— 0 29	— 0 03	+ 0 26
	21	27 26						
	15	27 27						
	42	11 11 35 89						
	51	35 86						
δ Hyd et Crat	59	35 89	35 91	35 84	35 66	— 0 25	— 0 18	+ 0 07
	65	35 96						
	47	3 94						
	29	3 50 48 04						
	47	48 10						
γ Erıdanı	33	48 20	48 14	47 93	47 89	— 0 25	— 0 04	+ 0 21
	39	48 14						
	24	48 22						
	15	14 42 18 84						
	33	18 92						
L b æ	30	18 91	18 90	18 87	18 75	— 0 15	— 0 12	+ 0 03
	22	18 89						
	19	18 93						
	38	6 38 19 27						
	102	19 31						
Canıs Majorıs	102	19 36	19 34	18 79	19 12	— 0 22	+ 0 33	+ 0 55
	71	19 38						
	59	19 38						
	19	5 25 5 82						
	26	53 84						
Leporıs	26	53 84	53 86	53 61	53 68	— 0 18	+ 0 07	+ 0 25
	29	53 88						
	15	53 91						
	31	0 35 48 44						
	35	48 46						
β Cet	30	48 62	48 53	48 28	48 23	— 0 30	— 0 05	+ 0 25
	20	48 51						
	10	48 60						
	6	15 56 25 96						
	19	26 06						
β Scorpıı	19	26 08	26 05	25 87	25 86	— 0 19	— 0 01	+ 0 18
	18	26 07						
	3	26 09						

NAMES	N Obs	M N E	N RY			D R N		
		O 43— 7	M I	V VI I	W (1) I	I —I	I I— I	I—II
	41	— 8 59 3 03						
	41	4 24						
θ Cetı	38	5 46	4 45	2 43	4 80	—0 35	—2 37	—2 02
	37	4 19						
	13	5 34						
	45	—10 20 59 15						
	70	59 09						
Vırgınıs	70	60 16	59 60	60 36	61 66	—2 06	—1 30	+ 0 76
	57	59 19						
	31	60 41						
	22	—13 1 14 17						
	17	13 26						
Caprıcornı	26	14 18	14 10	11 85	15 01	—0 91	—3 16	—2 25
	20	14 03						
	15	14 87						
	43	—13 56 24 78						
	45	23 82						
δ Hyd et Crat	58	25 04	24 64	25 78	27 28	—2 64	—1 50	+ 1 14
	67	24 63						
	47	24 92						
	31	—13 57 11 22						
	46	12 86						
γ Erıdanı	37	11 96	12 15	11 99	12 12	+ 0 03	—0 13	—0 16
	40	11 70						
	23	13 01						
	13	—15 23 38 14						
	29	37 66						
Lıbræ	30	38 23	38 14	38 84	38 37	—0 23	+ 0 47	+ 0 70
	17	37 96						
	19	38 69						
	36	—16 30 26 97						
	89	26 33						
Canıs Majorıs	111	26 40	26 57	29 94	29 28	—2 71	+ 0 66	+ 3 37
	84	26 47						
	58	26 70						
	20	—17 56 14 52						
	22	14 38						
Leporıs	28	15 09	14 89	16 09	15 72	—0 83	+ 0 37	+ 1 20
	28	15 06						
	13	15 41						
	31	—18 50 16 71						
	36	16 70						
β Cetı	29	17 92	17 39	16 67	18 97	—1 65	—2 30	—0 65
	22	17 09						
	8	18 18						
	5	—19 22 33 60						
	14	32 86						
β Scorpıı	16	33 95	33 62	33 87	33 94	—0 32	—0 07	+ 0 25
	14	33 19						
	4	34 52						

N MES	N o	M AN R H EN N J U Y Obs 6 — 7	Mean I	V VI —0 1 I	G w (84) I I	IFFE ENC S III—	III–II	I–II
		h m s	s	s	s	s		s
	12	18 4 29 73						
	20	29 89						
μ^1 S g tta ı	23	29 89	29 88	29 89	29 58	— 0 30	— 0 31	— 0 01
	12	29 91						
	12	30 00						
	40	12 26 15 47						
	54	15 49						
β Cor	52	15 50	15 52	15 39	15 23	— 0 29	— 0 16	+ 0 13
	38	15 58						
	32	15 5						
	46	8 0 56 79						
	66	56 81						
15 A gus	66	56 82	56 83	56 52	56 62	— 0 21	+ 0 10	+ 0 31
	65	56 87						
	48	56 86						
	13	16 19 54 83						
	38	54 84						
Scorp	47	54 90	54 88	54 76	54 69	— 0 19	— 0 07	+ 0 12
	34	54 87						
	11	54 96						
	34	6 5 32 18						
	71	32 26						
Canıs Majo ıs	68	32 27	32 26	32 14	32 04	— 0 22	— 0 10	+ 0 12
	67	32 31						
	41	32 28						
	36	22 49 4 56						
	61	4 44						
P scı Aust	70	4 60	4 55	4 16	4 17	— 0 38	+ 0 01	+ 0 39
	63	4 53						
	28	4 62						
	39	5 34 2 34						
	55	2 40						
Col mbæ	46	2 44	2 41	2 27	2 24	— 0 17	— 0 03	+ 0 14
	54	2 45						
	47	2 44						
	13	21 58 26 50						
	33	26 22						
G u s	18	26 48	26 40	26 08	26 02	— 0 38	— 0 06	+ 0 32
	23	26 41						
	17	26 38						
	34	6 20 30 75						
	72	30 82						
A gu	70	30 87	30 83	30 45	30 82	— 0 01	+ 0 37	+ 0 38
	34	30 88						
	17	30 82						
	16	20 13 21 17						
	—	—						
Pavonıs	21	21 18	21 19	20 75	21 01	— 0 18	+ 0 26	+ 0 44
	10	21 17						
	4	21 23						

Th Pl f th d th f ll wing Stars tak fr m

N MES	N O	M N DE LIN I N NU RY — Obs 8 —1847	M I	V VI I	(84) I	D FFERENCES III—I	III—II	I—II
	12	— 21 5 36 37						
	18	35 11						
μ S g ttar ı	23	35 98	35 99	36 08	36 53	— 0 54	— 0 45	— 0 09
	11	36 07						
	11	36 40						
	39	— 22 3 18 95						
	50	18 05						
β Cor ı	50	19 15	18 71	20 82	20 05	— 1 34	+ 0 77	+ 2 11
	37	18 37						
	35	19 05						
	44	— 23 51 38 18						
	60	38 37						
15 Argus	69	39 33	39 14	38 40	40 94	— 1 80	— 2 54	— 0 74
	64	39 97						
	48	39 86						
	13	— 26 4 55 33						
	30	55 10						
Scorpıı	41	55 94	55 51	55 74	56 25	— 0 74	— 0 51	+ 0 23
	28	55 52						
	11	55 64						
	33	— 28 45 51 51						
	67	52 49						
Canıs Majorıs	67	53 48	53 08	53 24	55 08	— 2 00	— 1 84	+ 0 16
	65	53 64						
	50	54 26						
	42	— 30 26 31 14						
	57	30 67						
α P sc s Aust	71	31 42	31 46	29 29	31 48	— 0 02	— 2 19	— 2 17
	71	31 62						
	23	32 45						
	38	— 34 9 36 30						
	49	36 39						
Columbæ	47	37 20	37 00	36 60	40 70	— 3 70	— 4 10	— 0 40
	55	37 32						
	47	37 77						
	13	— 47 42 29 58						
	32	29 04						
α Gruıs	19	29 91	29 92	27 56	29 72	+ 0 20	— 2 16	— 2 36
	22	29 95						
	17	31 12						
	36	— 52 36 46 11						
	64	46 00						
α Argu	67	47 23	46 77	47 41	47 38	— 0 61	+ 0 03	+ 0 64
	37	46 98						
	19	47 54						
	15	— 57 13 29 31						
α Pavonıs	21	30 10	29 84	26 44	30 53	— 0 69	— 4 09	— 3 40
	10	29 42						
	4	30 53						

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NAMES	N Obs.	ME N RIGHT I N J N BY — Obs 1843—1847	M I	V VI — II	G w (840) III	DIFFEREN III—I	III—I	I— I
		h m s	s	s		s	s	
	33	1 31 56 11						
	37	55 92						
Eridani	37	56 31	56 14	56 19	56 06	—0 08	—0 13	—0 05
	32	56 18						
	18	56 16						
	57	9 12 56 44						
	72	56 63						
Argus	57	56 57	56 57	56 59	56 58	+0 01	—0 01	—0 02
	76	56 70						
	43	56 53						
	50	10 39 3 92						
	63	4 02						
η Argus	74	3 95	3 96	3 93	3 92	—0 04	—0 01	+0 03
	80	3 98						
	47	3 94						
	30	13 52 56 63						
	30	56 77						
β Centauri	16	56 65	56 72	56 51	56 65	—0 07	+0 14	+0 21
	38	56 72						
	18	56 82						
	17	14 29 7 81						
	29	7 86						
α² Centauri	17	7 78	7 81	8 04	7 91	+0 10	—0 13	—0 23
	18	7 79						
	14	7 83						
	14	12 18 1 54						
	46	1 75						
α Crucis	37	1 47	1 62	1 38	1 65	+0 03	+0 27	+0 24
	30	1 67						
	18	1 67						
	2	16 32 19 25						
	6	19 08						
Trianguli Aust	4	19 05	19 07	19 33	18 83	—0 24	—0 50	—0 26
	5	19 00						
	2	18 97						

NAME	N O	ME N INA ON NU RY O TI 8 — 47	M I	V VI I	WI (1 0) I	DIF R EN III—	III—II	I—II
	34	— 58 1 31 68						
	37	31 42						
Eridani	38	31 94	31 82	33 27	32 80	— 0 98	+ 0 47	+ 1 45
	40	31 97						
	41	32 07						
	57	— 58 37 33 64						
	69	34 16						
A g s	51	34 86	34 48	35 78	34 82	— 0 34	+ 0 96	+ 1 30
	75	34 78						
	47	34 97						
	52	— 58 52 13 38						
	61	13 42						
η Argus	76	13 75	13 84	14 19	15 44	— 1 60	— 1 25	+ 0 35
	80	14 12						
	48	14 53						
	30	— 59 37 15 28						
	26	15 15						
β Centauri	17	17 03	16 10	14 98	16 26	— 0 16	— 1 28	— 1 12
	36	15 91						
	18	17 14						
	17	— 60 11 2 27						
	27	26 17						
Centauri	17	26 82	26 53	26 32	21 88	+ 4 65	+ 4 44	— 0 21
	17	26 24						
	14	28 17						
	41	— 62 14 20 93						
	45	20 05						
Crucis	37	19 42	20 29	21 44	19 75	+ 0 54	+ 1 69	+ 1 15
	29	20 10						
	24	20 96						
	2	— 68 43 57 48						
	6	55 93						
Trianguli Aust	4	58 00	56 93	58 65	57 27	— 0 34	+ 1 38	+ 1 72
	6	56 44						
	2	56 80						

SUBSIDIARY OBSERVATIONS OF THE FIXED STARS

FOLLOWING the Peimanent Catalogue I w ll now give tl e Meai Places of e eral of the F xed St s which for va ous reasons as lready expla ed ha e ag ı bee re ob e ved ın the first column on e tl er page—followı g the name nd number of the Sta —ıs g ven the numbe undeı wh cl ıts place to be found ın Vol VI ın the second colum g en the Mean Place a deri ed from observatıons ın tı o and n some cases ın three separate years the e eparate determınatıon beıng ed ced to a commo poch (1845) plaue all chance of e o out of cons de ation the th rd column contaıns the pl ces f om Volume VI save that for the left hand page the deteımınatıons of A R are reduced by 0 10 ın order to render them comp rable witl the Recent observatıons ı which the Equınoctıal Poınt had been changed to thıs amount and finally under tl e head of Remarks w ll be found the occasıon whıch has led to re-examınatıon of the place a hasty ınspectıon of these Remarks wh ch h e bee made ı the course of computatıon and witl out further consıderatıon ınduces me to belıeve that ın se eral ınst nces a ıable amou t of proper motıon l as been made out but w nt of leı ure at the p esent moment only permıts me to record re ult lea ın their d cussıon to be entered upon at some future tıme

MEAN PLACES

o

SEVERAL OF THE FIXED STARS,

FROM

OBSERVATIONS MADE AT THE MADRAS OBSERVATORY,

IN THE YEARS 1843—1847

COMPARED WITH THE RESULTS OF FORMER YEARS &c &c

REDUCED TO JANUARY 1 1845

Mean Right Ascensions of Stars

S N		M R Asc Jan 84 R nt Obs	V VI (—0)	REMARKS
		h m		
11 Cassiop β	(2)	0 0 56 17	56 34	P az ı a ıgns a P M + 0 082 P w th 1835 gı es 0 075 1835 — 1845 — 0 058
Phœnıcıs	(26)	0 6 9 72	9 64	
App Sculp x	(53)	0 10 32 04	32 13	
Tucanœ ζ	(60)	0 11 58 00	58 03	The p esent result confirms the la ge P M + 292 *n tım* s gıv ın Vol VI
Phœnıcıs	(88)	0 18 34 17	34 40	The P M + 033 no doubt too large
Phœnıc	(89)	0 18 37 03	36 48	The P M + 013 ppear to be too small
Cet	(115)	0 22 37 7	37 44	
53 Cassıopeıæ	(135)	0 25 26 27	26 74	P a zı assıgns a P M + 005 P w th 1835 g ves + 028 1835 — 1845 — — 019
App Sculp	(140)	0 26 7 89	7 64	
13 Cet	(151)	0 27 16 38	16 36	P M + 036
Cet	(166)	0 29 23 01	23 01	Confirm ng the P M + 111
Cetı	(184)	0 32 49 20	49 04	
Cassıop	(202)	0 36 6 71	6 61	
17 Cetı φ	(203)	0 36 22 46	22 07	
Phœnıcıs	(232)	0 39 41 04	41 41	
64 Pıscıum y	(239)	0 40 50 40	50 38	Pıazzı ss gns a P M + 040 P wıth 1835 g es — 004 1835 — 1845 — — 002
37 Androm μ	(282)	0 48 9 56	10 13	The Observat ons of thıs Star n 1835 a well as on tl e present occasıon re very accordant *ınter se* has the P M altered?
Cepheı	(280)	0 48 36 77	34 54	P M accordıng to He el us + 0 170 } La Lande + 0 020 } Pıazzı s notes Pıa ı — 0 340 } P wıth 1835 gıves + 0 096 1835 — 1845 — + 0 319

Mean Declinations of Stars

S N M		M D J 4 R O	V VI	REMARKS
11 Cassiop β	( )	+58 17 41 35	42 83	
Phœnicis	(26)	—47 51 49 69	50 33	D ffers about 10 f om the B isbane Catalogue
App S ulp χ	(53)	—37 22 16 55	12 88	Differs 10 from the Br sbane Catalogue
Tucanæ ζ	(60)	—65 47 6 72	2 57	The P M of th St (+ 1 83) was obtained f om a com parison of th Obse vatio i 1835 w th the B place—to reconcile tl e Madras Observations we must assum + 1 41
Phœnicis	(88)	—44 32 ——	——	
Pl œni s	(89)	—43 8 52 43	52 24	Confirming the P M (— 0 44)
Cet	(115)	—24 38 44 88	43 92	Piaz i as igns a P M — 0 40 P with 1835 gi es + 0 06 1835 — 1845 — — 0 01
53 Cassiopeiæ	(135)	+24 6 18 75	18 96	Pia zi assigns a P M + 0 40 P with 1835 g es 0 00 1835 — 1845 — + 0 02
App Sculp	(140)	—35 50 9 78	10 12	Confi ming the P M — 0 48
13 Ceti	(151)	— 4 26 ——	——	
Ceti	(166)	—25 37 13 42	13 38	
Cet	(184)	— 5 12 10 47	11 65	Piazzi assigns a P M + 0 35 P witl 1835 give — 0 02 1835 — 1845 — + 0 10
Cassiop	(202)	+47 26 6 95	7 19	Piazzi assigns P M — 0 30 P witl 1835 gi es + 0 07 1835 — 1845 — + 0 05
17 Ceti φ	(203)	—11 27 15 29	14 04	P zzi as gns P M + 0 30 P with 1835 gives — 0 01 1835 — 1845 — — 0 13
Phœnicis	(232)	—52 51 7 02	8 45	Differs from the B isbane Catalogue 9 or 10 seconds
64 Piscium y	(239)	+16 6 10 00	11 04	
37 Androm μ	(282)	+37 39 26 18	26 38	P azzi assigns a P M + 0 40 P with 1835 gi e 0 00 1835 — 1845 — — 0 02
Cephei	(280)	+85 25 19 20	19 62	P M according to Hevelius — 0 85 } Piazz s notes La Lande 0 00 Piazzi + 0 53 P with 1835 + 0 13 1835 — 1846 + 0 09

MEAN RIGHT ASCENSIONS OF STARS (Continued)

S N		M R A J 84 R O	V VI (—0)	REMARKS
		h m		
App Sculp	(300)	0 51 8 19	7 83	
322 Cephei	(298)	0 51 30 82	29 72	P M + 110
190 Piscium	(333)	0 57 48 10	48 03	The proper motion (— 025) confirmed
Cassiop μ	(335)	0 58 0 17	59 73	P i a signs a P M + 0 380 P with 1835 gives + 384 1835 — 1845 — + 428
79 Piscium ψ²	(349)	0 59 38 87	38 96	
30 Cet	(351)	0 59 58 77	58 33	Pia s gns P M — 047 P with 1835 gives + 006 1835 — 1845 — + 050
80 Piscium ε	(355)	1 0 23 40	23 37	Confirming the P M — 025
43 Androm β	(361)	1 1 4 09	3 87	Piazzi assigns a P M + 023 P with 1835 gi es — 033 1835 — 1845 — — 011
Ceti	(399)	1 6 34 27	34 07	
Cassiopeiæ	(419)	1 10 47 13	48 43	P w th 1835 gi es a P M + 070 1835 — 1845 — — 060
Cassiopeiæ	(420)	1 10 49 57	50 17	P w th 1835 gi es a P M + 025 1835 — 1845 — — 035
50 Androm	(516)	1 27 43 16	43 35	
Phœnicis ψ	(564)	1 34 39 36	39 02	
52 Ceti	(575)	1 36 52 20	52 14	Confirmi g the large P M — 117
Camelop	(574)	1 37 16 83	16 11	
App Sculp	(579)	1 38 23 44	23 27	Pi zz ass gn a P M + 031 P with 1835 give + 016 1835 — 1845 — + 033
Fornacis	(594)	1 41 26 30	26 07	This is deduced f om the place gi en in Vol VI *not* allowing the P M (— 123) there must be some error in Piazzi s place
Mach Elect k'	(603)	1 43 7 52	7 52	

MEAN DECLINATIONS OF STARS (Cont ued)

S N		M D J R NT OBS	V V	REMARKS		
App Sculp	(300)	—30 11 46 21	43 70	P ı gn P M P th 1835 g e 1835 — 1845 —	— + —	0 30 0 07 0 18
322 Cepl eı	(298)	+86 18 57 36	57 99			
190 Pısc u n	(333)	+ 4 5 53 48	54 16			
Cass op μ	(335)	+54 9 27 07	26 58	P ız g a P M P wıtl 1835 gı 1835 — 1845 —	— — —	0 65 1 57 1 52
79 Pısc um ψ	(319)	+19 54 48 80	50 04	P ı z a a P M P th 1835 g e 1835 — 184 —	— — —	0 2 0 06 0 18
30 Cet	(351)	—10 36 57 29	53 89			
80 Pıscıum	(355)	+ 4 49 42 01	44 04			
43 Androm β	(361)	+34 47 49 83	51 83			
Cetı	(399)	— 8 44 41 56	40 29	1 tl 1835 gıve P M 1835 — 1845 —	+ +	0 34 0 21
Cassıopeıæ	(419)	+63 51 ——	——			
Cassıopeıæ	(420)	+63 50 35 17	35 68			
50 Androm	(516)	+40 37 41 95	41 71	P w tl 1835 g ves P M 1835 — 1845 —	— —	0 32 0 37
Phœnı ψ	(564)	—38 55 13 79	13 32	Pıa ı a gn a P M P w th 1835 g e 1835 — 1845 —	+ + 	0 36 0 05 0 00
52 Cet	(575)	—16 45 19 69	19 32	P w tl 1835 g es a P M 1835 — 1845 —	+ +	0 84 0 81
Camelop	(574)	+81 11 16 06	15 29	P a zı a s g s a P M P w th 1835 g es 1835 — 1845 —	+ + +	0 36 0 04 0 12
App Sculp	(579)	—25 49 42 39	41 36	P zzı s gns a P M P with 1835 gı es 1835 — 1845 —	— + —	0 44 0 08 0 02
Fornacıs	(94)	—27 1 ——	——			
Mach Elect k	(603)	—39 11 10 37	10 20	Conf rmıng P M	+	0 34

MEAN RIGHT ASCENSIONS OF STARS (C nt nued)

S N M		M Bi Jan 1 84 R nt Obs	V VI (—0)	REMARKS
		h m		
Ar etis γ	(614)	1 45 1 96	1 92	
5 Arietis γ	(615)	1 45 1 99	1 97	(See Note)
147 Cass op	(639)	1 49 48 59	48 30	P w th 1835 gives a P M + 073 1835 — 1845 + 102
A ietis	(670)	1 54 31 59	31 31	Confirming the forme result the B Cat must be 30 seconds in e ror
Phœnici χ	(677)	1 55 29 72	29 19	P w th 1835 gives a P M — 035 1835 — 1845 — + 018
62 Cet	(698)	2 1 19 17	18 88	
Phœnicis ω	(714)	2 3 27 19	26 89	P ass gns a P M — 049 P w th 1835 g ve 000 1835 — 1845 — + 030
Horolog	(745)	2 6 56 93	57 54	
Trianguli δ	(746)	2 7 36 76	36 39	Pi zz ass gns a P M + 086 P with 1835 gi e + 038 1835 — 1845 — + 075
T i guli	(751)	2 8 26 02	26 25	
T ngul	(752)	2 8 26 65	26 65	
M ch Elect ρ	(775)	2 12 2 03	1 97	
And om	(777)	2 13 15 55	15 81	P w th 183 gives a P M + 033 1835 — 1845 — + 007
Phœnici	(778)	2 13 3 64	3 82	
Horologu	(789)	2 14 45 50	46 01	
Horolog	(815)	2 18 15 47	16 04	Diffe about 8 seconds f om B
Horolog	(817)	2 18 28 14	28 78	D ffe about 16 seconds from B
Ho olog	(818)	2 18 32 27	32 33	Differ about 20 econds from B
26 Arietis	(833)	2 21 57 62	58 08	P azzi as g s a P M — 007 P with 1835 + 062 1835 — 1845 + 016
46 T ianguli	(854)	2 26 23 50	22 99	P a i as igns a P M — 045 P with 1835 g ve — 006 1835 — 1845 — + 045
Ceti	(861)	2 27 35 46	35 29	Confirming the large P M + 123

Th St N 614 and 615 b g ly f th m

MEAN DECLINATIONS OF STARS (Continued)

S N		M D J 84		REMARKS
		R O	V VI	
Ar etis γ	(614)	+18 31 52 57	53 71	The P M in Vol VI is erroneous (See errata)
5 Arietis γ	(615)	+18 32 0 47	2 82	
147 Cas iop	(639)	+76 31 52 15	52 97	
Ariet s	(670)	—17 19 10 43	8 92	
Phœnicis χ	(677)	—45 27 39 66	37 47	P w th 1835 gives P M + 0 34 1835 — 1845 — + 0 12
6? C t	(698)	— 3 4 1 48	2 65	Piaz assigns a P M + 0 26 P witl 1835 gives — 0 05 1835 — 1845 — + 0 07
Phœnicis ω²	(714)	—41 36 5 19	2 03	Our P M (— 0 08) is probably too small
Horolog	(745)	—56 12 10 12	7 98	Confirming the supposed error of the Brisbane determination
Tr anguli δ	(746)	+33 30 40 91	41 03	
Tr anguli	(751)	+28 1 21 19	——	Not observed before (P M — 0 09)
Tr angul	(752)	+28 1 33 13	34 20	
Mach Elect ρ	(775)	—26 40 52 12	54 15	P with 1835 gives P M + 0 40 1835 — 1845 — + 0 60
Androm	(777)	+40 46 ——	——	
Phœ ic s	(778)	—39 41 33 87	32 52	Confirming the supposed error of B
Horolog	(789)	—56 49 46 31	47 27	Do do do do
Horologii	(815)	—57 15 6 17	3 77	Do do do do
Horologii	(817)	—57 15 14 77	13 04	Do do do do
Horolo	(818)	—57 31 12 89	8 92	Compared with the Brisbane Catalogue the P M = — 0 2
26 Arietis	(833)	+19 9 49 90	49 68	
46 Trianguli	(854)	+34 0 26 62	26 90	Pia zi assigns a P M — 0 32 P with 1835 gives + 0 22 1835 — with 1845 — + 0 19
Ceti	(861)	+ 6 8 38 49	37 78	Confirming the P M + 1 48

A R t d fficult t y wh h h ld b pl c d fi t

Mean Right Ascensions of Stars *(Co tinued)*

S N		M R 84 R NT BBS	V V (—)	REMARKS
		h m		
Cetı *d*	(863)	2 27 33 98	33 89	
13 Per eı *θ*	(900)	2 33 38 54	38 27	P z ss gns a P M + 045 P w th 1835 gı es + 007 1835 — 1845 — + 034
Pe se	(951)	2 41 58 71	58 65	
47 A etı	(987)	2 49 13 43	13 71	P w th 1835 gı e a P M + 038 1835 — 1845 — + 010
Perse	(1039)	2 57 54 70	5 04	P w tl 1835 g e a P M + 141 1835 — 1845 — + 107
Horolog	(1060)	3 0 42 60	42 43	
E ıd n	(1144)	3 13 44 54	44 29	P w th 1835 give a P M + 266 1835 — 1845 — + 291
Camelop	(1152)	3 15 49 74	49 70	
Horologu	(1157)	3 16 33 30	32 83	
Erıdanı	(1161)	3 17 20 16	20 51	
E d n	(1175)	3 19 44 89	44 87	
Fornac s	(1205)	3 25 18 02	17 83	
T u ı	(1210)	3 27 21 76	22 08	P w th 1835 g es a P M — 012 1835 — 1845 — + 020
E ıda	(1216)	3 28 2 96	4 08	Tl pl ce g v n Vol VI w der d f om l s rvatıon ı 1838 P M = — 16
Messoı s *m*	(1245)	3 34 6 02	4 14	P w th 1835 g ves a P M — 042 Th diffe e ce ıs quite naccountable
Er dan	(1300)	3 40 13 17	12 86	Confi mı g the supposed error of B
E ıdanı *g*	(1327)	3 43 39 07	38 79	Pı ı gns a P M — 068 P w th 1835 g e — 025 1835 — 1845 — + 003
45 T u ı	(1441)	4 3 5 44	5 52	See e ta
40 Erıdanı *d*	(1475)	4 8 8 50	8 27	P z a s g s a P M — 147 P with 1835 g e — 148 1835 — 1845 — — 125
220 Perseı	(1514)	4 14 35 17	35 18	
69 Taur	(1533)	4 17 2 24	2 31	

MEAN DECLINATIONS OF STARS (Continued)

S N		M D OLLN J 1 O R	V VI	REMARKS
Ceti *d*	(863)	— 4 13 24 76	24 65	Confirming the P M — 0 56
13 Persei *θ*	(900)	+48 34 5 14	5 40	
Persei *r*	(951)	+34 25 5 94	4 28	
47 Arietis	(987)	—— ——	——	
Pe sei	(1039)	+49 0 56 97	59 00	
Horolog	(1060)	—61 39 4 80	4 89	Confirming the assumed error of the Brisbane determination
Eridani *e*	(1144)	—43 39 57 99	56 52	P with 1835 gives a P M + 0 84 1835 — 1845 — + 0 69
Camelop	(1152)	+59 42 27 64	——	The Declination given in former Vols appears to belong to another Star (P M + 0 01)
Horologii	(1157)	—48 20 1 19	59 79	B Catalogue 10 in error
Eridani	(1161)	—41 48 34 90	36 37	See errata
Eridan	(1175)	—38 51 37 96	36 92	See errata
Fornacis	(1205)	—34 4 41 79	39 08	B Catalogue 10 in error
Tauri	(1210)	+16 57 35 88	34 27	P with 1835 gi es a P M — 0 30 1835 — 1845 — — 0 14
Eridani	(1216)	—38 33 24 66	24 61	
Messoris *m*	(1245)	+70 50 ——	——	
Eridan	(1300)	—39 4 10 35	7 08	
Eridani *g*	(1327)	—36 40 24 45	22 14	
45 Tauri	(1441)	+ 5 6 54 64	53 48	
40 Eridani *d*	(1475)	— 7 53 51 03	51 88	P azzi as i ns a P M — 3 60 P with 1835 gives — 3 45 1835 — 1845 — — 3 37
220 Persei	(1514)	+33 35 49 06	49 44	See errata
69 Tauri	(1533)	+22 27 24 73	26 01	Piazz assigns a P M — 0 30 P with 1835 gives + 0 03 1835 — 1845 — — 0 10

Mean Right Ascensions of Stars (Continued)

S N M		M R J 1 8 R NT Obs	V VI (—0)	REMARKS		
		h m				
3 Orionis r	(1706)	4 42 57 09	57 08			
1 Leporis	(1809)	4 56 12 79	12 43	P a zi ass g a P M P with 1835 gi es 1835 — 1845 —	+ — +	018 021 015
15 Aurigæ λ	(1885)	5 8 14 56	14 36	P with 183 gives a P M 1835 — 1845 —	+ +	044 064
Columbæ	(1918)	5 11 53 98	53 81			
Orionis	(1931)	5 13 56 87	55 95	P w th 1835 gi es a P M 1835 — 1845 —	— +	069 023
Camelop	(2061)	5 28 46 12	46 35			
399 Tauri	(2135)	5 38 25 05	24 85			
15 Leporis δ	(2190)	5 44 39 52	39 31	See errata		
Columbæ β	(2200)	5 45 29 94	29 77			
33 Aurigæ δ	(2203)	5 46 46 15	46 02			
Aur gæ c	(2250)	5 52 7 49	7 53			
Monocer	(2272)	5 54 41 10	40 97			
107 Camelop	(2285)	5 56 ——	——			
Columbæ ρ	(2318)	6 0 12 77	12 99			
Columbæ π	(2338)	6 1 53 70	53 68			
Equ Pict	(2343)	6 2 16 21	16 66	This tar differs 30 seconds from B		
Columbæ π^2	(2354)	6 3 4 20	4 20	P azz ass gns P M P with 1835 gi es 1835 — 1845 —	— + +	0 60 0 07 0 07
24 Monocer	(2404)	6 9 3 43	3 81			
Canis Maj	(2438)	6 12 31 82	31 85			

Mean Declinations of Stars *(Continued)*

S N		Mea D J 8 R O ti	V VI	Remarks		
3 O ion s	(1706)	+ 5 20 5 81	5 74	P azz as g s P M P with 1835 gi es 1835 — 1845 —	+ — —	0 44 0 02 0 01
1 Leporis	(1809)	—23 1 18 59	17 06	P az i ss gns a P M P w th 1835 gi es 1835 — 1845 —	+ + —	0 35 0 08 0 08
15 Aur gæ λ	(1885)	+39 57 15 46	17 56	P w tl 1835 gives a P M 1835 — 1845 —	— —	0 60 0 81
Columbæ	(1918)	—35 3 1 29	2 02	P witl 1835 gi es a P M 1835 — 1845 —	— —	0 41 0 34
O ionis	(1931)	+ 3 24 53 01	53 77			
Camelop	(2061)	+53 24 36 23	34 55	P with 1835 gives a P M 1835 — 1845 —	— —	0 46 0 28
399 Tauri	(2135)	+24 37 29 45	28 35	Piazzi assigns a P M P with 1835 gives 1835 — 1845 —	+ + +	0 60 0 08 0 19
15 Leporis δ	(2190)	—20 53 45 90	45 68	P a zi ass gns a P M P with 1835 gi es a P M 1835 — 1845 —	+ — —	0 62 0 59 0 61
Columbæ β	(2200)	—35 49 47 37	48 86	P w th 1835 gives a P M 1835 — 1845 —	+ +	0 37 0 52
33 Aur gæ δ	(2203)	—54 15 52 68	52 34	Pia zi signs a P M P with 1835 gives 1835 — 1845 —	— — —	0 42 0 05 0 02
Aur gæ c′	(2250)	+42 54 32 34	34 14	See errata		
Monocer	(2272)	— 7 17 41 86	42 84	See errata		
107 Camelop	(2285)	+65 44 19 18	18 16	Differs 17 from Greenwich Catalogue of 1840		
Columbæ ϱ	(2318)	—45 4 47 77	47 41	P with 1835 g ves a P M 1835 — 1845 —	+ +	0 41 0 38
Columbæ π^1	(2338)	—42 16 58 06	56 83	Piazz assigns a P M P with 1835 gi es 1835 — 1845 —	— + —	0 28 0 04 0 08
Equ P ct	(2343)	—59 48 32 95	30 76	Confirming the supposed erro of B		
Columbæ π^2	(2354)	—42 7 56 01	57 33	Piazzi assigns a P M P with 1835 gives 1835 — 1845 —	— + +	0 44 0 12 0 25
24 Monocer	(2404)	+ 5 8 36 70	38 13	See errata		
Cani M j	(2438)	—13 29 40 76	40 78	See errata		

