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KG
11366
W21

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$\overline{\text{Lat.}}\,(P-p) = \dfrac{\overline{\text{Log. a}}\;\overline{\text{Lat. w}}}{\overline{\text{Log. b,}}}$

No.	1	2	3	4	5	6
Date.						
Log. dec. Day.						
" Diff.						
" .5						
Sum Logs.						
Number.						
w						
w,						
Log. tan. w,						
" a						
a. c. log. b.						
Sum Logs.						
P - p	88.54	89.17	−86.04	−85.28	−83.67	−84.60
P						
p						

No.						
Date.						
Log. dec. day						
" diff.						
Sum logs.						
Number						
w						
w,						
Log. tan. (D)	235.72	237.36	228.03	226.83	226.99	230.10
" a (C)	235.39	234.76	229.96	229.20	227.59	228.31
a.c. log. b	+0.33	+2.60	−1.93	−2.37	−0.60	+1.79
Sum logs.						
P - p						
P						
p						

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Deimos. (Pos. Angles)
Computation of Residuals.

7	8	9	10	11	12	13
−83.20	−80.55				−86.80	−87.81
228.31	224.23	221.47	61.07	58.47	55.57	51.78
226.73	224.08	220.36	58.91	57.37	56.59	51.20
+1.58	+0.15	+1.11	+2.16	+1.10	−1.02	+0.58

check.

~~Deim (Pos. Angl)~~
Computation of Residuals.

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Demios. (Pos. Angles)
Computation of Residuals.

7	8	9	10	11	12	13
−83.20	−80.55	−76.83	84.44	86.02	86.80	−87.81
228.31	224.23	221.47	61.07	58.47	55.57	51.78
226.73	224.08	220.36	58.91	57.37	56.59	51.20
+1.58	+0.15	+1.11	+2.16	+1.10	−1.02	+0.58

check.

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No.	14	15	16	17	18	19
Date.			Nov. 1. 7685	Nov. 1. 7764	Nov. 1. 7903	Nov. 1. 8037
Log. dec. day.			0.24761	0.24954	0.25293	0.25617
" diff.			2.75657			
" S			9.69897			
Sum Logs.			2.70315	2.70508	2.70847	2.71171
Number			504.83	507.09	511.05	514.89
w			646.78	(649.04)	653.00	656.84
w,			286.78	289.04	293.00	296.84
Log. tan. w,			0.52063	0.46204	0.37211	0.29588
" a			1.82600	1.82600	1.82611	1.82611
a.c. Log. b			8.82799	8.82798	8.82777	8.82777
Sum Logs.			1.17462	1.11582	1.02597	0.94976
I - p	-87.22	-86.89	-86.17	-85.62	-84.62	-83.59
I						
p						
No.						
Date.						
Log. dec. day			323.4700 -			
" diff.			.0093			
Sum Logs.			.04644			
Number			.0841	82	82	83
w			323.389	.388	.388	.387
w. (0)	51.22	50.36	45.56	49.16	49.54	47.46
Log. tan. w(0)	50.61	50.28	49.56	49.01	48.01	46.98
" a	+0.61	+0.08	- 4.00	+ 0.15	+ 1.53	+ 0.48
a.c. Log. b			X			
Sum Logs.						
I - p						
I						
p						

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20	21	22	23	24	25	26
Nov. 1. 8077	Nov. 1. 8182	Nov. 1. 8248	Nov. 1. 8450	Nov. 1. 8563	Nov. 1. 8705	Nov. 4. 6530
0.25713	0.25964	0.26121	0.26600	0.26865	0.27428	9.81491
						2.75661
						9.69897
2.71267	2.71518	2.71675	2.72154	2.72419	2.72982	2.70479
516.02	519.01	520.90	526.68	529.90	536.81	186.45
657.97	660.96	662.85	668.63	671.85	678.76	390.22
297.97	300.96	302.85	308.63	311.85	318.76	30.22
0.2749n	0.2219n	0.1900n	0.0974n	0.0478n	9.9428n	9.765 3
1.8261	1.8261	1.8261	1.8261	1.8261	1.8261	1.8265
8.8276	8.8276	8.8275	8.8274	8.8273	8.8272	8.8104
0.9286n	0.8756n	0.8436n	0.7509n	0.7012n	0.5961n	0.4022
−83.28	−82.41	−81.84	−79.94	−78.75	−77.78	68.39
						323.286−
						.088
						.044
83	84	84	85	86	86	.029
.387	.386	.386	.385	.384	.384	322.257
46.82	46.22	45.26	44.00	41.88	38.92	[227.35]
46.67	45.80	45.23	43.32	42.13	39.16	211.65
+0.15	+0.42	+0.03	+0.68	−0.25	−0.24	+15.70

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W1

No.	27	28	29	30	31	32
Date.	Nov. 4.79 01	Nov. [illegible] 7746	Nov. [illegible] 7910	Nov. [illegible] 6000	Nov. [illegible] 6177	Nov. [illegible] 6255
Log. dec. day.	9.89768	0.19717	0.20167	0.20412	0.20890	0.21099
" diff.		2.75661				
" . [illegible]		9.69897				
Sum Logs.	2.3[illegible]326	2.6[illegible]27[illegible]	2.6[illegible]72[illegible]	2.6[illegible]970	2.66448	2.666[illegible]7
Number	22[illegible].[illegible]6	449.[illegible]2	4[illegible]4.20	4[illegible]6.77	461.83	464.0[illegible]
w	429.36	6[illegible]3.32	6[illegible]8.00	660.[illegible]7	66[illegible].63	667.8[illegible]
w,	69.36	293.32	298.00	300.[illegible]7	30[illegible].63	307.8[illegible]
Log. [illegible]. w,	0.4241	0.36[illegible][illegible]w	0.2743w	0.2286w	0.1446w	0.1096w
" a	1.8[illegible]26[illegible]	1.8264	1.8264	1.8264	1.8264	1.8264
a. c. log. b	8.8096	8.80[illegible]1	8.80[illegible]0	8.8050	8.8049	8.8048
Sum Logs.	1.0602	0.9970w	0.90[illegible]7w	0.8600w	0.77[illegible]9w	0.7408w
P - p	8[illegible].02	-84.2[illegible]	-82.92	-82.14	-80.49	-79.70
P						
p						

No.		323.286-				
Date.		.088				
Log. dec. day		.044				
" diff.	3[illegible]-	.069	70	70	71	72
Sum log.	323.2[illegible]1	.217	.216	.216	.21[illegible]	.214
Number (O)	239.12	47.07	4[illegible].6[illegible]	44.67	43.89	42.7[illegible]
" (C)	238.23	47.47	46.14	45.36	43.71	42.91
w,	+0.89	-0.40	-0.49	-0.69	+0.18	-0.16
Log. [illegible]. w						
" a						
a. c. log. b.	Check.					
Sum Logs.						
P - p						
P						
p						

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P.

33	34	35	36	37	38	39
Lon. 6372	Lon. 6704	Lon. 6732	Lon. 6895	Lon. 10.8453	Lon. 10.8927	Lon. 10.8997
0.21410	0.21759	0.22385	0.22776	9.76738	9.77283	9.77793
				2.7866		
				9.69897		
2.66968	2.67317	2.67913	2.68334	2.22297	2.22842	2.23352
467.39	471.16	477.67	482.32	167.80	169.21	171.21
671.19	674.96	681.47	686.12	283.81	285.92	287.92
311.19	314.96	321.47	326.12			
0.0584n	0.0006n	9.9011n	9.8271n	0.6094n	0.8448n	0.4903n
1.8264	1.8264	1.8263	1.8263	1.8233	1.8232	1.8232
8.8048	8.8047	8.8046	8.8045	8.7799	8.7799	8.7798
0.6892n	0.6317n	0.5320n	0.4879n	1.2126n	1.1479n	1.0933n
-78.44	-76.86	-73.63	-70.79	-86.49	-85.93	-85.39

323.03
.073
.036

72	73	73	74	.021	21	22
.214	.213	.213	.212	.014	.014	.013
40.89	40.81	38.45	34.85	49.32	47.70	48.82
41.65	40.07	36.84	34.00	49.80	48.94	48.40
-0.76	+0.44	+1.61	+0.85	-0.18	-1.24	+0.12

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No.	40	41	42	43	44	45
Date.	Nov. 10.6045	Nov. 10.6633	Nov. 10.6711	Nov. 10.6948	Nov. 16.5991	Nov. 16.6159
Log. dec. day.	9.78140	9.82171	9.82679	9.84186	9.7775 0	9.7891
" diff.					2.7566 9	
" .5					9.6982 7	
Sum Logs.	2.23699	2.27730	2.28238	2.29745	2.23306	2.24507
Number	172.58	189.36	191.59	198.36	171.02	175.82
w	289.29	306.07	308.30	315.07	200.66	205.46
w_1						
Log. tan · w_1	0.4559w	0.1376w	0.1025w	9.9990w	9.5764	9.6777
" a	1.8232	1.8232	1.8232	1.8231	1.8141	1.8140
a.c. log. b	8.7794	8.7795	8.7795	8.7794	8.7584	8.7584
Sum Logs.	1.0485w	0.7403w	0.7052w	0.6015w	0.1489	0.2501
I − p	−85.01	−79.61	−78.85	−75.95	54.64	60.66
I						
p						
No.					322.839	
Date.					.051	
Log. dec. day.					.025	
" diff.	25	24	24	25	.015	.016
Sum logs.	.013	.011	.011	.010	322.824	.823
Number (C)	47.18	42.04	41.02	38.86	[79.49]	[67.27]
w (C)	48.02	42.65	41.86	38.96	88.18	82.16
w_1	− 0.84	− 0.55	− 0.84	− 0.10	− 8.69	− 14.89
Log. tan · w						
" a						
a.c. log. b.						
Sum logs.						
I − p						
I						
p						

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46	47	48	49	50	51	52
Lov. 16.6346	Lov. 16.7133	Lov. 16.7260	Lov. 16.7312	Lov. 16.7377	Lov. 16.7431	Lov. 16.7492
9.80250	9.85327	9.86094	9.86404	9.86788	9.87105	9.87460
2.25806	2.30883	2.31650	2.31960	2.32344	2.32661	2.33016
181.16	203.62	207.25	208.74	210.59	212.16	213.88
210.80	233.26	236.89	238.38	240.23	241.80	243.52
9.7753	0.1270	0.1856	0.2107	0.2426	0.2707	0.3027
1.8140	1.8138	1.8138	1.8138	1.8138	1.8138	1.8138
8.7583	8.7581	8.7581	8.7581	8.7581	8.7581	8.7581
0.3476	0.6989	0.7575	0.7826	0.8145	0.8426	0.8746
65.81	78.69	80.09	80.63	81.29	81.82	82.40
16	18	18	18	18	18	19
.828	.821	.821	.821	.821	.821	.820
[43.29]	63.78	63.00	61.52	61.70	60.60	59.36
77.01	64.13	62.70	62.19	61.53	61.00	60.42
−33.72	−0.35	+0.27	−0.67	+0.17	−0.40	−1.06

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No.	ν3	ν4	ν5	ν6	ν7	ν8
Date.	Nov. 16.7νν	Nov. 16.7613	Nov. 16.7667	Nov. 16.7723	Nov. 16.7930	Nov. 16.7989
Log. dec. day.	9.87ν23	9.88156	9.88463	9.88779	9.89927	9.90249
" diff.						
" ν						
Sum Logs.	2.33379	2.33712	2.34019	2.3433ν	2.3ν483	2.3ν8ον
Number	215.67	217.33	218.87	220.47	226.38	228.06
w	24ν.31	246.97	248.ν1	2ν0.11	2ν6.02	2ν7.70
w,						
Log. tan. w,	0.337ν	0.371ν	0.4048	0.441ν	0.6039	0.661ν
" a	1.8138	1.8137	1.8137	1.8137	1.8137	1.8137
a.c. log. b.	8.7ν80	8.7ν80	8.7ν80	8.7ν80	8.7ν79	8.7ν79
Sum Logs.	0.9093	0.9432	0.976ν	1.0132	1.17νν	1.2331
P-p	82.97	83.ν0	83.97	84.46	86.18	86.6ν
P						
p						

No.						
Date.						
Log. dec. day.						
" diff.	19	19	19	19	20	20
Sum Logs.	322.820	.820	.820	.820	.819	.819
Number (c)	60.18	58.76	58.64	57.70	ν6.72	ν6.08
w (c)	ν9.85	ν9.32	ν8.85	ν8.36	ν6.64	ν6.17
w,	+0.33	−0.ν6	−0.21	−0.66	+0.08	−0.09
Log. tan w						
" a						
a.c. log. b.						
Sum Logs.						
P-p						
P						
p						

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59	60	61	62	63	64	65
Nov. 16.8427	Nov. 16.8531	Nov. 16.8598	Nov. 16.8641	Nov. 16.8719	Nov. 16.8780	Nov. 16.8850
9.92567	9.93100	9.93440	9.93656	9.94047	9.94349	9.94694
2.38123	2.38646	2.38996	2.39212	2.39603	2.39905	2.40225
240.56	243.54	245.45	246.67	248.90	250.64	252.64
270.20	273.18	275.09	276.31	278.54	280.28	282.28
2.4571u	1.2553u	1.0503u	0.9563u	0.8234u	0.7415u	0.6622u
1.8136	1.8136	1.8135	1.8135	1.8135	1.8135	1.8135
8.7578	8.7578	8.7578	8.7578	8.7577	8.7577	8.7577
3.0285u	1.8267u	1.6216u	1.5276u	1.3946u	1.3127u	1.2334u
-89.95	-89.14	-88.63	-88.30	-87.69	-87.21	-86.66
X						

21	21	22	22	22	22	22
.818	.814	.817	.817	.817	.817	.817
52.64	51.12	52.18	51.08	50.92	49.70	50.26
52.77	51.96	51.45	51.12	50.51	50.03	49.48
-0.13	-0.84	+0.73	-0.04	+0.41	-0.33	+0.78

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No.	66	67	68	69	70	71
Date,	Nov. 16.8912	Nov. 16.8975	Nov. 16.9039	Nov. 16.9101	Nov. 16.9175	Nov. 16.9232
Log. dec. day.	9.94998	9.95303	9.95612	9.95909	9.96180	9.96530
" diff.						
Sum logs.	2.40555	2.40859	2.41168	2.41466	2.41736	2.42066
Number.	2544.1	2562.0	2580.4	2598.0	2614.3	2634.4
w.	284.05	285.86	287.68	288.44	291.07	293.18
w,						
Log. rate w,	0.6016w	0.5471w	0.4965w	0.4770w	0.4143w	0.3683w
" a	1.8134	1.8134	1.8134	1.8134	1.8134	1.8134
a. c. log. b.	8.7577	8.7577	8.7576	8.7576	8.7576	8.7576
Sum logs.	1.1728w	1.1183w	1.0675w	1.0480w	0.9853w	0.9393w
I-p	-86.16	-85.64	-85.11	-84.88	-84.09	-83.44
I						
p						

No.						
Date.						
Log. dec. day.						
" diff.						
Sum logs.	22	22	22	23	23	23
number	.817	.817	.817	.816	.816	.816
(o)	48.44	49.04	46.00	49.08	47.10	46.32
(c)	48.95	48.46	47.93	47.70	46.91	46.26
	-0.55	+0.58	-1.93	+1.38	+0.19	+0.06

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72	73	74	75	76	77	78	79
Nov. 16.9311	Nov. 21.5113	Nov. 21.5243	Nov. 21.6919	Nov. 21.7053	Nov. 21.7274	Nov. 21.7492	Nov. 21.7689
9.96900	0.17935	0.18307	0.22837	0.23180	0.23742	0.24532	0.24771
	2.7566						
2.42456	2.63487	2.63863	2.68393	2.68736	2.69298	2.70088	2.70327
2650	4313	4314	4429	4681	4931	5020	5049
2944	5269	5264	5744	5831	5446	5370	5648
	162.89	166.64	214.48	218.31	224.65	233.70	236.48
0.32274	9.48833	9.37566	9.83688	9.89766	9.99477	0.13400	0.17889
1.81341	1.80241	1.80241	1.80191	1.80191	1.80181	1.80171	1.80171
8.75766	8.74866	8.74866	8.74883	8.74883	8.74883	8.74825	8.74825
0.89372	0.03933	9.92666	0.38700	0.44788	0.55448	0.68399	0.72888
-82.72	-47.59	-40.18	67.70	70.37	74.08	78.30	79.42

322.744
.038
.019

23	.029	.029	.032	.032	.033	.033	.034
.816	322.715	.715	.712	.712	.711	.711	.710
40.62	[205.28]	[204.44]	[66.19]	[62.34]	[57.84]	6542	6490
45.54	190.31	182.90	75.01	72.34	68.63	64.41	63.29
-4.92	+14.97	21.54	-8.82	-10.00	-10.79	+1.01	+1.61

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No.	80	81	82	83	84	85
Date.	Nov. 21.7827	Nov. 21.8103	Nov. 21.8265	Nov. 21.8517	Nov. 21.8782	Nov. 21.8643
Log. dec. day.	0.2[illegible]1084	0.2[illegible]7[illegible]	0.26162	0.2675[illegible]	0.26910	0.2705[illegible]
" diff.						
Sum logs.	2.70664	2.71331	2.71718	2.72313	2.72466	2.72604
Number.	[illegible]089	[illegible]16.79	[illegible]21.41	[illegible]28.60	[illegible]30.47	[illegible]32.21
w	600.41	608.29	612.91	620.10	621.97	623.71
w,	240.41	248.29	252.91	260.10	261.97	263.71
Log. tan. w,	0.2458	0.4000	0.[illegible]123	0.7[illegible]81	0.8[illegible]0[illegible]	0.9[illegible]77
" a	1.8017	1.8016	1.8016	1.8015	1.8015	1.8015
a.c. log. b.	8.7482	8.7482	8.7482	8.7481	8.7481	8.7481
Sum logs.	0.7957	0.9498	1.0621	1.3077	1.4001	1.5073
P - p	80.91	83.54	85.05	87.18	87.72	88.22
P						
p						

	.034	.034	.035	.035	.035	.035
	.710	.710	.709	.709	.709	.709
(o)	64.58	59.76	57.92	[illegible]7.96	[illegible]4.78	[illegible]4.14
(c)	61.80	[illegible]9.17	[illegible]7.66	[illegible]5.53	[illegible]4.99	[illegible]4.49
	-0.22	+0.[illegible]9	+0.26	+0.43	-0.21	-0.3[illegible]

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86	87	88	89	90	91	92	93
Lov.21.8696	Lov.21.8766	Lov.21.8837	Lov.21.9037	Lov.22.0188	Lov.22.0358	Lov.22.0447	Lov.23.0947
0.27175	0.27337	0.27507	0.27944	9.71500 2.76502	9.72900	9.7369	0.20263 2.76502
2.72731	2.72893	2.73363	2.73500	2.17049	2.18449	2.19244	2.68102
533.71	535.71	541.54	543.25	148.08	152.93	155.75	455.11
625.21	627.21	633.04	634.75	450.47	452.32	458.14	757.50
265.21	267.21	273.04	274.75	90.47	95.32	98.14	37.50
1.0768	1.3122	1.2749u	1.0805u	2.0860u	1.0310u	0.8445u	9.8850
1.8014	1.8014	1.8014	1.8014	1.7996	1.7995	1.7995	1.7965
8.7481	8.7481	8.7480	8.7480	8.7475	8.7475	8.7475	8.7467
1.6263	1.8617	1.8243u	1.6299u	2.6331u	1.5780u	1.3915u	0.4285
88.64	89.21	-89.14	-88.66	-89.87	-88.49	-87.67	69.54

				322.706-			322.706-
				.032			.032
				.016			.016
36	36	36	36	.008	9	9	.025
.708	.708	.708	.708	322.698	322.697	.697	322.681
540.8	53.50	51.50	53.14	232.40	231.26	230.88	[254.14]
54.07	53.50	51.85	51.37	232.57	231.09	230.37	253.14
+0.01	0.00	-0.35	+1.77	-0.17	+0.07	+0.51	+1.00

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No.	94	95	96	97	98	99
Date,	hor. 23.6105	hor. 23.7324	hor. 23.7489	hor. 23.7583	hor. 23.7665	hor. 23.7895
Log. dec. day	0.20697	0.24015	0.24277	0.24510	0.24712	0.25273
" diff.						
Sum logs.	2.66246	2.69564	2.69826	2.70059	2.70261	2.70822
Number	459.69	496.18	499.19	501.87	504.21	510.76
w	762.08	798.57	801.58	804.26	806.60	813.15
w,	42.08	78.57	81.58	84.26	86.60	93.15
Log. Sin. w,	9.9857	0.6942	0.8297	0.9978	1.2261	1.2694
" a	1.7964	1.7961	1.7960	1.7960	1.7960	1.7959
a. C. log. b.	8.7466	8.7465	8.7465	8.7465	8.7465	8.7465
Sum logs.	0.4987	1.2368	1.3722	1.5403	1.7686	1.8018
P - p	72.40	86.62	87.57	88.34	89.02	-89.10
P						
p						
	.026	28	28	28	28	29
	324.680	.678	.678	.678	.678	.677
(O)	[249.34]	235.88	235.20	234.66	233.86	231.86
(C)	250.28	236.06	235.11	234.20	233.66	231.78
	-0.94	-0.18	+0.09	+0.36	+0.20	+0.08

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100	101	102	103	104	105	106
Lon. 23.7996	Lon. 23.8044	Lon. 23.8237	Lon. 23.8337	Lon. 24.4311	Lon. 24.4384	Lon. 24.4573
0.25517	0.25730	0.26095	0.26333	9.6345 2.7561	9.64187	9.66020
2.71066	2.71279	2.71644	2.71882	2.0900	2.09734	2.11567
√13.64	√16.17	√20.52	√23.09	123.04	125.12	130.52
816.03	818.56	822.91	825.78	276.28	27836	283.76
96.03	98.56	102.91	105.78			
0.9762	0.8224	0.6394	0.5489	0.9584	0.8328	0.6110
1.7959	1.7959	1.7952	1.7958	1.7939	1.7939	1.7939
8.7465	8.7465	8.7464	8.7464	8.7462	8.7462	8.7462
1.5186	1.3644	1.1820	1.0911	1.4985	1.3729	1.1511
−88.26	−87.53	−86.24	−85.36	−88.18	−87.57	−85.96

322.674
.028
.014

29	29	29	29	.006	6	6
.677	.677	.677	.677	322.668	.664	.664
230.70	230.22	228.92	227.26	√0.62	√0.18	48.70
230.94	230.21	228.92	228.04	√0.85	√0.24	48.63
−0.24	+0.01	−0.20	−0.78	−0.23	−0.06	+0.07

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No.	107	108	109	110	111
Date.	Nov. 24 ν327	.ν640	.ν687	.ν947	Nov. 25. ν113
Log. dec. day	9.72648	9.7ν128	9.7ν488	9.77430	0.1793ν
In diff.					2.7ν6ν0
Sine logs.	2.1819ν	2.2067ν	2.2103ν	2.22977	2.63482
Number	1ν2.04	160.97	162.31	169.73	431.34
w	30ν.24	314.21	31ν.νν	322.97	ν84.νδ
w,					224.νδ
Log. cos. w,	0.1ν02n	0.0120n	9.9917n	9.8776n	9.9936
In a	1.7936	1.793ν	1.793ν	1.7934	1.790ν
a.c. log. b.	8.7461	8.7461	8.7461	8.7461	8.74ν8
Sine. logs.	0.6899n	0.ννν16n	0.ν3134n	0.4171n	0.ν2999
I - p	-78.46	-74.31	-73.60	-69.06	73.ννν
I					
p					
					322.674-
					.026
					.013
	7	8	8	8	.020
	32ν.667	.666	.666	.666	32ν.6ν4
(0)	40.94	38.28	3ν.92	33.40	69.94
(d)	41.13	36.98	36.27	31.73	69.10
	-0.19	+1.30	-0.3ν	+1.67	+0.84

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112	113	114	115	116	117	118
.5197	.5468	.5599	.5700	.5906	.6412	Nov. 26. 44 A3
0.18176	0.18943	0.19309	0.19590	0.20156	0.21516	9.65157
						2.75646
2.63723	2.64490	2.64856	2.65137	2.65703	2.67063	2.10700
433.74	441.47	445.20	448.10	453.97	468.41	127.94
586.98	594.71	598.44	601.34	607.21	621.65	132.00
226.98	234.71	238.44	241.34	247.21	261.65	
0.0300	0.1501	0.2117	0.2623	0.3766	0.8333	0.04569
1.7905	1.7904	1.7904	1.7904	1.7903	1.7901	1.7875
8.7458	8.7458	8.7458	8.7458	8.7458	8.7458	8.7458
0.5663	0.6863	0.7479	0.7945	0.9127	1.3692	0.57899
74.81	78.36	79.87	80.96	83.03	87.55	−7.523
						322.644 −
						.021
						.010
20	20	20	20	21	21	4
.6574	.6574	.6574	.6574	.6573	.6573	322.644
60.41	64.86	62.22	62.32	60.64	54.96	220.06
67.84	64.29	62.78	61.69	59.62	55.10	217.87
−7.43	+0.57	−0.56	+0.63	+1.02	−0.14	+2.19

V. D. Sp. lines used large sp. der.

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No.	119	120	121	122	123
Date,	Nov. 29.4969	.5198	.5284	.5555	.5611
Log. dec. day	0.17519	0.18181	0.18432	0.19187	0.19343
" diff.	2.7563				
Sum logs.	2.63079	2.63721	2.63972	2.64727	2.64883
Number,	427.16	433.72	436.23	443.88	445.48
ω	641.99	648.55	651.06	658.71	660.31
ω_1	281.99	288.55	291.06	298.71	300.31
Log. Cos ω_1	0.6729n	0.4743n	0.4145n	0.2614n	0.2331n
" a	1.7770	1.7767	1.7767	1.7766	1.7766
a.c. log. b.	8.7474	8.7474	8.7474	8.7474	8.7474
Sum logs.	1.1973n	0.9984n	0.9386n	0.7854n	0.7571n
I - p	-86.37	-84.27	-83.43	-80.69	-80.08
I					
p					
	322.627-				
	.018				
	.009				
	14	14	14	14	14
	322.613	.613	.613	.613	.613
(o)	47.78	47.32	45.42	44.32	42.79
(c)	46.98	46.88	46.04	43.30	42.69
	-1.20	+0.44	-0.62	+1.02	+0.108

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124	125	126	127	128	129
log 30.5041	.5169	.5549	.5973	.6073	.6322
9.70252	9.71341	9.74421	9.77619	9.78340	9.8005
2.5639					
2.15788	2.16877	2.19957	2.23157	2.23876	2.25621
143.84	147.49	158.38	170.43	173.28	180.39
209.40	213.05	223.89	235.99	238.84	245.95
9.7509	9.8133	9.9831	0.1708	0.2185	0.3504
1.7731	1.7730	1.7729	1.7727	1.7727	1.7726
8.7484	8.7484	8.7485	8.7485	8.7486	8.7486
0.2724	0.3347	0.5045	0.6920	0.7398	0.8716
61.89	65.12	72.62	78.51	79.68	82.34
322.609-					
.015					
.0088					
4	4	4	5	5	5
322.605	.605	.605	.604	.604	604
68.12	68.71	70.64	63.52	63.92	60.16
80.71	77.48	69.98	64.09	62.92	60.26
-12.59	-8.77	+0.66	-0.57	+1.00	-0.10
Dist. 1.	Dist. 6.				