MEAN RIGHT ASCENSIONS OF STARS (Conti ued)

S N		M R 80 81 J 84 O R NT	V V (−)	REMARKS
		h m		
Equ Pict	(2449)	6 14 5 08	5 34	I presume this to be the Star ntended as No 1210 n the B is bane Catalogue
Equ Pict	(2450)	6 13 44 51	——	The St r B 1211 is not now vi ible the are th ee Stars he e altogether two of which Nos 2449 nd 2452 g ee with B 1210 and 1212 but 2450 (whose place was om tted in Vol VI) differs about 20 seconds from B 1211
Equ Pict	(2452)	6 14 9 82	10 00	
1 Can Maj ζ	(2451)	6 14 21 88	21 69	
122 Camelop	(2480)	6 19 40 26	38 76	
Geminor	(2515)	6 22 ——	20 24	
Can Maj D^2	(2523)	6 22 53 21	53 17	
236 Aurigæ	(2540)	6 24 59 86	59 91	
22 Navis	(2555)	6 26 1 54	1 71	
Equ Pict μ	(2588)	6 29 39 88	39 94	
Navis	(2605)	6 31 46 24	46 18	
Arg in pup x	(2701)	6 42 3 46	2 85	
101 Canis Maj	(2749)	6 47 23 94	23 95	P with 1835 give a P M + 0 30 1835 — 1845 — + 0 29
Geminor	(2799)	6 53 38 81	38 92	
Navis C	(2843)	6 59 8 17	8 10	
Geminor	(2841)	6 59 20 38	20 50	
28 Canis Maj ω	(2936)	7 8 30 85	31 27	

Mean Declinations of Stars (*Continued*)

S N		M D J 1 8 R Obs	V V	REMARKS
Equ Pict	(2449)	—59 9 11 38	9 92	Differs 10 from No 1210 B there is probably a small (—) P M
Equ Pict	(2450)	—59 5 55 34	——	Differs 1 25 from B 1211
Equ Pict	(2452)	—59 8 33 07	30 58	This Star has been re observed in order to settle its place relative to Nos 2449 and 2450 or B 1210 and 1212
1 Can Maj ζ	(2451)	—29 59 56 05	55 12	Piazzi assigns a P M — 0 25 P with 1835 gives + 0 07 1835 — 1845 — + 0 02
122 Camelop	(2480)	+79 42 54 55	54 41	P with 1835 gives a P M — 0 53 1835 — 1845 — — 0 52
Gemino	(2515)	+32 33 30 72	30 29	The Greenwich Catalogue for 1840 is about 8 in error
Can Maj *D*	(2523)	—32 16 28 34	27 63	Piazzi assigns a P M — 0 30 P with 1835 gives + 0 15 1835 — 1845 — + 0 08
236 Aurigæ	(2540)	+31 32 5 70	4 87	P with 1835 gives a P M + 0 38 1835 — 1845 — + 0 30
22 Navis	(2555)	—40 48 35 19	32 06	Piazzi assigns a P M — 0 50 P with 1835 gives + 0 05 1835 — 1845 — — 0 26
Equ Pict μ	(2588)	—58 38 13 36	12 49	
Navis	(2605)	—38 1 9 46	9 72	Piazzi assigns a P M + 0 40 P with 1835 gives + 0 06 1835 — 1845 — + 0 08
Argus pup x	(2701)	—37 45 41 53	40 53	Piazzi assigns a P M — 0 30 P with 1835 gives + 0 11 1835 — 1845 — + 0 01
101 Canis Maj	(2749)	—28 19 55 44	54 88	P with 1835 gives a P M — 0 39 1835 — 1845 — — 0 45
Geminor	(2799)	+29 35 27 50	28 35	P with 1835 gives a P M — 0 70 1835 — 1845 — — 0 78
Navis *C*	(2843)	—42 6 40 79	42 02	Piazzi assigns a P M — 0 40 P with 1835 gives a P M + 0 08 1835 — 1845 — + 0 20
Gemino	(2841)	+15 46 3 01	——	See errata
28 Canis Maj ω	(2936)	—26 30 24 78	25 25	Piazzi assigns a P M + 0 40 P with 1835 gives + 0 07 1835 — 1845 — + 0 12

Mean Right Ascensions of Stars (Contin ed)

S N		M R Asc Jan O R	V VI (—)	REMARKS
		h m		
Navis *L*	(2939)	7 8 48 63	48 32	
Can s Maj	(2951)	7 10 22 46	22 28	
Na is	(3023)	7 16 53 31	53 26	Confirm ng the presumed er or of the Brisbane determinat on
Geminor	(3058)	7 21 0 87	0 89	
Navis *k*³	(3086)	7 24 40 81	40 84	P i ass g s a P M — 0 60 P with 1835 g es — 0 18 1835 — w tl 1845 — — 0 21
Na *z*	(3116)	7 28 14 65	14 70	See ata
Gem nor	(3174)	7 34 ——	7 88	
N is *T*	(3209)	7 38 9 37	9 56	
82 Gem nor *B*	(3222)	7 39 ——	——	
Arg in pup	(3248)	7 41 38 57	38 59	
Navi	(3254)	7 42 31 34	31 28	
217 Navis	(3256)	7 42 21 54	——	Anothe Star observed in 1835
7 Navi *ξ*	(3262)	7 42 ——	——	
Canc *ψ*	(3432)	8 1 6 47	6 28	
19 Cancri *λ*	(3519)	8 11 ——	——	
Navis	(3806)	8 39 12 64	12 70	
Pix Naut	(3850)	8 43 33 99	33 80	
16 Hydræ *ζ*	(3882)	8 47 11 86	11 88	
Urs M j *ρ*	(3891)	8 48 28 93	28 29	P a z s gn a P M — 1 47 (See Piazzi s note) P with 1835 gi e — 0 13 1835 — 1845 — + 0 51
79 Cancri	(3982)	9 0 ——	——	
18 Urs Maj *e*	(4017)	9 4 59 58	59 59	

MEAN DECLINATIONS OF STARS (Continu d)

S N		M D J 8 R O	V VI	REMARKS
		°		
N is *L*	(2939)	—44 23 22 31	19 83	P w tl 1835 ves a P M + 0 54 1835 — 1845 — + 0 29
Canis Maj	(2951)	—27 36 38 60	40 78	P s g s a P M + 0 40 P ith 1835 gi e + 0 03 1835 — 1845 — + 0 25
N	(3023)	—51 54 28 91	27 07	
Gemino	(3058)	+28 1 37 30	——	See e rata
N s *k*	(3086)	—30 38 20 88	24 18	
N is	(3116)	—36 0 15 01	15 38	
Gem nor	(3174)	+2? 45 34 46	37 52	The Gieenwich Catalogue for 1840 gi es 33 24
N v s *T*	(3209)	—44 46 53 59	56 54	P with 1835 gives a P M — 0 50 1835 — 1845 — — 0 20
82 Geminor *B*	(3222)	+23 31 9 84	12 62	Th Greenwich Catalo ue for 1840 gives 8 27
Arg in pup	(3248)	—25 33 22 46	21 83	See errata
Nav s	(3254)	—24 31 40 92	40 68	The Greenwich Catalogue for 1840 gives 44 83
217 Navis	(3256)	—24 34 42 86	——	Another Star observed in 1835
7 Navis	(3262)	—24 28 28 73	26 93	Tl e Greenwich Catalogue for 1840 gives 29 03
Cancri ψ^2	(3432)	+25 58 16 67	19 95	Piazzi ass gns a P M — 0 42 P with 1835 gives — 0 62 P — 1845 — — 0 47 } Only one observa t on in 1835
19 Cancri λ	(3519)	+24 30 19 85	23 75	The Greenwich Catalogue for 1840 g ves 19 85
Na	(3806)	—42 3 43 80	44 27	P with 1835 gi es a P M — 0 38 1835 — 1845 — — 0 34
Pix Naut	(3850)	—32 12 13 60	14 62	P with 1835 g es a P M — 0 38 1835 — 1845 — — 0 28
16 Hydræ ζ	(3882)	+ 6 31 55 57	53 89	Piazzi a signs a P M — 0 48 P with 1835 gives — 0 01 1835 — 1845 — + 0 16
Urs Maj ϱ	(3891)	+ 68 13 ——	——	
79 Cancri	(3982)	+22 37 19 88	20 70	The Greenwich Catalogue for 1840 gives 16 60
18 Urs Maj e	(4017)	+54 39 26 92	24 78	Piazzi ass gns a P M — 0 27 P with 1835 gives + 0 07 1835 — 1845 — + 0 28

MEAN RIGHT ASCENSIONS OF STARS (*Cont nued*)

S N M		M R Ascen J R nt O	V VI (—0)	REMARKS
		h m		
Dracon s	(4102)	9 14 29 11	28 72	
Pix Naut θ	(4112)	9 14 38 38	38 16	P as gns a P M — 0 20 P with 1835 gives + 0 05 1835 — 1845 — + 0 27
5 Leonis ξ	(4191)	9 23 ——	——	
22 Leo Min	(4213)	9 26 20 72	20 76	
10 Antl Pneum	(4253)	9 30 30 11	29 62	
16 Leonis ψ	(4287)	9 35 ——	——	
Antl Pneum θ	(4301)	9 37 17 92	17 73	
66 Leonis	(4315)	9 39 1 38	1 37	
61 Sextant s	(4544)	10 6 1 80	2 62	P zi ass gns a P M — 0 44 P with 1835 gives + 0 23 1835 — 1845 — — 0 59
190 Camelop	(4587)	10 11 35 92	35 67	P with 1835 g es a P M — 0 82 1835 — 1845 — — 0 57
34 Urs Maj μ	(4605)	10 13 ——	——	
73 Leonis n	(5123)	11 7 ——	——	
Navis	(5158)	11 11 0 41	——	Not obse ved befo e
Navis	(5159)	11 11 6 31	——	Not observed before
297 Urs Maj	(5357)	11 32 52 51	52 48	
449 Leonis	(5372)	11 34 11 70	12 00	Piazzi ass gns a P M — 0 41 P w th 1835 g ves — 0 05 1835 — 1845 — — 0 35
Virgini	(5461)	11 47 28 06	28 40	Piaz assigns a P M — 0 24 P with 1835 g es + 0 11 1835 — 1845 — — 0 23
16 Virginis c	(5658)	12 12 ——	——	

MEAN DECLINATIONS OF STARS (C tnu d)

S N M	M 1 R NT	V V	REMARKS
D o (4102)	+82 0 29 82	6 8	P w tl 1835 g es a P M + 0 61 1835 — 1845 — — 0 03
Pix Naut θ (4112)	—25 18 29 10	27 65	P a ı a P M + 0 50 P w tl 1835 ı + 0 20 1835 — 1845 — + 0 0?
5 Leo (4191)	+11 58 59 72	59 4	Tl e G ee wich C t logue f r 1840 10 error
22 Leo M (4213)	+36 30 7 88	24 98	P w th 1835 g es a P M — 0 35 1835 — 1845 — — 0 06
10 A ıtl Pneum (4253)	—31 29 2 5	1 84	Pı z s ı P M + 0 57 P w th 1835 g + 0 06 1835 — 184 — — 0 01
16 Leon s ψ (4287)	+14 43 41 82	42 47	The Greenw h Catalogue for 1840 gives 39 04
Antl P eum θ (4301)	—27 3 43 17	4 41	P ı s g s a P M + 0 43 P with 1835 gives + 0 03 183 — 1845 — + 0 05
66 Leon s (4315)	+21 19 9 27	9	P a ı a P M + 0 37 P w th 183 v — 0 02 1835 — 1845 — — 0 00
61 S xtant (4544)	— 6 37 9 21	10 42	
190 Camelop (4587)	+83 20 31 52	31 40	
34 Urs Maj μ (4605)	+42 16 35 12	33 88	The G eenwich Catalogue for 1840 gives 27 49
73 Leo is n (5123)	+14 9 8 36	9 43	The Green vich C talogue for 1840 gives 5 66 See errata
Na (5158)	—58 21 42 63	41 74	
N s (5159)	—58 23 25 63	24 51	Confirming tl e presume l e ror of B
297 Urs M j (5357)	+35 4 36 36	35 01	P with 1835 gives a P M — 0 39 1835 — 1845 — — 0 26
449 Leonis (5372)	+ 5 36 20 32	18 97	
V rg ı (5461)	+ 1 57 38 81	37 04	
16 Virg is c (5658)	+ 5 10 35 61	40 50	The Obser ations furnishing this re ult were made in 1832 The G eenwich Observations for 1840 gives 34 36

MEAN RIGHT ASCENSIONS OF STARS (C ntn d)

S N		M R sc Jan 1 R nt Obs	V VI (—)	REMARKS		
		h m				
8 Canum Ven d	(5782)	12 26 22 27	22 00	Pa as gns P M P with 1835 g ves 1835 — 1845 —	— — —	001 072 045
33 Vi gin	(5869)	12 38 29 96	30 18			
43 Com Ber ω	(6078)	13 4 38 01	38 25	Piaz as gn a P M P with 1835 g es 1835 — 1845 —	— — —	080 040 064
61 Vir i	(6123)	13 10 18 60	18 50	Pia i sig a P M P ith 1835 g e 1835 — 1845 —	— — —	087 067 057
Centauri	(6180)	13 16 ——	——			
Centau i	(6185)	13 17 ——	——			
Centau	(6209)	13 19 ——	——			
Virgi is	(6214)	13 20 19 66	19 72			
Centauri	(6281)	13 26 ——	——			
Cent u	(6288)	13 27 52 70	52 69			
Ce tau i	(6297)	13 28 ——	——			
82 Vi ginis m	(6347)	13 33 29 03	28 94	Confi m g the P M		
Cent uri	(6363)	13 35 ——	——			
438 U s M j	(6405)	13 39 28 90	28 90			
Centauri	(6414)	13 40 ——	——			
10 Draconis	(6474)	13 46 54 23	54 35	P zz assig s a P M P w th 1835 g es 1835 — 1845 —	— + +	032 027 015
Camelop	(6484)	13 47 3 83	2 92	P w th 1835 1835 — 1845	— +	080 011
Hyd æ	(6485)	13 48 ——	——			
Centauri	(6529)	13 53 ——	——			
D acon s	(6543)	13 54 50 22	50 72			
Centauri	(6544)	13 55 26 57	26 95			
252 Can Ven	(6560)	13 57 13 39	13 63			

Mean Right Ascensions of Stars *(Contı ued)*

S N		M J R NT BS TI	V V (—)	REMARKS
		h m		
630 V rgı	(6575)	13 58 48 22	48 08	
Ce taur	(6597)	14 2 26 70	——	(No 2566 of Vol V)
V n	(6624)	14 4 44 96	44 98	
Centaur	(6647)	14 8 7 66	8 49	
19 Bootı λ	(6666)	14 10 29 29	29 31	P a P M — 037 P w th 1835 g e — 012 1835 — 1845 — — 014
Ce taur	(6684)	14 12 5 20	5 38	
Centau ı	(6714)	14 14 35 52	35 09	
Lıbræ	(6721)	14 16 21 44	21 52	
Hydıæ	(6736)	14 17 42 46	42 36	
Centau	(6735)	14 17 27 01	26 63	Confiım ng the p esumed e ror of B
23 Bootis θ	(6754)	14 19 55 24	55 96	P ı ass gn P M — 053 P w th 1835 g es — 015 1835 — 1845 — — 017
Lup	(6784)	14 23 45 89	45 92	The B b e C talog ıe t tes tl ı St to be double
L bræ	(6825)	14 28 45 65	45 37	P g P M — 030 P w tl 1835 g e — 067 1835 — 1845 — — 039
Lup	(6833)	14 29 26 89	27 17	
Ce taur	(6843)	14 30 44 54	44 94	The Brısbane place ıs one mı ute ın error
Bootıs h	(6861)	14 33 4 08	4 02	
L bræ	(6890)	14 37 24 06	24 27	
12 Hyd æ Con	(6902)	14 38 42 82	42 70	P z a ıgns a P M — 029 P w th 1835 g e + 015 1835 — 1845 — + 027
Lup	(6959)	14 47 32 25	32 43	
Quad Mur d	(6991)	14 51 14 40	14 73	The Greenwı h Catalogue for 1840 g ves 14 11
Lupı	(7046)	14 58 ——	——	No 5183 B ıs not now vıs ble

MEAN DECLINATIONS OF STARS *(Co ti ued)*

S N		M cL	s	REMARKS
		B NT	V VI	
630 Virgin	(6575)	—15 26 53 42	53 22	Pia ns a P M — 0 38 P with 1835 g e + 0 01 1835 — 1845 — — 0 01
Centauri	(6597)	—55 19 53 88	——	Not ob e ved bef re
Vi ginis	(6624)	— 2 34 32 10	32 98	P w th 1835 g e a P M — 0 31 1835 — 1845 — — 0 22
Centauri	(6647)	—58 37 24 12	20 05	D ff rs e eral s conds f om B Cat a P M — 0 5 probably exi t
19 Booti λ	(6666)	+46 48 9 41	4 77	P azz s gı a P M + 0 27 P with 1835 g ves + 0 10 1835 — 1845 — + 0 56
Centauri	(6684)	—55 14 59 34	57 77	Confirmi g the presumed error of B
Centauri	(6714)	—36 44 20 69	——	Another Star observed (See errata)
L bræ	(6721)	—10 57 45 08	40 66	G eenwich Catalogue for 1840 gives 46 08
Hydræ	(6736)	—26 9 17 87	——	Another Sta obser ed by m take in 183
Centauri	(6735)	—38 8 57 29	53 00	
23 Bootis θ	(67 4)	+52 35 10 85	7 89	Piazzi assigns a P M — 0 54 P with 1835 gi es — 0 38 1835 — 1845 — — 0 08
Lupi	(6784)	—45 46 32 62	32 51	This is B No 4956
Libræ	(6825)	—11 38 34 62	31 78	P azzi assigns a P M + 0 34 P w th 1835 g es + 0 43 1835 — 1845 — + 0 15
Lupi	(6833)	—45 37 29 41	28 88	Confirming the presumed error of B
Centau i	(6843)	—39 56 8 98	9 33	Confirming the presumed error of B
Bootis h	(6861)	+45 4 34 84	32 87	Pi zi as igns a P M — 0 36 P w th 1835 g es + 0 03 1835 — 1845 — + 0 23
Libræ	(6890)	—20 30 52 31	51 73	Greenwich Catalogue for 1840 is 1 in error
12 Hydræ Con	(6902)	—25 26 0 52	1 41	
Lupi	(6959)	—48 13 11 47	9 76	B Cat gives 13 2 24 there is probably a (—) P M
Quad Mur d	(6991)	+50 15 53 71	50 71	The Greenwich Catalogue for 1840 gives 55 33
Lupi	(7046)	—56 31 ——	——	No 5183 B is not now visible

MEAN RIGHT ASCENSIONS OF STARS (*Cont nu d*)

S N		M R so J 1 4 Re nt Obs	V VI (—0)	REMARKS
		h m		
44 Bootis	(7051)	14 58 40 51	40 97	P azzi assigns a P M — 060 P with 1885 gi es a P M — 022 1835 — 1845 — — 068
40 U s Min	(7065)	15 0 17 36	17 41	P with 1885 gives a P M — 074 1835 — 1845 — — 079
C rc u δ	(7089)	15 4 28 24	28 04	
Lupi	(7097)	15 5 8 93	8 87	
42 Urs Min	(7115)	15 6 1 36	1 13	
L bræ	(7167)	15 14 11 97	12 23	
15 Quad Mur	(7174)	15 14 38 61	38 72	
Libræ	(7246)	15 24 43 28	43 33	
36 Libræ	(7253)	15 25 14 35	14 11	
7 Cor Bor ζ	(7316)	15 33 32 39	32 66	
Serpenti	(7391)	15 45 59 03	58 88	
41 Serpentis γ	(7411)	15 49 17 62	17 46	
Cor Bor ρ	(7451)	15 55 7 15	7 00	
14 Scorpi	(7521)	16 2 59 79	59 80	
Normæ	(7553)	16 7 8 87	9 94	See errata
Normæ	(7588)	16 11 52 96	53 10	
21 Urs Min η	(7658)	16 22 6 26	5 56	
15 Draconis A	(7695)	16 28 18 66	17 72	
123 Scorpii	(7714)	16 31 26 74	26 79	See errata
Aræ	(7726)	16 33 9 44	10 00	Observed only at one w re
40 Herculis ζ	(7747)	16 35 26 56	26 60	

MEAN DECLINATIONS OF STARS (Continued)

S N		M D J 4 B O	V VI	REMARKS
44 Bootis	(7051)	+48 15 34 75	34 21	
40 Urs M	(7065)	+72 22 15 84	15 53	
Circin δ	(7089)	—60 22 33 49	——	Not observed before
L p	(7097)	—47 29 26 30	27 88	Confirmi g the supposed error of B
42 Urs Mi i	(7115)	+74 29 9 19	8 54	Pi zzi ssigns a P M — 0 30 P w th 1835 gives + 0 18 1835 — 1845 — + 0 24
Libræ	(7167)	—10 5 34 86	33 38	Piazzi assigns a P M + 0 50 P with 1835 gives — 0 14 1835 — 1845 — — 0 29
15 Quad Mur	(7174)	+50 46 38 94	34 75	Greenwich Catalogue for 1840 gives 38 90
Libræ	(7246)	—24 34 57 08	57 58	Confirming the supposed erroi of B
36 Libræ	(7253)	—27 31 12 07	12 63	See err ta
7 Cor Bor ζ	(7316)	+37 8 31 08	30 01	P a ass gns a P M — 0 40 P ι th 183 gives — 0 09 1835 — 1845 — + 0 01
Serpentis	(7391)	+23 41 9 20	8 58	P azzi ass gns a P M — 0 16 P with 1835 gives — 0 70 1835 — 1845 — — 0 64
41 Serpentis γ	(7411)	+16 10 16 69	16 92	P with 1835 gives a P M — 1 30 1835 — 1845 — — 1 28
Cor Bor ρ	(7451)	+33 46 27 79	27 04	P with 1835 gives a P M — 0 73 1835 — 1845 — — 0 67
14 Scorpii ν	(7521)	—19 3 9 47	8 00	This extraordinary difference merits particulai attention Green Cat 1840 gives 8 10 70
Normæ	(7553)	—49 1 30 17	——	See errata
Normæ	(7588)	—54 50 51 83	52 15	See errata
21 Urs Min η	(7658)	+76 6 37 58	32 26	Greenwich Catalogue for 1840 gi es 34 81
15 Draconis A	(7695)	+69 6 12 49	8 48	Greenwich Catalogue for 1840 gives 11 92
128 Scorpii	(7714)	—20 6 1 93	55 80	P az i ass gns a P M — 0 09 P with 1835 gives + 0 17 1835 — 1845 — — 0 44
Aræ	(7726)	—58 12 25 04	——	Not observed before
40 Herculis ζ	(7747)	+31 53 13 48	9 56	Greenwich Catalogue for 1840 gi es 12 86

MEAN RIGHT ASCENSIONS OF STARS (Contin ed)

S N M	M R Asc J		REMARKS
	R NT O T	V V (—)	
	h m		
Scorpu ζ² (7810)	16 43 41 62	41 16	
Ophiuch (7879)	16 52 27 17	26 86	
Aræ (7906)	16 56 8 72	8 95	
Dr conis R (7915)	16 56 31 13	30 88	
34 Oph uchi (7917)	16 56 50 04	50 46	
22 U s Min (7959)	—— ——	——	
53 Serpentis γ (8016)	17 12 6 73	6 69	
Herculis ω (8042)	17 14 51 54	51 59	
Ophiuchi (8048)	17 15 28 47	28 56	
33 Scorpu (8049)	17 15 38 31	37 98	
34 Scorp i (8079)	17 20 14 14	13 57	
24 Dracon s (8147)	17 29 7 57	7 69	
Hercul s (8173)	17 32 28 97	28 65	
141 Draco s (8182)	17 33 23 91	23 35	
Aræ (8214)	17 37 52 15	52 56	
87 Hercul s (8252)	17 42 31 90	32 13	
Sagittar (8322)	17 52 31 81	31 28	
Telescop i (8366)	—— ——	——	
Dracon (8371)	17 56 23 89	22 53	
70 Ophiuchi P (8372)	17 57 37 37	37 31	A small Star (7 8 mag) follows tl is at 37 80 about 3 2 to the *South*
34 D acon s ψ (8379)	17 57 52 20	51 25	Only one doubtful obser atio in 1835
Telescopii (8445)	18 10 8 90	9 52	

MEAN DECLINATIONS OF STARS (C t nued)

S N		M J	V V	REMARKS
Scorpu ζ	(7810)	—42 5 21 15	22 5	P w th 1835 g ve a P M — 0 35 1835 — 1845 — — 0 21
Oph ıcl	(7879)	—13 19 5 41	6 85	P w th 1835 es P M — 0 37 1835 — 1845 — — 0 23
A æ	(7906)	—46 27 49 67	46 91	B C t l ue e 56 12 1
D acon R	(7915)	+56 55 4 94	9 76	P w tl 183 g e a P M + 0 43 1835 — 1845 — — 0 05
31 Oı h uchı	(7917)	+13 49 4 70	——	Not ob v d bef c
22 Ur M ı	(7959)	—— ——	——	
53 Serı entıs γ	(8016)	—12 41 1 14	2 89	Pıa ı s gns a P M + 0 48 P w th 1835 gı e — 0 04 1835 — 1845 — + 0 13
Hercul s	(8042)	+32 40 14 57	15 85	P wıth 1835 gı es a P M — 1 00 1835 — 1845 — — 1 13
Ophıuchı	(8048)	— 9 1 23 43	23 03	G eenwı l C t 1840 g e 26 36
33 Scorı	(8049)	—24 5 44 97	41 50	G eenw cl Cat 1840 gıves 44 94
34 Scorpıı	(8079)	—37 9 53 76	55 15	Greenwicl C talogue g ves 48 06 tl e alt tude at Green vich ıs oı ly 1 20
24 D ıcon s	(8147)	+55 17 28 97	30 80	G eenwich Cat 1840 g ves 27 20
Hercul	(8173)	+48 3 34 36	29 51	P w th 1835 gı es P M — 0 32 1835 w th 1845 — + 0 16
141 Dracon s	(8182)	+61 59 36 98	42 30	P z as g P M — 0 40 P w tl 1835 — 0 39 1835 — 1845 — — 0 92
Aræ	(8214)	—53 33 10 28	——	See er ata
87 Herculıs	(825)	+25 40 42 31	39 68	See e rata
Sagıttarıı	(83 2)	—22 46 11 69	16 78	G een h C talogue 1840 gıves 12 78
T lescop	(8366)	—22 36 53 50	53 52	Co fiımıng the presumed erro of B
Draconıs	(8371)	+76 58 43 20	42 84	P a gn a P M + 0 60 P wıth 1835 g ves + 0 24 1835 — 1845 — + 0 27
70 Oplıuchı P	(8372)	+ 2 32 30 79	30 08	P vıth 1835 g ves a P M — 1 02 1835 — 1845 — — 1 09
34 Draconıs ψ	(8379)	+72 1 5 62	7 55	
Telescopıı	(8445)	—36 50 0 87	0 97	Coı firmıng the presumed erro of B

MEAN RIGHT ASCENSIONS OF STARS (Co t nu d)

S N m		M R sc J 84 R NT O s.				V VI (—)	REMARKS		
		h	m						
U s M	(8535)	18	20	—		—			
Telescopu	(8551)	—	—			—			
44 Draconis χ	(8547)	18	23	50 71		50 72	P w th 1835 g es a P M 1835 — 1845 —	— —	119 120
82 Ur Min	(8587)	18	28	4 40		4 30			
Telescop	(8689)	—	—			—			
63 Serpent s θ	(8701)	18	48	30 88		30 94			
Telescopu	(8712)	—	—			—			
Dr conis	(8724)	18	51	14 36		13 89	P w th 1835 gi es a P M 1835 — 1845 —	+ +	084 131
Co Aust γ	(8757)	18	55	56 44		56 37			
S g ttari	(8771)	18	57	45 38		45 06			
41 Sag ttaru π	(8791)	19	0	32 78		32 45			
S gittaru	(8861)	19	10	9 96		9 55			
Sa ttaru	(8874)	—	—			—			
S g tta u	(89 3)	19	17	22 04		21 63			
3 Sagittæ	(8930)	19	17	47 80		47 32			
Pavo is	(8933)	—	—			—			
61 Dr conis	(9046)	19	32	39 07		38 74	Pazz ass g i a P M P with 1835 g es 1835 — 1845 —	+ + +	085 107 140
Draconis	(9064)	19	35	57 85		57 35			
Aquilæ	(9139)	19	44	47 84		48 11			
2 Draconis	(9168)	19	48	40 12		40 31			

MEAN DECLINATIONS OF STARS (C ntinued)

S N		MEA D R O	V V	REMARKS
U s Min	(8535)	+85 39 50 57	——	One obse t o in 1835 differ 30
Telescopii	(8551)	—59 14 21 80	20 86	B C talogue is 5 n error
44 Draconis χ	(8547)	+72 39 50 12	52 12	
82 U s Mi i	(8587)	+86 58 11 99	28 05	A vrong Sta ppear to have been obse ed in 1835
T lescopii	(8689)	—55 13 8 73	5 61	B C t logue g es 12 59 86 the e s prob bly a (—) P M of 4 o 5
63 Sc p e tis θ	(8701)	+ 4 0 23 78	22 98	Pia i g is P M + 0 32 P w th 1835 gi es — 0 02 1835 — 1845 — + 0 06
Telescopii	(8712)	—58 8 1 21	0 38	Confirming the presumed error of B
Dracon s	(8724)	+74 32 18 41	18 20	
Cor Aust γ	(8757)	—37 16 45 37	44 37	P w th 1835 gi es a P M — 0 34 1835 — 1845 — — 0 44
Sag ttar i	(8771)	—28 52 11 00	9 63	Pi g s P M — 0 31 P w tl 1835 g es + 0 01 1835 — 1845 — — 0 13
41 Sa ittarii π	(8791)	—21 15 52 83	48 68	G eenwich Cat for 1840 g e 51 82 P vitl 1835 g ves a P M + 0 01 1835 — 1845 — — 0 40
Sagittarii	(8861)	—15 48 3 33	1 12	P ssigns a P M — 0 54 P w th 1835 gi es — 0 20 1835 — 1845 — — 0 38
Sagitta ii	(8874)	—22 41 6 58	6 88	B Catalogue gi es 11 80
Sa ittarii	(8923)	—15 21 19 19	15 02	Greenw ch Cat fo 1840 g 18 20
3 Sag ttæ	(8930)	+16 39 29 37	34 51	G eenwich C t fo 1840 gi es 29 25
Pavonis	(8933)	—60 34 57 08	54 78	Confirming the presumed erro of B
61 Draconis	(9046)	+69 23 53 08	52 02	P zz ass gns P M — 2 12 P with 1835 gi e — 1 70 1835 — 1845 — — 1 65
Draconis	(9064)	+69 26 58 44	——	See er at
Aquilæ	(9139)	+11 14 57 59	56 69	P w th 183 gi es a P M — 0 42 1835 — 1845 — — 0 33
2 Draconis	(9168)	+69 52 23 49	23 00	P azz as igns a P M — 0 30 P with 1835 gives + 0 09 1835 — 1845 — + 0 14

MEAN RIGHT ASCENSIONS OF STARS (Cont nu d)

S N			M R J — R NT DS	V V (—)	REMARKS		
			h m				
12	Sagıttæ γ	(9188)	19 51 51 77	51 79			
	Sag ttar ı	(9203)	19 53 44 65	44 15			
	Telescop ı	(9222)	19 56 18 90	18 73			
349	S gıtta	(9255)	20 0 29 92	30 07			
	Sag ttar y	(9260)	20 1 0 49	0 22	P th 1835 g a P M 1835 — 1845 —	+ +	043 070
24	Cel he	(9297)	20 3 53 26	53 13	P gn P M P w tl 1835 g e 1835 — 1845 —	— + +	055 066 079
	Sag tt ı	(9303)	20 5 36 91	36 30	Pıa z s g a P M P v th 1835 g 1835 — 1845 —	+ + +	083 062 123
	Cephei	(9376)	20 13 14 63	15 56	P w th 1835 g e P M 1835 — 1845 —	+ +	103 010
1	Cepl	(9383)	20 14 0 01	0 26	P ı a sıgns a P M P wıtl 1835 gı 1835 — 1845 —	— + +	053 081 056
	Cephe	(9438)	20 20 55 51	55 96	P w tl 1835 g P M 1835 — 1845 —	+ +	093 048
	C p co nı	(9433)	20 20 59 32	59 07			
12	Cap co	(9434)	20 21 0 55	0 29			
	Antı o	(9439)	20 21 51 44	51 38			
2	Ceph θ	(9488)	20 26 58 39	58 38	P s gns P M P w th 1835 gıv 1835 — 1845 —	— + +	024 019 020
16	Caprıco n ψ	(9575)	20 36 54 81	54 66			
	M c oscop	(9584)	20 37 ——	——			
279	D aco ıı	(9589)	20 37 41 96	42 45	See er at		
	Delphı φ	(9627)	20 42 14 66	14 49			
3	Cephei η	(9629)	20 42 7 78	7 13			
	Cephe	(9634)	20 43 20 51	19 93	See e ata		
	Mıcroscopu μ	(9666)	20 46 ——	——			

MEAN DECLINATIONS OF STARS (Cont nued)

S N		M D J 84 O R	V VI	REMARKS
12 Sagıttæ γ	(9188)	+19 4 28 98	28 98	P a sign a P M + 0 28 P w th 1835 g es — 0 09 1835 — 1845 — — 0 09
Sag ttar ı	(9203)	—38 17 16 75	17 01	P w th 1835 gives a P M — 0 38 1835 — 1845 — — 0 35
Telescopıı	(9222)	—53 0 58 43	58 63	See errata
349 Sagıttarıı	(9255)	—21 2 18 13	15 86	P ass gns a P M — 0 41 P with 1835 g ves — 0 03 1835 — 1845 — — 0 26
Sagıttarıı ȷ	(9260)	—36 29 7 03	7 37	P w th 1835 g e a P M — 1 63 1835 — 1845 — — 1 60
24 Cephei	(9297)	+76 2 47 60	47 46	
Sag ttarıı τ	(9303)	—27 29 26 91	24 34	Piazzi ass gns a P M + 0 76 P with 1835 gı es — 0 23 1835 — 1845 — — 0 49
Cephei	(9376)	+77 21 35 61	35 82	
1 Cephei	(9383)	+77 14 31 80	32 29	
Cephei	(9438)	+77 32 2 24	2 11	
Capricorni o^1	(9433)	—19 5 40 71	41 97	See errata
12 Capricorni ²	(9434)	—19 5 28 40	29 45	See errata
Antınoi	(9439)	— 4 56 49 45	51 79	See errata
2 Cephei θ	(9488)	+62 28 26 84	29 39	
16 Capricorni ψ	(9575)	—25 49 24 26	20 63	Greenwich Catalogue for 1840 gives 24 03
Microscopıı	(9584)	—44 32 54 79	52 26	Confirming the presumed error of B
279 Draconis	(9589)	+80 53 14 49	17 51	See errata
Delphini φ	(9627)	+11 58 9 92	10 45	P M erroneous in Vol III
3 Cephei ȷ	(9629)	+61 14 17 61	16 61	See errata
Cephei	(9634)	+54 59 55 50	53 14	
Microscopıı μ	(9666)	—44 40 38 73	41 81	Confirming the presumed error of B

Mean Right Ascensions of Stars (Cont nu d)

S N		M R A Jan 1 4 R nt Obs				V VI (—0)	Remarks		
		h	m						
Microscopu	(9689)	20	49	——		——			
Ind	(9710)	20	52	——		——			
22 Capricorn ι	(9740)	20	55	34 77		34 57			
3 P scis Aust	(9818)	21	4	5 50		4 97	Piazzi assigns a P M P with 1835 give 1835 — 1845—	— — +	073 003 050
Cephei w	(9863)	21	8	29 16		30 05	P with 1835 g ves a P M 1835 — 1845 does not confirm this P M	+	072
Capricorn	(9947)	21	19	22 84		22 61			
129 Capricorni	(9978)	21	22	43 07		42 80			
Aquarii	(9999)	21	25	37 51		37 39			
Indi	(10050)	21	31	——		——			
I di	(10056)	21	31	——		——			
Indi	(10073)	21	33	25 38		24 95			
45 Capricorni d^3	(10087)	21	35	33 04		32 86			
11 Cephei	(10128)	21	39	37 72		37 78	P ass gn a P M P with 1835 g es 1835 — 1845 —	+ + +	009 043 037
Indi	(10200)	21	51	27 49		27 12	B with 1835 gives a P M 1835 — 1845 —	+ +	400 437
Indi K	(10226)	21	54	——		——			
Indi	(10234)	21	55	——		——			
P scis Aust	(10257)	21	59	——		——			
174 Cephei	(10272)	22	0	22 51		22 28	P azzi assigns a P M P with 1835 gives 1835 — 1845 —	+ + +	047 008 031
Grus	(10305)	22	5	9 46		9 41			
Laceitæ m	(10326)	22	7	13 86		13 97			

MEAN DECLINATIONS OF STARS *(Continued)*

S N		M AN D CL TI JAN 45 B NT OBS TI	V VI	REMARKS
Microscop ı	(9689)	—43 36 42 08	45 63	Confirming the presumed error of B
Ind	(9710)	—59 32 17 14	17 19	Confi ming the presumed error of B
22 Capricorni η	(9740)	—20 27 49 92	46 52	Greenwich Catalogue for 1840 gives 49 81
3 Piscis Aust	(9818)	—28 14 58 39	59 88	Piazzi assigns P M — 0 11 P with 1835 gives — 0 11 1832 — 1845 — + 0 39
Cephe w	(9863)	+77 29 47 50	48 89	
Capricorni	(9947)	—22 23 6 24	6 42	P with 1835 gi es a P M — 0 31 1835 — 1845 — — 0 30
129 Capricorni	(9978)	—19 54 54 45	51 80	Piazzi assigns a P M — 0 29 P with 1835 gives + 0 08 1835 — 1845 — — 0 20
Aquarii	(9999)	— 6 6 1 25	5 10	P with 1835 gives a P M — 0 43 1835 — 1845 — — 0 04
Indi	(10050)	—58 18 46 57	49 10	Confirmi g the presumed error of B
Indi	(10056)	—50 47 41 13	41 23	Confirming the presumed error of B
Indi	(10073)	—56 10 38 87	37 10	Confirming the supposed error of B
45 Capricorni d[1]	(10087)	—15 27 24 21	25 29	Piazzi assigns a P M + 0 32 P with 1835 gives — 0 10 1835 — 1845 — + 0 01
11 Cephei	(10128)	+70 35 55 25	55 32	
Indi	(10200)	—57 25 6 91	6 50	B with 1835 g ves a P M — 2 90 1835 — 1845 — — 2 94
Indi K	(10226)	—60 22 55 78	55 38	See errata
Indi	(10234)	—59 52 46 89	49 49	Confirming the presumed error of B
Piscis Aust	(10257)	—34 47 46 69	47 04	Confirming the presumed error of B
174 Cephei	(10272)	+61 31 37 62	39 71	
Gruis	(10305)	—42 6 49 50	46 57	P with 1835 g es a P M — 0 60 1835 — 1845 — — 0 89
Lacertæ m	(10326)	+38 56 53 02	52 66	Piazzi assigns a P M — 0 80 P with 1835 gives — 0 05 1835 — 1845 — — 0 01

Mean Right Ascensions of Stars *(Continued)*

S N		M R Asc J 84 — B ceNT O	V VI (—O)	REMARKS	
		h m			
43 Aquarii θ	(10336)	22 8 39 21	39 11		
Gruis π	(10359?)	22 13 14 30	14 13		
Gruis	(10403)	22 19 33 39	32 90		
35 Pegasi H³	(10407)	22 20 0 75	0 85		
57 Aquarii	(10423)	22 22 26 62	26 35		
Cephei C	(10447)	22 25 28 95	28 91	P a zi assigns P M P w th 1835 g e 1835 — 1845 —	— 037 + 033 + 037
59 Aquarii	(10450)	22 26 12 71	12 32		
Cephei ρ	(10469)	22 28 27 18	27 30		
18 Piscis Aust	(10488)	22 32 4 63	4 24		
Gruis	(10501)	22 33 ——	——		
Lacertæ	(10524)	22 36 50 75	51 12		
Gruis	(10527)	22 36 ——	——		
Pegasi	(10538)	22 38 21 26	21 21		
Aquarii	(10541)	22 39 50 48	50 74		
Cephei	(10562)	22 44 9 27	9 55	P with 1835 gi es a P M 1835 — 1845 —	+ 074 + 046
246 Cephei	(10580)	22 47 55 83	56 38	P with 1835 g es P M 1835 — 1845 —	+ 071 + 016
Cephei T	(10621)	22 55 25 52	25 29	P with 1835 g ve P M 1835 — 1845 —	+ 117 + 140
Gruis	(10669)	23 3 54 68	54 39		
Tucanæ	(10685)	23 7 24 61	24 55		
Gruis	(10702)	23 10 4 51	4 49		

MEAN DECLINATIONS OF STARS *(C ntinu d)*

S N		M D cli J 1 5		REMARKS
		Rec nt Obs	V V	
43 Aquarii θ	(10336)	— 8 33 9 31	6 97	G e nwi h C t l gue f r 1840 gi es 10 58
Gru π^1	(10359)	—46 4 35 91	35 54	Confi ming the pre umed error of B
Gruis	(10403)	—39 54 50 27	52 09	P w th 1835 g es a P M. — 0 31 1835 — 1845 — — 0 13
35 Pegasi H²	(10407)	+ 3 55 13 98	14 34	P th 1835 g es a P M — 0 40 1835 — 1845 — — 0 44
57 Aquarii	(10423)	—11 28 8 48	0 89	P w th 1832 g es a P M — 0 05 183? — 1845 — — 0 64 G eenw ch Catalogue f 1840 gi es 5 84
Cephei C	(10447)	+77 59 47 15	46 63	
59 Aquarii	(10450)	—21 30 0 44	59 25	Piazzi s g s P M — 0 46 P w th 1835 gi es — 0 15 1835 — 1845 — — 0 27
Cephei ϱ	(10469)	+78 1 48 39	45 53	P i g P M — 0 21 P w th 1835 g es + 0 08 1835 — 1845 — + 0 36
18 Piscis Au t	(10488)	—27 51 1 84	57 94	Greenw cl C talogue for 1840 g ve 1 58
Gruis	(10501)	—45 3 28 82	29 34	C nf m ng the presumed e ror of B
Lacertæ	(10524)	+43 43 8 31	——	The wro g Sta appea s t ha e bee ob e ed n 1835 nd the p esent determi ation diffe s 3 from Piazz
Gruis	(10527)	—50 29 20 42	14 61	B Cat g ves 1 56 or it appears that there s a P M of — 1 0
Pega i	(10533)	+29 38 38 79	36 62	P w tl 1835 g ves a P M — 0 37 1835 — 1845 — — 0 15
Aquarii	(10541)	— 5 1 54 53	56 01	P with 1835 g s a P M — 0 37 1835 — 1845 — — 0 22
Cephei	(10562)	+82 27 17 14	18 87	
246 Cephei	(10580)	+82 19 54 43	54 01	
Cephei T	(106?1)	+83 30 57 58	59 69	
Gruis	(10669)	—55 1 40 80	40 74	Confirming the presumed error of B
Tucanæ	(10685)	—56 22 19 28	15 7	Differs se eral second f om B
Gruis	(10702)	—48 16 54 87	53 07	Confirm ng the presumed error of B

Mean Right Ascensions of Stars (Continued)

S N M	M J 1 — O NT	V V (—)	REMARKS
	h m		
8 Piscium ι (10764)	23 18 59 26	59 37	P zz a g s P M — 018 P ι tl 1835 g es + 020 1835 — 1845 — + 009
Cephei V (10820)	23 7 49 00	——	Compared tl P a the P M comes out + 02 Observat ons discord nt
104 Aqua ii A (10852)	23 33 ——	——	
Phœnicis (10860)	23 35 38 9	38 45	
3 Messori (10918)	23 44 54 97	54 79	P w th 1835 gives a P M + 090 1835 — 184 — + 108
Phœn c s (10924)	23 45 15 94	15 80	
Cassiopeiæ σ (10959)	23 51 10 53	10 62	
P scium (10963)	23 51 43 47	43 84	
85 Pega i (10980)	23 54 4 98	5 08	Pazz a g s P M + 060 P with 1835 gi es + 072 1835 — 1845 — + 062

Mean Declinations of Stars (Continued)

S N M	M D TI J — Obs	V VI	REMARKS
8 Piscium ι (10764)	+ 0 24 26 48	28 40	
Cephei V (10820)	+86 27 8 34	9 33	
104 Aquarii A (10852)	—18 40 34 35	32 19	See err ta
Phœnicis (10860)	—46 19 11 98	9 75	Tl e B Catalogue gives 19 1 54 there is probably a (—) P M
3 Messoris (10918)	+74 40 50 00	49 43	
Phœnic s (10924)	—49 47 48 59	50 51	Confirming the presumed error of B
Cassiopeiæ σ (10959)	+54 53 32 71	32 83	D ffering 20 from Greenwich Catalogue for 1840
Piscium (10963)	— 6 45 12 45	12 68	P az i ssigns P M + 0 36 P with 1835 g ves — 0 03 1835 — 1845 — — 0 01
85 Pegasi (10980)	+26 15 42 41	41 87	* See errata

NORTH POLAR DISTANCES

OF

THE PLANET MARS,

AND OF

STARS SITUATED NEAR TO HIS PATH,

AT THE SEVERAL OPPOSITIONS

BETWEEN 1831 AND 1847

OBSERVED AT THE MADRAS OBSERVATORY

Madra Mean Time	Names	B r-	Therm In	Therm Out	Obser N P D
1832 d h m		In hes			
	A T uri				68 26 31 9
No 9 12 44 5	♂ Center	30 112	77 6	76 2	69 1 52 7
	53 T u ı				69 19 47 3
	Tauri	30 100	77 0	75 8	73 53 36 8
	b Tauri				69 11 42 0
15 12 11 6	♂ Center	30 150	78 0	76 5	69 8 8 4
	53 T uri				69 17 45 2
	Tauri	30 130	78 0	76 2	73 51 3 8
	b Tauri				69 11 42 0
16 12 6 1	♂ Center	30 142	76 9	74 3	69 9 56 6
	α Tau	30 126	76 7	73 6	73 51 33 4
17 12 0 0	♂ Center				69 11 49 3
	A Tau ı	30 112	7 8	71 8	68 24 31 4
22 11 32 9	♂ Center	30 110	75 3	72 0	69 22 30 3
	b T u				69 11 40 3
	A T	30 110	75 2	72 0	68 4 29 0
	α Tau ı	30 102	75 0	71 8	73 51 33 5
29 11 55 1	♂ Center	30 128	77 0	76 2	69 38 59 4
	Tauri	30 120	76 7	76 0	73 51 32 5
	65 Ar et s				69 49 17 9
30 10 49 8	♂ Center	30 114	77 0	76 8	69 41 20 3
	65 Arietis				69 52 42 6
Dec 4 10 29 2	♂ Center	30 128	77 4	76 4	69 53 26 0
	T ur	30 110	77 5	75 5	73 54 59 8
5 10 24 2	♂ C te	30 156	77 7	77 0	69 55 26 6
	Tau ı	30 140	77 5	76 8	73 54 59 6
	65 A ıet s				69 52 42 7
6 10 19 2	♂ Ce ter	30 170	77 8	76 4	69 57 20 5
	F T u				70 55 27 0
	α Tauri	30 144	77 0	73 4	73 55 0 9
	65 Ar eti				69 50 46 9
7 10 14 2	♂ Ce te	30 112	76 9	75 9	69 57 10 8
	F T u ı				70 53 31 5
	α Tauri	30 099	76 5	75 5	73 53 3 1
12 9 50 3	♂ Center	30 118	78 1	76 8	70 4 38 2
	T u ı	30 110	77 9	77 0	73 53 15 9
	38 Ariet s				70 9 14 3
13 9 45 7	♂ Ce ter	30 144	77 5	7 8	70 5 43 1
	T u ı	30 180	77 0	73 0	73 53 15 8
	38 A et s				70 10 35 8
15 9 36 7	♂ Center	30 100	75 5	71 1	70 8 47 1
	Tau	30 076	74 4	69 3	73 54 36 6
	38 A et s				70 10 35 7
16 9 31 2	♂ Center	30 136	76 4	75 6	70 9 23 8
	Tau ı	30 120	75 7	73 0	73 54 37 5

Ma ra M T	N mes	B	rm In	rm e- ut	Obser N P D
1832 d h m		I h			
Dec 17 9 27 8	♂ Center	30 152	75 0	71 7	70 9 54 1
	Taur	30 144	74 5	71 0	73 54 37 0
	38 A etis				70 10 37 9
18 9 23 5	♂ Ce ter	30 128	76 3	74 8	70 10 13 4
	α Taur	30 108	75 0	71 4	73 54 38 5
20 9 15 0	♂ Center				70 13 15 4
	65 A etis	30 108	77 0	76 2	69 55 14 6
	Tauri				73 57 29 8
21 9 10 9	♂ Cente	30 066	77 0	76 0	70 13 2 7
	65 A et s				69 55 14 3
	Tau	30 072	76 3	73 6	73 57 30 1
22 9 6 8	♂ Center	30 028	77 3	76 7	70 12 44 8
	65 A ts				69 55 13 5
	Tauri	30 028	77 0	76 0	73 57 29 9
24 8 58 7	♂ Ce ter	30 012	75 9	75 8	70 11 36 5
	65 A ts				69 55 15 1
	Tauri	30 016	76 0	75 3	73 57 30 3
25 8 54 8	♂ Center	30 030	75 9	74 9	70 10 46 6
	65 A tis				69 55 14 1
	Tauri	30 032	75 9	74 8	73 57 32 0
1834					
	(P) an th f l	30 120	74 9	72 1	64 3 13 8
Dec 23 13 1 5	♂ N L				63 56 14 0
	♂ S L				63 56 31 8
	40 Geminor	30 112	77 3	76 9	63 54 55 8
24 12 55 9	♂ N L	30 112	77 2	76 8	63 51 35 2
	♂ S L				63 51 53 3
25 12 50 3	♂ N L	30 102	77 7	77 8	63 47 2 8
	♂ S L				63 47 20 9
	40 Gem o	30 114	78 0	76 2	63 54 53 6
26 12 44 7	♂ N L				63 42 36 7
	♂ S L				63 42 55 1
	40 Gem or	30 130	76 4	74 0	63 54 55 9
27 12 39 1	♂ N L				63 38 21 3
	♂ S L				63 38 35 0
	s Gemino	30 128	75 6	73 0	63 35 7 8
	40 Gem or	30 110	76 9	76 3	63 54 55 4
28 12 33 4	♂ N L				63 34 10 5
	♂ S L				63 34 28 7
	Gemino				63 35 8 2
29 12 27 7	♂ C te	30 098	75 0	72 7	63 30 18 2
	s Geminor				63 35 7 9
	39 Gem no	30 112	74 2	69 8	63 45 20 6
30 12 22 0	♂ N L				63 26 18 2
	♂ S L				6 6 34 4
	Geminor				63 22 33 5

M M	N M	B no	T	T UT	O N P D
1834 d h m		I l			
De 31 12 16 3	♂ C ı ter (t)	30 074	75 6	72 0	63 22 43 8 63 22 34 5
1835					
Ja 2 12 4 9	( ) ♂ Center 47 G m or	29 992	73 2	68 3	63 14 52 9 63 15 51 7 62 55 34 4
3 11 59 2	♂ Cente 47 G ı or	30 032	72 0	68 2	63 12 40 8 62 55 34 3
4 11 53 5	♂ Cente (w) 47 Ge or	30 024	70 8	66 9	63 9 41 7 63 6 56 0 62 55 35 7
5 11 47 8	♂ Center (w) 47 Geminor	30 018	73 0	72 7	63 6 52 2 63 6 56 7 62 55 33 9
6 11 42 2	♂ Center (w)	30 076	74 0	70 5	63 4 14 8 63 6 58 6
8 11 31 0	54 Au ıgæ ♂ Center (x)	30 150	74 8	73 9	61 38 41 7 62 59 35 7 62 57 39 0
9 11 25 4	54 Aurigæ ♂ Cente	30 118	73 3	70 9	61 38 43 1 62 57 30 8
12 11 8 9	♂ Center (j)	30 062	71 3	ʻ9 2	62 52 25 1 62 51 49 1
13 11 3 4	* ( ) ♂ Center (j)	30 036	70 0	66 7	62 49 8 0 62 51 10 7 62 51 48 6
14 10 58 0	( ) ♂ Center (y)	30 054	71 5	69 0	62 49 7 6 62 49 59 8 62 51 49 7
15 10 52 6	♂ Center (z) (y)	30 058	70 9	69 5	62 49 3 8 62 49 9 8 62 51 50 6
16 10 47 3	♂ Center ( ) (j)	30 076	73 3	70 4	62 48 14 8 62 49 8 4 62 51 49 5
18 10 36 8	♂ Center * (y)	30 094	71 7	68 8	62 47 10 6 62 51 49 6
19 10 31 6	(B) ♂ Center	30 098	72 6	69 8	62 47 1 6 62 46 42 2
20 10 26 5	♂ Center	30 080	72 7	70 6	62 46 29 7
21 10 21 4	43 Aurigæ * (B) ♂ Center	30 082	75 3	75 3	62 46 45 4 62 47 0 8 62 46 25 7

M MEA T	N M S		T	T UT	OBS N P
1835 d h m		I l os			
J n 22 10 16 4	43 Au gæ (B) ♂ Ce ter	30 130	75 8	74 9	62 46 44 6 62 47 1 9 62 46 28 8
30 9 38 3	43 Aur gæ (C) ♂ Ce teı	30 170	76 9	76 0	62 46 42 7 62 51 12 6 62 50 40 2
31 9 33 8	43 Au gæ (C) ♂ C ter	30 194	77 0	76 5	62 46 43 2 62 51 12 6 62 51 35 3
Feb 1 9 29 4	43 A r gæ (C) ♂ C te	30 192	74 8	71 6	62 46 44 0 62 51 12 9 62 52 32 2
2 9 25 0	♂ Ce ter	30 178	74 0	72 8	62 53 37 4
4 9 16 5	♂ Center (A) 49 Aurigæ	30 114	73 8	71 7	62 55 49 5 62 58 45 4 61 54 9 7
5 9 12 3	♂ C nter (A) 49 Au gæ	30 156	75 9	76 0	62 57 0 9 62 58 44 8 62 54 11 8
7 9 4 1	♂ Center (A)	30 174	77 8	77 7	62 59 30 2 62 58 44 6
10 8 52 3	♂ Cente (A)	30 164	77 0	77 8	63 3 31 7 62 58 44 0
1837 Jan 26 13 16 7	♂ Center (x) η Leo ı s	30 050	71 2	66 7	71 20 33 5 71 12 12 4 72 27 37 1
27 13 11 4	(w) ♂ Center η I eoı ı	30 066 30 050	71 0 71 0	67 0 67 0	71 8 54 7 71 12 27 0 72 27 37 9
28 13 6 0	(p) ♂ Center η Leonis	30 096 30 064	74 0 7° 4	71 7 69 0	71 0 42 4 71 4 18 1 72 27 38 3
29 13 0 6	(q) ♂ Center η Leonis	30 128	75 2	73 7	70 53 21 5 70 56 11 9 72 27 36 2
31 12 49 6	♂ Center (t) η Leonis	30 110 30 094	74 8 74 8	71 0 69 8	70 40 3 6 70 35 5 2 72 27 37 6
Feb 2 12 38 6	(k) ♂ Center η Leonis	30 100 30 090	73 5 72 0	68 6 68 0	70 15 20 8 70 24 10 3 72 27 37 6
3 12 33 2	(k) ♂ Cente η Leonis	30 144 30 126 30 124	75 6 74 7 74 5	70 6 70 0 69 7	70 15 9 5 70 16 22 2 72 27 37 9

M RA M	N M S				O N P D
1837 d h m		I hes			
	(l)	30 114	75 0	73 0	70 1 18 1
F b 4 12 27 6	♂ Center	30 102	74 0	72 3	70 8 40 1
	δ C nc	30 032	74 2	70 6	71 15 58 6
	( )				69 50 39 7
5 12 22 1	♂ Cente	30 010	74 0	69 7	70 1 6 5
	δ Ca c i	30 024	74 2	71 7	71 15 58 5
	(n)	30 020	74 0	70 0	69 50 39 1
6 12 16 6	♂ Cente				69 53 41 3
	δ Ca i	30 072	76 0	74 3	71 15 58 7
7 12 11 1	♂ Ce ter	30 064	75 8	73 7	69 46 25 0
	( )				69 41 21 2
	δ C n r	30 116	76 0	74 3	71 15 59 2
	1141A S C				69 31 41 9
8 12 5 5	♂ Ce ter	30 084	76 0	73 7	69 39 19 4
	δ C	30 094	75 3	72 0	71 15 58 8
	1141A S C				69 31 41 1
9 12 0 0	♂ Center	30 078	75 0	72 0	69 32 27 2
	δ Ca cn	30 092	77 2	75 5	71 15 57 4
10 11 54 5	♂ Ce te	30 080	76 9	75 2	69 25 44 8
	(o)	30 070	76 5	74 0	69 17 31 6
	δ C ncn	30 012	77 5	74 6	71 15 57 3
11 11 49 0	♂ Center				69 19 16 3
	(o)	29 994	77 0	74 0	69 17 31 4
	δ Ca cr	29 994	78 0	76 6	71 15 57 3
12 11 43 5	♂ Ce te				69 13 0 8
	(m)	29 994	77 7	76 0	69 10 14 0
	δ C nc	30 056	79 7	79 8	71 15 57 6
13 11 38 0	♂ Center				69 6 58 9
	( )	30 046	79 4	79 5	68 57 32 1
	γ Cancn	30 110	79 5	77 6	67 57 55 9
14 11 32 6	♂ Cente				69 1 11 1
	( )				68 57 35 2
	γ C ncr	30 130	78 2	77 0	67 57 56 4
15 11 27 1	♂ C nter	30 120			68 55 41 2
	(h)				68 47 9 0
	γ Canc	30 160	78 2	76 2	67 57 56 8
	( )				68 40 28 4
17 11 16 3	♂ Ce ter			76 0	68 45 22 7
	γ C nc i	30 140	78 5	75 0	67 57 56 2
18 11 11 0	♂ Cente	30 136	78 3	74 0	68 40 36 1
	γ Ca c				67 57 55 4
19 11 5 7	♂ Ce ter				68 37 7 5
	(g)	30 110	76 0	72 0	68 31 6 5
	γ Canc i	30 152	76 8	72 0	67 57 57 2
20 11 0 4	♂ Center				68 31 54 9
	(g)				68 31 13 4

M RA M	N ME		T		N
1837 d h m		l l			
	γ C c	30 186	78 1	75 0	67 57 56 9
Feb 21 10 55 2	♂ Ce t	30 184	77 9	76 2	68 27 57 8
	(f)				68 26 28 5
	γ C ncn	30 044	78 0	75 3	67 57 54 1
	(b)				68 13 12 3
26 10 29 4	♂ Ce te				68 12 20 6
	γ C nc	30 034	77 9	74 3	67 57 54 8
27 10 24 4	♂ C t				68 10 1 1
	γ Canc	30 078	78 2	74 8	67 57 54 4
	(a)				68 13 14 6
28 10 19 5	♂ Cent				68 7 58 2
	γ C ncr	30 116	78 2	77 3	67 57 53 1
	(a)				68 13 14 6
Mar 1 10 14 6	♂ Center				68 6 10 7
	γ Cancn	30 096	79 7	78 8	67 57 53 4
	(a)				68 2 30 6
4 10 0 3	♂ Center		79 5	78 6	68 2 25 1
	γ Canc i	30 116	80 2	77 5	67 57 52 8
	(a)				68 2 31 1
5 9 55 6	♂ Center				68 1 40 1
	γ C n i	30 120	79 5	76 5	67 57 52 7
6 9 51 0	♂ Ce ter				68 1 9 2
	(a)				68 2 31 0
	γ C n	30 116	80 0	76 9	67 57 52 1
7 9 46 4	♂ Ce te				68 0 53 3
	(a)				68 2 28 3
	γ C	30 106	79 9	78 0	67 57 51 6
8 9 41 9	♂ Ce t				68 0 52 3
	(a)				68 2 29 0
	γ Canc i	30 124	79 9	77 7	67 57 52 5
9 9 37 4	♂ Cent				68 1 4 7
	(a)				68 2 29 4
	γ Cancn	30 072	79 7	78 5	67 57 50 7
10 9 33 0	♂ C ter				68 1 32 2
	(a)				68 2 29 2
	γ C n i	30 024	80 3	80 2	67 57 51 6
11 9 28 7	♂ Ce te				68 2 12 3
	γ C c i	30 076	80 2	79 7	67 57 50 4
12 9 24 4	♂ Ce te				68 3 7 4
	γ C n i	30 076	81 0	79 0	67 57 12 4
13 9 20 2	♂ Ce ter				68 4 13 8
	(a)				68 2 27 9
	γ C ncn	29 990	81 8	80 0	67 57 51 2
14 9 15 8	♂ Center				68 5 32 6
	(a)	29 986	80 5	79 8	68 2 32 4

M M	NAMES				O
1837 d l		I l			
	γ Ca cr	29 960	80 6	79 5	67 57 51 4
Mar 15 9 11 6	♂ C t r				68 7 5 9
	(b)	29 958		79 0	68 13 10 9
	γ C n i	30 000	80 5	79 6	67 57 52 3
16 9 7 5	♂ C t				68 8 48 3
	(b)				68 13 12 1
17 9 3 5	♂ Cei ter	30 044	80 4	80 0	68 10 45 2
	(b)				68 13 11 3
	γ Can	30 054	80 7	78 2	67 57 51 6
18 8 59 4	♂ Ce t r				68 12 53 5
	(b)				68 13 10 8
	γ C ncri	29 998	82 3	81 8	67 57 51 3
19 8 55	♂ C rte				68 15 9 2
	(b)	30 010		81 2	68 13 12 2
20 8 51 6	♂ Cente	29 990	82 0	80 0	68 17 41 2
1839					
	V rg n s(b)	29 964	74 0	73 0	85 25 56 8
Feb 12 14 34 6	♂ C ter				86 14 6 3
	b V rgin s	29 938	74 4	71 6	85 25 58 1
13 14 30 1	♂ Center				86 9 14 1
	b Virgi is	29 974	77 8	77 8	85 25 57
14 14 25 6	♂ Cei t r				86 4 6 5
	b Vi g is	29 9 0	78 5	78 0	8 25 59 5
16 14 16 3	♂ C t				8 53 1 3
	c V gni				85 46 29 9
	l Virginis	29 972	79 9	79 1	85 25 57 4
17 14 11 6	♂ Cei t r				85 47 5 2
	c Virgi is				85 46 30 0
	Virgii is	30 014	78 9	78 0	85 36 21 6
18 14 6 9	♂ Center				85 40 54 2
19 14 2 2	♂ C iter	30 0 6	78 5	77 0	85 34 1 1
	b Virg s	30 050	77 6	77 4	85 25 57 5
20 13 57 4	♂ Cei ter				85 27 53 9
	b Vi gims	0 090	74 2	75 0	85 25 58 4
21 13 52 5	♂ Ce ter				85 21 0 6
23 13 42 6	♂ Center	30 076	74 0	73 8	85 6 46 3
	(c)				85 2 1 0
24 13 37 6	♂ Center	30 050	73 5	73 2	84 59 19 3
	(c)				85 2 1 5
	Vir nis	30 012	74 0	73 4	8? 33 16 1
25 13 32 6	♂ C iter				84 51 44 0
	Virginis	29 992	77 8	76 8	82 33 16 4
	( )				84 44 46 4
26 13 27 5	♂ Center				84 43 58 7

M RA MEA	NAME			UT	O N
1839 d h m		I h			
	V gi s	9 972	77 8	77 6	82 33 15 6
Feb 27 13 22 4	♂ Ce te				84 36 3 9
	(f)				84 34 30 8
	V g s	30 010	79 5	79 2	82 33 15 5
28 13 17 2	♂ C te				84 28 2 0
	(g)				84 27 20 8
	V rg	30 050	77 8	77 4	82 33 15 4
	(l)				84 12 39 4
Ma 1 13 12 0	♂ Center				84 19 51 4
	V gi	30 032	79 8	79 9	82 33 16 6
	(h)				84 12 40 ?
2 13 6 8	♂ Ce t r				84 11 37 1
	V g n	30 022	80 0	80 0	82 33 16 4
3 13 1 6	♂ Cente				84 3 14 7
	( )				84 5 39 0
5 12 51 1	♂ Center	30 016	81 0	84 8	83 46 20 7
	(l)				83 44 35 8
	Leoni	30 040	79 8	79 6	83 4 28 0
	(m)				83 35 39 8
6 12 45 8	♂ Center				83 37 48 6
7 12 40 4	♂ Cente	29 984	79 0	79 4	83 39 17 5
	( )				83 27 56 7
	Leo s	30 012	79 9	78 7	83 4 28 1
8 12 35 0	♂ Center				83 20 40 6
	(o)				83 16 13 3
	Leo	29 980	80 9	81 1	83 4 27 3
9 12 29 7	♂ Cente				83 12 9 2
	(p)	29 968	80 9	80 9	83 12 6 0
	Leo s	29 938	80 7	80 9	83 4 27 7
	(q)				8 59 2 3
10 12 24 3	♂ Ce t r	29 936	80 7	80 3	83 3 37 2
	Leonis	29 966	82 0	81 9	83 4 27 4
	( )				82 49 31 5
11 12 18 9	♂ Center	29 960	81 8	81 7	82 55 8 4
	Leonis	29 986	81 3	80 7	83 4 27 5
	( )				82 49 32 9
12 12 13 5	♂ Cente				82 46 44 3
	Leonis	30 020	81 1	81 0	83 4 27 2
13 12 8 1	♂ Cente				82 38 24 8
	V gin s	30 008	81 7	80 2	82 33 16 6
	Leo i	30 040	79 8	79 0	83 4 27 7
14 12 2 7	♂ Ce te				82 30 10 6
	Vi gi	30 030	79 7	78 6	82 33 17 1
	σ Leonis	30 096	79 7	78 8	83 4 29 4
	(s)				82 19 40 6
15 11 57 3	♂ Center	30 096	79 7	78 3	82 22 2 8