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Lv.	130	131	132	133	134
Date.	Nov. 30.6418	.6679	.6782	.7096	.7154
Log. dec. day	9.80740	9.82471	9.83136	9.85101	9.85447
" diff.					
Sum logs.	2.26276	2.28007	2.28672	2.30637	2.30991
Number	183.13	190.52	193.52	202.47	204.13
w	248.69	256.14	259.08	268.03	269.69
w,					
Log. tan w,	0.4089	0.6074	0.7146	1.4635	2.2668
" a	1.7726	1.7725	1.7724	1.7723	1.7723
a.c. log. b,	8.7486	8.7486	8.7486	8.7487	8.7487
Sum logs.	0.9301	1.1289	1.2356	1.9845	2.7878
I - p	83.30	85.75	86.67	89.41	89.91
I					
p					
	5	5	5	6	6
	322.604	.604	.604	.603	.603
(0)	60.40	56.86	57.06	52.94	53.10
(0)	59.30	56.85	55.93	53.19	52.69
	+1.10	+0.01	+1.13	−0.25	+0.41

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135	136	137	138	139	140	141
.7325	.7489	.7543	.7750	.7900	.8082	.8156
9.8644	9.8744	9.8775	9.8893	9.8976	9.9075	9.9114
2.32017	2.32978	2.33290	2.34466	2.35299	2.36288	2.36684
209.01	213.69	215.23	221.14	225.42	230.61	232.72
274.57	279.25	280.79	286.70	290.98	296.17	298.28
1.0973u	0.7882u	0.7199u	0.5229u	0.4163u	0.3086u	0.2693u
1.7722	1.7722	1.7721	1.7721	1.7720	1.7719	1.7719
8.7487	8.7487	8.7487	8.7488	8.7488	8.7488	8.7488
1.6182u	1.3091u	1.2407u	1.0436u	0.9371u	0.8293u	0.7900u
-88.62	-87.19	-86.71	-84.83	-83.41	-81.57	-80.79
6	6	6	6	6	6	7
.603	.603	.603	.603	.603	.603	.602
50.48	50.02	49.42	48.18	47.74	47.16	43.66
51.22	49.79	49.31	47.43	46.01	44.17	43.39
-0.74	+0.23	+0.11	+0.75	-0.47	+0.99	+0.27

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W.

Eco.	142	143	144	145	146
Date.	Nov. 30.8378	.8446	.8512	Dec. 1.5504	Dec. 4.4369
Log. dec. day	9.92314	9.92665	9.93003	0.19044	9.64032
" diff.				2.75639	2.75632
Sum log.	2.37850	2.38201	2.38539	2.64580	2.09567
number.	239.05	241.00	242.88	442.38	124.64
ω	304.61	306.56	308.44	507.94	251.50
ω,				147.94	
Log. sin. ω,	0.16100	0.12978	0.10044	9.79688	0.47552
" a	1.7718	1.7718	1.7718	1.7691	1.7576
a.c. log. b	8.7488	8.7489	8.7489	8.7497	8.7548
Sum log.	0.68116	0.65045	0.62211	0.31576	0.9879
P-p	-78.54	-77.39	-76.54	-64.20	84.13
P					
p					
				322.609	322.552
				.015	.011
				.008	.006
	7	7	7	12	3
	322.602	.602	.602	322.597	322.579
(o)	42.42	39.36	40.58	211.24	57.69
(c)	40.84	39.99	39.14	206.80	58.45
	+1.58	-0.63	+1.44	+4.44	-0.76

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147	148	149	150	151	152	153
.4970	.5119	.5393	.5461	.5870	.6061	.6210
9.69636	9.70919	9.73183	9.73727	9.76864	9.78254	9.79309
2.1516	2.16448	2.18712	2.19256	2.22393	2.23783	2.24838
141.79	146.04	153.46	155.80	167.48	172.92	177.17
268.65	272.90	280.72	282.66	294.34	299.78	304.03
*						
1.6277	1.2954u	0.7228u	0.6485u	0.3445u	0.2424u	0.1705u
1.7574	1.7573	1.7572	1.7572	1.7570	1.7569	1.7569
8.7549	8.7549	8.7550	8.7550	8.7551	8.7551	8.7552
2.1400	1.8076u	1.2304u	1.1607u	0.8566u	0.7544u	0.6826u
89.58	−89.11	−86.67	−86.04	−82.08	−80.02	−78.27
3	3	3	3	4	4	4
.579	.579	.579	.579	.578	.578	.578
53.14	51.58	49.50	48.66	44.46	42.76	41.00
53.00	51.69	49.25	48.62	44.66	42.60	40.85
+0.14	−0.11	+0.25	+0.04	−0.20	+0.16	+0.15

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Lis.	154	155	156	157	158
Date.	Dec. 4. 6476	.6555	.7109	.7194	.7644
Log. dec. day	9.81131	9.81657	9.85181	9.85697	9.88332
" diff.					
Sum logs.	2.26660	2.27186	2.30710	2.31226	2.33861
Number	184.76	187.01	202.82	205.24	218.08
w	311.62	313.87	329.68	332.10	344.94
w,					
Log. tan w,	0.0514n	0.0172n	9.7670n	9.7238n	9.4299n
" a	1.7567	1.7567	1.7565	1.7565	1.7563
a.c. log. b	8.7555n	8.7555n	8.7554	8.7554	8.7555
Sum logs.	0.5633n	0.5291n	0.2789n	0.2357n	9.9417n
P - p	-74.71	-73.52	-62.55	-59.54	-41.17
P					
p					
	4	4	4	4	5
	.5778	.5778	.5778	.5778	.577
(o)	38.48	36.30	30.60	27.72	[42.44]
(c)	37.29	36.10	24.83	22.42	3.75
	+1.19	+0.20	.5.77	.5.30	+38.69
			Star, obs. by mistake Sp. lines used.	Do.	Do.

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P.

159	160	161	162	163	164	165
Dec. 7. 5271	.5873	.6105	.6539	.7308	.7413	.7541
0.18387	0.20066	0.20697	0.21851	0.23825	0.24084	0.24406
2.75634						
9.69897						
2.63912	2.65591	2.66222	2.67376	2.69350	2.69613	2.69931
435.63	452.80	459.43	471.80	493.74	496.74	500.39
773.07	790.24	796.87	809.24	831.18	834.18	837.83
53.07	70.24	76.87	89.24	111.18	114.18	117.83
0,1240	0,4447	0.6322	1.8773	0,4118w	0.3478w	0.2775w
1,7447	1,7445	1,7444	1,7442	1,7438	1,7438	1,7438
8,7622	8,7623	8.7624	8.7625	8.7627	8,7627	8.7628
0.6309	0.9515	1.1390	2,3840	0.9183w	0,8543w	0,7841w
76.84	83.62	85.85	89.76	−83.12	−82,04	−80,66

322.5713
.010
.005
8

8	8	9	9	9
322.563	.563	.563	.562	.562	.562	.562
246.26	240.04	236.48	233.74	224.20	225.74	222.80
245.72	238.94	236.71	232.80	225.68	224.60	223.22
+0.54	+1.10	−0.23	+0.94	−1.48	+1.14	−0.42

Check.

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W. X

No.	166	167	168	169	170
Date.	.7816	.7905	Dec. 9.4239	.4396	.4531
Log. dec. day	0.2507	0.2529	0.1534	0.1824	0.16230
" diff.			2.7562 4 9.6982 97		
Sum logs.	2.70606	2.70823	2.60869	2.61347	2.61751
Number	507.23	510.7	406.1	410.63	414.49
w	847.67	848.22	794.12	798.60	602.46
w,	125.67	128.22	234.12	238.60	242.46
Log. tan. w,	0.1440n	0.1038n	0.1406	0.2144	0.2828
" a	1.7436	1.7436	1.7364	1.7364	1.7363
a. C. log. b	8.7628	8.7629	8.7677	8.7677	8.7678
Sum logs.	0.6504n	0.6103n	0.6447	0.7185	0.7869
I - i	-77.39	-76.22	77.23	79.18	80.72
I					
p					
			322.561-		
			.009		
			.004		
	9	9	6	6	6
	322.562	.562	322.555	.555	.555
(o)	218.90	219.17	44.04	63.00	62.06
(c)	219.95	218.78	65.33	63.38	61.84
	-1.05	+0.39	-21.29	- 0.38	+ 0.22

Check.

Prob. not Perinv.

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171	172	173	174	175	176	177
.5110	.5390	.5512	.5839	.6209	.6455	.6677
0.17926	0.18724	0.19067	0.19973	0.20975	0.21630	0.22212
2.63447	2.64245	2.64588	2.65494	2.66496	2.67151	2.67733
430.99	438.99	442.47	451.79	462.34	469.37	475.70
618.96	626.96	630.44	639.76	650.31	657.34	663.67
258.96	266.96	270.44	279.76	290.31	297.34	303.67
0.7097	1.2749	2.1147u	0.7644u	0.4317u	0.2865u	0.1764u
1.7361	1.7359	1.7359	1.7357	1.7356	1.7355	1.7354
8.7679	8.7680	8.7681	8.7682	8.7683	8.7683	8.7684
1.2137	1.7788	2.6187u	1.2683u	0.9356u	0.7903u	0.6802u
86.50	89.04	-89.86	-86.91	-83.38	-80.79	-78.21
6	6	6	6	6	7	7
.5555	.5555	.5555	.5555	.5554	.5554	.5554
56.74	53.04	53.00	50.24	44.54	43.94	41.26
56.06	53.52	52.42	49.47	45.94	43.34	40.76
+0.68	-0.48	+0.58	+0.77	-1.40	+0.60	+0.50

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p.

No.	178	179	180	181	182
Date.	Dec. 2.5961	.6298	.6416	.6761	.7003
Log. dec. day	9.7752	9.79920	9.80726	9.83001	9.8452
" diff.	2.75616 / 9.69297				
Sum logs.	2.23047	2.25433	2.26239	2.28514	2.30041
Number	170.00	179.61	182.97	192.82	199.72
w	418.85	428.46	431.82	441.67	448.57
w,	58.85	68.46	71.82	81.67	88.57
Log. fun. w,	0.2186	0.4037	0.4836	0.8344	1.6027
" a	1.7222	1.7220	1.7220	1.7218	1.7217
a. c. log. C	8.7784	8.7785	8.7786	8.7787	8.7788
Sum logs.	0.7192	0.9042	0.9842	1.3349	2.1032
P - p	79.19	82.89	84.08	87.35	89.55
P					
p					
	322.543 -				
	.009				
	.004				
	2	3	3	3	3
	322.541	.541	.541	.541	.541
(o)	247.24	239.64	239.16	236.10	234.54
(c)	243.35	239.65	238.46	235.19	232.99
	+3.92	-1.77	+0.70	+0.91	+1.55

check.