M M T	N MES	B.	T	UT	O N P D
1839 d l m Mar 16 11 51 9	Leo s (ι) ♂ Cente	I h 30 096	79 7	78 3	83 4 28 8 82 15 19 9 82 14 5 3
17 11 46 5	Leonis ♂ Ce te	30 052	81 7	81 2	83 4 27 9 82 6 16 6
18 11 41 1	Leo s ♂ Cente	30 068	82 3	82 4	83 4 27 5 81 58 36 4
19 11 35 7	Leonis (w) ♂ Cente	30 066	84 3	83 8	83 4 27 8 81 53 36 2 81 51 7 5
21 11 25 0	Leo s ♂ Center (j)	30 038	82 8	82 0	83 4 27 7 81 36 47 9 81 29 55 1
22 11 19 7	♂ Center (y)	30 014	82 8	82 9	81 29 57 3 81 29 44 4
23 11 14 4	χ Leoni ♂ Center	30 064	82 5	83 1	81 46 48 8 81 23 22 9
24 11 9 1	χ Leonis ♂ Ce ter	30 064	82 9	83 7	81 46 49 6 81 17 2 1
25 11 3 8	χ Leoni ♂ Center (A)	30 010	82 3	81 4	81 46 48 4 81 10 55 1 81 8 45 6
26 10 58 6	χ Leonis Leon s ♂ Center	30 000	81 7	82 3	81 46 49 2 81 2 42 1 81 5 5 7
27 10 53 4	χ Leo L o is ♂ Ce te	29 972	79 8	78 2	81 46 48 7 81 2 41 1 80 58 33 9
28 10 48 3	χ Leo ι (B) ♂ Center	29 974	81 8	81 3	81 46 48 4 80 50 46 7 80 54 14 3
29 10 43 2	χ Leon (C) ♂ Center	29 960	81 9	82 0	81 46 47 9 80 47 58 5 80 49 19 8
30 10 38 1	χ Leon s (C) ♂ Cente	29 956	81 8	82 1	81 46 42 7 80 47 51 4 80 44 34 6
31 10 33 1	χ Leon s ♂ Center	30 000	81 8	82 2	81 46 48 5 80 40 10 3
Apr 1 10 28 1	χ Leon s ♂ Center	30 022	82 2	82 4	81 46 48 0 80 36 4 5
2 10 23 1	χ Leonis ♂ Center	30 099	81 8	82 3	81 46 48 8 80 32 15 5

M RA M T	N MES				O N D
1839 d h m Apr 3 10 18 2	(D) ♂ Center Leon	1 1es 30 082	83 2	83 9	80 23 21 2 80 28 45 8 78 34 13 8
4 10 13 4	(D) ♂ Cente Leo	30 014	83 1	83 9	80 23 21 7 80 25 33 3 78 34 13 9
5 10 8 6	(D) ♂ Cente Leo ı	29 960	84 2	83 9	80 23 21 6 80 22 40 1 78 34 14 3
6 10 3 8	(E) ♂ Cente Leonis	29 930	83 7	84 0	80 15 2 9 80 20 5 8 78 34 14 4
7 9 59 0	(E) ♂ C nte Leonis	29 920	84 0	84 0	80 15 4 3 80 17 51 2 78 34 18 7
8 9 54 3	(E) ♂ Center	29 924	84 6	84 1	80 15 1 5 80 15 55 4
13 9 31 5	(E) ♂ Ce t Leonis	30 024	85 7	84 8	80 15 1 9 80 10 47 5 78 34 13 1
14 9 27 1	(E) ♂ Ce ter Leoni	30 010	85 8	85 0	80 15 2 8 80 10 42 0 78 34 13 3
15 9 22 7	(E) ♂ Center Leon	29 970	84 1	84 4	80 14 59 0 80 10 54 7 78 34 12 2
16 9 18 4	(E) ♂ Ce t Leon s	29 926	84 2	84 7	80 14 59 8 80 11 25 6 78 34 13 0
17 9 14 1	(E) ♂ Ce ter Leonis	29 896	85 8	85 2	80 15 2 0 80 12 14 8 78 34 12 1
18 9 9 8	♂ Cente Leonis	29 906	85 6	85 8	80 13 21 7 78 35 13 1
19 9 5 7	♂ Cente Leon s	29 926	84 7	85 7	80 14 46 3 78 34 12 1
20 9 1 6	♂ Center (E) Leonis	29 934	84 3	85 3	80 16 26 5 80 15 0 1 78 34 11 5
25 8 41 8	♂ Center Leo	29 884	85 0	8 5	80 28 54 1 78 34 11 6
1841 Mar 18 14 32 0	λ Virginis ♂ Cente (a)	29 914	83 8	83 8	102 37 42 0 101 11 50 7 101 9 9 7

M M T	NAMES	B BO B-R.	T	UT	OBSER N D
1841 d h m		I 1			
	λ V gınıs	29 898	84 3	83 5	102 37 41 2
Mar 19 14 27 7	♂ Cente				101 10 23 9
	λ Vı ıs	29 912	82 5	79 7	102 37 41 0
21 14 18 8	2 L b æ				100 58 41 3
	♂ Cente				101 6 41 7
	λ V g nıs	29 946	82 0	80 6	102 37 42 0
22 14 14 4	2 L bræ				100 58 41 9
	♂ Center				101 4 33 6
	Vı g ıs	29 966	82 4	81 5	99 31 26 0
23 14 9 9	♂ Center	29 956	81 9	79 8	101 2 12 2
	V g ıs	29 938	80 8	78 6	99 31 24 0
25 14 0 7	♂ C nte				100 56 51 8
	L bræ				100 58 37 3
	V gınıs	29 884	78 1	75 3	99 31 26 5
27 13 51 3	♂ Center				100 50 40 3
	(b)	29 882	78 1	74 9	100 58 38 8
	V rgınıs	29 942	80 5	78 7	99 31 26 4
28 13 46 5	♂ Center				100 47 14 9
	Vı gınıs	29 914	82 4	81 7	99 31 25 5
29 13 41 8	♂ Center				100 43 42 0
	Vırgın s	29 934	82 2	79 7	99 31 25 9
30 13 36 9	♂ Center				100 39 53 8
	(c)	29 918	82 3	79 0	100 39 31 5
	94 Vırgınıs	29 938	82 7	82 5	98 7 26 8
Apr 1 13 27 1	♂ Center				100 31 50 9
	94 V rgınıs	29 906	81 8	82 3	98 7 26 6
2 13 22 1	♂ Center				100 27 32 7
	(e)	29 918	81 1	82 1	100 23 10 0
3 13 17 1	♂ Center				100 23 2 3
	(e)	29 914	81 0	82 0	100 23 6 3
4 13 12 1	♂ Center				100 18 23 2
	λ Vırgınıs				102 37 40 3
	(g)	29 896	82 7	82 5	99 57 21 1
7 12 56 6	♂ Center				100 3 28 4
	82 Vırg nıs	29 920	83 8	83 8	97 53 32 8
17 12 3 6	♂ Center				99 6 40 5
	(k)				98 57 57 8
	82 V gınıs	29 960	83 8	84 2	97 53 32 9
18 11 58 2	♂ Center				99 0 37 6
	(k)				98 58 1 5
	82 Vırgın s	29 932	84 0	84 6	97 53 32 4
21 11 42 0	♂ Center				98 42 38 2
	(m)				98 46 13 6

M M	N ME	B	T	UT	OBS N
1841 d h m		I 1es			
	76 V g ıs	29 896	83 5	83 8	99 20 13 1
Apr 22 11 36 6	♂ Center				98 36 43 0
	76 V rg ıs	29 928	84 0	84 8	99 20 13 5
27 11 9 8	♂ Ce te				98 8 10 5
May 5 10 27 9	♂ Ce ter	29 804	85 1	86 0	97 29 39 0
	82 Vı g n s				97 53 30 9
7 10 17 8	♂ Center	29 784	88 3	87 9	97 36 58 7
	82 V rg n s				97 53 30 8
1843	θ Ophı ch	29 878	84 0	84 3	114 49 4 9
	33 S p				114 4 32 5
May 7 14 22 4	♂ Ce te				114 4 51 8
	θ Ophıuol	29 860	84 6	83 8	114 49 5 9
	33 Sco pıı				114 4 31 8
8 14 18 2	♂ Center				114 7 47 1
	θ Ophıuchı	29 874	84 3	84 0	114 49 8 0
9 14 14 0	♂ Center				114 10 47 0
	θ Ophıuchı	29 896	84 5	83 2	114 49 4 7
11 14 5 4	♂ Center				114 16 32 2
	θ Oplıuclı	9 917	84 0	83 9	114 49 9 1
12 14 1 0	♂ Ce ıter				114 19 25 8
	θ Oplıuchı	29 914	83 5	82 5	114 49 8 1
14 13 51 9	♂ Center				114 25 9 4
	A S C 1939	29 769	84 4	84 2	114 49 41 8
30 12 33 0	♂ Ce te				115 4 9 3
	A S C 1939	29 823	83 8	83 8	114 49 42 5
31 12 27 7	♂ Center				115 5 56 8
	A S C 1939	29 848	83 7	82 6	114 49 44 5
	(c)				115 14 2 8
June 2 12 17 0	♂ Center				115 9 15 0
8 11 44 7	♂ Center	29 872	84 2	83 7	115 6 21 5
	25 Scorpıı	29 920	84 3	83 6	115 13 4 8
	(e)				115 18 33 4
9 11 39 3	♂ Center				115 17 8 0
	25 Scorpı	29 898	85 2	84 2	115 13 3 0
	(e)				115 18 32 1
10 11 33 9	♂ Center	29 864	85 0	83 5	115 17 48 0
	Sco p	29 838	84 8	84 2	117 51 50 8
17 10 56 5	♂ Center				115 19 53 1
	(e)	29 836	84 5	84 2	115 18 32 0
	Scorpıı	29 830	84 2	83 9	117 51 53 0
21 10 35 6	♂ Center				115 19 19
24 10 20 4	♂ Center	29 876	84 8	84 2	115 18 24 7

Mean Time	Names	Barometer	Therm. Attached	Therm. Out	Observed N P D
1843 d h m		Inches			
	Sco p	29 836	84 4	83 9	115 11 33 7
June 27 10 5 6	♂ Center				115 17 17 6
	σ Scorpii	29 821	84 0	83 8	115 11 31 4
28 10 0 8	♂ Center				115 16 56 8
1845	45 Aquarii	29 844	83 5	81 5	104 3 13 1
July 22 14 17 0	♂ Center				106 58 40 5
	45 Aqu ri	29 842	83 9	82 9	104 3 12 5
25 14 4 7	♂ Center				107 12 6 1
	(a)				107 6 50 1
	45 Aquarii	29 846	86 1	87 0	104 3 12 8
26 14 0 5	♂ Center				107 16 59 5
27 13 56 3	♂ Center	29 842	86 3	85 9	107 22 0 0
	45 Aqu i	29 850	84 0	82 4	104 3 11 4
31 13 38 8	♂ Cente				107 43 44 2
	42 Aqu ri	29 826	84 4	82 5	103 34 36 2
Aug 1 13 34 3	♂ Center				107 49 28 0
	Aquarii	29 838	85 7	86 4	104 35 36 5
7 13 6 4	♂ Center				108 25 19 2
	Aquarii	29 824	83 6	82 3	104 35 36 0
8 13 1 7	♂ Center				108 31 21 3
	Aquarii	29 906	83 6	81 2	104 35 33 6
12 12 42 3	♂ Center				108 54 57 9
	35 Aquarii	29 877	81 9	79 3	109 14 54 6
16 12 22 5	♂ Center				109 16 54 7
	μ C p icorn	29 857	83 0	82 7	104 15 10 7
21 11 57 6	♂ Center	29 848	82 8	82 1	104 40 24 1
	μ Capricorni	29 936	84 2	83 4	104 15 10 7
	Pla I XXI 333				109 53 47 0
23 11 47 6	♂ N L	29 931	84 1	83 3	109 47 57 6
	♂ S L				109 48 29 7
	μ Capr corni	29 916	83 0	82 2	104 15 12 2
	P and XXI 33				109 53 49 0
26 11 32 8	♂ S L				109 58 7 1
	♂ N L				109 57 40 2
	μ Capricorni	29 900	84 3	83 5	104 15 11 5
27 11 27 9	♂ N L	29 884	84 2	83 5	110 0 16 1
	♂ S L				110 0 46 4

Mean Time	Name	Barometer	Therm. Attached	Therm. Out	Observed N P D
1845 d h m		Inches		°	
	μ Capricorni	29 880	84 4	84 3	104 15 14 8
Aug 28 11 23 0	♂ N L				110 2 34 2
	♂ S L				110 3 7 5
	δ Cap icorn	29 912	85 7	84 4	106 48 6 7
29 11 18 1	♂ S L				110 5 6 2
	♂ N L				110 4 36 8
	δ C pricorni	29 908	83 8	83 7	106 48 8 0
30 11 13 2	♂ N L				110 6 14 3
	♂ S L				110 6 47 6
	δ Capri or	29 917	84 4	83 3	106 48 6 4
31 11 8 4	♂ N L				110 7 37 0
	♂ S L				110 8 9 9
	δ Capricorni	29 972	85 6	84 6	106 47 59 7
Sept 2 10 58 9	♂ S L	29 960	85 5	84 6	110 9 42 7
	♂ N L				110 9 13 4
	Capricor	29 994	83 5	83 0	109 32 26 9
10 10 22 4	♂ N L				110 2 29 0
	♂ S L				110 2 57 8
	Capricorni	30 000	84 1	83 6	109 32 28 3
11 10 18 1	♂ N L				110 0 10 9
	♂ S L				110 0 38 4
	C pricorni	29 990	83 3	83 1	109 32 26 4
12 10 13 8	♂ N L				109 57 30 5
	♂ S L				109 57 57 2
	Capr corni	30 032	84 0	83 8	109 32 26 8
13 10 9 5	♂ N L	30 036	84 0	83 6	109 54 32 1
	♂ S L				109 54 59 3
	Cap ico n	30 044	84 0	83 4	109 32 26 8
14 10 5 3	♂ N L				109 51 15 6
	♂ S L				109 51 43 4
	Cap corni	30 076	84 0	83 6	109 32 27 7
15 10 1 1	♂ N L				109 47 40 0
	♂ S L				109 48 6 0
	Capricorn	30 034	81 2	81 3	109 32 27 5
17 9 53 0	♂ N L				109 39 40 3
	♂ S L				109 40 7 1
	Capricorni	29 958	82 3	81 3	109 32 27 7
19 9 45 1	♂ N L				109 30 30 3
	♂ S L				109 30 55 8
	Capricorn	29 960	83 6	82 0	109 32 27 1
20 9 41 2	♂ N L				109 25 29 4
	♂ S L				109 25 54 9

ECLIPSES

OF THE

SUN AND MOON,

AND OF THE

SATELLITES OF THE PLANET JUPITER,

TOGETHER WITH

OCCULTATIONS OF FIXED STARS BY THE MOON

IN THE INTERVAL 1838–1847

AS OBSERVED AT THE MADRAS OBSERVATORY

Observation of the Eclipse of the Moon on the 17th February 1840

The time of commencement was so very uncertain that I have not thought it necessary to place the observation on record

	Madras Mean Time				Madras Mean Time		
	H.	M	S		H.	M	S
The shadow Touches Tycho	6	13	6 7	The shadow Leaves Tycho	7	57	17 5
Covers ——	6	31	53 6	End of the Eclipse	8	27	55 5
Discovers ——	7	54	48 0				

The umbra was much confused with the Penumbra at the last Observation

Observed with the 5 feet Achromatic power 60

Observation of the Eclipse of the Sun on the 3d March 1840

	Madras Mean Time				Madras Mean Time		
	H.	M	S		H.	M	S
Beginning of the Eclipse	19	1	2 5	Leaves a small spot	20	33	26 3
A large spot touched	19	22	44 9	A large spot centre	20	34	53 1
The same spot covered	19	23	12 8	Same spot leaves	20	35	18 0
A large spot covered	19	24	14 6	Leaves a small spot	20	35	57 9
A small spot covered	19	24	34 5	A large spot centre	20	37	57 6
A large spot touched	19	28	34 8	Same spot leave	20	38	28 5
The same spot covered	19	29	10 7	A large spot centre	20	40	41 1
A small spot covered	19	30	53 4	Same spot leaves	20	41	17 0
A small spot covered	19	36	25 5	A small spot leaves	20	46	19 2
A large and long spot touched	19	49	7 4	A small spot leaves	20	49	50 6
The same spot covered	19	50	34 2	A large spot centre of the head	21	1	44 6
A small spot covered	19	51	46 0	Same spot leaves	21	3	12 4
A double spot covered	19	54	4 6	End of the Eclipse	21	33	40 4

Clear observation certain within 2

Observed with the 5 feet Achromatic with a power of 60

The above was observed by my Assistant *Annutacharyer* during my absence from India

Observation of the Eclipse of the Moon on the 5th February 1841

		Madras Mean Time					Madras Mean Time		
		H.	M	S.			H.	M	S
Beginning of the Eclipse		17	41	45 4	Copernicus	covered	17	59	13 5
Grimaldus	covered	17	42	48 2	Heraclide	touched	17	59	52 4
Galileus	covered	17	44	47 9	Tycho	touched	18	0	28 4
Gassendus	covered	17	49	3 2	Mare Imbrium	touched	18	1	34 2
Keplerus	touched	17	50	37 0	Tycho	covered	18	2	15 1
Keplerus	covered	17	52	22 7	Regiomontanus	covered	18	4	34 7
Aristarchus	covered	17	52	56 6	Albategnius	covered	18	6	1 5
Reinholdus	covered	17	53	51 4	Schikardus	covered	18	8	0 2
Mare Nubium	touched	17	54	36 3	Mare Vaporum	covered	18	11	28 5
Copernicus	touched	17	55	44 1					

Although low the Moon was very clear observation certain within 2 seconds Approaching twilight and the setting of the Moon prevented further observation The Earth's shadow was well defined

Observed with the 5 feet Achromatic power 60

The above was observed by my Assistant *Annutacharyer* during my absence from India

Observation of the Eclipse of the Moon on the 26th January 1842

		M d ns M Tim		
Beg nn g of the Ecl ı se		9	38	27 0
A t rchus	co e ed	9	45	53 8
G l leu	co red	9	45	50 8
H acl d s	toucl d	9	47	25 6
G n ldu	toucl ed	9	48	0 5
G ldus	co ered	9	51	29 9
Keı l ru	tou hed	9	52	0 8
O ea u Procellarum		9	53	38 5
Re holdus		9	55	59 1
Pl to	touched	9	56	54 0
Coper ıcus	co ered	9	58	8 8
Pl to	covered	9	58	37 7
E tostl e ıes	co red	10	2	22 1
M re Imbrıum	covered	10	7	27 3
M e Humorum	touched	10	7	3 3
Mare Serenıtatıs	touchcd	10	8	50 1
B l ldus	co e ed	10	12	22 5
Posıdon us	covere l	10	17	45 6

		Mad M	M	Tı
Me el us	cove ed	10	18	39 5
Pl ı ı	toucl ed	10	21	0 1
P t t	co eıed	10	22	12 9
Alb teg ıııs	co e d	10	28	23 9
M e Nub um	co e ed	10	30	36 5
M C tıum	co e ed	10	38	52 2
M e N cta ıs	o e ed	10	50	46 2
M e Humorum	out	11	24	22 7
G m ldu	wl olly o t	11	27	34 2
M e Humorum	wholly out	11	37	42 5
K ı lc	out	11	47	40 9
A ta chu	wholly out	11	50	13 5
Coı e ı	wl olly out	12	4	43 1
Alb t gnıu	wholly o t	12	9	39 3
M e I coı d tat s	wl olly o t	12	16	38 1
M re C ıstıum	ı l olly out	12	27	44 3
L d of the Ecl pse		12	31	41 4

Obsc ved with 5 f ct Achromatıc vith a power of 60

Tl e sky was ve y clear and dew fallıng δ Cancıı was near the ed e of the shadow and the observatıon was ceıtaın witl ıı 2

Observed by *Anuntacharyer* the head Assistant durıng my absence from Indıa

Observation of the Eclipse of the Sun on the 20th December 1843

	M lra M Tim			Obs rr	T l sc p	P
Begınnıng of the Eclıpse	20	2	37 8	B	42 ıncl	120
	20	2	37 8	Γ	5 fect	200
	20	2	39 8	A	42 ınch	120

At mıddle breadth of the ıllumınated portıon = 3 98 of the mıcıometer

	M lras M Tim					
E ıd of the Eclıpse	23	1	19 6	ꟼ	42 ncl	120
	23	1	21 6	ꓕ	5 fe t	200
	23	1	24 6	A	42 ıı cl	120

Tl e ky v s ı eıfectly cl and the obse atıons wcre consıdcıed very satısfactory the lctte s B S and A refer to my three Ass st ı ts *Baboo Sashoo* a ıd M W llıam Allcn

Observation of the Eclipse of the Moon on the 24th November 1844

	M l ns M Tim		
Begınn g of the Eclıpse	15	11	9 0
The hadow toucl es G ımaldus	15	14	8 5
touches Arıstarchus	15	28	26 2
covers A ıstarchus	15	29	36 0
touches Tycho	15	31	0 7
covers Tycho	15	32	41 5

	M l as Mean Tim		
The shadow coveıs Copernıcu	15	35	56 9
cove s Eratosthenes	15	38	46 5
touches Censorıus	15	52	40 2
covers C nsorıus	15	53	0 1
touches Plato	15	55	16 8
Total obscuratıon	16	18	30 8

Γlyıng clouds prevented more deta led observatıon The sl adow was partıcularly well defined and the observatıons ıs f r as tl ey go were very satisfactory Observed w th the 5 feet Achromatıc tl a poı er of 110

Observation of the Eclipse of the Moon on the 21st May 1845

	M dras Mean im M		M as M an Tim M
Begin ing of the Eclipse	7 37 36 2 T	The shadow touches Censorius	8 21 11 0 T 8 21 23 0 L
The hadow covers Grimaldus	7 41 58 5 L 7 41 59 5 T	covers Censorius	8 21 32 9 T
covers Aristaichus	7 57 27 0 T 7 57 32 9 L	touches Endymion	8 26 34 2 L 8 26 43 1 T
touches Tycho	7 58 56 7 L 7 58 56 8 T	covers Endym on	8 27 23 0 T 8 27 24 1 L
covers Tycho	8 0 0 6 T 8 0 2 5 L	covers Proclu	8 37 6 4 T 8 37 8 5 L
touches Copernicus	8 2 10 2 T 8 2 12 1 L	touche Mare Cristium	8 38 53 1 T 8 38 54 2 L
covers Copern cus	8 4 36 8 T 8 4 38 7 L	co ers Mare Cristium	8 43 30 3 T
covers Eratosthenes	8 7 54 2 T 8 7 57 2 L	Total obscuration	8 49 12 5 L 8 50 4 3 T
		Clouds p e ented further observation	
		Last conta t with shadow	10 52 38 9 T

T with 42 inch Telescope power 75 —L with 5 feet Achromatic power 60

The ob ervat on marked L ι e e made by C pt n L dlow of the Co ps of Eng neers ai d tho e marked T were made by myself O r d sagreeme t a to the time of tot l ob cur t o is e y large consid ing the circumstances but we each felt satisfied tl at our observation was good

Observation of the Eclipse of the Moon on the 13th November 1845

By reason of ha e the time of commencement of the Eclipse of the Moon could not be observed w th ordinary accuracy I estimated the time as near as ci cumstances permitted at 16 29 38 2 —Observed with the 5 feet Achromat c with a power of 60

The spots were not suffic ently well defined to admit of observation

Observation of the Eclipse of the Moon on the 24th September 1847

	M dras M an Tim M		M dras M an Tim M
Beg nning of the Eclipse	6 48 1 1	End of the E l pse	9 0 43 0

At the commencement of the Ecl pse tl e Moon was en eloped in halo a d ha e whe eby an un ert ty of 20 o 30 seconds attache to this ob ervation the Ecl pse p oceeded the h ze g adually dis ppeared but I w s unable to make any observation on the spots at the end of the E lipse the ky was tolerably clear and observation satisfactory

Observed with 5 feet Achromatic power 60

Observation of the Eclipse of the Sun on the 9th October 1847

On d rect ng the Telescope to the Sun at about ten minutes before the commencement of the Ecl pse there were several spots v ble on his d sc all bei g well defined with the except on of one s tuated nea to the edge bout to be e l psed this spot however I fancied had become much better defined at the time of commencement of eclipse and during the three or four minute which preceded it The sky was quite clear and the time of commencement of eclipse which was considered to be very certain and satisfactory was observed as follows

							Madras Mean Tim M
Observed by	W	w th 42 nch Achromatic	power	75	at	2 8	34 4
—— —	T	— 5 feet	——	—	60	—	35 9
—— —	W A	— 42 inch	——	—	45	—	35 9

W ef s t C ptai W te f th C rp f Madras Artill ry T to my lf and W A t M W lli m All f my A t t

OBSERVATION OF THE ECLIPSE OF THE SUN ON THE 9TH OCTOBER 1847 *(Continued)*

An attempt was made to observe the time of contact with and total obscurat on of a well defined d rk and double spot at 20 eco ds before the estimated time of contact the edge of tl e spot lo t its sha p es of definement and as t advanced to closer contact became mo e a d more i di t ct and confused—so as to p event my making even an approximate obser ation of the time at the other telescopes as above

	Madras M	Tim		
		M		
The first contact was noted at	2	25	15 1	by W A
— —— ——	2	25	33 1	— W

The total ecl pse of tl e spot or rather its shadow—for nothing beyond a faint shadow was visible towards the time of total obscuration—was observed as follows

		M dr	M an	l
			M	
By T w th 5 f et Achromatic power 60	at	2	25	50 6
By W A — 42 incl —— — 45	—	2	25	58 1

The above ren a l s apply equally to all three observers we each fancied that the time of total obscuration was delayed by the ppea ance of a lengthened shadow long after the substance itself must have been covered

Another si nilar observation was made of a double spot as follows

	M lras M	an	lm	
		M		
First contact was observed at	2	57	49 8	by W A
— — — — —	2	57	59 8	— W
— — — — —	2	58	0 8	— T
Total Obscuration was observed at	2	58	46 7	— T
— —— — — —	2	58	47 7	— W
— —— — — —	2	58	49 7	— W A

Botl Captain Worster nd Mr Allen agree in assign n the same appearances to tl is spot as exper enced in tl e observation of the last but my own impres ion was dist ct—that nothing particular had appeared we each had employed the same telescope save that on this last occasion I l ad used a power of 150

Durin my absence from the Observatory M Allen observed the first contact and total obscuration of a small spot as follows

		M dras M		Tim	
		H	M		
F rst contact	at	3	11	1 7	With 5 f et Achromat c power 150
Total Obscuration	—	3	11	21 7	

He noted that at the first contact no i d stinctness wl atever was visible but that at the time of total Obscuration the ndis tinctness and sl adow before obser ed was now equally obvious

Towards the end of tl e E l pse tl e Sun which had only 7 or 8 degrees altitude had become enveloped in haze hich rendered the observations which follow less satisfactory than could be desired

	M dras M an Tl		
		M	
End of the Eclipse observed by T	5	9	20 2
— — — — — W			21 7
— — — — — W A			25 2

Telescopes and powers as before noted

Eclipses of the Satellites of Jupiter

1838		I C	sco	w	M ra M T			REMARKS
1838					H	M		
J n 28	IV	Emers on	5 feet	110	9	39	4 4	
30	I	Imme n	5 feet	110	9	54	34 3	
Feb 4	II	Imme o	5 feet	110	10	27	17 5	
5	III	Im r n	5 feet	110	16	30	1 3	
Mar 17	I	Eme sion	5 feet	110	12	26	53 1	
19	I	Emer ion	5 feet	110	6	55	30 1	
26	II	Emersion	5 f et	110	7	24	29 5	
26	I	Eme on	5 fe t	110	8	48	46 7	
Apr 2	II	Eme s on	5 f et	110	10	1	47 8	
May 11	I	Eme sion	5 feet	110	9	11	56 1	
11	II	Eme sion	5 feet	110	12	25	21 3	
24	III	Eme sion	5 f et	110	7	22	3 8	Good obser at on
27	I	Eme ion	5 feet	110	7	29	58 6	Good obse tio
1839								
Feb 12	II	Imme s o	5 f et	110	14	18	12 4	Good obse t o
18	I	I nmer n	5 f t	110	11	3	50 9	
20	III	Immersio	5 fe t	110	11	9	42 5	
20	III	E ners o	5 f t	110	13	49	49 5	
25	I	Immersion	5 fe t	110	12	57	27 3	Good ob er at oi
27	III	Imme sio	f et	110	15	7	44 9	Ve y good obs t on
Mar 9	II	Immeısio	5 feet	110	11	17	37 5	Good ob ervati n
11	I	Immer i n	5 feet	110	16	44	33 4	A little ha y otherw se atisfactory
13	I	Imme o	5 f et	110	11	13	57 3	
16	II	Imme sion	5 feet	110	13	52	30 4	Veiy good obser at on
29	I	Immersion	5 feet	110	9	28	15 3	S tell te lo e to the b dy but otherw se good observation
Apr 4	III	I nmers on	5 f et	110	10	54	32 8	Satellite very close to the body observation not sat f ctory
4	III	Emers n	5 feet	110	13	34	49 5	
5	I	Eme on	5 feet	110	13	32	55 6	The Em too near the body of the Planet to admit of accuıate obsv
7	I	Eme ion	5 feet	110	8	1	9 9	S tell t t o e the Planet fo accur te obse ation
14	I	Emersion	5 feet	110	9	53	55 3	Good obser at o
17	II	Eme sion	5 feet	110	15	55	12 5	
28	I	Emeıs on	5 feet	110	13	44	37 3	
May 7	I	Eme sio	5 f et	110	10	5	20 2	
10	III	Eme io	5 feet	110	9	21	39 9	
1840								
Feb 5	I	Imme sion	5 feet	110	15	40	15 7	Cle obser at on good
6	II	Immersion	5 feet	110	13	10	35 7	Pl net lo clear ob at on satisfacto y
6	III	Imme sion	5 f et	110	13	55	40 3	Clea observat on satisfacto y
6	II	Emers on	5 feet	110	15	26	7 5	Clear ob ervation ood
6	III	Eme sio	5 feet	110	16	1	26 7	Clea obser at on e y good
12	I	Im ne on	5 feet	110	17	33	23 5	Planet in the e th cle obse ation sat sfactory
13	II	Imme n	5 feet	110	15	43	11 4	Clea ob e t on good
13	III	Imme on	5 feet	110	17	52	22 1	Tw l ght le r obse t on ti facto y
13	II	Eme s on	5 f et	110	17	59	14 0	Do do do do
21	I	Immeı on	5 feet	110	13	55	14 3	Pl et clea co en ent alt tude ob erv tion e y good
28	I	Imme s o	5 feet	110	15	48	41 6	Pla et the e th le r d w ob e at o good
Mar 8	I	Immersion	5 feet	110	12	10	49 1	Planet low cl obse t oı good
13	III	Emersio	5 f et	110	11	47	5 2	Planet clea ob e at on good
15	I	Imme on	5 feet	110	14	3	49 1	Do do do
20	III	Imme o	5 feet	110	13	40	47 9	Pl et high and cle r moo l ght ob ervat on satisf ctory
20	III	Emer i n	5 fe t	110	15	46	54 2	Pl net clear moo l ght ob e atio good
22	I	Imme s o	5 feet	110	15	56	51 5	Planet l gh moon l ght clea ob ervation good
24	I	Immer ion	5 feet	110	10	26	9 1	Pl n t lo lear ob er t on good
27	III	Immersion	5 feet	110	17	36	8 4	Pla et of on ie t altitude tw light observation sat factory
31	I	Immers on	5 feet	110	12	20	4 8	Do do do fly g loud do
Apr 3	II	Imme ion	5 feet	110	9	33	56 3	Pla et low and t emulous ob e ation satisfacto y
7	I	Imme sion	5 feet	110	14	13	50 1	Pl n t the e th cl r ob e atio good

Eclipses of the Satellites of Jupiter (Continued)

1840	ILIT	I E	SCO	P	M M T	REMARKS
1840					M	
Ap 9	I	Immersion	5 feet	110	8 41 40 5	Planet e y low and t emulous ob er at on not satisfacto y
10	II	Immers on	5 feet	110	12 8 18 1	Planet e y l obser at on good
14	I	Immers o	5 feet	110	16 7 12 1	Clear moon l ght obseiv tion e y good
16	I	Immersion	5 feet	110	10 36 1 5	Do do do s t factory
17	II	Imme s on	5 feet	110	14 42 2 8	Moon near ha y obser ation not satisfactory
23	I	Immersion	5 feet	110	12 29 58 3	Clear obsei ation very good
24	II	Immers on	5 feet	110	17 16 28 8	Tw l ght ha y obse v tion not satisfactory
30	I	Immer ion	5 feet	110	14 24 15 2	Plan t lear obser tion good
May 2	I	Immersion	5 feet	110	8 52 12 2	Plan t ery clear obse vation sat sfactory
2	III	Imme sio	5 feet	110	13 25 54 3	Planet l igh and very clear observ tion good
5	II	Eme sion	5 feet	110	11 25 20 9	Do do do do
11	I	Emers on	5 feet	110	7 23 11 9	Planet low th n l aze obse t o s t f cto y
12	II	Emc ion	5 feet	110	14 0 13 1	Pla t l gh a d veiy lea obs vat on iot sat f cto y
16	I	E nersion	5 f et	110	14 48 21 5	Planet high full moon ai very clear ob ervat on good
18	I	Eme sion	5 feet	110	9 17 9 8	Pl iet at con enient altitude clear observation very good
19	II	Emersion	5 feet	110	16 36 30 0	Tl in haze observation unsatisfactory
25	I	Emersion	5 feet	110	11 11 5 9	Planet very high clea observat on good
30	II	Eme ion	5 feet	110	8 27 5 2	Planet at a convenient altitude ve y clear obse atio very good
31	III	Emersion	5 feet	110	7 25 15 0	Do do do do observation good
June 1	I	Emersion	5 feet	110	13 5 34 9	Planet clear observation very good
3	I	Emersion	5 feet	110	7 34 19 6	Observation good
6	II	Emersion	5 feet	110	11 4 5 3	Haze observation not satisfactory
26	I	Emersion	5 feet	110	7 46 48 0	Planet near the zenith clear observat on very good
July 1	II	Emersion	5 feet	110	8 10 24 2	Planet n the enith ery clear ob e vatioi at f cto y
Aug 27	I	Emersion	5 feet	110	6 32 40 4	Planet su ffci tly higl tl i l a e obser ation ti facto y
Sept 19	I	Emers on	5 feet	110	6 42 43 2	Pl net ery cl ar con enient altitude observation good
Oct 12	I	Emersion	5 feet	110	6 55 6 8	Clea observation good
1841						
Jan 8	I	Immersion	5 feet	110	16 31 16 3	Planet low but very clear moon light observation satisfactory
12	II	Immersion	5 feet	110	17 35 50 1	Planet at a con enient alt clear tw light obse vation sati factory
22	III	Immersion	5 feet	110	16 35 23 4	Planet sufficiently high ery clear obse vation good
31	I	Immers on	5 feet	110	16 40 7 9	Planet at a convenient altitude air clear obse vation ery good
Feb 13	II	Imme sion	5 feet	110	17 8 54 4	Planet sufficiently high a r clea obser ation satisfactory
23	I	Immersion	5 feet	110	16 49 5 1	Planet high and clear observation pretty good
27	III	E ne o	5 feet	110	14 42 26 1	Planet low and clear tremulous observation satisfactory
Mar 4	I	Immersion	5 feet	110	13 10 48 4	Planet in the horizon tremulou clear observation sat sfactory
6	III	Immers on	5 feet	110	16 20 52 1	Planet suff ciently h gh flying clouds obser ation satisfactory
10	II	Imme s o	5 feet	110	14 4 55 6	Planet low thin haze observation other i e satisfactory
10	II	Eme sion	5 feet	110	15 31 48 3	Planet sufficiently high and clear moon light observation good
11	I	Imme sion	5 feet	110	15 4 20 3	Planet con enient alt flying clouds moon l ght obser satisfactory
17	II	Imme sion	5 feet	110	16 37 35 6	Planet ery high flyi g clouds observation satisfactory
27	I	Immers on	5 feet	110	13 19 37 0	Pla et sufficiently high and clear observation good
Apr 3	I	Imme s on	5 feet	110	15 13 11 7	Obse v tion satisfacto y
10	I	Immersion	5 feet	110	17 8 59 5	Planet ery h gl very clear observation good
11	III	Immers o	5 feet	110	12 9 12 9	Planet low and clear observation satisfactory
11	II	Imme sion	5 feet	110	13 33 14 1	Planet sufficiently high and clea observation good
11	III	Eme sion	5 feet	110	14 28 55 0	Pl net h gh flying clouds observation good
18	II	Imme sion	5 feet	110	16 6 10 4	Pla et in the ze ith ery clear observation satisfactory
18	III	Imme sion	5 feet	110	16 7 20 2	Observat on good
19	I	Immer ion	5 feet	110	13 27 59 6	Planet clear observation very good
28	I	Immersion	5 feet	110	9 50 55 0	
May 3	I	Imm rsion	5 feet	110	17 16 26 7	Planet low but clear twil ght ob ervation otherwi e goo l
5	I	Immersion	5 feet	110	11 45 4 5	Planet ufficiently high and cle r full moon obser ation satisfactory
19	I	Immersion	5 feet	110	15 33 27 0	Pla et l gh and ery clea ob ervation good
24	III	Immer o	5 feet	110	11 56 12 9	Planet very high and clear obser ation go d
28	I	Imme sion	5 feet	110	11 56 4 6	Planet l gh flyi g clouds observation satisfactory
June 14	II	Emersion	5 feet	110	15 5 16 9	Pla et low but clear observat on good

Eclipses of the Satellites of Jupiter (Cont ued)

1841	ll	E	el sco	P	Madra M	REMARKS
1841					M	
June 15	I	Eme s on	5 feet	110	6 51 55 9	Planet low and e y clear twilight good obse at on
20	I	Eme s o	5 feet	110	14 18 18 2	Planet uffic ently h gh ha e ob ervation othe w se good
29	III	Eme o	5 f et	110	10 23 11 9	Pla et h gh rather l azy moon light ob ervation otherwi e good
29	I	Eme o	5 feet	110	10 41 44 1	Pl et h gh and cle observation good
July 13	I	Eme on	5 feet	110	14 31 16 0	Pl net ery low a d e y clear do do
31	I	Eme on	5 feet	110	7 18 24 0	Planet high and clear obser ation sati factory
Aug 3	II	Eme o	5 feet	110	9 18 28 1	Do do do good
23	I	Eme on	5 feet	110	7 32 47 3	Planet h h haze ob ervation otherwise good
Aug 30	I	Eme io	5 feet	110	9 27 1 8	Pla et suffi tly h gh a d e y cl a moo light obser pretty good
Sept 4	II	Imme o	5 feet	110	6 24 14 8	Pl et n the enith thin ha e tw l ght obser ation otherwise good
15	I	Eme io	5 feet	110	7 46 30 7	Planet e y clear obser ation good
Oct 8	I	Eme sio	5 feet	60	8 0 18 6	
1842						
Feb 13	I	Imme io	5 feet	60	15 54 31 9	Pl net the ho i o t emulou clear obse vation othe wise good
Ma 15	IV	Immer	5 feet	110	15 52 31 6	Pl et l dew obser ation good
15	IV	Em on	5 f t	110	17 29 35 6	Plan t e y cl r tw l ght obse tio atisf cto y
21	III	Em o	5 feet	110	14 14 24 9	Pl net tl e ho on trem lous clea ob e tion satisfactory
28	III	Imme s n	5 fe t	110	15 8 33 5	Pla et low and ve y cle r obser t o tisfacto y
30	I	Imme s on	5 feet	110	16 20 27 0	Planet ery cle r moon light obser at on good
Apr 12	II	Imme on	5 feet	110	15 12 56 7	Pl net suffi ently l gh nd ery clear ob e t on good
15	I	Imme o	5 feet	60	14 37 13 3	Pl net ufficiently high and h e ob er ation satisfact y
May 8	I	Imme ion	5 feet	120	14 46 35 4	Ve y s t f cto y obse t on
15	I	Imme io	5 feet	60	16 39 49 1	Fai ob e at o p etty clear
21	II	Imme o	5 feet	120	17 18 56 8	G od obse at on not th tanding that it was broad day l ght
24	I	Imme n	5 feet	110	13 2 37 4	Pl net sufficiently high and moon light ob e at o good
July 27	IV	Imme on	5 feet	110	15 15 52 67	
Oct 7	II	Eme o	5 feet	110	10 29 14 1	
Dec 21	I	Emersion	5 feet	110	6 19 3 2	Planet low and clear observat on good
1843						
Apr 11	I	Immer ion	5 feet	60	16 0 45 1	
13	II	Imme n	5 feet	60	17 6 19 4	
May 4	I	Imme o	5 f et	60	16 9 14 5	H e
June 1	III	Imme ion	5 f et	60	14 55 0 4	
16	II	Imm o	5 f et	60	16 27 13 9	
Sept 14	I	Em s on	5 feet	60	12 9 50 2	Pl net high and clear
23	I	Eme on	5 feet	60	8 33 49 3	
23	I	Eme si	46 I	60	8 33 42 3	
24	II	Em r o	5 feet	110	7 23 21 2	
24	III	Eme o	5 feet	110	10 37 14 3	
Oct 23	I	Eme s o	5 feet	110	10 45 26 5	
No 24	I	Emersion	5 feet	110	7 26 37 7	
1844						
Jan 9	I	Eme s on	5 feet	110	7 57 35 9	
24	III	Eme sion	5 feet	110	7 5 10 8	
June 27	II	Emer on	5 feet	110	13 28 12 0	
30	I	Imme s on	5 fe t	110	16 22 14 3	
July 23	I	Immers o	5 feet	60	16 33 40 2	
Aug 4	III	Immer io	5 feet	60	16 6 33 8	
17	I	Imme ion	5 feet	60	11 11 14 9	
30	II	Imme sion	5 feet	60	10 13 43 6	
Sept 9	I	Imme s on	5 feet	200	11 24 13 2	
9	III	Imme ion	5 feet	60	12 12 15 2	
18	I	Imme s on	5 f et	110	7 47 8 7	Observation good
24	II	Eme o	5 feet	110	9 50 56 3	
25	I	Eme sion	5 feet	110	11 54 26 5	
Oct 1	II	Emer ion	5 feet	110	12 26 1 2	
2	I	Immersio	5 feet	110	11 20 0 4	

ECLIPSES OF THE SATELLITES OF JUPITER (Continued)

1844	S	I E	T	P W	M Mea T H	M	S	REMARKS
1844								
Oct 2	I	Emersion	5 feet	110	13	49	14 1	
4	I	Emersion	5 feet	110	8	18	35 2	
18	I	Emersion	5 feet	110	12	8	16 3	
19	II	Emersion	5 feet	110	6	54	35 2	
22	III	Immersion	5 feet	110	12	25	11 1	
25	I	Emersion	5 feet	110	14	4	30 1	
26	II	Emersion	5 feet	110	9	29	47 5	
27	I	Emersion	5 feet	110	8	33	34 0	
Nov 2	II	Emersion	5 feet	110	12	5	16 9	
3	I	Emersion	5 feet	110	10	29	14 5	
12	I	Emersion	5 feet	110	6	53	33 0	
19	I	Emersion	5 feet	110	8	49	55 5	
20	III	Emersion	5 feet	110	7	27	3 1	Flying clouds doubt
26	I	Emersion	5 feet	110	10	46	15 2	Flying clouds
27	II	Emersion	5 feet	110	9	10	11 2	
27	III	Emersion	5 feet	110	11	28	52 3	Flying clouds
Dec 4	II	Emersion	5 feet	110	11	46	5 2	
12	I	Emersion	5 feet	110	9	6	59 0	Haze
1845								
Jan 9	III	Immersion	5 feet	60	8	58	4 2	
20	I	Emersion	5 feet	60	7	44	59 9	
30	II	Emersion	5 feet	60	8	36	19 4	
Feb 14	III	Emersion	5 feet	110	7	51	24 2	
July 7	III	Emersion	5 feet	110	16	1	42 6	Very faint hazy
12	I	Immersion	5 feet	110	16	23	42 2	Good
14	III	Immersion	5 feet	110	17	43	17 2	Daylight
Aug 26	III	Immersion	5 feet	110	17	49	22 4	Faint
27	I	Immersion	5 feet	110	16	42	55 7	
29	I	Immersion	5 feet	110	11	10	35 1	
31	II	Immersion	5 feet	110	12	49	45 9	
Sept 12	I	Immersion	5 feet	60	14	58	48 2	Observation satisfactory
19	I	Immersion	5 feet	110	16	53	2 8	Moon near the planet
21	I	Immersion	5 feet	110	11	21	30 5	Faint haze
24	III	Immersion	5 feet	110	9	53	32 3	Unsatisfactory haze
24	III	Emersion	5 feet	110	12	0	1 7	Haze pretty good
25	II	Immersion	5 feet	110	9	57	21 9	Haze pretty good
28	I	Immersion	5 feet	110	13	15	32 5	Haze faint
Oct 1	III	Emersion	5 feet	110	16	1	9 7	Observation satisfactory
2	II	Immersion	5 feet	110	12	33	51 7	Observation good
7	I	Immersion	5 feet	110	9	38	40 4	Observation good
23	I	Immersion	5 feet	110	7	56	20 7	Satellite near the body of Jupiter
27	II	Immersion	5 feet	150	9	39	54 7	Observation good
30	I	Emersion	5 feet	150	11	58	58 6	
Nov 1	I	Emersion	5 feet	110	6	27	41 9	Good
3	II	Emersion	5 feet	110	14	39	49 0	Flying clouds
6	III	Emersion	5 feet	110	12	5	1 7	
6	I	Emersion	5 feet	110	13	53	43 0	Good
8	I	Emersion	5 feet	110	8	22	9 9	Observation satisfactory
15	I	Emersion	5 feet	110	10	17	33 6	Planet in the zenith good
29	I	Emersion	5 feet	110	14	9	35 7	Unsatisfactory flying clouds
Dec 17	I	Emersion	5 feet	110	6	57	54 1	
19	III	Immersion	5 feet	110	10	16	38 1	
24	I	Emersion	5 feet	110	8	54	12 9	Haze
1846								
Jan 16	I	Emersion	5 feet	110	9	10	56 1	Unsatisfactory flying clouds
23	I	Emersion	5 feet	110	11	6	51 2	
24	III	Immersion	5 feet	110	6	28	40 6	Very faint

Eclipses of the Satellites of Jupiter *(Continued)*

1846	S LL	I E	SC	P WE	M BA M TIM	REMARKS
1846					M	
24	II	Emer on	5 feet	110	8 33 2 3	Flying clouds
31	III	Imm o	5 feet	110	10 30 53 3	Very fai t
Feb 1	I	Emer io	5 feet	110	7 31 45 9	Moon near Jupiter
8	I	Emer ion	5 feet	110	9 28 4 9	
24	I	Eme sion	5 feet	110	7 48 50 5	Good
25	II	Eme s on	5 feet	110	8 14 27 7	Good
Mar 8	III	Imme on	5 feet	110	6 42 53 1	Observation very satisf ctory
8	III	Emersion	5 fe t	60	8 39 43 9	
29	II	Emersion	5 feet	60	7 57 20 8	Observat on satisfacto y
July 29	III	Immer ion	5 feet	110	14 56 7 8	Very f int flying clouds
29	III	Eme sio	5 feet	110	17 0 41 5	Faint haze unsatisfactory
31	II	Immers on	5 feet	110	15 9 34 6	Very faint haze
Aug 25	II	Eme o	5 feet	110	14 52 36 6	Very good ob ervation
Sept 26	II	Immer io	5 f et	110	12 6 1 0	Ve y good obse t on
26	II	Eme ion	5 f et	110	14 39 20 0	S t ll te on the edge of the body good
Oct 23	III	Imme sio	5 f et	110	14 50 56 6	Satisf cto y obse atio
23	III	Emer io	5 feet	110	17 2 9 1	S tisfactory observatio
26	I	Imme s o	5 feet	110	11 25 30 1	Sat factory ob ervation
Nov 4	II	Immer o	5 feet	110	14 28 50 0	Planet in the zenith moon near and very bright good
9	I	Imme s o	5 feet	110	15 12 57 5	Planet high good observation
16	I	Immersion	5 feet	110	17 7 0 2	
18	I	Immersion	5 feet	110	11 35 39 1	The satell te seemed to have disappeared at 11h 35m 32s but a few seconds afterwa ds it eappeared u sati f cto y
Dec 10	II	Emersion	5 feet	110	6 5 39 8	
1847						
Jan 12	I	Emer ion	5 feet	110	10 34 19 0	
18	II	Emer o	5 feet	110	8 25 31 4	
19	I	Emer on	5 feet	110	12 29 41 0	Very satisfactory observation
21	I	Emer io	5 feet	110	6 57 37 5	
25	II	Emer on	5 feet	110	11 1 55 3	S tisf ctory
28	I	Eme ion	5 feet	110	8 54 26 0	Ve y satisfactory ob er tion
Feb 4	I	Emer io	5 feet	110	10 50 4 9	
15	III	Imme sion	5 feet	110	6 55 45 0	
15	III	Eme s o	5 feet	110	9 20 34 8	
19	II	Eme s on	5 feet	110	8 8 18 1	Satisfactory
22	III	Immers on	5 feet	110	10 57 32 7	
27	I	Emer on	5 feet	110	11 6 41 5	S t f ctory observation
Mar 8	I	Eme s on	5 feet	110	7 31 22 7	Good ob ervation
23	II	Eme s o	5 feet	110	7 48 49 3	Obser ation ery good
30	III	Immers on	5 feet	110	7 1 51 6	
	III	Emers on	5 feet	110	9 33 27 6	
31	I	Emer on	5 feet	110	7 47 55 6	Good observat on
Apr 7	I	Emer ion	5 feet	110	9 45 0 8	Good observation
23	I	Emer ion	5 feet	110	8 7 19 6	

Occultation of Stars by the Moon

Date	Day	Observation		Madras Mean Time h	m	s
1840 June	2	I mersio of 40 *G m no* b hind the Moon s d rk limb obser ed with tl e 5 feet Achromat c (po 60) Cl ob e at on good	at	7	4	26 1
		I nme on f 39 *Gemin r* beh nd the Moon s dark limb obse ed with the 5 feet A h omat c (p 60) Cle obser ation good	at	7	5	44 4
		Imme on of 37 *Gemi or* bel ind tl e Moon s dark limb obser ed w th the 5 feet Ach omat c (pov e 60) Moon was lo v but the sky being clear tl e obser ation wa con idered to be good	t	7	59	46 0
	4	I iers on of a small star bel ind th Moon d rk limb observed with the 5 feet Achromatic (power 60) Moo w s low and tl e sky co e ed with thin ha e but observation satisf cto y	at	7	31	38 2
July	2	Immer ion of 8 *Leo is* (Mag 5) bel id the Moon dark limb	at	7	31	45 1
		Do 7 *Leonis* (Mag 8) do do do		7	33	50 3
		Do 9 *Leon* (Mag 8) do do do The Moon was low but very cle r observation ertain within a quarter of a second		7	36	20 4
December	27	I me sion of 837 *Capricorni* behind the Moon s da k limb obsei ed with the feet Achro n tic (power 60) The Moon was ery low but cle r observation satisfactory	at	6	26	33 7
		I nm rsion of a sm ll star in *Capricornus* behind the Moon s dark limb with the 5 feet Achromatic power 60 (9th M g)	t	7	56	38 9
	28	Imme on of 919 *Aquarii* behind the Moon s dark liml observed with tl e 5 feet Acl romat (ı owe 60) The Moon was low but very clear observation ery good (Mag 5 6)	at	8	20	3 0
1841 January	4	Immersion of P *Tauri* bel id tl e Moon s dark limb observed with the 5 feet Achromatic (power 60) The Moon was in the zenith and clear observation satisfacto y (Mag 6)	at	8	30	28 2
	6	Immersion of 49 *Geminor* behind the Moon s da k limb observed with tl e 5 feet Achromatic (power 60) clear observation very good (Mag 5)	at	6	15	47 4
	29	Immer ion of 73 *Ari tis* behind tl e Moon s dark limb obse ved w th the 5 feet Achromatic (power 60) Moon was at a conven ent altitude and clear observation good	at	9	11	14 0
Feb uary	26	Imme on of *Ariet s* behind the Moon s dark limb observed with the 5 feet Achromatic (powe 110) The Moon was suff ciently h gh and cleai observation pretty ood	t	7	4	44 9
March	2	Immer o of 37 *Ge nor* bel d tl e Moon dark limb obsrvd witl the 5 feet Achromatic (power 60) The Moon was n the zenith and very clear obser ation certa n within 1	at	7	33	59 1
	3	Immersion of 82 *Geminor* behind the Moon s da k limb observed with the 5 feet Achromat c (powe 60) The Moon was in the zenith and very clear observation good	at	7	46	20 1
	3	Immersion of 84 *Gemin r* behind the Moon s dark limb observed with the 5 feet Achromatic (powe 60) The Moon in the meridian very clear observation good	at	8	25	21 1
	4	Immersion of *Cancri* behind the Moon s dark limb observed with the 5 feet Achromatic (powe 60) (M g 5 6)	t	8	8	58 2
		Do do 4 5	at	8	14	59 7
		Do do 4	at	8	25	49 4

Occultation of Stars by the Moon (C t d)

			M l as M		m
1841					
M rcl	4	Imm on of tar compo ing tl e N bulæ n *Cancer* behı d tl e Moo s da k l mb ob erved w tl the 5 feet Acl rom tı (power 60) M g 3 4	t 8	27	31 9
		D do do 6 7	t 8	43	9 6
		Do do do 3 4	t 8	45	14 2
		D do d 3 4	t 8	52	30 0
		D do do 3 4	t 8	56	12 4
		D do do 4 5	t 9	4	19 0
		Do do do 4 5	t 9	11	17 4
		Do do d 4	at 9	15	19 2
		The Moon w tl e en tl a ıd cle the m lle staıs became too f nt to be obser ed o pp oa h ng the moo l ght Ob e atıons e y ce taın w th n e o d (tl e aı wa ery pl nt)			
Ma ch	5	Imme o *Leonis* bel ı d the Moon daık lımb ob erved th tl e 5 feet Achromatıc (po ve 60) (M g 4 5)	at 7	27	47 5
		Tl e M on was ufficıently h gh and cl ar obser at o good			
		Imme o of *ψ Leonis* beh nd the Moon d rk lımb ob e ed w th th 5 feet Ach omat c (powe 60) (M g 5 6)	t 8	59	54 3
		Tl Moo w e y h gh a d cle tl e ta b ne e y f nt o pı roa h ng tl e Moon s bo de ob e atıo l ow e s tısf to y			
Apııl	18	I mer o of 22 *Piscium* beh nd tl e Moo enl l te ed lımb obseıved wıth the 5 feet Achrom t (po e 60) (M g 4 5)	t 16	19	31 0
		Tl e Moon e y low a d cle r ob e vat on ce ta n w tl ın a co d			
		Immersıo of 25 *Piscium* behınd th Moon l gl tened l mb bser ed w th tl e 5 feet Achrom t (pow 110)	t 17	22	1 6
		Moon was at a con enıent alt tude wıth tw l ght suffic ently ad an ed to rendeı observat o d ffıcult obse at on p etty good			
Ju e	16	Imme ıon of *Tauri* behınd the Moo enl ghtened lı nb obse ed w th the 5 feet Ach omat (pow 110) (M g 5)	t 17	12	44 2
		Tl e Moon w low d l the sta w s suffıcıently d st ct notw th t d g the tw l gl t tısf cto y			
July	14	Eme ıo of *Ta ri* f om behınd the Moon d k l mb ob erved wıth the 5 feet Acl om t (pow 110) (M g 4 5)	t 16	55	2 0
		The Moo was suffıcıently h gl l a ob e at o t f to y w th 2			
Octobe	19	Imme s on f *Sagittarii* (5 6 M g) bel nd the Moon s da k l mb bse ed w th the 5 feet Ach omat (powe 60)	t 6	38	23 1
		The Moon wa low but y cle obser at o good			
		Immer o of 62 *Sag tt ıı* (5 6 M g) behınd the Moon dark lı nb obser d w th the 5 feet Achromat (power 60) l ob tıon good	t 6	57	32 9
December	8	I nme o of *V g ıs* (5 6 M g) beh d the Moon e l gl te ed l mb ob er ed wıth the 5 f et Ach om t c (pow 60)	t 17	19	6 8
		Tl e Moon suffıc ently hıgh d clear obser at on s t sfactoıy			
1842					
January	15	Imme ıon of a mall st bel d the Moon da k lımb bse ed wıth the 5 feet A h o t (pow r 110)	t 7	1	13 5
		The Moon w s lo v but ery cl a obse atıon good			
Ma ch	15	Imme sıon of *Piscium* (6 7 M g) behınd the Moon s d k l mb ob erv d w th the 5 feet Ach o m t (powe 60)	t 7	23	36 4
		Imme ıon of *Piscium* (4 5 Mag) beh nd the Moo s da l l mb observed wıth the 5 feet A hro m tıc (po ver 60)	at 7	24	5 2
		The Moo wa e y low but clear obse vat on good			

Th Ob rv t nd mark ar by my A tant *A u t l y* m d d g my b f m I d

OCCULTATION OF STARS BY THE MOON (*Continued*)

Date		Observation		Madras Mean Time h	m	s
1842 March	17	Immersion of the *Pleiades* behind the Moon's dark limb observed with the 5 feet Achromatic (power 60)	at	7	15	6 8
		Do M 6 7 *Pleiades* do	at	7	24	46 2
		Do do 6 7 do do	at	7	40	19 1
		Do do 4 do do	at	8	4	8 2
		Do do 4 5 do do	at	8	4	46 6
		Moon was convenient altitude and clear observation good				
		Do do 6 do do	at	8	25	4 3
		Do do 4 5 do do	at	8	28	12 8
		Do do 6 do do	at	8	30	45 3
		Do do 6 7 do do	at	8	58	42 7
		Moon became low and was occasionally obscured by flying clouds observation good				
	19	Immersion of *Geminor* (5 Mag) behind the Moon's dark limb observed with the 5 feet Achromatic (power 60) The Moon was sufficiently high clear observation good	at	8	44	53 9
	30	Immersion of *Scorpii* behind the Moon's enlightened limb with 5 feet Achromatic (power 110) Moon was high and clear observation very good	at	16	42	4 5
1843 January	5	Immersion of a small star behind the Moon's dark limb observed with the 5 feet Achromatic power (110)	at	6	50	44 7
May	4	Immersion of a small star behind the Moon's dark limb observed with the 5 feet Achromatic power (60)	at	7	57	29 7
	4	Immersion of a small star behind the Moon's dark limb observed with the 5 feet Achromatic (power 60)	at	8	7	2 2
June	1	Immersion of a small star behind the Moon's dark limb observed with the 5 feet Achromatic (power 60)	at	7	53	15 7
December	27	Immersion of a small star behind the Moon's dark limb observed with the 5 feet Achromatic (power 60)	at	7	49	3 7
		Immersion of a very small star behind the Moon's dark limb observed with the 5 feet Achromatic (power 60)	at	8	37	12 8
		Immersion of a bright star behind the Moon's dark limb observed with the 5 feet Achromatic (power 60)	at	9	9	1 6
1844 January	23	Immersion of a small star (about 6th Magnitude) behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	7	14	33 8
	26	Immersion of a very bright star behind the Moon's dark limb in the constellation *Pegasus* observed with the 5 feet Achromatic (power 110)	at	7	17	22 4
November	14	Immersion of a bright star (of 5th Magnitude) behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	6	3	14 2
		Immersion of a star (of 6th Magnitude) behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	6	10	31 0
		Immersion of a star (of 7th Magnitude) behind the Moon's dark limb observed with the 5 feet Achromatic (power 110)	at	6	19	25 5
1845 January	10	Immersion of a star (of 5th Magnitude) behind the Moon's dark limb observed with the 5 feet Achromatic (power 60)	at	7	10	57 8
February	10	Immersion of a bright star behind the Moon's dark limb with 5 feet Achromatic (power 60)	at	7	29	29 4
June	9	Immersion of a bright star (about 2d Mag) behind the Moon's dark limb observed with the 5 feet Achromatic (power 60)	at	7	46	4 2

Occultation of Stars by the Moon (*Co tinued*)

			Madras M M		T m
1845 September	10	Immersion of a st (of 5th M g) in the constellation *Sagittarius* behind the Moo s d k l mb observed with the 5 feet Ach om tic (pow 60) t	7	32	12 0
		Imme n of a t (of 4th M g) in the con tellation of *Sag ttarius* b hind the Moon s dark l mb obse ed with the 5 feet Ach om ti (power 60) lea ob erv tion s t sfa tory t	8	6	47 4
October	5	Immer ion of a br ght star beh d the Moon s d k limb observed with the 5 feet Achromat c (power 110) t	7	28	14 0
	8	Imme io of a small star behind the Moon s dark limb obse ved with the 5 feet Achrom t c (power 110) at	7	22	5 3
		Imme on of a small star behind the Moon s dark limb obser ed with the 5 feet Ach omat c (powe 110) at	7	26	20 6
		Immers on f a br ght star behind the Moon dark limb observed with the 5 feet Ach omatic (power 110) at	7	34	25 3
		Imme o of a small sta behind the Moon s dark limb observed with the 5 feet Achromatic (powe 110) t	8	8	40 7
		Immer on of ery b ght star behind the Moon s dark l mb observed witl the 5 feet Achromatic (power 110) t	9	36	56 3
	9	Imme ion of a brigl t st in *Capricornus* behind the Moon s dark limb observed with the 5 feet Achromatic (power 110) at	7	31	59 0
		Immers on of a small star behi d the Moon s dark limb observed with the 5 feet Achromatic (power 110) at	8	40	47 8
		Immers on of a bright t r (of the 5th Mag) beh nd the Moon s dark limb observed with the 5 feet Achromatic (powe 110) at	10	25	51 6
No ember	3	Imm on of a tar behind the Moon s dark limb observed with the 5 feet Achromatic (powe 110) at	7	23	21 2
	4	Imme on of a tar (of 6th M g) behind the Moon s da k l mb observed with the 5 feet Achromatic (powe 110) t	7	14	44 6
		Immersion of a st r (of 7th M g) behind the Moon s dark limb observed with the 5 feet Acl romatic (power 110) at	7	27	8 6
	5	Imme ion of a star (of 5th Mag) behind the Moon s dark limb observed with the 5 feet Ach omatic (power 110) at	6	32	26 3
		Immers on of a star (of 7th Mag) behi d the Moon s dark limb with the 5 feet Achromatic (power 110) at	6	36	11 1
		Imme s on of a st r (of 7th Mag) behind the Moon s dark limb with the 5 feet Ach omatic (power 110) at	6	51	5 8
	6	Imme ion of a tar (of 3d Mag) behind the Moon s da k limb obser ed with the 5 feet Achromatic (power 110) at	6	56	50 3
		Emersion of the abo e star from behind the Moon s enlgtd limb with 5 feet Achromat c (power 110) at	8	19	37 4
		Imme sion of a bright sta behind the Moon s dark limb ob erved with the 5 feet Achromatic (power 110) at	9	31	2 8
	7	Immer ion of a br ght star behind the Moon s dark limb observed with the 5 feet Achromatic (power 110) good at	9	36	4 1
1846 Janua y	31	Immersion of a bright star behind the Moon s dark limb observed with the 5 feet Achromatic (power 110) at	8	4	18 3

OCCULTATION OF STARS BY THE MOON (Cont d)