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183	184	185	186	187	188	189
.7192	.7385	.7527	.7731	.7964	Dec. 17.7484	Dec. 18.4386
9.8568	9.8683	9.8766	9.8824	9.9013	0.2414 0 2.7560 8 9.6897	9.6420 2.7560 9.6897
2.3119	2.3234	2.3317	2.3433	2.3562	2.6964	2.0970
205.10	210.61	214.66	220.48	227.12	497.11	125.05
453.95	459.46	463.51	469.33	475.97	806.64	284.83
93.95	99.46	103.51	109.33	115.97	86.64	
1.1609u	0.7783u	0.6193u	0.4550u	0.3124u	1.2313	0.5771u
1.7216	1.7215	1.7215	1.7214	1.7213	1.6983	1.6950
8.7789	8.7789	8.7790	8.7791	8.7791	8.7992	8.8023
1.6614u	1.2787u	1.1198u	0.9555u	0.8128u	1.7288	1.0744u
-88.75	-86.99	-85.66	-83.68	-81.25	88.93	-85.18
					322.5525	322.5516
					.009	.010
					.004	.005
3	3	3	3	3	6	2
.5541	.5541	.5541	.5541	.5541	322.5519	322.5514
230.40	231.06	227.68	227.74	221.44	232.48	48.04
231.29	229.53	228.20	226.22	223.79	233.59	47.69
-0.49	+1.53	-0.52	+1.52	-1.91	-1.11	+0.35

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No.	190	191	192	193	194
Date.	Dec. 18.44	.45 27	.4675	.4798	.4890
log. dec. day.	9.64836	9.65581	9.66975	9.68106	9.68931
" diff.					
Sum logs.	2.10387	2.11082	2.12479	2.13607	2.14432
Number	126.87	129.07	133.29	136.79	139.42
w	286.6	288.8	293.07	296.17	299.20
w,					
Log. tan · w,	0.5243n	0.4668n	0.3706n	0.3010n	0.2527n
" a	1.6950	1.6949	1.6949	1.6948	1.6948
a.c. log. b.	8.8024	8.8024	8.8025	8.8025	8.8026
Sum logs.	1.0217n	0.9641n	0.8680n	0.7983n	0.7501n
E-p	-84.57	-83.80	-82.78	-80.96	-79.92
P					
p					
	2	2	2	2	2
	322.514	,514	,514	,514	,514
(o)	47.54	45.28	45.80	42.96	43.00
(c)	47.04	46.31	44.79	43.47	42.43
	+0.46	-1.03	+1.01	-0.51	+0.57

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195	196	197	198	199	200	201
.5081	Dec. 26. 6329	Dec. 30. 4393	.4786	Jan. 2. 4627	.5049	Jan. 5. 6649
9.705959	9,80134	9,64276	9,67994	0,16555	0,17751	9,82276
2,16096						
144.86						
304.64						
0,1606w						
1,6947						
8,8027						
0,6580w						
−77.61						
3						
13						
4222	226,84	227,94	224,44	45,22	55,24	230,24
40,12	229,05	227,48	223,48	59,96	59,24	235,11
+2,10	−2,21	+0,46	+0,96	=14,74	−4,00	−4,87

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No.	202	203	204	205	206
Date.	Jan. 5.6836	Jan. 7.5648	.6688	.6960	Jan. 10.7347
Log. dec. day q.					
" diff.					
Sum logs.					
Number,					
cu					
w,					
Log. (an. w,					
" a					
a.c. log b.					
Sum logs.					
T - t					
T					
t					
(O)	229.70	43.44	45.12	46.51	225.42
(C)	233.76	55.30	45.98	43.18	234.33
	-4.06	-11.86	-0.86	+3.33	-8.91

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~~60~~	208	209	210	211	212	213
Nov. 16. 8485	Dec. 9. 4526					
9.92865	0.16215					
2.7567	2.7624					
2.38421	2.61736					
242.22	414.35					
271.86	242.32					
1.4						
1.4855	0.2407					
1.8136	1.7363					
8.7578	8.7678					
2.0599	0.7843					
− 89.50	80.67					
322.815						
52.32	61.89					

Dec. 9.

Dbb. = 70.°47 (17.°97)

w

log. a
1.7427
1.7339

log. b.
1.2366
1.2306 (for 2 days.)

52,44
52.32
+.12

~~Dec.~~ Nov. 16.

log. a.	log. b.
1.8153	1.2400
1.8112	1.2452

#1
205

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Phobos: (Pos. angles)
Computation of Residuals.

No.	1	2	3	4	5
Date.	Oct. 26.6[illegible]6	.6[illegible]7	.6[illegible]91	.8080	.8288
log. dec. day	0.208334	0.218982	0.219873	0.2[illegible]719[illegible]	0.262166
" diff.	3.3[illegible]37[illegible]6				
Sum logs.	3.261060	3.271708	3.272599	3.309924	3.314892
number	1824.1[illegible]	1869.43	1873.27	2041.38	2064.87
w	[illegible]1.43	[illegible]1.43	[illegible]1.43	[illegible]1.43	[illegible]1.43
w,	7[illegible].[illegible]8	120.86	124.70	292.81	316.30
log. (an. w,	0.[illegible]899	0.2236w	0.[illegible]96w	0.3762w	9.9803w
" a	1.4226	1.4226	1.4226	1.4228	1.4229
a.c. log. 6	9.2977	9.2974	9.2974	9.2963	9.2961
Sum logs.	1.3102	0.9436	0.8796	1.09[illegible]3w	0.6993w
I - s	87.20	-83.[illegible]0	-82.48	-8[illegible].41	-78.70
P					
p					
	322.780				
	.098				
	.049				
	.079	.081	.081	.089	.090
	322.70	322.70	322.70	322.69	322.69
(C)	23[illegible].[illegible]0	226.20	22[illegible].[illegible]8	48.10	41.39
(O)	237.62	231.3[illegible]	[249.[illegible][illegible]]	49.[illegible]7	[40.40] see sheet
	-2.12	-[illegible].1[illegible]	24.37	-1.47	[+0.99]

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6	7	8	9	10	11	12
Lon. 10.6093	.6173	.6262	.6319	.6405	.6560	Lon. 16.5116
9.784831	9.790496	9.796713	9.800648	9.806519	9.816904	9.708931
3.353786						3.353776
2.437587	2.843252	2.849469	2.853404	2.859927	2.869660	2.761677
688.00	697.03	707.08	713.52	723.23	740.73	577.67
117.53	117.53	117.53	117.53	117.53	117.53	52.44
85.53	94.56	104.61	111.05	120.76	138.26	270.11
1.1069	1.0982n	0.5839n	0.4167n	0.2254n	9.905n	2.7167n
1.4248	1.4248	1.4248	1.4248	1.4248	1.4248	1.4159
9.2002	9.2002	9.2001	9.2001	9.2001	9.2000	9.1765
1.7319	1.7232n	1.2088n	1.0396n	0.8503n	0.5753n	3.3091n
8894	−88.92	86.46	−84.78	−81.96	−75.11	−89.27
321.991−						321.764−
.083						.061
.041						.030
.025	.026	.026	.026	.027	.027	.016
321.97	321.96	321.96	321.96	321.96	321.96	321.75
233.03	230.88	228.42	226.74	223.92	217.07	51.72
232.70	230.30	230.73	227.78	225.66	219.06	52.59
+0.33	+0.58	−2.31	−1.04	−1.74	−1.99	−0.87

Check.

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Eco.	13	14	15	16	17
Date,	Nov. 16.52[illegible]	.5366	.5499	.5605	.6578
Log. dec. day	9.722222	9.729651	9.740284	9.748576	9.818094
" diff.					
Sum Logs.	2.774968	2.782397	2.793030	2.801322	2.870840
Number	595.62	605.89	620.91	632.88	742.74
w	52.44	52.44	52.44	52.44	52.44
w,	288.06	298.33	313.35	325.32	75.18
Log. tan. w,	0.4867w	0.2684w	0.0251w	9.8401w	0.5774
" a	1.41528	1.41528	1.41528	1.41528	1.41526
a. c. log. b.	9.1764	9.1764	9.1764	9.1763	9.1760
Sum. Logs.	1.0789w	0.8606w	0.6173w	0.4322w	1.1690
P - s	-85.23	-82.15	-76.43	-69.71	86.12
P					
p					
	321.764-				
	.016	.016	.017	.017	.020
	321.75	321.75	321.75	321.75	321.74
C	46.98	43.90	37.18	31.46	235.62
O	46.01	[33.59]	37.04	31.99	237.75
	+0.97		+1.14	-0.53	-2.13
				check.	Check.

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18	19	20	21	22	23	24
.6814	.6987	.8203	.8321	[illegible]	.7977	.6014
9.833402	9.844291	9.913973	9.920176	0.200722 3,3737 62	0.202897	0.204700
2.446148	2.897037	2.966719	2.972922	3.273274	3.275629	3.277232
769.39 √2.44	788.93 √2.44	926.20 √2.44	939.77 √2.44	1791.6√ 248.9√	1801.48 248.9√	1802.14 248.9√
101.83	121.37	256.67	271.99	240.60	250.43	257.09
0.6789w	0.2149w	0.6982	1.7624w	0.2491	0.4492	0.6398
1.4177	1.4177	1.4172	1.4172	1.4039	1.4039	1.4039
9.1760	9.1779	9.1777	9.1777	9.1647	9.1647	9.1647
1.2704w	0.8063w	1.2489	2.3731w	0.8177	1.0176	1.2082
-86.93	-81.12	87.06	-89.77	81.37	84.72	86.46
				321.649		
.021	.021	.027	.027	.047 .0237		
				.037	.037	.037
321.74	321.74	321.74	321.74	321.61	321.61	321.61
228.67	222.86	74.68	71.49	60.26	77.09	75.17
228.39	227.02	72.17	70.32	76.27	77.78	73.28
+0.28	-2.16	+2.71	+1.17	+4.04	+1.31	+1.87
					x	
					check.	
					x	
					x	

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No.	25	26	27	28	29
Date.	Nov. 21.6024	.6154	.6218	.6264	.6352
Log. dec. day	0.206475	0.208280	0.209997	0.211334	0.213571
" diff.					
Sum logs.	3.259261	3.261012	3.262729	3.264066	3.266303
Number.	1816.64	1823.95	1831.17	1836.82	1846.30
w	248.9r	248.9r	248.9r	248.9r	248.9r
w,	265.66	272.90	280.12	285.77	295.25
Log. sin. w,	1.10	1.29r4w	0.7444w	0.5492w	0.3264r
" a	1.4038	1.4038	1.4038	1.4038	1.4038
A. C. log. b.	9.164r	9.164r	9.164r	9.1644	9.1644
Sum logs.	1.67	1.8637w	1.3167w	1.1174w	0.8946w
P-s	88.78	-89.25	-87.24	-85.64	-82.74
P					
s					
	321.649-				
	.038	.038	.038	.038	.038
	321.61	321.61	321.61	321.61	321.61
	52.8	50.83	48.85	47.25	44.35
	52.84	49.62	48.82	45.44	43.62
	-0.02	+1.21	+0.03	+1.77	+0.73

Check.

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30	31	32	33	34	35	36
.640v	.6v39	.7770	kov.22.v492	.vv42	.v72f	kov.23.v191
0.214976	0.218v09	0.249687	9.739731	9.743667	9.7vf003	0.181v86
						3,3v37v6
3,267708	3,271241	3.302419	2.792463	2.796399	2,810735	3,234312
18v2.29	1867.42	2006.40	620.10	62v.7v	646.7v	171v.19
248.9v	24f.9v	24f.9v	347.1v	347.1v	347.1v	347.1v
301.24	316.37	9v.3v	247.2v	2v2.90	273.90	262.34
0.2171w	9.9793w	1.02fvw	0.3774	0.v120	1.1664w	1.f713
1.4038	1.4037	1.4034	1.4012	1.4012	1.4011	1.39fJ
9.1644	9.1644	9.164v	9.1632	9.1632	9.1631	9.1621
0,78v3w	0.v474w	1.v961w	0,9418	1.0764	1.7306w	2,4317
-80,69	-74.17	-88,vv	83.48	8v.21	-88,93	89.79
			321.602-			
			,039			
,039	,039	,042	,019v			
			,011	,011	,011	,020
321.61	321.61	321.61	321.v9	321.v9	321.v9	321.v7
42.30	3v.78	230.16	v8.11	v6.3v	v0.v2	v1.78
40.v2	40.68	230.69	vv.10	vv.02	v1.37	vv.47
+1.78	-4.90	-0.v3	+3.01	+1.36	-0.8v	-3.69

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No.	37	38	39	40	41
Date,	Nov. 23.[illegible]	.[illegible]402	.[illegible]616	Nov. 24.4628	.4716
Log. dec. day	0.18426[illegible]	0.187[illegible]77	0.193[illegible]70	9.66[illegible]393	9.673[illegible]74
" diff.				3.3[illegible]3549	
Sum logs.	3,236991	3,240303	3,246296	2,718112	2,726293
Number.	172[illegible].80	1739.01	1763.18	[illegible]22.[illegible]3	[illegible]32.47
w	347.1[illegible]	347.1[illegible]	347.1[illegible]	8[illegible].32	[illegible].3[illegible]
w,	272.9[illegible]	2[illegible]6.16	310.33	247.[illegible]5	2[illegible]7.79
Log. tan. w,	1.2880w	0.[illegible]380w	0.0711w	0.3903	0.6647
" a	1.39[illegible]3	1.39[illegible]3	1.39[illegible]2	1.39[illegible]4	1.39[illegible]4
a.c. log. b.	9.1620	9.1620	9.1620	9.161[illegible]	9.1612
Sum logs.	1.[illegible]483w	1.098[illegible]3w	0.6313w	0.9469	1.2213
P - p	-89.19	-[illegible]5.44	-76.84	8[illegible]3.[illegible]5	86.[illegible]6
P					
p					
	321.602[illegible]			321,[illegible]63	
	,039			,03[illegible]	
	,019[illegible]			,016[illegible]	
	,030	,030	,030	,008	,008
	321.[illegible]7	321.[illegible]7	321.[illegible]7	321.[illegible]6	321.[illegible]6
	[illegible]0.76	47.01	38.41	[illegible]8.01	[illegible][illegible].00
	47.[illegible]9	48.44	37.74	[illegible]9.[illegible]6	[illegible][illegible].4[illegible]
	+3.17	-1.43	+0.67	-1.[illegible][illegible]	-0.42

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42	43	44	45	46	47	48
.4762	.4814	.4865	.4927	.5074	.5139	.5251
9.677789	9.682506	9.687083	9.692583	9.705350	9.710879	9.720242
2.730508	2.733225	2.739802	2.745302	2.754069	2.763599	2.772961
57.66	43.53	49.29	56.29	72.89	80.23	92.47
8V.32	8V.32	8V.32	8V.32	8V.32	8V.32	8V.32
262.98	268.85	274.61	281.61	298.21	305.55	318.19
0.9096	1.6974	1.0935u	0.6873u	0.2705u	0.1459u	9.9515u
1.395 4	1.395 4	1.395 4	1.395 3	1.395 3	1.395 3	1.395 2
9.1612	9.1612	9.1612	9.1612	9.1612	9.1612	9.1612
1.4662	2.2540	1.6501u	1.2438u	0.8270u	0.7024u	0.5079u
88.04	89.68	−88.72	−86.74	−81.53	−78.78	−72.75
.008	.008	.008	.008	.008	.008	.009
321.56	321.56	321.56	321.56	321.56	321.56	321.55
53.52	51.88	50.28	48.30	43.09	40.34	34.30
54.96	52.88	50.12	48.54	45.54	39.94	40.84
−1.44	−1.00	+0.16	−0.24	−2.45	+0.40	−6.54

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No.	49	ν0	ν1	ν2	ν3
Date,	Nov. 25.435	.7960	.6002	.6073	.6122
Log. dec. day	0.1768	0.203033	0.204174	0.205556	0.207419
" diff.	3.3733749				
Sum logs.	3.2097	3,2577	3.2568	3,2527	3,260138
Number.	1620.21	1801.99	1806.73	1812.49	1820.28
w	8ν.32	8ν.32	8ν.32	8ν.32	8ν.32
w,	26ν.ν3	87.31	92.0ν	97.81	10ν.60
Log. cau. w,	1.1069	1,3280	1,4463w	0.8097w	0.ννν41w
" a	1,3924	1,3919	1,3919	1.3918	1,3918
a.c. log. t.	9.1607	9.1606	9.1606	9.1606	9.1606
Sum logs.	1.6600	1.880ν	1.9988w	1.3621w	1,106νw
I - /2	88,7ν	89.2ν	-89,42	-87,ν1	-8ν,ν3
I					
p					
	321,ν63-				
	,033				
	.016ν				
	,024	,026	,026	.026	,027
	321.ν4	321.ν4	321.ν4	321.ν4	321.ν4
C	ν2.79	232.29	230.96	229.0ν	227.07
O	ν1.17	232.70	231.ν0	230.34	228.14
	+1.62	-0.41	-0,ν4	-1.29	-1.07

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.6247	.6317	Lun.26. [illegible]	.[illegible]376	.[illegible]419	.[illegible]461	.[illegible]5[illegible]
0.210773	0.212640	9.726483	9.730[illegible]9	9.733919	9.737272	9.741[illegible]46
		3.[illegible]3739				
3.263492	3.26[illegible]3[illegible]9	2.779192	2.78316[illegible]	2.78662[illegible]	2.789981	2.7942[illegible]
1834.39	1842.30	601.44	606.97	611.83	616.[illegible]7	622.67
[illegible]5.3[illegible]	[illegible]5.3[illegible]	183.4[illegible]	183.4[illegible]	183.4[illegible]	183.4[illegible]	183.4[illegible]
119.71	127.62	64.[illegible]9	70.4[illegible]	7[illegible].2[illegible]	80.02	[illegible]6.12
0.2436[illegible]	0.1132[illegible]	0.[illegible]292	0.4[illegible]4[illegible]9	0.[illegible]80[illegible]	0,7[illegible]46	1.1687
1.3918	1.3918	1.3[illegible]8[illegible]	1.3[illegible][illegible][illegible]	1.3[illegible]8[illegible]	1.3[illegible]4[illegible]	1.3[illegible]4[illegible]
9.1606	9.1606	9.1604	9.1604	9.1604	9.1604	9.1604
0.7960[illegible]	0.66[illegible]6[illegible]	0.8784	0.9981	1.1297	1.3037	1.7178
−80.91	−77.81	82.46	84.27	8[illegible].76	87.1[illegible]	8[illegible].90
		321.[illegible]30				
		.029				
		.014[illegible]				
.027	.027	.008	.008	.008	.008	.008
321.[illegible]4	321.[illegible]4	321.[illegible]2	321.[illegible]2	321.[illegible]2	321.[illegible]2	321.[illegible]2
222.4[illegible]	219.3[illegible]	239.06	237.2[illegible]	23[illegible].76	234.37	232.6[illegible]
223.40	220.24	239.42	237.7[illegible]	236.80	234.80	232.3[illegible]
−0.9[illegible]	−0.[illegible]9	−0.36	−0.[illegible]3	−1.04	−0.43	+0.2[illegible]

check. Check.

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No.	61	62	63	64	65	66
Date,	.5564	.5614	.5694	57.36	.5761	.5807
Log. dec. day	9.7455854	9.7492772	9.7525722	9.7558609	9.7604994	9.7639552
" diff.						
Sum logs.	2.7988096	2.8019981	2.8048431	2.8113187	2.8153207	2.8176661
Number,	628.20	633.84	643.33	647.62	650.44	655.63
w	183.45	183.45	183.45	183.45	183.45	183.45
w_1	91.65	97.29	106.78	111.07	113.89	119.08
Log. tan. w_1	1.5405w	0.8930w	0.5207w	0.4143w	0.3537w	0.2548w
" a	1.3887	1.3887	1.3887	1.3886	1.3886	1.3886
a. c. log. b,	9.1604	9.1604	9.1604	9.1604	9.1604	9.1604
Sum logs.	2.0896w	1.4421w	1.0698w	0.9633w	0.9027w	0.8038w
P-p	-89.53	-87.93	-85.13	-83.79	-82.87	-81.07
P						
p						
	321.530					
	.008	.008	.008	.008	.008	.008
	321.52	321.52	321.52	321.52	321.52	321.52
(C)	231.05	229.45	226.65	225.31	224.39	222.59
(O)	231.94	230.02	228.40	226.34	225.08	222.28
	-0.89	-0.57	-1.75	-1.03	-0.69	+0.31

check.

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67	68	69	70	71	72	73
.5850	.5847	.5930	Nov. 30. 5307	Dec. 1. 6562	.6662	Dec. 4. 6895
9.767156	9.769894	9.773055	9.724849	0.219113	0.221727	9.838534
				3.353720		3.353699
2.419856	2.422603	2.425764	2.377558	3.271803	3.274417	2.891203
660.49	664.67	669.52	599.18	1869.83	1881.12	778.40
183.45	183.45	183.45	19.56	19.56	19.56	215.47
123.94	128.12	132.97	258.74	89.39	100.68	273.87
0.17208	0.10538	0.03088	0.7010	1.9728	0.72448	1.16988
1.3886	1.3886	1.3886	1.3746	1.3703	1.3703	1.3542
9.1604	9.1604	9.1604	9.1622	9.1634	9.1634	9.1684
0.72108	0.65438	0.57988	1.2378	2.5065	1.2581	1.69648
-79.24	-77.50	-75.26	86.69	89.82	-86.84	-88.85
			321.477 -	321.477 -		321.440 -
			.020	.020		.014
			.010	.010		.007
.008	.009	.009	.005	.007	.007	.0048
321.552	321.552	321.552	321.47	321.47	321.47	321.44
(C) 220.76	219.02	216.78	54.78	231.65	228.31	50.29
(O) 220.92	220.70	218.67	[72.09]	227.14	230.04	48.84
-0.16	-1.68	-1.89		+4.51	-1.73	+1.45
				Wind shake		
				tel. Large		
				w. dev.		
		check				

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No.	74	75
Date,	Dec. 7.5660	.5777
Log. dec. day	0.194792	0.194024
" diff.	3.353689	3.353689
Sum logs.	3.247451	3.250683
number	1767.87	1781.08
w	313.34	313.34
w,	291.21	294.42
Log. tan. w,	0.7029w	0.7429w
" a	1.3461	1.3461
a.c. log. 6.	9.1750	9.1750
Sum logs.	1.2240w	0.8640w
P - p	-86.58	-82.21
P		
p		
	321.426	
	.013	
	.0065	
	.010	.010
	321.42	321.42
C	42.00	43.63
O	49.50	49.94
	-1.50	-6.31

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$$s = \frac{a \sin w}{\sin.(I - p)}$$ Decmos.

No.	1	2	3	4	5	6
Date.	Nov. 21, 7894	.7964	.8315	.8396	Nov. 24.4439	.4-30
Log. dec. day.	0.2-271	0.2-441	0.2628 1	0.26472	9.64729	9.6-610
" diff.	2,7-6--				2.7-6-0	
Sum. logs.	2.70823	2.70993	2.71833	2.72024	2.10276	2.111-7
Number.	-10.78	-12.78	-22.79	-2-.10	126.69	129.29
w	91,-0	91,-0			1-3,24	
w_1	242,28	244,28	2-4.29	2-6.60	279.93	28-.-3
Log. tan. w_1	0,2794	0.3172	0.--09	0.6230	0.7-6 8 w	0.6-32 w
" a	1.8017	1.8016	1.801-	1.801-	1.7939	1.7939
a.C. log. b	8.7482	8.7482	8.7481	8.7481	8.7462	8.7462
Sum log.	0.8293	0.8670	1.100-	1.1726	1.2969 w	1.1933 w
I - p.	81.-7	82.26	8-.46	86.1-	-87.11	-86.33
a.C. log. sin (I-p)	0.0047	0.0039	0.0013	0.0010	0.0006 w	0.0009 w
log. a						
" sin. w	9.9470 w	9.9-47 w	9.983- w	9.9880 w	9.993- w	9.989- w
	1.7-34 w	1.7602 w	1.7863 w	1.790- w	1.7880	1.7843
(C)	-6.68	-7.-7	61.14	61.73	61.38	60.86
(O)	-6.66	-7.46	62.38	62.06	60.80	60.-3
(O-C)	-0.02	-0.11	+1.24	+0.33	-0.-8	-0.33

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Distances. Computations of Residuals.

7	8	9	10	11	12	13
.r377	.rr3r	.r743	.r799	1nr.2r.r76r	.r832	.647r
9.730r4	9.74312	9.7r914	9.7633r	0.19770 2.7r6r0	0.199r4	0.21643
2.18601	2.198r9	2.21461	2.21882	2.6r317	2.6rr01	2.67230
1r3.46	1r7.98	163.91	16r.r1	449.96 1r3.24	4r1.87	470.22
306.70	311.22	317.1r	318.7r	243.20	24r.11	263.46
0.1276n	0.0r7rn	9.9673n	9.9430n	0.2966	0.333r	0.9407
1.7936	1.7936	1.793r	1.793r	1.7903	1.7903	1.7901
8.7461	8.7461	8.7461	8.7461	8.74r8	8.74r8	8.74r8
0.6673n	0.r972n	0.r069n	0.4826n	0.8327	0.8696	1.4766
-77.86	-7r.84	-72.71	-71.78	81.64	82.31	88.09
0.0098n	0.013rn	0.0201n	0.0223n	0.9047	0.0039	9.0002
9.9041n	9.8764n	9.8326n	9.8191n	9.9r06n	9.9r76n	9.9972n
1.707r	1.683r	1.6462	1.6349	1.74r6n	1.7r18n	1.787rn
r0.99	48.2r	44.28	43.14	rr.67n	r6.47n	61.31n
r1.29	48.60	44.87	44.8r	r4.81	rr.92	60.88
+0.30	+0.3r	+0.r9	+1.71	−0.86	−0.rr	−0.43

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No.	14	15	16	17	18	19
Date,	.6	Nov. 29.	.	.	.	Nov. 30.
Log. dec. day	0.2	0.17711	0.17889	0.18611	0.1884	9.812
" diff.		2.7643				2.7639
Sum logs.	2.6743	2.6325	2.63429	2.6417	2.643	2.26794
Number.	472.44	429.	430.21	438.04	440.40	184.33
w		214.83				64.56
w,	26	283.88	284.64	292.87	295.23	20.89
Log. tan. w,	1.1218	0.6071	0.5529	0.3749	0.3268	0.4603
" a	1.7901	1.7768	1.7768	1.7767	1.7766	1.772
a. c. log. b.	8.74	8.7474	8.7474	8.7474	8.7474	8.7486
Sum logs.	1.67	1.13139	1.07711	0.8990	0.8508	0.9814
I - f	88.74	- 85.77	-85.21	-82.81	-81.97	84.04
Cclog. sin(I-f)	0.0001	0.00129	0.00157	0.0034	0.0043	0.0004
log. a						
" sin. w	9.9988	9.9871	9.9836	9.9644	9.9563	9.9754
	1.7890	1.7651	1.7619	1.7445	1.7374	1.7483
(c)	61.52	58.22	57.80	55.53	54.63	56.01
(o)	60.76	58.92	57.61	56.09	55.19	56.50
(o-c)	- 0.76	+ 0.70	- 0.19	+ 0.56	+ 0.56	+ 0.49