1846			M dras Mea	n T	im
			H	M	S.
M ch	1	Imme ion of br gl t ta of (5th Mag) behind the M o d rk limb ob e ed with the 5 feet Acl r mati (po e 110) t	7	48	12 2
		Imme ion of a b ght st of (3d Mag) b l i d the Moo dark l mb ob e v d w th the 5 f t Acl o t c (powe 240) at	8	42	39 2
	2	Occult t o of ta of tl e (7th M g) by the Moon s d k li b obse ed w th the 5 f et Achrom t (po e 110) e y s tisf cto y ob e t o t	6	52	53 1
		O cultati n of a t of tl e (3d M g) by tl Moon s d k l mb ob er ed with the 5 feet Acl o ti (po er 110) ti f to y ob e at on t	7	43	47 1
		Occ lt ti of tar of the (3d Mag) by the Moon s d rk l mb observed w th the 5 feet Achromat c (power 110) ood obs vatio at	8	58	54 3
	3	Occ ltatio i of a ta of the (7th M g) by the Moo d k l mb obser ed witl the 5 feet Achrom ti (po e 110) ti f cto y b e atio t	7	8	20 2
		Occultat i of a br ght star by the Moon s d rk limb obser ed with the 5 feet Achromat c (power 110) e y good t	9	42	52 9
	5	Occultat on of star of tl e (5th Mag) by the Moon s dark limb observed with the 5 feet Achromatic (powe 110) ery good obser ation at	7	59	59 4
		Occultation of a b ght tar by the Moon s dark limb observed with the 5 feet Achromat c (power 110) ery good at	11	8	34 4
	8	Occultation of a st of the (3d Mag) by tl e Moon s da k limb observed with the 5 feet Acl omatic (power 60) very sat sfa to y obser ation at	7	44	15 5
	31	Occultation of a star of the (2l Mag) by the Moo s lark l mb obser ed with the 5 feet Ach omatic (powe 110) c y good obse vat on at	6	50	44 3
April	28	Occultat on of a b ght sta by the Moon s dark l mb observed with the 5 feet Achromat c (power 110) good obse v tio at	7	52	37 1
May	2	Occultation of a b ight sta bel ind tl e Moon d rk limb observed with the 5 feet Achromatic (powe 110) ve y satisfacto y ob er ation at	7	16	52 1
September	24	Occultat on of a br ght star bel ind the Moon s dark limb observed with the 5 feet Achromat c (power 110) ve y good obser at on t	7	46	53 1
	26	Occultation of a st bel ind the Moon s dark li nb obser ed with the 5 feet Achromatic (power 110) good obser atio at	6	55	27 8
		Occultat on of a star behind the Moon s dark limb observed w th the 5 feet Achromat c (power 110) very good observatio t	7	22	24 9
		Occultation of tar behind tl e Moon s dark limb ob erved with the 5 feet Achromatic (power 110) t	8	30	8 3
	28	Occultation of ϱ' S gittari behind the Moon s dark limb observed with the 5 feet Achromatic (power 110) good at	8	15	4 6
		Occult tion of st r by tl e Moon s da k l mb observed with the 5 feet Achromatic (power 110) obse ation satisfactory at	9	28	56 6
	28	Oc ltation of a br gl t sta by the Moon s da k l mb obse ved th the 5 feet Achromatic (powe 110) satisfactory t	9	30	50 2
		Occult t on of a sm ll tar by the Moon s dark limb observed with the 5 feet Acl romatic (power 110) satisf ctory at	10	11	57 6
		Occultation of small star by the Moon s da k l mb observed with the 5 feet Achromatic (powe 110) good t	10	18	4 6

OCCULTATION OF STARS BY THE MOON (Conti u d)

				M rns Mca M		im
1846						
Septembe	28	Occult t on of a small t by the Moon s dark limb obser ed with the 5 feet Ach omat (powe 110) not e y sat f to y	t	11	12	8 7
	29	Occultation f a st r by the Moon s da k limb ob erved witl the 5 feet A h om tic (power 110) tisfactory ob e tion	t	9	23	6 3
1847						
January	19	Occultation of a st r behind the Moon s dark l mb obser ed with the 5 feet A h omati (powe 110)	t	6	57	4 5
	20	Occult tion of a star beh nd the Moon s d rk limb obser ed with the 5 feet Achromatic (power 110)	t	8	9	41 6
		Occult tion of a st r behi d the Moon s dark limb observed w th the 5 feet Achromatic (powe 110)	t	8	20	35 8
	21	Occult t on of a small st r behind the Moon s dark limb obser ed with the 5 feet Ach om tic (power 110)	t	7	6	31 1
		Occult t on of *Piscium* of (4th M g) by the Mo n s d k limb obser ed with the 5 feet Ach omat (powe 110) e y tisf to y obse atio	at	7	49	24 5
		Occultation of a m ll ta b hi d the Moon dark limb obse ed with the 5 feet Ach omat c (power 110) atisfacto y obser ation	at	8	42	22 3
	23	Occult t on of a small star by the Moon dark limb obser ed w th the 5 f et Achromatic (powe 110)	t	9	45	29 7
February	23	Occult t on of a b ght star beh nd the Moon s dark limb observed with the 5 feet Achromat c (power 110) ob e vation very good	t	9	10	41 0
Apr l	19	Occ ltat on of a mall ta by the Moon s dark limb observed with the 5 feet Ach omatic (powe 110) good ob e ation	t	7	7	33 1
		Oc ltat on of b ght st by the Moon d k l mb obser ed with the 5 feet Achrom t (powe 110) e y good observation	t	7	10	55 6
		O cu lt t on of a sm ll ta by the Moon s da l l mb observed w th the 5 feet Achromatic (power 110) good obse tion	at	7	42	39 4
		Occu lt tion of y b ght ta by the Moon dark l mb obse ed with tl e 5 feet Achromat c (powe 110) e y good ob v t o	at	8	7	3 8
		Occu lt t on of a ve y b ght star by the Moon s dark l mb obser ed with the 5 feet Achromat (power 110) e y good obser ation	t	8	19	5 9
May	19	Occultat on of a br ght t of (4th Mag) by the Moon s dark limb obser ed with the 5 feet Ach omatic (powe 110) ve y satisf cto y obse atio	t	7	48	40 4
September	20	Occultat on of a sta of 4th Mag by the Moon s d k limb observed with the 5 feet Ach omatic (power 110)	t	7	29	33 5
		Occultat on of a ve y b ght t of 2d M g by the Moon s dark limb observed with the 5 feet A hromatic (power 110) very ood ob ervatio	t	7	37	35 7
October	15	Occult tion of a star by the Moon dark l mb observed with the 5 feet Achromatic (power 110) good	at	7	15	2 2
		Occultation of a star by the Moon s dark limb observed w th the 5 feet Achromatic (power 110) very good	t	7	49	34 5
November	11	Occult tion of a star by the Moon s dark limb observed with the 5 feet Achromatic (power 110) haze observation not satisfactory	at	6	47	21 2

D	N	O T		
1838		h	m	s
Jan 3	P c m	0	53	59 62
	M I L	0	57	40 19
	η P um	1	22	16 81
	———	1	36	18 23
4	ι P ı m	1	22	16 17
	———	1	36	17 65
	Moo I L	1	48	43 11
	ψ A t	2	21	23 13
	π ———	2	39	43 06
5	ψ A ets	2	21	23 29
	π ———	2	39	43 39
	Mo n I L	2	41	9 97
	g A tis	3	14	13 07
	η Iau ı	3	37	19 81
6	g Arietis	3	14	13 43
	Mo n I L	3	35	47 37
	ι I u ı	3	37	20 34
7	Moon I L	4	32	46 11
	β T uri	5	15	33 22
	ζ ———	5	27	27 82
8	β T u ı	5	15	34 22
	ζ ———	5	27	28 70
	Moo I L	5	31	26 28
	A igæ	6	4	34 48
	Gem no	6	33	28 93
9	Aurigæ	6	4	36 01
	Moon I L	6	30	23 26
	Gen r	7	15	12 18
	———	7	25	28 61
10	Gen inor	7	15	13 46
	———	7	25	30 14
	Moon I L	7	27	55 56
	Mo n II L	7	30	15 18
	λ Cancri	8	10	27 83
	η ———	8	22	54 08
Feb 4	T u ı	4	53	19 13
	Moo I L	5	13	31 24
	β I	5	15	57 45
	Au gæ	6	4	57 60
5	Aurigæ	6	4	57 36
	Moon I L	6	12	1 56
	Gem nor	6	33	51 92
	———	7	0	43 83
6	Gem or	6	33	52 76
	Gem o	7	0	44 41
	Moo I L	7	9	34 66
	β Geminor	7	35	18 76
	μ Cancr	7	56	37 11
7	β Gem nor	7	35	19 40
	μ¹ Cancr	7	56	37 65
	Moon I L	8	4	29 31
	γ Cancri	8	33	49 82

D	N m	O T		
1838		l	m	s
Feb 7	———	8	59	57 89
8	γ C c	8	33	50 16
	Moon I L	8	56	57 64
	Ca ı	8	59	58 11
	λ Leo is	9	22	23 99
9	λ Leon s	9	22	24 13
	ψ ———	9	34	50 17
	Moon II L	9	48	1 71
M r 4	l A gæ	5	28	4 78
	C T u ı	5	42	59 60
	Moon I L	5	53	20 62
6	Gem o	7	24	4 47
	———	7	34	28 99
	Moon I L	7	47	35 23
8	g Cancri	8	9	43 94
	λ Leo s	9	22	16 23
	Moon I L	9	30	9 63
	Leonis	9	59	32 24
	γ ———	10	10	50 12
9	Leonis	9	59	31 68
	γ ———	10	10	49 57
	Moon I L	10	16	56 57
	l Leonis	10	40	31 75
10	l Leonis	10	40	31 22
	χ ———	10	56	26 44
	Mo I I	11	1	3 83
	V ı	11	37	18 74
	β ———	11	42	2 28
11	Virgi ıis	11	37	18 18
	β ———	11	42	1 87
	Moon II L	11	46	55 66
Apr 2	Moo ı I L	7	27	56 32
	λ C cri	8	10	21 56
	φ ———	8	16	26 87
3	λ Cancr	8	10	20 30
	φ C ncr	8	16	25 74
	Moon I L	8	22	26 62
4	ξ Cancri	8	59	27 92
	g ———	9	9	21 66
	Moo I L	9	13	19 94
5	Leo is	9	48	54 95
	η ———	9	57	54 26
	Moo I L	10	1	0 15
	ρ I eonis	10	23	41 48
	l ———	10	40	9 21
6	ρ Leon s	10	23	40 33
	l ———	10	40	8 04
	Moo ı I L	10	46	10 56
	Leonis	11	14	52 41
	———	11	28	3 13

D	N	O T		
1838		h	m	s
Ap 7	Leon	11	14	51 17
	———	11	28	2 04
	M on I L	11	29	48 02
	b V g	11	51	1 72
	η ———	12	10	59 89
8	b V g s	11	51	0 77
	η ———	12	10	59 00
	M n I L	12	12	53 69
	γ V s	12	32	48 93
	ψ ———	12	45	17 77
9	γ V g	12	32	47 95
	ψ ———	12	45	16 74
	Mo I L	12	56	30 06
	V gin	13	16	0 71
M y 2	λ Leo ı	9	21	56 49
	ψ ———	9	34	22 46
	Mooı I L	9	43	27 11
	γ Leonis	10	10	29 90
	ρ ———	10	23	44 41
3	γ Leonis	10	11	14 76
	ρ ———	10	24	29 45
	Mo n I L	10	30	21 78
	Leonis	11	11	59 91
5	V rgin s	11	37	52 25
	β ———	11	42	35 71
	Moo I L	11	57	46 14
	γ Virg ı is	12	33	47 83
6	γ Vi g n	12	33	48 83
	Mo I I	12	41	7 89
	θ V rg	13	1	55 79
	———	13	17	1 85
7	θ V rg n s	13	1	56 99
	———	13	17	2 99
	Moon I L	13	25	48 93
9	Libræ	14	42	21 02
	20 ———	14	55	1 53
	Moo I L	15	3	33 72
	Moon II L	15	5	48 84
June 2	η Virgin	12	11	27 97
	Moon I L	12	22	51 03
3	ψ V rgi is	1°	45	48 16
	θ ———	13	1	26 15
	Moon I L	13	6	43 54
July 1	Moon I L	13	33	8 16
	V gin s	14	4	44 95
	λ ———	14	10	50 56
31	χ Lib æ	15	30	55 14
	Moon I L	15	41	6 23
	b Scorpii	15	41	27 19
	σ ———	16	11	33 61
	———	16	20	1 25

D	N	O T h	m	s
1838		h	m	
Aug 1	Scorp	16	11	35 38
	———	16	36	2 95
	Moo I L	16	38	49 61
	d Oph chı	17	17	15 80
	3 Sagıtta ı	17	37	37 03
2	d Oph chı	17	17	17 49
	3 S g tt	17	37	38 81
	Moon I L	17	41	9 58
3	δ S g tt rı	18	10	56 01
	φ ———	18	35	50 74
	Moo I L	18	46	32 86
	h Sag tta u	19	27	9 39
Sept 3	Aqu	21	57	52 06
	———	22	22	15 19
	Moo I L	22	25	9 66
	φ Aqu ı	23	6	6 72
	Pıscıum	23	18	48 52
4	φ Aqu	23	6	7 95
	P m	23	18	49 86
	Moon II L	23	24	18 48
27	φ S gıttar ı	18	36	18 80
	———	18	45	59 84
	M I I	18	52	44 12
	h S g tt ı	19	27	37 71
	c ———	19	3	28 67
28	h Sagıtt u	19	27	39 15
	c ———	19	53	30 16
	Moo I L	19	55	11 27
	ψ C p ıcornı	20	37	18 77
	η ———	20	55	59 52
29	ψ C p ıcornı	20	37	20 22
	η ———	20	56	1 07
	Moo I L	20	56	24 56
	δ Cap co nı	21	38	56 11
30	γ Cap ıco nı	21	31	58 52
	δ ———	21	38	57 42
	Moo I L	21	55	31 02
	σ Aqu u	22	22	56 31
	λ ———	22	45	1 68
Oct 1	σ Aqua ı	22	22	57 77
	λ ———	22	45	3 20
	Moo I L	22	52	33 60
	k Pıscıum	23	19	31 27
	n ———	23	40	30 53
Nov 1	γ A et	1	51	30 33
	Moo I L	2	7	26 05
	A etıs	2	50	44 68
24	Moon I L	22	6	36 99
	λ Aqua ıı	22	44	42 59
25	λ Aqua	22	44	44 71
	Moon I L	22	59	37 43
	Pıs ıum	23	40	12 40

D	N	O T h	m	s
1838		h	m	
No 27	Mo n I L	0	44	28 04
	η P cı m	1	23	29 25
Dec 1	T u	4	17	26 12
	———	4	33	20 48
	Moon II L	4	46	19 16
24	M I L	0	26	14 87
	P m	0	54	52 79
	μ ———	1	22	2 88
25	P s m	0	54	55 14
	Moo I L	1	18	37 18
	μ P m	1	22	4 94
	γ A t	1	4	2 13
	θ ———	2	9	30 84
26	γ A ıet	1	45	4 13
	θ ———	2	9	3 90
	Moo I L	2	13	27 54
28	A T u	3	55	37 82
	M I L	4	13	55 07
	T ı	4	53	55 42
29	T u	4	53	58 00
	β ———	5	16	36 46
	Moon I L	8	18	46 03
	A æ	6	5	36 73
	μ Gem o	6	13	42 49
1839				
Ja 23	A et	2	50	10 38
	M o I L	2	52	29 56
	η Tau ı	3	35	29 23
	A ———	3	55	21 02
26	l Au gæ	5	28	34 93
	C T	5	43	29 47
	Mo I L	5	58	43 46
	Gem or	6	34	18 50
	———	7	1	10 45
Feb 21	Moon I L	4	35	43 74
	β T ı	5	16	18 49
	C ———	5	43	24 12
22	β T u	5	16	17 73
	Mo I L	5	38	1 50
	C T u	5	43	23 28
	Au gæ	6	5	18 16
	Gemı or	6	34	12 60
23	Gem o	6	34	15 26
	Moo I L	6	41	40 91
	Gemı o	7	15	57 19
	β ———	7	35	41 67
24	Gem or	7	16	0 10
	β ———	7	35	44 30
	Moon I L	7	41	40 64
	λ Canc	8	11	14 40
	γ ———	8	34	14 76

D	N	O T h	m	s
1839		h	m	s
F b 25	λ C c	8	11	17 12
	γ ———	8	34	17 44
	M o I L	8	37	47 58
	λ Leo	9	22	51 53
26	λ L	9	22	54 10
	M o I L	9	29	46 72
	Leo	9	32	55 58
	———	10	0	10 13
	γ ———	10	11	28 30
27	Leo s	10	0	12 75
	γ ———	10	11	30 73
	M o Cent	10	19	10 37
	l L o	10	40	12 55
	χ ———	10	56	7 68
28	l L o	10	41	15 38
	χ ———	10	57	10 56
	Moon II L	11	5	46 10
Mar 22	Moo I L	6	22	38 89
	δ G m	7	10	54 64
	———	7	24	43 75
23	δ Gem r	7	10	55 34
	M I L	7	23	58 12
	6 Canc ı	7	54	2 88
	θ ———	8	22	50 08
24	6 C ncrı	7	54	3 48
	M o I L	8	21	10 74
	ξ Ca c	9	0	32 08
	q ———	9	10	25 85
25	C ı	9	0	32 78
	q ———	9	10	26 31
	M o I L	9	13	59 54
	L o	9	50	0 53
	η ———	9	59	0 08
26	Leo	9	50	1 29
	η ———	9	59	0 92
	Moo I L	10	2	53 18
	ρ Leo	10	24	47 93
	l ———	10	41	15 44
27	ρ Leonıs	10	24	48 73
	l ———	10	41	16 30
	M on I L	10	48	46 68
	Leo ıs	11	13	19 01
	———	11	29	11 42
28	Leonıs	11	13	19 80
	———	11	29	12 25
	Moo I L	11	32	43 79
	V g ıs	11	57	30 29
	η ———	12	12	10 13
29	V g	11	57	31 07
	η ———	12	12	10 99
	Moo I L	12	15	49 00
	ψ V gıı	12	46	29 93

D	N	O T
1839		h m s
M 30	ψ V g	12 46 30 72
	M Il L	13 1 7 96
	O V	13 37 53 71
Ap 125	β V g	11 43 4 33
	———	11 57 46 21
	M I L	12 2 4 80
	γ¹ V g n	1 34 16 13
6	η V g	12 34 17 05
	M I L	12 45 3 97
	ψ V g¹	12 46 45 98
	———	13 17 29 96
27	V g	13 17 30 54
	M I I	13 28 9 79
8	M C t	14 15 3 85
	L b æ	14 43 47 2
	o ——	14 55 28 13
M y 1	M I L	11 3 44 88
	L	11 29 32 63
	β V ıs	11 43 8 96
Ju 21	V rg	13 17 20 18
	O ——	13 37 58 72
	M I J	13 41 41 23
	λ V g	14 11 1 80
	λ V	14 11 1 90
	Mo I L	14 28 24 81
b pt 23	ω P n	23 51 19 12
	d ———	0 12 35 37
	M oı II L	0 23 19 38
O t 16	C pn	20 10 24 65
	M I L	20 18 34 69
	η C pn	20 55 33 07
	———	21 7 8 71
17	M I L	21 13 17 01
	Aq	21 58 3 54
18	Aq	21 58 3 84
	Mo I L	22 6 38 62
	λ Aqu ı	22 44 32 44
1840		
J y 14	M I L	3 18 1 89
	A T r	3 55 11 84
1	A¹ T	3 55 12 21
	——	4 16 42 12
	M o I L	4 23 19 65
16	β T ι	5 16 9 35
	l A ngæ	5 28 20 4
	M o I L	5 32 1 59
18	δ G n	7 10 33 78
	β ———	7 35 31 15
	M I L	7 47 17 03

D	N	O T
1840		l m
F b 12	Au gæ	4 46 42 8
	T u	4 3 40 07
	M I L	5 6 4 79
	C T u	5 43 4 0
13	C Γ	5 43 33
	M I L	6 13 53 41
14	M n I T	7 20 35 60
	6 C nc	7 53 1 67
	θ ——	8 22 38 63
15	6 C n	7 3 52 57
	M n I L	8 21 33 7
	ξ Ca	9 0 0 90
	q ——	9 10 14 41
16	ξ C n	9 0 21 82
	q ——	9 10 1 41
	M n I I	9 18 52 13
	L s	9 49 49 36
	——	10 0 3 36
17	L on	9 49 0 20
	——	10 0 4 40
	Mo II L	10 13 58 54
M r 13	β C	7 35 5 01
	φ ———	7 41 99
	M I L	8 0 5 79
15	λ L	9 23 0 02
	M o I I	9 1 41 62
	l I n	10 24 47 81
	34 S xta t s	10 34 46 12
16	ρ L s	10 24 18 3
	34 b xt t	10 31 46 94
	Mo n I L	10 41 30 68
	L	11 13 18 4
	——	11 29 16 77
17	I ıs	11 13 18 83
	Mo I I	11 28 54 37
	l V	11 52 11 08
Ap 110	θ C ı	8 54 38
	δ ——	8 36 1 62
	M ı I L	8 41 30 77
11	λ I n	9 23 2 09
	——	9 33 4 07
	M n I L	9 35 29 81
	L ıs	10 0 18 4
13	q Leon s	11 9 32 86
	M I I	11 12 54 31
	β V	12 42 51 25
	b ———	12 52 14 8
1	q V rg n s	12 6 3 13
	γ¹ ———	12 34 4 91
	Mo ı I L	1 44 13 02

D	N	O T N
1840		h ı
Ap 115	3 V	13 4 4 84
	———	13 17 17 84
M y 1	I b æ	14 42 34 14
	M I L	14 51 8 82
	20 L b æ	14 55 15 15
	——	15 39 16 42
	π S p	15 49 43 36
J 8	η V g	12 12 25 94
	M I L	12 15 10 83
	γ V g	12 46 45 03
	g ———	13 0 14 16
O t 7	δ C p	21 38 23 95
	Aq	21 57 59 08
	M n I L	22 1 42 78
9	P s n	23 18 57 43
	λ ———	23 34 6 61
	M I L	3 39 57 01
	B P ɑ m	0 6 58 19
De 3	M n I L	23 41 43 83
	B I un	0 7 30 89
	I n	0 55 26 14
	M I L	1 23 24 60
6	M I L	2 20 51 13
	δ Arıet	3 3 18 46
	g ——	3 15 41 53
1841		
J y	β A ıt	1 46 37 23
	M I I	1 52 59 19
	A t	2 30 33 64
	π ——	2 41 11 23
	T u ı	4 33 30 28
	——	4 54 23 62
	M I L	4 48 74
	C I u ı	5 44 8 07
	A gæ	6 6 2 91
I b 2	β T	5 17 12 22
	M o I I	5 41 1 67
3	μ Gemı o	6 14 19 24
	———	6 35 7 84
	M on I L	6 50 21 24
4	C	7 24 16 91
	β ———	7 35 24 86
	M I L	7 56 19 50
	δ (	8 35 28 45
	ı ——	8 49 37 15
7	M I L	3 7 53 94
	η T u	3 38 9 26
28	η T n	3 38 10 30
	M I L	4 9 39 07
	Tau	4 53 43 85

D	N	O T		
1841		h	m	
F b 28	β T uri	5	16	22 94
Mar 4	λ C	8	10	50 61
	θ ——	8	22	17 49
	M I L	8	30	12 63
	q C	9	9	52 25
	ξ L	9	8	8 94
5	q C	9	9	53 43
	ξ L	9	23	9 42
	M n I L	9	29	14 17
	L	9	59	41 19
	ρ ——	10	24	13 37
Ap l 2	L nis	9	59	50 19
	M I L	10	2	38 19
	48 L s	10	26	26 42
	χ ——	10	56	45 06
3	48 L	10	26	26 60
	M n I L	10	55	5 49
	χ L	10	56	45 30
	——	11	28	44 98
	β Virgini	11	4	21 42
4	L on s	11	28	45 46
	β V g n s	11	42	21 84
	M n I L	11	46	0 93
	η V g	12	11	43 60
	γ ——	12	33	33 48
M y 26	M I L	9	28	36 96
	L	10	0	9 94
Aug 24	S p	16	19	25 21
	Mo I L	16	22	48 63
Sept 24	λ S g ttari	19	27	10 15
	Mo I L	19	40	59 18
	β C p n	20	12	12 66
	——	20	30	8 05
Nov 9	β P m	22	56	58 14
	M n I L	22	58	0 41
	P um	23	19	57 98
	——	23	32	57 76
1842 Ja y 4	V g	18	15	2 09
	M o II L	18	38	12 52
26	θ C n	8	1	5 30
	δ ——	8	35	12 89
	Mo n I L	8	35	38 32
	ξ Le n s	9	22	55 82
	——	9	32	18 28
F b 21	G m n r	6	34	58 32
	ζ ——	6	54	30 10
	Mo n I L	6	56	41 23
Mar 2	Mo n II L	15	45	31 52
	S rpii	16	19	31 50
	——	16	25	51 07

D	N M	O T		
1842		l	m	
Mar 30	M n II L	16	18	41 67
	S rp	16	19	46 22
M y 17	M n I L	9	50	22 57
	ρ L	10	24	57 97
	34 S xt ıtı	10	31	56 46
18	ρ L	10	24	59 81
	34 S xt tı	10	34	57 98
	M n I L	10	44	5 18
	L	11	13	29 57
	——	11	29	22 08
20	η Virg n	1	12	23 27
	q ——	12	26	11 80
	M n I L	1	30	16 06
	53 V gı	13	4	13 74
	——	13	17	26 87
	λ V gı	14	11	12 06
	M I L	14	21	48 58
	0 L b æ	14	55	28 18
	——	15	8	1 55
23	20 L b æ	14	55	29 89
	——	15	3	53 23
	M n I L	15	20	50 86
	β¹ S p	15	56	55 26
24	β¹ S p	15	56	56 92
	——	16	20	25 28
	M n II L	16	23	45 88
	A Opl u h	17	6	20 22
26	μ¹ Sagitt n	18	5	4 38
	λ ——	18	18	58 71
	M II L	18	23	10 49
	Sa ttar	18	46	13 46
	π ——	19	1	7 38
27	S g ttar	18	46	14 98
	π ——	19	1	8 58
	M n II L	19	19	5 62
	57 Sagitt n	19	43	47 57
29	C p	20	31	52 6
	μ Aq n	20	44	56 98
	M II L	21	10	40 26
	β Aq n	21	24	3 46
	C p orn	21	39	8 01
June 19	ı L b æ	14	43	34 20
	20 ——	14	56	15 63
	M n I L	14	59	55 51
20	ι S rp	15	42	56 79
	δ ——	15	52	27 53
	M n I L	15	57	56 37
	S rp	16	21	11 36
	η Oph u hı	17	2	46 89
21	α Sco p	16	21	13 18
	M on I L	16	58	47 74

D	N M	O Γ		
1842		h	m	s
Ju 21	η Oph h	17	2	48 24
	3 S g tta	17	38	6 63
	4 ——	17	51	39 01
23	M II L	18	59	20 41
	l S tt	19	28	38 83
6	C p	21	8	40 29
	β A n	21	24	54 39
	M I L	21	20	28 64
J ly 19	M I I	17	38	57 97
	S g tta	18	6	54 16
	φ ——	18	37	23 18
20	M I L	18	36	12 67
	φ Sagitt r	18	37	25 62
	π ——	19	2	0 16
	l ——	19	28	4 31
22	C p	20	11	35 90
	M C t	20	23	32 83
	μ Aq ar	20	46	50 55
26	P m	23	18	43 34
	M II L	23	24	48 46
	ω P um	23	51	3 92
27	ω P m	23	51	6 04
	B ——	0	6	44 6
	M II L	0	8	56 63
	P um	0	54	39 01
28	δ P m	0	40	25 9
	M II L	0	54	24 6
	η P m	1	22	58 05
A g 15	η O h h	17	1	52 47
	θ ——	17	12	5 29
	M I L	17	19	2 46
	γ S g tt	17	56	13 1
	μ ——	18	1	52 6
16	γ S g tt	17	56	14 89
	Mo I L	18	16	30 19
21	θ Aq n	22	8	15 2
	ζ ——	2	21	27 26
	M II L	22	26	58 45
24	d l m	0	12	19 11
	M II L	0	38	49 01
	η P n	1	22	53 9
S p 12	3 S g tt	17	37	59 48
	4 ——	17	50	30 91
	M I L	17	57	54 02
	S g tt	18	45	50 62
	——	18	55	35 38
13	S g tta	18	45	2 74
	M I L	18	54	6 42
	Sagitt r	18	55	37 65

D	N	O T
184		l n
S p 13	/ S g tt	19 27 30 19
	57 ——	19 43 25 95
14	7 S tt	19 43 7 81
	M I I	19 47 13
	β C l	0 12 34 85
	——	20 1 11 79
1	β C p	0 1 36 91
	——	0 4 14 01
	M I L	20 3/ 16 8
16	C p ı	1 7 30 1
	M o I L	21 4 40 88
	Aq n	1 58 24 00
	θ ——	8 0 4
17	Aq	1 8 26 04
	M I L	22 10 9 28
	λ Aqı u	22 44 10
	λ P s m	22 2 4 29
O t 11	h² S g tt	19 27 46 61
	M I L	19 9 4 (2
	β² C l o	20 13 48 08
	ρ ——	20 1 3 94
1	β C l n	20 13 1 41
	M I I	20 21 19 01
	C l n	1 8 43 /6
13	θ C lr r	20 58 0 0
	——	21 8 46 39
	M I L	21 9 4 88
	ξ Aqua ı	21 31 6 81
14	ξ Aq ı	21 31 9 35
	/ C l ı	21 46 29 96
	M o I I	21 55 1 4
	γ Aq	2 15 18 99
	/ ——	22 9 3 7
1	/ Aq	2 13 21 55
	/ ——	6 25
	M o I I	22 38 30 30
	/ I	23 8 49 73
	——	3 18 41 49
16	/ Pı m	23 8 13
	ı ——	23 18 44 09
	Mo I L	23 2 38 21
	ω lı m	23 51 6 01
	B ——	0 6 44 41
17	ω P s um	23 51 8 89
	M I I	0 7 10 19
	δ P c m	0 40 26 0
	——	0 54 41 90
18	M I L	0 53 2 43
	P ım	0 54 44 33
	η ——	1 23 1 88

D	N м	O T
1842		
O t 19	η P m	1 23 4 8
	M C t	1 12 8 17
	θ A t	2 9 3 99
N 11	θ Aqu	22 8 31 76
	M I L	2 21 39 31
	λ Aqu	2 44 7 61
	β P n	22 55 5 49
12	λ Aqı	22 44 2 16
	β I u	2 55 53 00
	M I L	23 5 48 84
13	P m	23 31 50 04
	M I L	23 19 53 81
	ω P n	23 50 2 77
	d ——	0 12 29 19
1	M n I L	1 22 25 1
	β A ts	1 45 51 78
	θ ——	2 9 17 39
17	A t	2 50 8 91
	δ ——	3 28 72
	M o I L	3 5 48 88
	η I ı	3 37 8 80
	A ——	3 5 14 33
18	η T n	3 37 56 96
	A ——	3 5 12 5(
	M I I	4 41 51 33
	T	4 32 36 91
	——	4 53 30 02
D c 12	δ P ın	0 39 41 6
	——	0 53 7 81
	M ı I L	1 1 14 40
	η l m	1 22 14 87
	β A tı	1 45 8 27
13	η P m	1 22 13 29
	β A t	1 45 6 51
	M I L	1 49 44 94
14	ψ A t	2 21 19 18
	π ——	2 39 38 36
	M I L	2 41 34 18
	η Ta	3 37 16 22
16	T	4 15 0 29
	——	4 31 54 51
	Mo I L	4 36 7 81
	β T u	1 27 39
	ζ ——	5 27 20 80
17	β T un	5 13 42 80
	ζ ——	5 25 36 74
	M I L	5 35 45 97
	G mı o	6 30 7 42
18	μ G m o	6 11 0 83
	——	6 31 49 10
	M I L	6 40 2 90

D	N	O Γ
1842		l m s
D 18	δ G	7 8 17 49
	——	7 32 30 99
19	δ G n	7 8 28 19
	——	7 3 41 55
	M II I	7 41 2 19
	θ C	8 20 24 44
	——	8 33 29 32
1	ξ I	9 23 23 87
	——	9 32 41 28
	M II L	9 38 24 48
	ρ I	10 21 2(34
22	ρ I	10 24 30 18
	M II L	10 32 40 44
	p¹ L	11 5 40 81
	——	11 22 15 32
23	p⁴ L	11 5 43 47
	——	11 22 17 59
	M II I	11 25 7 18
	η V g	12 11 2 21
1843		
J y 9	η P s n	1 23 41 77
	M I L	1 29 36 87
	ψ A t	2 22 49 11
11	A t	2 50 56 77
	δ ——	3 8 21 72
	M I I	3 12 19 86
	η I	3 38 2 08
	A¹ ——	3 56 7 68
21	q V rb s	12 26 49 87
	γ ——	12 47 20 46
	Mo II L	12 58 24 81
2	V b	13 18 7 16
	x ——	13 42 32 60
	M II I	13 54 49 87
	L l m	14 43 23 31
Γ b 8	η T	3 38 4 18
	Mo I I	3 42 17 64
	I	4 10 50 12
	——	4 32 14 46
9	T	4 16 52 52
	——	4 3 47 04
	M I I	4 39 33 17
	β I	16 19 82
	ζ ——	28 13 51
10	β T ı	5 16 22 2
	ζ ——	5 28 16 07
	M I L	5 39 32 11
	μ G m	6 13 28 24
	——	6 34 16 89
11	μ G o	6 13 30 52
	——	6 34 19 23
	M I L	6 41 1 69