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20	21	22	23	24	25	26
.6569	.6895	.6964	.7208	.7264	.7370	.7424
9.8175o	9.8384	9.8431	9.8578	9.8611	9.8674	9.8706
2,27286	2,29389	2,29847	2,31317	2,3165	2,32283	2,32600
187.44	196.74	198.82	205.67	207.27	210.30	211.84
253.00	262.30	264.38	271.23	272.83	275.86	277.40
0.5147	0.8690	1.0070	1.6682u	1.3060u	0.9887u	0.8486u
1.7725	1.7724	1.7724	1.7723	1.7722	1.7722	1.7722
8.7486	8.7487	8.7487	8.7487	8.7487	8.7487	8.7487
1.0354	1.3901	1.5281	2.1892u	1.8269u	1.5096u	1.4074u
84.74	87.67	88.30	−89.63	−89.15	−88.2	−87.76
0.0019	0.0004	0.0002	0.0000u	0.0000u	0.0002u	0.0003u
9.9806u	9.9961u	9.9977u	9.9999u	9.9995u	9.9977u	9.9963u
1.7550u	1.7689u	1.7705u	1.7722u	1.7717	1.7701	1.7688
56.89u	58.74u	58.95u	59.18u	59.12	58.90	58.72
56.94	60.11	58.94	60.09	59.98	60.15	59.98
+0.05	+1.37	−0.01	+0.91	+0.86	+1.25	+1.26

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hr.	27	28	29	30	31	32
Date,	.7577	.7666	.7755	.7997	.8206	.8288
Log. dec. day	9.8797n	9.8847n	9.9000n	9.9029n	9.9141n	9.9184n
" diff.						
Sum logs.	2.33491	2.33993	2.34544	2.35834	2.36949	2.37381
number.	216.23	218.74	226.70	228.21	234.1	236.49
w						
w,	281.79	284.30	292.26	293.77	299.71	302.0
Log. sin. w,	0.6804n	0.6936n	0.3879n	0.3561n	0.2436n	0.2034n
" a	1.7721	1.7721	1.7720	1.7720	1.7719	1.7718
a.c.log. b	8.7487	8.7488	8.7488	8.7488	8.7488	8.7488
Sum logs.	1.2012n	1.1146n	0.9087n	0.8769n	0.7643n	0.7240n
I - p	-86.40	-85.61	-82.97	-82.44	-80.24	-79.31
C.log.sin.(I-p)	0.0009n	0.0013n	0.0032n	0.0038n	0.0064n	0.0076n
log. a						
" sin. w	9.9907	9.9863n	9.9664n	9.9615n	9.9388n	9.9282n
	1.7637n	1.7597	1.7416	1.7373	1.7171	1.7076
(c)	58.04n	57.50	55.16	54.61	52.13	51.00
(o)	59.63	58.80	56.06	55.75	52.42	51.90
(o-c)	+1.59	+1.30	+0.90	+1.14	+0.29	+0.90

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33	34	35	36	37	38	39
Dec. 4. 5914	.5977	.6271	.6562	.6631	.6718	.7325
9.77188	9.77644	9.79734	9.80359	9.82158	9.82724	9.86481
2.7563 2						
2,22717	2,23177	2,25263	2,25888	2,27687	2,28253	2,32010
168.72	170.52	178.91	181.50	189.18	191.66	208.98
126.86						
295.58	297.38	305.77	308.36	316.04	318.52	338.84
0.3200w	0.2858w	0.1424w	0.1016w	9.9842w	9.9465w	9.6519w
1,7570	1,7569	1,7568	1,7568	1,7567	1,7566	1,7564
8.7551	8.7551	8.7552	8.7552	8.7553	8.7553	8.7554
0,8321w	0,7978w	0,6544w	0,6136w	0,4962w	0,4584w	0,1637w
−81,63	−80.95	−77.51	−76.32	−72.31	−70.81	−55.55
0.00477w	0.00554w	0.01047w	0.01257w	0.02111w	0.02499w	0.04388w
9.9552w	9.9444w	9.9092w	9.8943w	9.8415w	9.8211w	9.6120w
1,7569	1,7107	1,6764	1,6636	1,6193	1,6026	1,4522
57.13	51.37	47.47	46.09	41.62	40.05	28.33
52.36	52,13	47,25	46,62	43,20	40,99	[44.10]
−4.77	+0,76	−0,22	+0,53	+1.58	+0,94	[15.77]

To be looked up.

Was obs by my mistake

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No.	40	41	42	43	44	45
Date.	.749	Dec. 7.5923	.6003	.6607	.6684	.7653
Log. dec. day	9.87477	0.20202	0.20420	0.22029	0.22230	0.24682
" diff.		2.7562				
Sum logs.	2.33006	2.6572	2.6594	2.6774	2.6775	2.70207
Number.	213.83	476.22	456.51	473.74	475.93	503.58
w		337.44				
w,	340.69	71.66	73.95	91.18	93.37	121.02
Log. tan. w,	9.5445w	0.4795	0.5411	1.6862w	1.2300w	0.2209
" a	1.7563	1.7444	1.7444	1.7441	1.7441	1.7437
a.c. log b.	8.7554	8.7623	8.7624	8.7625	8.7625	8.7628
Sum logs.	0.0562w	0.9862	1.0479	2.1928w	1.7366w	0.7274
P-p	-48.70	84.11	84.18	-89.63	-88.95	79.39
Co. log. sin. (P-p)	0.1242w	0.0023w	0.0018w	0.0000w	0.0001w	0.0075w
log. a						
" sin. w	9.5194w	9.9774	9.9827	9.9999	9.9992	9.9330
	1.3999	1.7241w	1.7289w	1.7440	1.7434	1.6842w
(c)	25.11	52.98w	53.57w	55.46	55.39	48.33w
(o)	[41.37]	51.60	52.56	53.92	54.36	49.52
(o-c)	+16.26	-1.38	-1.01	-1.54	-1.03	+1.19

Elav. obs. by mistake.

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46	47	48	49	v-0	v-1	v-2
Dec. 9. 4468	.v266	.v448	.v60v	.v973	.627v	.6vv8
0.16041	0.18372	0.18887	0.19326	0.20338	0.21102	0.21901
2,7v624						
2,61v62	2,63893	2,64408	2,64847	2,6v8v9	2,66673	2,67422
412.69	43v.44	440.64	44v.11	4vv.61	464.22	472.30
187.97						
240.66	263.41	266.61	273.08	283.v8	292.19	300.27
0.2v02	0.9374	1.61v0	1.2692u	0.6170u	0.3894u	0.2338u
1.7363	1.7360	1.73v9	1.73v8	1.73v7	1.73vv	1.73v4
8.7677	8.7680	8.7680	8.7681	8.7682	8.7683	8.7684
0.7v42	1.4414	2.1189	1.7731u	1.1209u	0.8932u	0.7376u
80.01	87.93	89.v6	-89.03	-8v.67	-82.71	-79.63
0.0066	0.0003	0.0000	0.0001u	0.0012u	0.0037u	0.0072u
9.9404u	9.9971u	9.9999u	9.9994u	9.9876u	9.9666u	9.9363u
1.6833u	1.7334u	1.73v8u	1.73v3	1.724v	1.70v6	1.6789
48.23u	v4.13u	v4.43u	v4.36	v3.03	v0.77	47.74
47.89	v4.64	vv.06	vv.00	v3.79	v1.44	48.44
-0.34	+0.v4	+0.63	+0.64	+0.76	+0.67	+0.70

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hv.	ν3	ν4	ν5	ν6	ν7	ν8
Date,	.6603	-				
Log. dec. dy.	0.22019					
" diff.						
Sum logs.	2.67ν40					
Number.	473.ν9					
w						
w,	301.ν6					
Log. law w,	0.2117w					
" a	1.73ν4					
a. C. log. b.	8.7684					
Sum logs.	0.71νν w					
I - p	- 79.10					
C. log. sin. (I-p)	0.0079w					
log. a.						
" sin. w	9.930νw					
	1.6738					
(C)	47.18					
(O)	48.67					
(O-C)	+1.49					

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r-9	60	61	62		

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No,
Date,
Log. dec. day,
" diff.
Sum logs.
Number,
w
w,
Log. tan. w,
" a
a. c. log. b.
Sum logs,
F-f

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Decimos (Pos. angles)

	Oct. 20, 7002 / 1	.7117 / 2	.7971 / 3	.8092 / 4	.8330 / 5	Oct. 25. 8607
φ	19.97	19.96	19.90	19.89	19.87	19.75
$\frac{1}{2}\varphi$	9.98	9.98	9.95	9.94	9.94	9.88
Log. sin. $\frac{1}{2}\varphi$	9.2388	9.2388	9.2375	9.2371	9.2371	9.2370
2 Log. sin. $\frac{1}{2}\varphi$	8.4776	8.4776	8.4750	8.4742	8.4742	8.2740
Sem. decim. mass	9.33	9.33	9.34	9.34	9.34	9.52
	0.9699	0.9699	0.9703	0.9703	0.9703	0.9786
Log. m =	9.3763	9.3763	9.3741	9.3733	9.3733	9.1814
$(90 + \theta)$ =	259	259	259	259	259	258
θ =	169	169	169	169	169	168
p =	235.72	237.36	228.03	226.83	226.99	230.10
$(p - \theta)$ =	67	68.	59.	58.	58.	62.
Log. Cos. $(p - \theta)$ =	9.5919	9.5736	9.7118	9.7242	9.7242	9.6716
	~~7.1607~~			~~9.2864~~		~~7.0331~~
	(8.9188)			(9.0442)		(8.7912)
	(.083)	.09	.11	(.111)	.11	(.062)
Log. dec. day	0.2305			0.2549		9.9348
" diff.	2.7539			2.7539		2.7549
Sum logs.	2.6845			2.7128		2.3031
Number,	485.13			516.24		245.64
w	317.24			317.24		229.41
w_1	82.37			113.48		115.05
Log. tan. w_1	0.8731			0.3621 w		0.3304 w
" a	1.8115			1.8114		1.8199
a.c. Log. b.	8.9104			8.9096		8.8743
Sum logs.	1.5947			1.0831 w		1.0246 w
$\Sigma - \frac{1}{2}$	88.54			$-$ 85.28		$-$ 84.60
Co. log. sin. $(\Sigma - \frac{1}{2})$	0.0001			0.0015 w		0.0019 w
" a						
" sin. w	9.9962			9.9985 w		9.9981 w
	8.1925			8.1886		8.1801

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Cor. for Gibbosity.

Lat. 29.6	.6901	.7239	Corr. 1.6271	.6487	.6601	.7439
7	8	9	10	11	12	13
12.47	12.44	12.41	9.83	9.81	9.80	9.72
6.24	6.22	6.20	4.92	4.90	4.90	4.86
9.0362	9.0348	9.0334	8.9333	8.9315	8.9315	8.9280
8.0724	8.0696	8.0668	7.8666	7.8630	7.8630	7.8560
9.63	9.63	9.63	9.66	9.66	9.66	9.66
0.9836	0.9836	0.9836	0.9850	0.9850	0.9850	0.9850
8.9848	8.9820	8.9792	8.7804	8.7768	8.7768	8.7698
2)7.8	2)7.83	2)7.82	2)7.40	2)7.39	2)7.39	2)7.38
168	168	168	-13.	-13	-13	-13
224.31	224.23	221.47	61.07	58.47	55.57	51.78
60.	56.	53.	74.	71.	69.	65.
9.6990	9.7476	9.7795	9.4403	9.5126	9.5543	9.6259
~~6.8597~~	~~6.9054~~			~~6.4634~~		
(8.6178)	(8.6635)			(8.2214)		
(.041)	.046	.05	.02	(.017)	.02	.02
9.8191	9.8389			0.21714		
2.7566	2.7566			2.7567		
2.27467	2.29443			2.67268		
188.22	196.98			470.63		
291.06	291.06			141.9		
119.28	126.04			252.58		
0.2513w	0.1066w			0.5026		
1.8241	1.8242			1.8260		
8.8487	8.8480			8.8283		
0.9236w	0.7788w			1.1569		
-83.20	-80.55			86.01		
0.0031w	0.0060			0.0011		
				1.8260		
9.9969w	9.9940w			9.9990		
8.1759	8.1758			8.1739		

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	.7529 14	.7580 15	.7685 16	.7764 17	.7903 18	.8037 19
φ	9.71	9.71	9.70	9.69	9.68	9.67
$\frac{1}{2}\varphi$	4.86	4.86	4.85	4.84	4.84	4.84
log. sin. $\frac{1}{2}\varphi$	8.9280	8.9280	8.9271	8.9262	8.9262	8.9262
2 log. sin. $\frac{1}{2}\varphi$	7.8560	7.8560	7.8542	7.8524	7.8524	7.8524
	9.66	9.66	9.66	9.66	9.66	9.66
	0.9850	0.9850	0.9850	0.9850	0.9850	0.9850
	8.7698	8.7698	8.7680	8.7662	8.7662	8.7662
	2.57.38	2.57.38	2.57.38	2.57.37	2.57.37	2.57.37
	-13.	-13	-13.	-13.	-13	-13.
	1.22	0.36	4.56	49.16	49.54	47.46
	64.	63.	59.	62.	63.	60.
	9.6418	9.6570	9.7118	9.6716	9.6570	9.6990
		(8.3558) = (.023				
		6.6007				
	.02		.02	.02	.02	.02
Log. dec. day.		0.2402				
" diff.		2.7657				
Sum logs.		2,7007				
number		501.83				
w		141.9"				
w_1		243.78				
Log. tan. w_1		0.6104_n				
" a		1,8261				
a. c. log. b.		8,8279				
Sum logs.		1.2644_n				
P - p.		-86.89				
Co. log. sin (P-p)		0.0006_n				
log. a		1,8261				
" sin. w		9.9994_n				
		8.1739 -				

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.8077 20	.8182 21	.8248 22	.8450 23	.8563 24	.8805 25	Lun. 4. 6h30 26
9.66	9.65	9.65	9.63	9.62	9.60	7.08
4.83	4.82	4.82	4.82	4.81	4.80	3.54
8.9253	8.9244	8.9244	8.9244	8.9235	8.9226	8.7906
7.8506	7.8488	7.8488	7.8488	7.8470	7.8452	7.5812
9.66	9.66	9.66	9.66	9.66	9.66	9.67
0.9850	0.9850	0.9850	0.9850	0.9850	0.9850	0
8.7644	8.7626	8.7626	8.7626	8.7608	8.7590	X
257.37	257.37	257.37	257.36	257.36	257.36	256.8
-13.	-13	-13	-13.	-13	-13	
46.82	46.22	45.26	44.00	41.88	38.92	
60.	59.	58.	57.	55.	52.	
9.6990	9.7178	9.7242	9.7361	9.7586	9.7893	
(8.3953)(.025-)				(8.4513) = (.028)		
6.6373				6.6933		
	.03	.03	.03		.03	
0.2573				0.2686		
2.7562				2.7562		
2.71267				2.72419		
516.02				529.90		
141.95				141.95		
297.97				311.85		
0.2749n				0.0479n		
1.8261				1.8261		
8.8276				8.8272		
0.9286n				0.7012n		
-83.28				-78.75		
0.0030n				0.0084n		
1.8261				1.8261		
9.9971n				9.9918n		
8.1738				8.1737		

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	.7901 27	Mov. 5.5946 28	.5910 29	.6000 30	.6177 31	.62[illegible] 32
φ	6.9[illegible]	6.23	6.22	6.21	6.19	6.18
½ φ	3.48	3.12	3.11	3.10	3.10	3.09
Log. sin. ½ φ	8.7832	8.73[illegible]8	8.7344	8.7330	8.7330	8.7316
2 log. sin. ½ φ	7.[illegible]664	7.4716	7.46[illegible]8	7.4660	7.4660	7.4632
	9.67	9.66	9.66	9.66	9.66	9.66
	0.9[illegible]54	0.9[illegible]50	0.9[illegible]50	0.9[illegible]50	0.9[illegible]50	0.9[illegible]50
	8.4806	8.38[illegible]4	8.3826	8.3798	8.3798	8.3770
	2[illegible]6.8	2[illegible]6.6	2[illegible]6.6	2[illegible]6.6	2[illegible]6.6	2[illegible]6.6
	167.	−13	−13.	−13.	−13.	−13
	239.12	47.07	45.6[illegible]	44.67	43.89	42.7[illegible]
	72.	60.	[illegible]9.	[illegible]8.	[illegible]7.	[illegible]6.
	9.4900	9.6990	9.7118	9.7242	9.7361	9.7476
	(7.9022)	8.0161		(8.0357)		
	6.1441	6.2[illegible]80		6.2776		
	(.008)	(.010)	(.01)	(.011)	.01	.01
Log. dec. day,	9.89768	0.19717		0.20412		
" diff.	2.7[illegible]661	2.7[illegible]661		2.7[illegible]661		
Sum logs,	2.3[illegible]326	2.6[illegible]27[illegible]		2.6[illegible]970		
number.	22[illegible]6	44[illegible]2		4[illegible]6.77		
w	203.80	203.80		203.80		
w,	69.36	293.32		300.[illegible]7		
Log. tan. w,	0.4247	0.36[illegible][illegible]		0.2286w		
" a	1.8[illegible]26[illegible]	1.82664		1.82664		
a. c. log. b.	8.8096	8.80[illegible]1		8.80[illegible]0		
Sum logs,	1.0608	0.9970		0.8600w		
I − ½	85.03	84.[illegible]5		−82.14		
Co. log. sin. (I − ½)	0.0017	0.0022		0.0041w		
log. a						
" sin. w	9.9983	9.9978		9.99[illegible]9w		
	8.1735	8.1736		8.1736		

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,6372 33	.6504 34	,6732 35	,6496 36	illegible 37	.5927 38	5997 39
6,17	6,16	6,14	6,13	1.54	1.53	1.52
3,04	3,04	3,07	3,06	0.77	0.76	0,76
8,7302	8,7302	8,7284	8,7274	8,1284	8,1227	8,1227
7,4604	7,4604	7,4576	7,4548	6,2566	6,2454	6,2454
9.66	9.66	9.66	9.66	9.60	9.60	9.60
0,9850	0,9850	0,9850	0,9850	0,9823	0,9823	0,9823
8,3742	8,3742	8,3714	8,3686	7,1679	7,1561	7,1561
256.6	256.6	256.6	256,6	254,	254	254
−13.	−13.	−13	−13	−16	−16.	−16.
40.89	40.51	38.47	34.85	49.32	47.70	48.52
54.	54.	51.	48.	65.	64.	65.
9.7692	9.7692	9.7989	9.8251	9.6259	9.6418	9.6259
(8,0751)		(8,1021)			(6,7332)	
6,3170		6,3440			4,9751	
(,012)	,01	(,013)	(,01)			
0,21410		0,22351			9,77283	
2,7561+		2,7561			2,7562	
2,66968		2,67913			2,22842	
467.39		477.67			169,21	
203.80		203.80			116,71	
311.19		321.47			285.92	
0,0580w		9,9011w			0,5448w	
1,8264		1,8264			1,8232	
8,8048		8,8046			8,7799	
0,6892w		0,5321w			1,1479w	
−78,44		−73,63			−85,93	
0,0089w		0,0179w			0,0011w	
9,9911w		9,9820w			9,9989w	
8,1736		8,1737			8,1768	

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	.6047 40	.6633 41	.6711 42	.6946 43	Lun. 16.5991 44	.6159 45
φ	1.57	1.46	1.45	1.42	3.82	3.83
$\frac{1}{2}\varphi$	0.76	0.73	0.72	0.71	1.91	1.92
Log. sin. $\frac{1}{2}\varphi$	8.1227	8.1057	8.0992	8.0931	8.5228	8.5271
2 Log. sin. $\frac{1}{2}\varphi$	6.2454	6.2104	6.1984	6.1862	7.0456	7.0502
	9.59	9.59	9.59	9.59	9.39	9.39
	0.9814	0.9814	0.9814	0.9814		
	7.1556	7.1206	7.1086	7.0964	X	X
	254	254	254	254		
	-16.	-16.	-16.	-16.		
	47.18	42.04	41.02	38.96		
	63.	58.	57.	55.		
	9.6570	9.7242	9.7361	9.7586		
			(6.7796)			
			5.0215			
Log. dec. day			9.82679			
" diff.			2.7562			
Sum log.			2.28238			
Number.			191.59			
w			116.71			
w,			308.30			
Log. sin. w,			0.10255 w			
" a			1.82132			
a. C. log. b			8.7795			
Sum logs.			0.70252 w			
P - p,			-78.85			
Co-log. sin (P-p)			0.00830 w			
log. a						
" sin. w			9.9917 w			
			8.1768			

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.6346 46	.7133 47	.7260 48	.7312 49	.7377 ν0	.7431 ν1	.7492 ν2
3.8ν	3.92	3.94	3.94	3.9ν	3.9ν	3.96
1.92	1.96	1.97	1.97	1.9ϝ	1.9ϝ	1.9ϝ
8.ν2ν1	8.ν340	8.ν363	8.ν363	8.ν38ν	8.ν38ν	8.ν38ν
7.0ν02	7.06ϝ0	7.0726	7.0726	7.0770	7.0770	7.0770
9.39	9.39	9.39	9.39	9.39	9.39	9.39
	0.9727	0.9727	0.9727	0.9727	0.9727	0.9727
X	7.969ν	7.9741	7.9741	7.978ν	7.978ν	7.978ν
	77.6	77.6	77.6	77.6	77.6	77.6
	−12.	−12.	−12.	−12.	−12.	−12.
	63.7ϝ	63.00	61.ν2	61.70	60.60	ν9.36
	76.	7ν.	74.	74.	73.	71.
	9.3ϝ37	9.4130	9.4403	9.4403	9.46ν9	9.ν126
				7.3631		
				ν.60ν0		
				9.86788		
				2.7ν6ν9		
				2,32344		
				210.ν9		
				29.64		
				240.23		
				0.2426		
				1.8138		
				8.7νϝ1		
				0.814ν		
				81.29		
				0.00ν0		
				9.99ν0		
				8.1862		

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	.7 ▽▽▽ ▽3	.76 13 ▽4	.7667 ▽▽	.7723 ▽6	.7930 ▽7	.7989 ▽8
φ	3.96	3.97	3.97	3.98	4.00	4.00
½ φ	1.98	1.98	1.98	1.99	2.00	2.00
Log. sin ½φ	8.▽3885	8.▽3885	8.▽3885	8.▽4061	8.▽4282	8.▽4282
2 log. sin ½φ	7.0770	7.0770	7.0770	7.0812	7.0856	7.0856
	9.39	9.39	9.39	9.39	9.38	9.38
	0.9727	0.9727	0.9727	0.9727	0.9722	0.9722
	7.9785	7.9785	7.9785	7.9827	7.9866	7.9866
	77.6	77.6	77.6	77.6	77.6	77.6
	−12.	−12.	−12.	−12.	−12.	−12.
	60.18	▽8.76	▽8.64	▽7.70	▽6.72	▽6.08
	72.	71.	71.	70.	69.	68.
	9.4900	9.▽126	9.▽126	9.▽341	9.▽▽43	9.▽736
				(7.4612.)		
				▽.7031		
Log. dec. day				9.88779		
" diff.				2.7▽6▽9		
Sum logs.				2.34335		
number				220.47		
w				29.64		
w,				2▽0.11		
Log. tan. w,				0.441▽		
" a				1.8137		
a. c. log. b				8.7▽80		
Sum logs.				1.0132		
I − p				8446		
2. log. sin (I − p)				0.0020		
log. a						
" sin w				9.9980		
				8.1863		

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.8427	.8447	.8531	.8598	.8641	.8719	.8720
√9	60	61	62	63	64	65
4.04	4.05	4.05	4.06	4.06	4.07	4.08
2.02	2.02	2.02	2.03	2.03	2.04	2.04
8.5471	8.5471	8.5471	8.5493	8.5493	8.5514	8.5514
7.0942	7.0942	7.0942	7.0986	7.0986	7.1028	7.1028
9.38	9.38	9.38	9.38	9.38	9.38	9.38
0.9722	0.9722	0.9722	0.9722	0.9722	0.9722	0.9722
7.9952	7.9952	7.9952	7.9996	7.9996	8.0038	8.0038
77.6	77.6	77.6	77.6	77.6	77.6	77.5
−12.	−12.	−12.	−12.	−12.	−12.	−12.
√2.64	√2.44	√1.12	√2.18	√1.08	√0.92	49.70
65.	64.	63.	64.	63.	63.	62.
9.6259	9.6418	9.6570	9.6418	9.6570	9.6570	9.6726

(7.6054)
√.8473

9.9047
2.7565

2,39603
248.91
29.64
278.55

0.8229u
1.8135
8.7577
1.3941u
−87.69
0.0004u

9.9996u
8.1865

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	.8485 66	.8912 67	.8975 68	.9039 69	.9101 70	.9158 71
φ	4.08	4.09	4.10	4.10	4.11	4.11
$\frac{1}{2}\varphi$	2.04	2.04	2.05	2.05	2.06	2.06
Log sin $\frac{1}{2}\varphi$	8.5514	8.5514	8.5535	8.5535	8.5557	8.5557
2 log. sin $\frac{1}{2}\varphi$	7.1028	7.1028	7.1070	7.1070	7.1114	7.1114
	9.38	9.38	9.38	9.38	9.38	9.38
	0.9722	0.9722	0.9722	0.9722	0.9722	0.9722
	8.0038	8.0038	8.0080	8.0080	8.0124	8.0124
θ	77.5 −12.	77.5 −12.	77.5 −12.	77.5 −12.	77.5 −12.	77.5 −12.
p	50.26	48.44	49.04	46.00	49.04	47.10
$(p-\theta)$	62.	60	61.	58.	61.	59.
Log sin. $(p-\theta)$	9.6716	9.6990	9.6876	9.7242	9.6876	9.7118
						(9.6689) 5.9108
Log. dec. day						9.961 80
" diff.						2.7576 9
Sum logs.						2,4173 6
number						261.43
w						29.64
w_1						291.07
Log. tan w_1						0.4143 w
" a						1.8134
A. C. log. b						8.7576
Sum logs.						0.9853 w
$P-p$						−84.09
Co. log. sin $(P-p)$						0.0023 w
log. a						
" sin. w						9.9977 n.
						8.1866

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.9232 ~ 72	.9311 73	Nov. 21.5113 74	.5243 7v	.6919 76	.7053 77	.7277 78
4.12	4.13	4.18	4.19	4.34	4.35	4.37
2.06	2.06	4.09	4.10	4.17	4.18	4.18
8.vvvv7	8.vvvv7	8.8v32	8.8v43	8.8616	8.8627	8.8627
7.1114	7.1114	7.7064	7.7086	7.7232	7.72v4	7.72v4
9.38	9.38			9.13	9.13	9.13
0.9722	0.9722	X	X	0.960v	0.960v	0.960v
8.0124	8.0124			8.6125	8.6147	8.6147
77.v	77.v	~~76.27~~		76.23	76.2~	76.22
-12.	-12.					
46.32	40.62					
v8.	v3.					
9.7242	9.779v					
.00	.00			.00	.00	.00