D	N м	O T
1843		l m
F b 11	δ G m	7 10 47 72
	——	7 35 1 09
1	δ G m	7 10 50 62
	——	7 35 4 05
	M I L	7 42 3 41
	θ C	8 22 44 20
	δ ——	8 35 51 1
13	θ C	8 22 47 39
	δ ——	8 35 54 57
	M I L	8 42 5 52
	ξ Le	9 23 37 85
	——	9 32 5 20
14	ξ L	9 23 40 69
	——	9 32 58 07
	M n C t	9 43 11 0
	ρ L	10 24 44 66
	34 b t ts	10 34 43 06
15	ρ L m	10 24 47 00
	34 b xt t	10 34 45 71
	M n II L	10 41 52 20
	L	11 20 6 36
	——	11 29 9 38
16	Leon	11 20 9 10
	——	11 29 12 00
	M II L	11 38 40 88
	η V	12 12 9 90
	q ——	12 25 58 28
17	η V n	12 12 12 54
	q ——	12 26 1 02
	M n II L	12 8 39 24
	g V	13 0 0 89
	——	13 17 15 81
18	g V s	13 0 3 77
	——	13 17 18 65
	M II L	13 33 34 01
	λ V gi s	14 10 59 89
19	λ V g	14 11 2 79
	Mo II L	14 32 52 22
	L b æ	15 42 20
	χ ——	15 31 26 00
20	L b æ	15 8 45 01
	M n II L	15 33 26 05
	S p	16 12 7 32
	——	16 20 15 40
21	S p	16 12 10 06
	——	16 20 18 19
	M n II L	16 34 30 69
Mar 11	ζ G m or	6 56 10 17
	δ ——	7 12 7 06
	M n I L	7 13 49 55
	g Gem r	7 38 24 35

D	N м	O T
1843		h
M 12	g G n o	7 38 28 12
	ζ C n	8 4 38 4
	M I L	8 13 17 41
	C n	8 51 20 28
	——	9 0 41 02
14	π L	9 53 8 18
	——	10 1 33 90
	M I L	10 9 45 53
	34 S xt ti	10 35 4 48
	d L	10 53 0 77
1	34 S xt nt	10 36 7 30
	d L	10 53 8 56
	M I L	11 7 15 32
	L	11 30 31 34
	β V b	11 44 7 78
16	L	11 30 35 26
	β \	11 44 11 75
	M 2 L	12 7 31 16
	ψ V m	12 47 52 38
	g ——	13 1 21 53
17	γ V gi s	12 47 55 74
	/ ——	13 1 24 88
	M L	13 6 39 88
19	L b æ	14 43 52 36
	20 ——	14 56 45 54
	M o 2 L	15 9 56 45
	A S l	15 46 3 46
	β¹ ——	15 58 10 69
Ap 1 8	M 1 L	7 47 58 63
	θ C	8 23 39 16
	δ ——	8 36 46 30
9	θ C	8 23 42 66
	δ ——	8 36 49 8
	M I I	8 44 54 3
	ξ L	9 24 33 12
	——	9 33 50 86
10	ξ L	9 24 37 50
	——	9 33 54 94
	M I L	9 41 8 00
	L	10 1 9 50
	ρ ——	10 25 41 76
11	M I L	10 37 8 21
	L	11 21 5 01
1	I is	11 21 9·24
	L n	11 30 11 99
	M ıI L	11 33 43 62
	g V gi s	12 2(58 68
13	η Vi gi	12 13 13 33
	q ——	12 27 1 71
	M 1 L	12 31 47 74
	53 V gn	13 5 3 78
	——	13 18 16 73

D	N м	O T
1843		h m
Ap 114	3 V	13 5 8 21
	——	13 18 21 33
	M I L	13 32 8 01
	M II I	13 34 32 13
15	λ V	14 1 6 97
	M II L	14 37 24 1
	L l æ	15 4 46 7
	——	15 34 24 35
16	L b æ	15 4 0 91
	——	15 34 28 17
	M II L	15 42 9 31
	S l	16 13 13 21
	——	16 21 21 29
17	S p	16 13 16 80
	——	16 21 2 1J
	M II L	1(47 15 52
	θ Opl h	17 18 59 88
	D ——	17 3 3J 01
M y 8	L	10 0 4 80
	M I L	10 13 12 38
	d L	10 53 12 91
	p⁴ ——	11 6 29 19
9	d I ı	10 3 17 47
	p⁴ L	11 (31 78
	M I L	11 8 0 (
	L	11 29 1 34
	β V g	11 43 21 7J
11	g V	12 26 38 89
	ψ ——	12 47 9 71
	M I L	13 1 9 10
	V g	13 42 19 56
12	V g	13 42 2 97
	M I L	14 1 46 27
	² L b æ	14 43 14 40
	20 ——	14 5 56 17
13	L b æ	14 43 17 68
	20 ——	14 5 59 40
	M I I	1 5 22 51
	Mo II L	15 7 50 19
	δ S p	1 52 9 65
	——	16 1 45 49
14	S p	16 12 49 00
	M II I	16 13 27 84
	θ Oph l	17 13 32 13
1	A Opl u l ı	17 6 55 70
	θ ——	17 13 36 23
	M II L	17 19 6 59
	μ S tt	18 5 36 04
J (	L	11 29 16 92
	M I L	11 42 33 58
	η V	12 12 14 98
	q ——	12 26 3 49

D	N	O T		
1843		l	m	s
J ne 7	η V rg s	12	12	18 22
	q ———	12	26	6 75
	M I L	12	37	32 29
	53 V g	13	4	9 04
	———	13	17	21 97
8	V s	13	17	25 67
	Moo I L	13	35	3 43
	λ Vi g n s	14	11	7 73
9	λ V g i	14	11	11 21
	M o I L	14	35	40 48
	L b æ	14	42	46 19
	———	15	3	51 20
	———	15	33	29 08
10	Libræ	15	33	32 12
	M o I L	15	39	9 95
	S o pii	16	20	25 52
	———	16	26	45 20
15	ϱ C p o	20	20	46 17
	Aqu i	20	40	2 25
	Mo II L	20	45	17 53
	s C p icorni	21	7	54 93
	β Aqua n	21	24	9 13
16	s C] corni	21	7	58 10
	β Aqua i	21	24	12 2
	Moo II L	21	35	26 99
	30 Aq ia	21	55	55 51
	γ Aquari	22	14	27 33
A g 8	e Sa itt n	19	33	1 05
	Moon I L	19	56	29 89
	C pr corni	20	30	35 18
	ι Aquarii	20	43	39 51
Sept 4	ϱ Sa ttarii	19	12	48 08
	Moon I L	19	39	17 91
8	λ Aquar	22	44	27 90
	M I L	22	56	52 25
	P cium	23	18	55 51
	———	23	31	55 02
11	Moon II L	1	16	10 18
	β A t	1	45	55 00
13	A ts	2	29	45 95
	———	2	50	5 90
	Moon II L	2	53	33 38
14	g Ar et s	3	14	51 46
	η Γ u i	3	37	58 27
	M o II L	3	45	22 61
	T u i	4	16	43 41
	———	4	32	37 87
Oct 2	β Cap co ni	20	11	26 09
	Moo I L	20	15	30 98
	μ Aquari	20	43	25 89
	———	21	0	17 31

D	N	O T		
1843		h	n	
Oct 3	μ Aqu	20	43	24 47
	———	21	0	15 93
	M I L	21	6	23 95
	δ C] i	21	37	36 06
	30 Aq	21	4	14 43
4	δ C p c	21	37	34 88
	30 Aq	21	54	13 31
	M I L	21	51	35 17
	γ Aqu ii	22	12	45 19
	η ———	22	26	29 69
	γ Aq i	22	1	43 85
	η ———	2	26	28 46
	Moon I L	22	41	56 94
6	γ Pi m	23	8	11 88
	———	23	18	3 42
	M on I L	23	26	21 89
7	ω P sc m	23	50	24 42
	Moon I L	0	11	39 86
13	M n II L	5	17	24 49
	C la i	5	45	27 85
14	C Tau i	5	45	39 15
	Moo II L	6	12	52 65
	μ Gem or	6	15	39 07
	———	6	36	27 65
31	β Aqua	21	22	57 09
	Moo I L	21	39	30 88
	θ Aq	22	8	12 78
	ς ———	22	20	24 80
Nov 2	β P cium	22	55	44 05
	γ ———	23	8	52 51
	M on I L	23	12	17 79
	Pi ium	23	31	43 66
	ω ———	23	51	6 34
3	P um	23	51	11 88
	M on I L	23	57	33 04
4	Moo I L	0	43	14 81
	ι P ium	1	23	8 96
5	η P s m	1	3	14 88
	Moon I L	1	30	8 02
	θ A ietis	2	9	34 01
6	θ Ar tis	2	9	34 17
	Moon I L	2	18	40 65
	A iet s	2	50	24 82
	δ ———	3	2	49 83
7	Mo n II L	3	11	28 12
	ι T ur	3	38	20 92
	A¹ ———	3	55	36 37
8	η Taur	3	38	21 68
	A ———	3	55	37 29

D	N	O T		
1843		l	m	
N 8	M II L	4	4	7 40
	T	4	33	1 68
	———	4	53	54 85
11	γ G m	6	19	53 44
	———	6	34	31 37
	M II L	6	48	25 83
	δ G m io	7	10	59 41
	———	7	35	12 59
13	θ C n	8	22	55 29
	M o II L	8	36	20 34
	C i	8	59	30 97
14	C c	8	59	32 01
	M II L	9	29	7 05
	Leo	10	0	17 63
28	θ Aqua i	22	9	1 84
	Mo I L	22	9	59 24
	ι Aquai i	22	27	46 31
29	x P c um	22	53	4 34
	Mo n I L	22	56	36 77
	P ciu n	23	19	22 79
	———	23	32	22 24
30	P scium	23	32	22 68
	Moon I L	23	42	9 13
Dec 9	ζ Gen or	6	55	24 63
	δ ———	7	11	21 64
	Moon II L	7	26	30 65
13	d Leon s	10	53	6 28
	Moo II L	10	56	45 94
	Leo	11	23	56 70
	β Vi g nis	11	43	10 07
29	Mo n I L	0	56	3 72
	η Pis ium	1	23	47 84
30	η Pisc i m	1	23	47 80
	Moo I L	1	43	18 81
	θ A i tis	2	10	7 00
	———	2	30	37 72
31	θ¹ A iet s	2	10	7 04
	Moon I L	2	32	19 39
	δ A iet s	3	3	22 94
1844				
Jan 2	A¹T ri	3	56	8 81
	ω² Tau i	4	8	47 50
	Moon I L	4	16	54 63
	T i i	4	54	26 57
	n Taur	5	10	34 63
3	Tau	4	54	26 95
	Moo i I I	5	12	7 05
	H G mino	5	55	18 66
	η ———	6	6	7 94

D	N м	O T
1844		l m
Ja 4	H G m o	5 55 18 82
	l ———	6 6 8 06
	Mo I L	6 8 18 87
	C m	6 35 0 43
	ζ ———	6 55 31 66
5	Gem o	6 35 0 27
	ζ ———	6 56 31 50
	M II L	7 6 46 94
	g G m or	7 37 45 48
	ζ C c	8 3 55 63
6	g G m	7 37 45 22
	M II L	8 2 7 86
	ζ C	8 3 55 79
	δ ———	8 36 28 92
	———	8 50 36 96
7	C c	8 50 37 02
	Moo II L	8 56 13 09
	ξ Le n	9 24 11 84
	———	9 33 29 05
8	ξ Ieo ι	9 24 11 80
	L	9 33 29 05
	M o II L	9 49 6 62
	ϱ Leo ι	10 25 15 19
	34 Se ta t s	10 35 13 59
10	Leo	11 22 59 99
	———	11 29 36 90
	Moo II L	11 33 37 99
	l V g	12 12 34 72
	q ———	12 26 23 05
11	η V gι	12 12 34 60
	M II L	12 27 1 75
	g V g ıs	13 0 22 62
	———	13 17 37 60
12	g V g	13 0 22 88
	———	13 17 37 80
	Mo II L	13 22 28 49
	V g	14 5 13 54
	λ ———	14 11 19 27
28	A et	2 51 1 24
	Moon I L	3 2 8 36
	δ A ts	3 3 26 48
	η Ta ι	3 38 56 72
	A ———	3 56 12 45
29	l T u	3 38 57 42
	Mo I L	3 54 15 02
	A¹T u	3 56 13 09
Feb 1	μ Gem or	6 14 18 41
	———	6 35 7 17
	Moon I L	6 40 7 12
	δ Ge nor	7 11 35 35
	k ———	7 25 29 29

D	N	O T
1844		h m
Feb 4	C	9 0 7 69
	M I L	9 26 17 54
	M o II L	9 28 31 42
	π Leo ıs	9 52 48 07
	———	10 0 53 50
6	d L o s	10 53 22 33
	M II L	11 15 58 80
	β V g	11 43 26 34
	η ———	12 12 47 40
7	β V g	11 43 27 36
	M o II L	12 10 13 88
	η V g	12 12 48 46
	ψ ———	12 47 7 94
	g ———	13 0 37 15
8	ψ V g	12 47 9 10
	g ———	13 0 37 97
	Mo II L	13 5 53 81
	x V g	13 42 18 38
	———	14 5 28 67
9	V g s	13 42 19 30
	M o II L	14 3 39 55
	α L b æ	14 43 10 11
	20 ———	14 55 51 88
27	T u	4 54 44 19
	M o I L	5 19 32 24
	η Gemıno	6 6 25 61
	μ ———	6 14 29 33
28	η G mıno	6 6 25 78
	μ ———	6 14 29 36
	M I L	6 14 37 52
	ζ G m o	6 55 49 50
	δ ———	7 11 46 48
29	ζ G m o	6 55 49 71
	M o I L	7 10 4 27
	δ Ge m o	7 11 46 70
	g ———	7 38 3 90
Mr 1	g Gem no	7 38 4 06
	ζ C	8 4 14 39
	M o I L	8 5 22 47
	δ C ncr	8 36 47 76
	———	8 50 55 89
2	δ Canc	8 36 48 00
	———	8 50 56 14
	M I L	9 0 16 06
	Leo ι	9 33 48 33
	π ———	9 57 57 15
3	Leon	9 33 48 79
	π ———	9 52 57 43
	Moo I L	9 54 50 64
	ϱ Leo	10 25 35 17
	d ———	10 53 29 79

D	N	O T
1844		l m
M 4	ϱ Leo	10 25 35 31
	M I L	10 49 30 27
	L o	11 23 20 69
	β V g	11 43 34 10
5	Le s	11 23 21 30
	Moo II L	11 47 7 66
6	q V g ι	12 26 44 97
	M II L	12 43 55 88
	ψ V gι s	12 47 15 83
	———	13 17 59 72
	x ———	13 42 25 23
7	Vι g s	13 18 0 30
	Moo II L	13 42 45 28
	λ Vι gι	14 11 41 86
	Lıb æ	14 43 16 76
8	λ V g	14 11 42 48
	M n II L	14 43 48 77
	L b æ	15 33 59 65
	δ S o pιι	15 5 8 74
9	Lıb æ	1 3 59 79
	Moo I L	15 46 41 86
	δ Sco p ı	15 52 8 98
	———	16 20 52 84
	m ———	16 33 35 03
10	Sco p ı	16 20 53 14
	m ———	16 33 35 33
	Moo II L	16 50 19 63
	θ Oph u h	17 13 27 86
27	Moon I L	6 45 11 94
	δ Gem or	7 11 0 03
28	δ Gem o	7 11 0 77
	k ———	7 24 54 75
	M o I L	7 39 16 20
	θ C	8 22 54 68
	δ ———	8 36 1 76
29	θ C c	8 22 55 61
	Moon I L	8 33 4 54
	δ Canc	8 36 2 61
	———	8 59 31 45
	ξ Leo s	9 23 46 03
30	C nc	8 59 32 43
	Leo	9 23 46 45
	M n I L	9 26 43 54
	π L	9 52 12 75
	———	10 0 18 14
31	π Leo	9 52 13 56
	———	10 0 18 98
	Mo I L	10 20 39 33
	d Leo ı	10 52 4 83
	φ ———	11 8 59 54

D	N	O T		
1844		h	m	
Ap 1	d L	10	52	46 93
	φ ———	11	9	0 74
	M o I L	11	15	31 33
	β V g i	11	42	51 07
	η ———	12	12	12 71
	β V s	11	42	52 21
	M o I L	12	1	6 40
	V rg i	13	17	17 36
3	θ V gi	13	2	12 10
	M Cc t	13	12	18 93
	Vi g i s	13	17	18 42
	———	14	4	54 88
	λ ———	14	11	0 44
4	V ını	14	4	55 24
	λ ———	14	11	1 31
	M II L	14	15	23 09
	L l ʊ	11	42	36 0
	20———	14	55	18 92
5	Lib ɷ	14	42	37 42
	20———	14	55	19 28
	Mo n II L	15	19	48 75
	β Scorı u	15	56	44 21
	———	16	20	13 00
6	β Sco p	15	56	45 39
	———	16	20	14 24
	Moon II I	16	2	36 04
	ι Opl ıucl ı	17	1	48 66
	θ ———	17	12	48 78
7	ι Opl ucl ı	17	1	49 90
	θ ———	17	12	49 90
	M II L	17	30	55 21
	μ S g tti n	18	4	49 68
	Clype Sob	18	20	41 62
8	ι Sag tta	18	4	50 76
	Clypei Sob	18	20	43 00
	Moon II L	18	33	55 74
26	Cancri	8	50	29 62
	Moo I L	9	3	30 00
	Leonis	9	33	22 01
	π ———	9	52	30 70
28	ρ Leon s	10	25	9 01
	Moon I L	10	48	25 59
	d Leoı ıs	10	53	8 69
	σ ———	11	13	39 03
	———	11	29	31 48
29	Leonis	11	29	32 14
	Mo n I L	11	42	50 29
	η Vi gin s	12	12	30 14
	q ———	12	26	18 67
30	η Vir i is	12	12	30 60
	q ———	12	26	19 12

D	N	O T		
1844		h	m	s
Ap 30	M on I L	12	39	47 81
	Vi g	13	17	34 41
	x ———	13	4	0 00
May 1	V g	13	17	34 41
	Mo I L	13	40	5 21
	λ V gu	14	11	16 35
2	L b ɷ	14	42	52 01
	Mo n II L	14	46	26 35
3	Mo n II L	15	53	15 08
	β Sc pi	15	56	59 93
	α ———	16	20	28 68
	ι Oplıu li	17	2	3 35
26	ι L ıus	10	53	22 30
	φ ———	11	9	36 25
	Moo I I	11	19	13 48
	β V g s	11	43	26 60
	η ———	12	12	48 12
28	γ V rgi ıus	12	47	8 0
	3———	13	4	40 09
	Moo I L	13	9	59 37
29	Moo I L	14	10	42 53
	L b ɷ	14	43	10 17
	20———	14	55	52 4
30	² L brɷ	14	43	10 84
	20———	14	55	52 79
	M o I I	15	15	23 19
	β Scoı	15	57	18 22
31	Sco pi	16	20	47 58
	Moon I L	16	23	0 51
June 3	ρ¹ Sa itta u	19	13	35 92
	e ———	19	34	33 89
	Moo II L	19	43	18 59
4	Caı c u	20	10	22 21
	Moo II L	20	41	32 92
	s Cap oi u	21	8	4 76
	β Aquari	21	24	18 56
5	s Cap corni	21	8	4 46
	β Aqi ri	21	24	18 58
	Moo II L	21	35	32 23
	θ Aquaru	22	9	33 68
	ι ———	22	21	45 44
6	θ Aquar	22	9	33 39
	ζ ———	22	21	45 25
	Mooı II L	22	26	9 31
25	V r ınis	13	17	54 24
	x ———	13	42	19 84
	Mo I L	13	44	22 02
	λ V gi s	14	11	36 20
	Librɷ	14	43	11 34

D	N	O T		
1844		h	m	
Jun 28	S o p	16	20	47 91
	Moo I L	16	56	48 71
J ly 2	M II L	21	10	24 94
	λ C l o	21	39	4 61
	30 Aq a u	21	56	0 09
24	Moo I L	15	24	50 27
	Sco pi	16	20	48 62
27	λ S g tt	18	19	3 57
	M I L	18	38	59 22
	ρ S g tt	19	13	20 15
	———	19	34	18 20
Aug 4	ι P c m	1	23	57 90
	Mo n II L	1	47	39 23
	ι A et	2	23	4 89
	———	2	30	47 26
5	ι A ıeti	2	23	5 77
	———	2	30	48 28
	Moon II L	2	37	19 01
23	4 Sa itta i	17	51	6 77
	ι ———	18	5	16 56
	Moon I L	18	15	22 20
	S g tta u	18	46	26 22
	π ———	19	1	19 70
24	S g tt r	18	46	26 80
	π ———	19	1	20 24
	Moon I L	19	17	12 39
Sept 20	¹ S gitt r	18	44	52 30
	———	18	55	27 49
	Moon I I	18	57	20 64
21	e S gittar i	19	33	44 43
	57———	19	43	16 76
	M on I L	19	56	18 32
	C p co n	20	31	18 97
	ι Aqu i	20	44	23 47
23	β Aq ia i	21	23	32 13
	λ C p ico n	21	38	19 64
	Moon I L	21	45	29 50
	γ Aqua i	22	13	47 44
	η ———	22	27	32 05
24	γ Aqua	22	13	49 50
	ι ———	22	27	34 06
	Moo I I	22	36	36 09
	γ Pis ium	23	9	18 67
	———	23	19	10 07
25	γ P s um	23	9	20 81
	———	23	19	12 39
	Moo I L	23	26	19 62
	Pi c un	23	51	34 56
26	d P ci m	0	12	52 57
	Moon I L	0	15	23 50

D	N	O T		
1844		h	m	s
Sept 26	δ P c m	0	40	53 84
	———	0	55	9 46
28	π Pi cium	1	29	12 10
	β A et	1	46	24 33
	Mo n II L	1	56	14 75
	Ari t s	2	30	20 43
	π ———	2	40	58 08
29	A ets	2	30	22 09
	π ———	2	40	59 84
	Moon II L	2	46	43 83
	g A et	3	15	30 55
	η T u	3	38	37 59
30	g A etis	3	15	32 59
	Moo II L	3	38	9 18
	η Tauri	3	38	39 26
	ω ———	4	8	33 48
Oct 1	ω T u	4	8	35 59
	Moo II L	4	30	22 52
	T u i	4	33	21 31
	———	4	54	14 42
	β ———	5	16	54 18
2	T uri	4	54	16 28
	β ———	5	16	55 95
	Moon II L	5	23	3 50
	η Gem o	6	5	57 08
	μ ———	6	14	0 70
3	η Gem o	6	5	59 07
	μ ———	6	14	3 01
	Moon II L	6	15	48 75
	ζ Geminor	6	55	22 36
	δ ———	7	11	19 09
18	ε S g ttarii	19	34	17 94
	Moon I L	19	39	16 38
	C pri o i	20	10	6 28
	Aqu u	20	39	56 10
19	Cap corni	20	10	7 68
	Moo I L	20	36	8 92
	Aqua i	20	39	58 18
	———	21	1	49 78
	β ———	21	24	4 86
21	θ Aquarii	22	9	23 64
	Moon I L	22	20	50 18
	β Ps ium	22	56	44 19
	γ ———	23	9	52 61
22	β Pisci m	22	56	46 44
	Moo I L	23	10	13 55
	Pisc um	23	32	45 88
	———	23	52	8 59
23	Pi c um	23	32	47 62
	———	23	52	10 27
	Moon I L	23	58	46 93
	δ P c um	0	41	27 59

D	N м	O T		
1844		h	m	s
O t 24	δ Pi i m	0	41	29 07
	Moon I L	0	47	16 89
	ι P scium	1	24	2 73
25	η P c m	1	24	4 12
	Moo I L	1	36	19 78
	θ A t	2	10	23 26
	ψ ———	2	23	11 61
26	θ A et	2	10	24 32
	ψ ———	2	23	12 55
	Moo II L	2	28	27 07
	A iet	2	51	15 04
	δ ———	3	3	40 00
27	A et	2	51	16 36
	δ ———	3	3	41 28
	M n II L	3	19	31 61
	A T	3	56	27 01
	ω ———	4	9	5 86
28	ω T u	4	9	7 21
	M II L	4	11	31 50
	T i	4	33	52 92
31	γ Geminor	6	29	45 23
	———	6	35	23 36
	Moon II L	6	48	41 22
Nov 2	θ Canc	8	23	46 40
	Moon II L	8	30	42 53
3	Canc i	9	0	23 65
	M n II L	9	20	56 59
	Leoni	10	1	9 32
17	30 Aqu	21	55	11 58
	Moon I L	22	4	21 86
	η Aq r	22	27	28 32
	z P scium	22	52	46 00
18	η Aqua i	22	27	29 58
	z Pis um	22	52	47 33
	Mo n I L	22	54	24 20
	P cium	23	19	5 74
	———	23	32	5 27
19	Pisc um	23	19	7 20
	———	23	32	6 83
	M on I L	23	43	0 64
	d Pis ium	0	12	45 81
20	d P sc m	0	12	47 27
	Moo I L	0	31	7 51
	Pi cium	0	55	4 18
21	Moon I L	1	19	31 00
	β A etis	1	46	16 39
22	β A ets	1	46	17 71
	Moon I L	2	8	46 48
	π Ari t s	2	40	51 63
	———	2	50	34 35

D	N	O T		
1844		h	m	
No 23	Moon I L	2	59	11 54
	η T	3	38	31 00
	A ———	3	55	46 45
24	η T	3	38	32 34
	M n I L	3	50	46 17
	A T i	3	55	48 02
	———	4	19	49 88
	———	4	33	12 38
25	Tau	4	19	51 05
	———	4	33	13 78
	Moo II L	4	45	21 40
26	β Tau	5	16	48 00
	ζ ———	5	28	40 96
	Moo II L	5	38	2 25
27	M o II L	6	30	21 63
	ζ Geminor	6	55	13 65
	δ ———	7	11	10 65
28	ζ G m	6	55	14 76
	δ ———	7	11	11 80
	M n II L	7	21	52 50
	ζ Ca c i	8	3	38 78
29	Moon II L	8	12	21 17
30	δ C nc	8	36	14 30
	———	8	50	22 39
	Moon II L	9	1	5 26
	Leo	9	33	14 19
	π ———	9	52	22 87
Dec 1	Leon	9	33	16 25
	M on II L	9	51	1 84
	ρ Leo s	10	25	2 08
	34 Se t t	10	35	0 71
21	ζ A et	3	6	30 51
	g ———	3	15	40 09
	Moo I L	3	33	51 37
	ω T u i	4	8	41 97
22	ω T u	4	8	44 01
	———	4	20	7 22
	Moon I L	4	25	53 96
	Tauri	4	54	23 30
1845				
Jan 17	δ A et	3	2	53 85
	Mo n I L	3	15	36 88
	η T uri	3	38	24 48
	A ———	3	55	40 18
18	η T u	3	38	25 97
	A ———	3	55	41 62
	Moon I L	4	7	15 77
	Taur	4	33	6 40
	———	4	52	59 76
20	C T ur	5	43	47 24

D	N	O T
1845		l m s
J 20	M I L	5 52 19 18
	μ G m no	6 13 47 04
	γ ———	6 28 57 46
21	μ G m no	6 13 48 63
	γ ———	6 28 58 92
	M o I L	6 44 49 39
	δ Ge or	7 11 5 32
	k ———	7 24 59 02
2	δ Gem o	7 11 6 64
	l ———	7 25 0 44
	Moo I L	7 36 40 13
	ζ C ı	8 8 33 53
	θ ———	8 22 59 67
23	ζ Canc	8 3 35 46
	θ ———	8 23 1 41
	M Cent	8 28 40 88
	C	8 59 37 09
24	Ca c	8 59 38 35
	M II L	9 19 46 5
	ξ L o	9 23 52 81
	π ———	9 5 18 86
	———	10 0 24 35
25	π Leo ı	9 52 20 29
	———	10 0 25 65
	M II L	10 9 11 56
	34 S ta ti	10 34 6 36
	d I or is	10 5 5 36
26	d L ı	10 52 53 8
	M II L	10 58 3 38
	Le ıı	11 29 21 4
	β V rgıı is	11 42 57 74
28	η V g is	12 12 22 29
	γ ———	12 34 12 08
	M II L	12 39 59 44
	Vi g is	13 17 25 48
	m ———	13 33 5 43
29	V g	13 17 27 06
	M II I	13 33 45 62
	V ɓ	14 5 3 08
	λ ———	14 11 8 95
30	V is	14 5 4 61
	λ ———	14 11 10 36
	M II L	14 30 31 95
	L b æ	15 3 50 4
Feb 14	η T u	3 38 53 15
	M oı I L	3 47 44 23
	γ T ı	4 11 35 21
	———	4 27 38 9.
15	γ Taur	4 11 36 41
	———	4 27 40 22
	Mo n I L	4 39 58 66
	β Ta ı	5 17 8 43

D	N	O T
1845		h m s
F b 15	ζ T u	5 29 1 59
16	β T	5 17 9 77
	ζ ———	5 29 2 97
	Mo I L	5 32 29 73
	μ G mı o	6 14 14 94
	l ———	6 29 25 27
17	μ Gem	6 14 16 22
	Mo I L	6 24 56 23
	γ G r	6 29 26 70
	ζ ———	6 55 36 07
	δ ———	7 11 33 25
18	ζ G m or	6 55 37 36
	δ ———	7 11 34 3
	Mo I L	7 16 57 35
	ζ C ı	8 4 1 77
19	ζ Canc ı	8 4 3 29
	M o I L	8 8 20 14
	δ C ı	8 36 36 37
	———	8 50 44 59
20	δ Ca cri	8 36 37 73
	———	8 50 45 99
	Moo I L	8 59 2 7
	L s	9 24 20 83
	———	9 33 38 09
21	Leo	9 24 22 23
	———	9 3 39 3
	M I L	9 49 10 76
	ρ I s	10 25 25 89
	34 S t ntis	10 35 24 30
22	ρ Leon s	10 25 27 33
	34 Sc t ntis	10 3 2 9
	Mo Cct	10 40 31 00
	Leonis	11 16 53 90
23	r Leo s	11 16 55 45
	M II L	11 3 16 47
	η Vi is	12 12 48 92
24	Moo II L	1 24 9 38
25	θ V rg is	13 2 49 10
	Mo II L	13 17 51 78
	Vi gı s	14 5 31 32
	λ ———	14 11 37 19
26	V g ıı	14 5 33 10
	λ ———	14 11 38 97
	M II L	14 14 6 73
	L b æ	14 43 13 84
	———	15 4 18 69
27	² L b æ	14 43 15 3
	———	15 4 20 24
	Mo II L	1 13 10 92
	β S rpıı	1 57 22 46
	———	16 3 56 14

D	N	O T
1845		h m
Feb 28	β S p	15 57 24 03
	———	16 3 57 65
	M o II L	16 14 22 94
	η Oph u h	17 2 26 97
Mar 17	γ G m or	6 29 45 92
	M o I L	6 55 36 63
	ζ G m or	6 55 55 13
	k ———	7 25 46 42
	g ———	7 38 9 59
18	Moon I L	7 46 51 00
	θ C c	8 23 47 61
	δ ———	8 36 54 89
19	θ C cn	8 23 49 04
	δ ———	8 36 55 90
	Moo I L	8 37 28 57
	C cı	9 0 24 75
20	Canc ı	9 0 25 67
	ξ Lc nis	9 24 40 23
	Mc n I L	9 27 42 11
	π Leo is	9 53 6 25
	———	10 1 11 69
21	π Leonis	9 53 7 80
	———	10 1 13 30
	Moo I L	10 17 59 09
	d L o	10 53 40 10
	f ———	11 6 56 36
22	d Leoı s	10 53 41 57
	p ———	11 6 57 86
	Moo I L	11 8 52 99
	L is	11 30 9 15
	β Vı ı is	11 43 45 52
23	Leonis	11 30 10 77
	β Vi gı ı	11 43 47 21
	M n I L	12 1 3 97
	γ Vi gınis	12 34 58 55
24	γ¹ Virg nı	12 34 59 93
	l ———	12 47 20 59
	M o II L	12 57 27 10
	V g	13 18 13 72
	x ———	13 42 39 33
25	x Virg	13 42 40 86
	Moon II L	13 54 9 36
26	L bræ	14 43 33 65
	Moo II L	14 53 35 54
	θ L b æ	15 46 15 1
	β S o pı	15 57 40 87
27	θ L b æ	15 46 16 93
	Mooı II L	15 55 26 54
	β Scorpıı	15 57 42 54
28	m Sco p	16 33 55 03
	Moo II L	16 58 46 75

D	N	O T
1845		l m
Ma 28	D Oph l	17 35 26 81
29	D Opl l	17 35 28 39
	M II L	18 2 11 31
	μ S gtt	18 5 49 11
	σ ———	18 46 58 57
	π ———	19 1 51 99
Apr 14	Mo I L	7 24 50 81
	ζ C cn	8 3 44 0
15	ζ C n	8 3 46 15
	Mo I L	8 15 4 77
	δ C c	8 36 19 23
	α ———	8 50 27 43
16	δ C ı	8 36 21 09
	———	8 50 29 28
	M o I L	9 4 42 58
	Leo	9 33 21 67
	π ———	9 52 30 57
17	Leonıs	9 33 23 33
	π ———	9 52 32 13
	Mo I L	9 54 11 33
	ρ Leo ıs	10 25 9 83
	34 Se t tıs	10 35 8 34
18	ρ Le ı	10 25 11 57
	34 S t nt	10 35 10 16
	Moon I L	10 44 10 25
19	Leo	11 20 33 20
	———	11 29 36 15
	M I L	11 35 25 33
	η V g	12 12 34 29
	q ———	12 26 22 83
20	η V g	12 12 5 93
	q ———	12 26 24 75
	Mo I L	12 28 44 49
	θ V g ı	13 2 33 19
	α ———	13 17 39 77
21	θ V gı ıs	13 2 35 05
	α ———	13 17 41 59
	M I L	13 24 53 03
	λ V g ı	14 11 23 52
	2 L b æ	14 15 45 37
22	λ V g ı	14 11 25 33
	2 L b æ	14 15 47 13
	Moo II L	14 26 39 56
	L b æ	15 4 5 53
	γ ———	15 27 33 33
24	β Sco p	15 57 11 63
	———	16 20 40 48
	Moo II L	16 34 10 0
	η Oph u hı	17 2 14 95
	θ ———	17 13 15 29

D	N	O T
1845		h m
Ap 25	η Opl chı	17 2 16 80
	θ ———	17 13 17 14
	M II L	17 39 38 02
	μ S gtt ı	18 5 16 77
27	ρ S g tt u	19 13 31 28
	———	19 34 29 69
	Moo II L	19 45 26 60
May 16	d L on s	10 58 5 38
	φ ———	11 9 19 39
	M o I L	11 11 19 54
	β V g nı	11 43 9 75
18	M on I L	12 56 19 95
	V g s	13 17 36 59
	O ———	13 38 15 80
19	V g	13 17 37 59
	O ———	13 38 16 75
	M I L	13 53 41 52
	L b æ	14 42 54 58
20	L b æ	14 4 55 60
	M o I L	14 54 59 01
	λ L b æ	15 44 57 65
	β Sco p ı	15 57 3 01
21	β S p	15 57 4 10
	Moo II L	16 2 18 61
22	η Opl h	17 2 7 76
	Moon II L	17 9 22 82
23	4 S g tta	17 51 58 52
	μ ———	18 5 8 41
	M II L	18 16 27 67
	π S g tt	19 1 11 31
	ρ ———	19 13 19 21
24	ρ Sag tta ı	19 13 5 69
	Moo II L	19 21 12 07
	C p cornı	20 9 51 55
	ρ ———	20 20 25 51
25	C prıcornı	20 9 51 93
	ρ ———	20 20 25 77
	Moon II L	20 22 44 80
	Aq ı	21 1 33 28
	β ———	21 23 48 10
26	Mo II L	21 20 33 09
	β Aqua	21 23 48 50
	30 ———	21 55 31 77
	γ ———	22 14 3 48
June 14	η Vı g n s	12 12 33 55
	Moo I L	12 31 49 28
	V rg	13 17 37 47
16	λ Vi g s	14 11 21 47
	Mo I L	14 23 47 89
	Libræ	15 4 1 82

D	N	O T
1845		h m
June 17	Mo I L	15 25 55 52
	β S pı	15 57 5 82
	———	16 20 35 11
24	η Aq	22 27 45 69
	Mo II L	22 48 26 91
	γ Pı un	23 9 29 98
July 13	M o I L	13 58 41 00
	2 L b æ	14 15 13 37
	———	14 42 26 76
17	μ S g tt	18 4 27 74
	Moon I L	18 11 17 60
24	P um	0 54 33 14
	Moo II L	1 3 9 62
25	β A ıet	1 45 41 81
	Mo II L	1 54 45 30
Aıg 12	S o p	16 1 55 4
	———	16 18 51 06
	M I L	16 3 49 16
	η Oph hı	17 0 25 73
	θ ———	17 11 26 08
13	η Oph ch	17 0 2 46
	θ ———	17 11 23 69
	M o I L	17 40 0 44
	μ S g tt	18 3 23 92
	A S C 2125	18 19 12 81
22	θ^1 A et	2 8 1 86
	ψ ———	2 20 50 12
	M II L	2 21 48 71
	A ıet s	2 48 5 49
	δ ———	3 1 17 49
23	A t	48 50 05
	δ ———	3 1 14 97
	Moon II L	3 17 38 41
Sept 9	M o I L	17 18 45 96
	4 S g tt	17 50 12 04
	μ ———	18 4 21 96
10	4 S gıtt	17 50 10 04
	μ ———	18 4 19 61
	Moo I L	18 21 35 46
	S g tta	18 55 13 73
	ρ ———	19 12 30 88
11	S g tta ı	18 55 11 51
	ρ^1 ———	19 12 29 08
	M on I L	19 24 2 14
	C p ıco n	20 9 15 12
	ρ ———	20 19 49 02
12	Cap ıco n	20 9 12 92
	ρ ———	20 19 46 88
	Moo I L	20 25 5 31

D	N	O T
1845		h m s
S ţt 13	Aqu ı	21 0 52 07
	(———	21 23 6 97
	M I L	21 24 13 06
	θ Aq ı	22 8 22 32
	ζ ———	22 20 34 12
14	M I L	2 21 26 13
	β P	22 55 40 38
	γ ———	23 8 49 00
17	δ P c u n	0 40 14 07
	———	0 54 29 62
	M› II L	1 7 52 95
	β A tis	1 45 40 73
19	π A ı tis	2 40 11 12
	———	2 49 53 66
	M(II L	2 55 33 44
	ı I ı	3 37 48 79
20	ı T u ı	3 37 47 12
	Mo II L	3 49 20 74
	T ı	4 26 31 67
	———	4 41 48 36
	Tau	5 17 46 03
	ε ———	27 49 33
	M u II L	5 35 48 66
	ı G ı unor	6 13 0 94
	γ ———	6 28 11 20
Oct 8	S g tt ı	18 59 26 04
	M(I I	19 3 33 55
	e S g tta ı	19 3 32 38
	C ı ricorn	20 8 20 48
9	e S gittarn	19 32 30 63
	M ı I L	20 3 46 99
	C ı corn	20 8 18 82
	μ Aqu u	20 43 9 10
11	30 Aquar	21 53 55 68
	M I L	21 58 16 71
	ı Aqua	2 26 12 00
20	χ O s	5 43 48 38
	Mo II L	6 5 25 85
No 7	β A ıu ı	1 22 28 86
	λ C ı ıcorn	21 37 16 45
	Moon I I	21 41 21 49
	γ Aquarn	22 12 43 84
	ı ———	22 26 28 67
8	γ Aq ıar ı	22 12 41 92
	ı ———	22 26 26 44
	M›o I L	22 35 37 96
	I ısc um	23 18 2 41
9	γ Pı cı m	23 8 8 88
	———	23 18 0 34
	Moon I L	23 28 34 72

D	N	O T
1845		h m
Nov 9	E P m	0 1 5 75
	d ———	0 11 38 78
10	d P m	0 11 36 26
	M I L	0 20 56 44
	P cı m	0 53 52 73
16	M o II L	5 44 23 51
	ı G m o	6 12 45 38
	γ ———	6 27 55 45
18	δ G m o	7 9 59 93
	ı ———	7 23 53 48
	M on II L	7 27 41 83
	ζ C c	8 2 26 59
21	Leo	9 31 56 70
	π ———	9 51 5 54
	Mo II L	9 52 44 19
	ρ Leoni	10 23 42 70
Dec 6	β P m	22 54 49 77
	γ ———	23 7 58 23
	M I L	23 12 41 76
	ω P m	23 50 11 84
9	ı Pı cium	1 22 0 98
	β Ar tı	1 44 54 59
	Moo I L	1 48 53 69
	ψ A ı tı	2 21 8 56
10	Moon I L	2 41 29 50
	ζ Ar t	3 5 49 7
11	ζ Ar et	3 5 48 93
	Moo I L	3 35 44 16
	δ T uri	4 13 49 22
	———	4 26 50 98
12	Tauri	4 26 50 32
	M on I L	4 29 23 47
	T uri	4 53 38 78
13	Tauri	4 53 37 88
	———	5 15 7 17
	Moo Cent	5 24 2 60
	η G m nor	6 5 19 13
	μ ———	6 13 22 79
18	ξ Leonis	9 23 17 44
	———	9 32 34 83
	Moon II L	9 35 37 63
	Leonis	9 59 48 77
19	Leo	9 59 47 89
	Moon II L	10 22 24 85
21	Leon s	11 28 39 72
	β Vı gı s	11 42 14 96
	Mo n II L	11 57 5 42
	γ¹ Vı ginis	12 33 27 04
1846 Jan 5	η Pisc um	1 23 8 87

D	N	O T
1846		h m
J 5	M I L	1 34 12 65
	A ı	1 58 24 22
	θ ———	2 9 28 28
6	M I L	2 26 38 79
	A ı	2 50 19 30
	δ ———	3 2 44 48
9	T ı	4 53 49 38
	y O	5 0 48 91
	M I L	5 5 37 03
	ζ T	5 28 22 25
	χ O o	5 45 11 3
10	ζ T u	5 28 22 35
	χ O o	5 45 11 63
	M I L	5 58 22 17
	γ G m o	6 28 44 51
	ξ ———	6 36 34 60
12	M on C nt	7 41 57 17
	θ Ca c ı	8 22 43 67
	δ ———	8 35 50 67
13	θ C	8 22 42 39
	Moo II L	8 32 13 32
	δ C	8 35 49 27
	———	8 59 17 79
	L o ıs	9 23 31 85
15	π L oı	9 51 56 53
	———	10 0 2 22
	M o II L	10 7 11 47
	ρ Leo	10 24 34 15
16	ρ Leoni	10 24 33 09
	d ———	10 52 27 47
	Moo II L	10 53 48 92
	Leon s	11 19 51 86
	———	11 28 54 78
17	Leonis	11 19 51 17
	———	11 28 54 28
	M II L	11 40 44 08
	η Vı g u	12 11 51 80
	γ¹ ———	12 33 41 5
18	Moon II L	12 28 43 85
	γ¹ V g	12 33 40 62
	θ ———	13 1 47 72
19	θ Vı gı ıs	13 1 46 91
	———	13 16 53 20
	M o II L	13 18 40 01
	Vı g n	14 4 29 10
	λ ———	14 10 35 08
Feb 3	Moon I L	3 1 34 17
	η T u ı	3 37 57 27
	λ ———	3 51 46 20
4	η Tauri	3 37 56 75
	λ ———	3 51 45 54

D	N	O T
1846		h m
Feb 4	Mo I L	3 55 2 10
	δ T	4 16 11 68
	———	4 26 41 81
5	δ T ı	4 16 11 14
	———	4 26 41 45
	Mo I L	4 48 17 34
	T ı	5 17 59 61
	ζ ———	5 28 3 03
6	T u	5 17 59 39
	ζ ———	5 28 2 74
	M I L	5 41 4 52
	μ G minor	6 13 14 79
9	s C c ı	7 59 42 60
	M I L	8 13 39 50
	29 C	8 19 38 20
	δ ———	8 35 32 45
	———	8 49 40 39
10	δ Ca c ı	8 35 32 95
	———	8 49 40 95
	M I L	9 2 11 23
	Leo	9 32 33 04
	π ———	9 51 41 61
12	ϱ Leo	10 24 20 6
	M II L	10 38 54 64
	σ L o	11 12 49 93
	———	11 19 39 38
15	M o II L	13 2 49 10
	ζ V g	13 26 29 90
	m ———	13 33 11 30
16	ζ V g ı	13 26 30 02
	m ———	13 33 11 41
	M II L	13 53 5 97
	L b æ	14 42 1 09
	———	14 48 4 07
18	β L b æ	15 8 22 47
	γ^1 ———	15 26 33 96
	Mo n II L	15 44 27 70
	σ S o p ı	16 11 28 88
	———	16 19 37 06
Ma 5	β Tau	5 16 9 70
	M I L	5 22 8 46
	O	5 58 22 83
	μ G m ıo	6 13 14 75
6	O onıs	5 58 22 83
	μ Gemı o	6 13 14 78
	M o I L	6 14 46 56
	Gem nor	6 36 14 88
	λ ———	7 8 50 76
7	ξ Ge or	6 36 14 72
	M o I L	7 6 9 29
	λ G m o	7 8 50 76
	g ———	7 36 48 60

D	N	O T
1846		h m s
Mar 7	1 C	7 47 50 96
8	g G m o	7 36 48 62
	1 C	7 47 51 01
	Moo I L	7 56 13 42
9	δ C	8 35 32 04
	M o I L	8 45 5 51
	ξ Leo	9 23 14 94
	———	9 32 32 15
10	ξ Leo	9 23 15 28
	M o I L	9 33 2 68
	L	9 59 46 78
	ϱ ———	10 24 18 71
11	Leo	9 59 46 83
	Mo I L	10 20 28 32
	ϱ L	10 24 19 01
	d ———	10 52 13 38
	σ ———	11 12 48 67
12	d Leo	10 52 14 11
	M I L	11 7 54 19
	σ L	11 12 49 34
	———	11 28 41 70
	β V	11 42 18 07
13	Le n	11 28 42 18
	β V g ı	11 42 16 69
	M II L	11 57 58 99
	γ V g	12 33 29 84
	ψ ———	12 45 59 50
14	γ V s	12 33 30 85
	M II L	12 47 11 26
	V g	13 16 44 20
	ζ ———	13 26 29 70
15	V g	13 16 44 76
	ζ ———	13 26 30 12
	Moo II L	13 38 9 49
16	λ Vı g s	14 10 27 8
	Mo II L	14 31 23 23
	f Lıb æ	15 25 26 00
17	β L b æ	15 8 24 53
	f^1 ———	15 25 26 78
	M II L	1 27 8 12
	δ S pı	15 50 5 09
	β ———	1 56 10 37
18	δ Sco p ı	15 50 55 88
	β ———	15 56 11 04
	M o II L	16 5 20 06
	ϱ Oplıu hı	17 11 28 04
19	η Opl uchı	17 1 14 78
	ϱ ———	17 11 28 54
	M II L	17 25 30 39
	4 S tt ı	17 50 5 3
	μ^1 ———	18 4 14 94

D	N	O T ı
1846		h m
Ap 4	δ Gem or	7 10 46 83
	k ———	7 24 40 70
	Mo I L	7 37 7 92
	s C	7 59 57 66
5	Ca ı	7 59 58 07
	29 ———	8 19 53 72
	M I L	8 26 30 26
	C	8 49 56 03
	———	8 59 16 66
6	C c ı	8 49 56 25
	———	8 59 16 88
	M on I L	9 14 41 70
	L	9 32 48 60
	———	10 0 2 90
7	Leo s	9 32 49 08
	———	10 0 3 39
	Moo I L	10 2 11 33
8	ϱ L	10 24 6 62
	M I L	10 49 34 44
	d L	10 5 31 15
	———	11 19 55 99
	β V g	11 42 35 54
9	I eo	11 19 56 29
	M I L	11 37 28 42
	β V g ı	11 42 35 84
	γ ———	12 33 47 28
10	η V	12 11 57 80
	Moo I L	12 26 33 89
	γ V g	12 33 47 66
	———	13 17 1 70
11	θ V g	13 1 55 41
	———	13 17 2 12
	Moo C t	13 18 33 40
12	V g	14 4 8 16
	λ ———	14 10 44 17
	Moo II L	14 12 55 85
13	L b æ	14 42 19 39
	Moo II L	15 8 49 04
	δ S o ı	15 51 19 80
14	δ S o p	15 51 12 18
	β ———	15 56 27 11
	Moo II L	16 7 11 78
	η Opl u l	17 1 30 63
	θ ———	17 12 31 10
15	η Oplı hı	17 1 32 19
	Mo II L	17 7 29 16
	θ O l h	17 12 32 63
	D ———	17 34 11 36
16	ι S gıtt	18 4 33 45
	Mo II L	18 8 42 21
	S tt ı	18 55 27 13

D	N	O T			
1846		l	m	s	
Ap 16	π S g ttarn	19	0	35	99
17	π S g tta	19	0	36	79
	M o II L	19	9	45	62
	Sag tt i	19	33	42	91
	C pr co i	20	9	30	55
May 4	L o s	9	33	0	86
	Moon I L	9	42	50	06
	α Leon s	10	0	15	49
	ρ ———	10	24	47	48
5	Leonis	10	0	16	01
	ρ ———	10	24	48	16
	Moon I L	10	29	53	48
	d Leo s	10	52	42	84
	———	11	20	7	72
6	d Leon s	10	52	42	84
	M n I L	11	17	9	36
	Leo i	11	20	7	72
	β Vi ginis	11	42	47	28
7	Moon I L	12	5	23	71
	η V g s	12	12	7	89
	γ^1 ———	12	33	57	75
	θ ———	13	2	5	32
8	γ Vi g nis	12	33	57	45
	Moon I L	12	55	24	69
	θ Vi g i	13	2	4	88
	———	13	17	11	50
	i ———	13	33	38	30
9	Vi g is	13	17	11	46
	m ———	13	33	38	30
	Mo n I L	13	47	58	60
	λ V g i	14	10	53	44
	Lib æ	14	42	28	57
10	λ V rginis	14	10	53	47
	Libræ	14	42	28	74
	Moon I L	14	43	19	55
	γ Lib æ	15	27	1	73
	δ Scorpii	15	51	21	02
11	γ^1 L b æ	15	27	1	67
	Moon II L	15	44	6	89
	δ Sco pii	15	51	20	91
	———	16	20	5	27
	———	16	26	25	09
12	Scorpii	16	20	5	03
	———	16	26	24	70
	Moon II L	16	45	10	25
	θ Ophiuchi	17	12	39	74
13	θ Oph uch	17	12	39	85
	Moon II L	17	47	41	46
14	Sag ttar i	18	45	48	80
	Moo II L	18	50	16	90
	S g ttarii	18	55	33	12

D	N ĸ	O T			
1846		l	m		
M y 14	ρ Sagitt	19	12	50	11
	e ———	19	33	48	12
15	ρ^1 S g tt ii	19	12	49	92
	———	19	33	47	91
	Moon II L	19	51	40	09
	β C p o	20	12	26	56
	Aqua i	20	39	24	32
16	β Capr orn	20	12	27	71
	Aqu ii	20	39	25	95
	Moon II L	20	51	7	36
	β Aqu	21	23	32	64
	δ C pricorni	21	38	37	68
June 3	e Leon	11	22	37	78
	β V g n	11	42	51	46
	Mo I L	11	44	30	82
	η V rgi is	12	12	12	99
	γ^1 ———	12	34	3	01
4	η Virgi	12	12	13	61
	Moon I L	12	32	57	55
5	θ V rgi i	13	2	11	62
	———	13	17	18	09
	Mo n I L	13	23	35	81
	V rg is	14	4	54	32
	λ ———	14	11	0	30
6	Vi ginis	14	4	9	31
	λ ———	14	10	15	23
	Mo n I L	14	16	2	51
7	β L b æ	15	8	10	75
	Moon I L	15	13	25	07
	δ S o i	15	50	41	90
	β^1 ———	15	55	56	96
9	θ Ophiucl i	17	11	58	77
	Moon I L	17	16	52	75
	Moon II L	17	19	17	39
	μ^1 Sag ttarii	18	3	58	31
12	² Caprico ni	20	8	51	30
	Moo II L	20	29	34	37
	Aqu i	20	38	40	91
14	Moon II L	22	26	25	57
	φ Aquari	23	5	39	04
	ψ^3 ———	23	10	15	27
15	φ Aqu rii	23	5	38	84
	ψ ———	23	10	14	77
	Moon II L	23	21	46	37
July 3	m Virg nis	13	31	3	36
	x ———	13	39	2	36
	Mo n I L	13	50	4	06
	Lib æ	14	39	53	96
4	α L b æ	14	41	52	92
	Moon I L	14	46	13	12

D	N	O T			
1846		h			
July 4	20 L b æ	14	55	35	19
	———	15	32	36	11
5	L bræ	15	32	34	92
	M I L	15	43	59	39
	S p	16	11	20	35
	ρ Oph u l	17	11	14	20
	D ———	17	33	39	89
	Mo I L	17	49	13	10
	S gitt	18	45	10	58
	———	18	54	54	62
8	Sag tt i	18	45	9	64
	Moo I L	18	54	19	65
	e S g tta	19	33	8	72
	C p icor i	20	8	56	57
Aug 1	Moon I L	15	17	57	97
	γ Lib æ	15	26	0	49
	β S pi	15	55	35	06
	———	16	19	4	37
2	Moon I L	16	15	54	49
	Sc pi	16	19	2	90
	η Opl ucl	17	0	37	24
10	s Pis um	23	56	20	85
	d ———	0	11	34	20
	Moo II L	0	30	52	29
Sept 4	M on I L	22	1	2	64
	η Aqu i	22	26	53	48
29	d Sag tt i	19	7	32	49
	ζ^1 ———	19	11	39	24
	Moon I L	19	30	56	52
	Cap icorni	20	8	25	53
	Aqua i	20	38	15	33
30	Cap ico	20	8	24	06
	Mo n I L	20	31	16	25
	Aqu ii	20	38	13	98
	———	21	1	6	01
Oct 1	Aqu i	21	0	4	45
	β ———	21	22	19	31
	Moon I L	21	31	6	40
5	P c um	0	53	46	00
	Moo II L	1	28	40	33
	Piscium	1	32	14	10
8	Moon II L	4	24	3	34
	T uri	4	25	51	29
	———	4	52	39	53
9	M on II L	5	20	53	07
	ζ T u i	5	27	11	31
29	Aqua	21	56	31	08
	Moon I L	22	6	14	81
	λ Aqi i	22	42	58	76

D	N M	O T h	m	s
1846		h	m	
O t 29	φ Aqu	23	4	44 83
30	λ Aqu ı	22	42	56 92
	Mo l L	23	3	9 56
	φ Aq	23	4	42 96
	P um	23	30	24 28
31	ω Pı ıum	23	49	45 26
	Moo I L	0	0	0 98
	δ Pı c um	0	37	46 90
	———	0	53	18 34
No 2	η Piscium	1	21	33 85
	β A t	1	44	27 60
	Moo I L	1	55	13 02
	μ Cet	2	34	56 45
	δ A ıetis	3	1	9 08
3	μ C t	2	34	55 47
	Mo II L	2	56	7 77
	δ A ti	3	1	8 24
	A T ı	3	53	54 13
4	η Tauri	3	36	37 78
	Mo n II L	3	54	59 09
	Tau	4	17	55 06
	———	4	25	22 48
5	Ta ı	4	17	54 32
	———	4	25	21 61
	M o II L	4	53	21 82
	ζ T ı	5	26	42 77
	O o	5	57	2 65
7	μ Geminor	6	11	53 59
	———	6	27	3 72
	M II L	6	45	33 18
	δ Ge ınor	7	9	10 08
	k ———	7	23	3 55
30	ξ C t	2	20	37 79
	Mo I L	2	30	43 95
	μ Cet	2	37	16 73
	δ A t	3	2	29 52
	f T u ı	3	22	2 12
Dec 1	γ A t	3	3	28 80
	f Γ	3	23	1 34
	M o I L	3	28	26 55
	γ Ta	4	11	40 84
	———	4	27	44 00
2	γ T u	4	11	39 80
	M o I L	4	26	33 27
	T	4	27	42 76
	———	4	54	31 69
	ζ ———	5	29	4 57
1847				
Ja 6	d Leo	10	52	44 29
	χ ———	10	57	11 98
	Moon II L	11	1	59 93
	Leo ı	11	29	11 75
	β Virgini	11	42	48 25

D	N M	O T h	m	s
1847		h	m	s
Jan 7	Le	11	29	11 86
	β V gin s	11	42	48 28
	Moon II L	11	48	3 72
	η V gı ı	12	12	9 46
	γ ———	12	33	59 11
8	η V gin	12	12	9 12
	γ ———	12	33	58 77
	Mo II L	12	34	32 39
	θ V gı ı	13	2	6 26
	———	13	17	12 67
25	ξ Tauri	3	18	53 35
	M o I L	3	47	13 55
	λ Tau ı	3	52	12 88
	γ ———	4	11	6 07
	———	4	27	9 39
26	γ T u	4	11	5 31
	———	4	27	8 81
	Moon I L	4	43	21 33
	ζ T u ı	5	28	30 47
27	ζ T uri	5	28	29 29
	Moo I L	5	39	1 63
	χ O on	5	45	18 61
	μ G m no	6	13	41 40
	γ ———	6	28	51 64
28	μ Gemi or	6	13	40 78
	γ ———	6	28	50 82
	Moon I L	6	33	42 88
	δ Gemino	7	10	57 58
29	k Gem no	7	24	50 58
	Mo I L	7	26	57 91
	ζ Ca cri	8	3	24 10
30	ζ C cr	8	3	23 49
	Moon I L	8	18	27 53
	θ C n ri	8	22	49 53
	———	8	50	4 51
	———	8	59	24 87
Feb 1	Moo II L	9	58	18 17
	Leon	10	0	9 96
	ρ ———	10	24	41 70
4	η Virg	12	11	58 34
	Moo II L	12	17	28 06
	δ V rgini	12	47	47 13
6	ζ V gı ı	13	26	44 93
	m ———	13	33	26 43
	Moon II L	13	52	20 77
	Lib æ	14	42	16 32
23	M on I L	5	21	40 34
	ζ Tau ı	5	28	7 59
	η G m o	6	5	16 11
	μ ———	6	13	19 85
24	η Geminor	6	5	15 45

D	N M	O T h	m	s
1847		h	m	
Feb 24	μ G m r	6	13	19 31
	Mo I L	6	16	38 23
	ζ Gemino	6	54	39 07
	δ ———	7	10	36 17
25	ζ Gem o	6	54	38 88
	Moo I L	7	10	2 50
	Gemino	7	34	49 58
26	Geminor	7	34	49 99
	φ ———	7	43	45 15
	Moon I L	8	1	42 34
	δ Ca cri	8	35	37 00
	———	8	49	44 76
27	Canc	8	49	44 02
	M on I L	8	51	36 66
	ξ Le ı	9	23	19 50
	———	9	32	36 71
M r 1	L o	9	59	49 79
	ρ ———	10	24	22 00
	Moo I L	10	27	7 99
	Le n	11	12	51 54
	———	11	19	40 89
2	Leo	11	12	51 36
	Moo II L	11	15	5 93
	L o ı	11	19	40 68
	V g	11	37	36 16
	β ———	11	42	20 07
3	V ginis	11	37	36 02
	β ———	11	42	20 30
	Moo II L	12	1	50 60
	γ V gi	12	33	31 45
	δ ———	12	47	30 34
4	γ V g	12	33	31 49
	Moon II L	12	48	28 16
	V g	13	16	45 21
	ζ ———	13	26	30 71
5	V gi ı	13	16	45 45
	ζ ———	13	26	30 87
	M II L	13	36	2 73
	V g	14	4	21 47
	λ ———	14	10	27 15
6	V gi s	14	4	21 35
	λ ———	14	10	27 39
	Moo II L	14	25	6 89
	β L b æ	15	8	23 51
9	η Oph h	17	1	12 53
	Moo II L	17	5	11 69
	θ Oph uchi	17	12	13 12
	D ———	17	33	52 01
24	Mo n I L	6	52	10 33
	ζ G m nor	6	54	29 88
	k ———	7	24	20 38
	———	7	33	40 40

D	N	O T h	m	s
1847		h	m	s
Mar 25	k Gemi or	7	24	21 02
	Moo I L	7	44	47 89
	θ C cri	8	22	20 85
	δ ———	8	35	27 93
26	θ Cancr	8	22	21 61
	Moo I L	8	35	20 72
	ξ Leo s	9	23	11 59
27	Moo I L	9	24	6 41
	Leo	9	32	29 15
	π ———	9	51	37 90
	———	9	59	43 56
29	d Leo	10	52	11 59
	χ ———	10	56	39 46
	Moon I L	10	58	4 56
	Leo	11	19	36 54
	β Virginis	11	42	15 92
30	Leo i	11	19	37 15
	Moon I L	11	44	22 81
	η V ginis	12	11	37 99
31	η Virg nis	12	11	39 06
	Moon I L	12	30	59 64
	θ Vi ginis	13	1	36 20
	———	13	16	42 61
Apr 1	θ V rgin s	13	1	37 49
	Moon II L	13	20	32 39
3	L b æ	14	42	2 59
	δ ———	14	52	25 61
	Moon II L	15	59	59 39
7	λ Sag tt r i	18	18	11 36
	Moo II L	18	41	4 10
	Sagittarii	18	45	26 19
	ρ ———	19	12	27 27
23	Can ri	8	49	53 96
	———	8	59	14 57
	M o I L	9	7	6 67
	Leonis	9	32	46 13
	———	10	0	0 49
26	Leon s	11	22	19 61
	Mooi I L	11	28	18 48
	π Virgini	11	52	51 52
	η ———	12	11	54 60
27	π Vi in s	11	52	51 86
	η ———	12	11	54 99
	Moon I L	12	14	44 05
	δ Vi g i	12	47	44 08
	θ ———	13	2	52 29
29	ζ Vi g s	13	26	44 62
	m ———	13	33	25 97
	Moon I L	13	50	29 91
May 1	f^1 Libræ	15	25	39 98

D	N M	O T h	m	s
1847		h	m	s
M y 1	Moon II L	15	35	28 14
	α Scorpii	16	19	52 95
3	η Ophiuchi	17	1	27 02
	θ ———	17	12	27 96
	Mo n II L	17	26	15 70
	λ Sagitt rii	18	18	22 26
4	μ Sagittarii	18	4	27 66
	λ ———	18	18	22 46
	Moon II L	18	23	40 86
	S gitt ii	18	55	21 19
	π ———	19	0	30 08
5	Sag ttar i	18	15	21 56
	π ———	19	0	30 39
	Moon II L	19	21	34 06
	Caprico n	20	9	23 83
6	Capr co ni	20	9	24 33
	Moo II L	20	19	20 49
	μ Aquarii	20	44	13 97
25	Moon I L	12	43	43 02
	61 Vi g nis	13	10	16 69
	———	13	17	0 30
26	Vi gi	13	16	59 56
	Moon I L	13	31	35 37
	Virginis	14	4	35 88
	λ ———	14	10	41 80
June 2	Sag ttar i	19	33	37 83
	Moo II L	20	1	56 11
	Cap i o ni	20	9	25 54
3	Aquarii	20	39	14 76
	μ ———	20	44	15 16
	Moon II L	20	59	48 15
	δ Capri orni	21	38	26 33
	Aquarii	21	58	0 91
July 21	Moon I L	14	29	29 42
	β L bræ	15	8	37 74
	γ ———	15	26	49 60
Aug 20	Moon I L	16	45	49 98
	ρ Opl iuchi	17	12	0 82
	Serpentis	17	32	59 47
21	ρ Oph uchi	17	12	1 64
	Serp nt s	17	33	0 38
	Moon I L	17	42	22 44
	μ^1 Sagitta i	18	4	48 50
	———	18	45	58 50
23	e Sagittar i	19	34	59 81
	Mo n I L	19	41	8 95
	Capricorni	20	9	47 66
	Aqua ii	20	39	37 44
25	γ Capricorni	21	31	52 63
	Moon I L	21	42	39 88

D	N	O TR h	m	s
1847		h	m	s
Aug 25	μ Capricorni	21	45	13 17
Sept 18	Moon I L	18	15	35 07
	S g ttari	18	56	5 72
	π ———	19	1	14 63
20	Capr corn	20	10	10 35
	Moon I L	20	12	7 42
	π C pr corni	20	19	10 06
	μ Aquarii	20	45	0 36
Oct 18	Moon I L	20	44	58 27
	β Aqı arii	21	23	48 32
	δ Capricorni	21	38	53 89
19	β Aqua	21	23	51 10
	δ C p o ni	21	38	56 49
	Moo I L	21	42	34 10
	γ Aquar	22	14	6 29
	λ ———	22	44	59 14
20	γ Aquar i	22	14	8 71
	Moo I L	22	40	37 60
	λ Aqua ii	22	45	1 72
	γ P cium	23	9	38 00
22	Moon I L	0	39	7 17
	δ P cium	0	41	14 58
	m Ceti	0	45	41 11
26	Moon II L	4	50	3 46
	ζ T u i	5	29	10 53
	χ Or o is	5	55	30 14
Nov 16	θ Aqua i	22	10	20 05
	γ ———	22	15	19 70
	Moon I L	22	18	51 31
	λ Aquarii	22	46	12 52
20	Piscium	1	39	5 45
	^{1} Cet	2	6	40 15
	Moon I L	2	10	40 15
	μ Cet	2	38	27 13
	Tauri	3	20	39 61
23	β Tauri	5	18	34 57
	Moon II L	5	21	5 90
	ζ T u	5	30	27 12
	μ Gem or	6	15	38 97
	γ ———	6	30	48 91
27	Moon II L	9	11	33 73
	Leoni	10	2	20 28
Dec 21	ζ Tau	5	29	22 90
	Moon Cent	5	49	38 77
	O oni	5	59	42 80
	μ Gemino	6	14	35 18

FINIS