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	.7592 79	.7649 80	.7827 81	.8103 82	.8265 83	.8517 84
φ	8.39	8.40	8.41	8.44	8.45	8.47
$\frac{1}{2}\varphi$	4.20	4.20	4.20	4.22	4.22	4.24
Log. sin. $\frac{1}{2}\varphi$	8.8647	8.8647	8.8647	8.8668	8.8668	8.8688
2 log. sin. $\frac{1}{2}\varphi$	7.7294	7.7294	7.7294	7.7336	7.7336	7.7376
	9.13	9.13	9.13	9.13	9.13	9.12
	0.9605	0.9605	0.9605	0.9605	0.9605	0.9600
	8.6187	8.6187	8.6187	8.6229	8.6229	8.6264
	76.21	76.21	76.21	76.20	76.20	76.19
	−14.	−14.	−14.	−14.	−14.	−14.
	65.42	64.90	61.55	59.76	57.92	55.96
	79.	79.	76.	74.	72.	70.
	9.2806	9.2806	9.3837	9.4403	9.4900	9.5341
		(7.8557)			(8.0694)	
		6.0976			6.3113	
	.01	(.007)	.01	.01	(.012)	.01
Log. dec. day		0.24771			0.26162	
" diff.		2.7566			2.7566	
Sum logs.		2.70323			2.71714	
number		504.92			521.36	
w		91.50			91.50	
w,		236.42			252.86	
Log. tan. w,		0.1779			0.5109	
" a		1.8017			1.8016	
a. c. log. b		8.7482			8.7482	
Sum logs.		0.7278			1.0607	
P − p		79.40			85.03	
Co. log. sin. (P − p)		0.0075			0.0017	
log. a						
" sin. w		9.9925			9.9983	
		8.1983			8.1984	

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.8782	.8643	.8696	.8766	.8970	.9030	Nov. 22, 1888
85	86	87	88	89	90	91
8.48	8.48	8.49	8.49	8.51	8.52	9.03
4.24	4.24	4.24	4.24	4.26	4.26	4.52
8.8688	8.8688	8.8688	8.8688	8.8709	8.8709	8.8966
7.7376	7.7376	7.7376	7.7376	7.7418	7.7418	7.7932
9.12	9.12	9.12	9.12	9.12	9.12	9.08
0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9581
8.6264	8.6264	8.6264	8.6264	8.6306	8.6306	8.6801
76.19	76.19	76.19	76.19	76.18	76.18	76.
−14.	−14.	−14.	−14.	−14.	−14.	166.
√4.78	√√.14	√4.08	√3.√0	√1.√0	√3.14	232.40
69.	69.	68.	68.	66.	67.	66.
9.√√43	9.√√43	9.√736	9.√736	9.6093	9.√919	9.6093
	(8.1373)			(8.1966)		(8.2479) (.012)
	6.3792			6.438√		6.4898
.01	(.014)	(.01)	.01	(.016)	.02	
	0.270√2			0.2807		9.71√00
	2.7√6√√			2.7√6√√		2.7√6√2
	2.72604			2.733√9		2.17049
	√32.16			√41.49		148.08
	91.√0			91.√0		302.39
	263.66			272.99		90.47
	0.9√42			1.2821ω		2.0860ω
	1.801√			1.8014		1.7996
	8.7481			8.7480		8.747√
	1.√038			0.8315ω		2.6331ω
	88.20			−81.62		−89.87
	0.0002			0.0047ω		0.0000ω
	9.9998			9.99√3ω		0.0000ω
	8.198√			8.1986		8.2004

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	.5358 92	.5457 93	Mon. 23. 5945 94	.6105 95	.7384 96	.7489 97
φ	9.05	9.06	9.93	9.94	10.05	10.06
$\frac{1}{2}\varphi$	4.5-2	4.5-3	4.96	4.97	5.02	5.03
Log sin $\frac{1}{2}\varphi$	8.8966	8.8975	8.9368	8.9377	8.9420	8.9429
2 log. sin $\frac{1}{2}\varphi$	7.7932	7.7950	7.8736	7.8754	7.8840	7.8858
	9.08	9.08	9.02	9.02	9.01	9.01
	0.9581	0.9581	0.9552	0.9552	0.9547	0.9547
	8.6801	8.6819	8.7576	8.7594	8.7675	8.7693
	76	76	76	76	76	76
	166.	166.	166.	166.	166.	166.
	231.26	230.88	254.14	249.34	235.88	235.20
	65.	65.	88	83.	70	69
	9.6259	9.6259	8.5428	9.0859	9.5341	9.5543
		(8.2664)		(7.8070)		(8.2857)
		6.5083		6.0489		6.5276
	(.02)	(.018)	.00	.006	(.02)	(.019)
Log. dec. day.		9.7369		0.20697		0.24277
" diff.		2.7562		2.7562		2.7562
Sum logs.		2.19244		2,66246		2,69826
number		155.7		459.9		499.19
w		302,39		302.39		302.39
w,		98.14		42.08		81.58
log. tan. w,		0.8445w		9.9557		0.8297
" a		1,7995		1.7964		1,7960
a. c. log. b		8,7475		8,7466		8,7465
Sum logs.		1,3915w		0,4987		1,3722
P-p		-87.67		72.40		87.57
Co. log. sin (P-p)		0.0004w		0.0208		0.0004
log. a						
" sin, w,		9.9996w		9.9792		9.9996
		8,2005		8,2036		8,2040

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.7583	.7665	.7695	.7996	.8084	.8237	.8337
98	99	100	101	102	103	104
10.07	10.07	10.09	10.10	10.11	10.12	10.13
5.04	5.04	5.04	5.05	5.06	5.06	5.06
8.9437	8.9437	8.9437	8.9446	8.9455	8.9455	8.9455
7.8874	7.8874	7.8874	7.8892	7.8910	7.8910	7.8910
9.01	9.01	9.01	9.01	9.01	9.01	9.00
0.9547	0.9547	0.9547	0.9547	0.9547	0.9547	0.9542
8.7709	8.7709	8.7709	8.7727	8.7745	8.7745	8.7740
76	76	76	76	76	76	76
166.	166.	166.	166.	166.	166.	166.
234.66	233.86	231.88	230.70	230.22	228.72	227.26
69	68	66.	65	64.	63	61.
9.5543	9.5736	9.6093	9.6259	9.6418	9.6570	9.6856
			(8.3608)	7(.023)	(8.3938)	7(.025)
			6.6027		6.6357	
.02	.02	.02		(.02)		(.03)
			0.2557		0.2609	
			2.7562		2.7562	
			2.71066		2.71644	
			√13.64		√20.52	
			302.39		302.39	
			96.03		102.91	
			0.9762u		0.6397u	
			1.7959		1.7958	
			8.7465		8.7464	
			1.5186u		1.1819u	
			−88.26		−86.24	
			0.00026u		0.00010u	
			9.9998u		9.9990u	
			8.2041		8.2042	

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No.	105	106	107	108	109	110
Date.	Nov. 24.4311	.4384	.4473	.5327	.5640	.5687
φ	10.62	10.63	10.64	10.71	10.73	10.74
$\frac{1}{2}\varphi$	5.31	5.32	5.32	5.36	5.36	5.37
Log. sin. $\frac{1}{2}\varphi$	8.9664	8.9672	8.9672	8.9704	8.9704	8.9712
2 log. sin. $\frac{1}{2}\varphi$	7.9328	7.9344	7.9344	7.9408	7.9408	7.9424
	8.97	8.97	8.97	8.96	8.96	8.96
	0.9528	0.9528	0.9528	0.9523	0.9523	0.9523
Log. w.	8.8144	8.8160	8.8160	8.8219	8.8219	8.8235
	76	76	76	76	76	76
	−14.	−14.	−14.	−14.	−14.	−14.
	50.62	50.18	48.70	40.94	38.28	35.92
	65	64	63	55	52	50
Reg. cos. $(\varphi-\theta)$	9.6259	9.6418	9.6570	9.7586	9.7893	9.8081
	.03	(8.4220) = (.026)		(8.5450) = (.034)		(8.5962) (.039)
		6.6639	(.03)	6.7869	(.04)	6.8381
Log. dec. day.		9.64187		9.72648		9.75488
" diff.		2.75650		2.75650		2.75650
Sum logs.		2.09734		2.18195		2.21035
number.		125.12		152.04		162.31
w		153.24		153.24		153.24
w_1		278.36		305.28		315.55
Log. tan. w_1		0.8328n		0.1502n		9.9916n
" a		1.7939		1.7936		1.7935
a.C. log. b		8.7462		8.7461		8.7461
Sum logs.		1.3729n		0.6899n		0.5312n
P − p		−84.57		−78.46		−73.60
Co. log. sin. (P − p)		0.0004n		0.0089n		0.0180n
log. a						
" sin. w_1		9.9996n		9.9911n		9.9820n
		8.20161		8.20064		8.2065

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111	112	113	114	115	116	117	118
.5947	hor. 25.5113	.5197	.5468	.5599	.5700	.5906	.6412
10.76	11.51	11.52	11.54	11.55	11.56	11.57	11.62
5.38	5.76	5.76	5.77	5.78	5.78	5.78	5.81
8.9720	9.0016	9.0016	9.0023	9.0031	9.0031	9.0031	9.0053
7.9440	8.0032	8.0032	8.0046	8.0062	8.0062	8.0062	8.0106
8.96	8.90	8.90	8.89	8.89	8.89	8.89	8.89
0.9523	0.9494	0.9494	0.9489	0.9489	0.9489	0.9489	0.9489
8.8251	8.8814	8.8814	8.8823	8.8839	8.8839	8.8839	8.8863
76	76	76	76	76	76	76	76
−14.	−14.	−14.	−14.	−14.	−14.	−14.	−14.
33.40	69.94	60.41	64.86	62.22	62.32	60.64	54.96
47	84	74.	79.	76	76	75.	69.
9.8338	9.0192	9.4403	9.2806	9.3837	9.3837	9.4130	9.3543
(8.6236) (.042)	(7.8682) (.007)	(.01)	(.01)	(8.2353) (.017)	(.02)	(8.2647) (.018)	(8.4106) (.026)
6.8655	6.1101			6.4772		6.5066	6.6525
9.77430	0.1793			0.19309		0.20156	0.21516
2.7565	2.7565			2.7565		2.7565	2.7565
2.22977	2.63482			2.64856		2.67063	2.70863
169.74	431.34			445.20		468.97	468.41
153.24	153.24			153.24		153.24	153.24
322.98	224.58			238.44		247.21	261.65
9.8774u	0.3231			0.2117		0.3766	0.8333
1.7934	1.7905			1.7904		1.7903	1.7901
8.7461	8.7458			8.7458		8.7458	8.7458
0.4169u	0.8594			0.7479		0.9127	1.3692
−69.05	82.13			79.87		83.03	87.55
0.0297u	0.0041			0.0068		0.0032	0.0004
9.9703u	9.9959			9.9932		9.9968	9.9996
8.2066	8.2095			8.2096		8.2097	8.2099

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No.	119	120	121	122	123	124
Date.	hw. 26. 4483	hw. 29. 4969	.5198	.5257	.5555	.5611
φ	12.26	14.63	14.65	14.65	14.67	14.68
½φ	6.13	7.32	7.32	7.32	7.34	7.34
Log. sin ½φ	9.0285	9.1052	9.1052	9.1052	9.1064	9.1064
2 log. sin ½φ	8.0570	8.2104	8.2104	8.2104	8.2128	8.2128
	8.83	8.62	8.62	8.62	8.62	8.62
	0.9460	0.9355	0.9355	0.9355	0.9355	0.9355
	8.9318	9.0747	9.0747	9.0747	9.0771	9.0771
	76	75	75	75	75	75
	166.	−15.	−15.	−15.	−15.	−15.
	220.06	47.78	47.32	45.42	44.32	42.79
	54	63	62.	60	59.	58.
	9.7692	9.6570	9.6716	9.6990	9.7118	9.7242
	(8.6716) (.047)	(8.7130) (.052)	(.06)	(8.7551) (.057)	(.06)	[8.7838] (.061)
	6.9135	6.9549		6.9970		7.0257
Log. dec. day.	9.6515	0.1719		0.1843 2		0.1934 3
" diff.	2.7564 6	2.7564 3		2.7564 3		2.7564 3
Sum logs.	2.1079	2.6305 9		2.6397 2		2.6498 3
number	127.94	427.16		436.23		445.48
W	4.06	214.83		214.83		214.83
W,	132.00	281.99		291.06		300.31
Log. sin. W,	0.0456 W	0.6729 W		0.4145		0.2331
" a	1.7727	1.7768		1.7767		1.7766
a.c. log. b	8.7457	8.7474		8.7474		8.7474
Sum logs.	0.5789 W	1.1971 W		0.9386		0.7571
Z − φ	−7.23	−8.63		+3.43		+0.08
Co log. sin. (Z − φ)	0.0146 W	0.0009 W		0.0029		0.0065
log. a						
" sin. W,	9.9854 W	9.9991 W		9.9971		9.9935
	8.2125	8.2232		8.2233		8.2244

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125	126	127	128	129	130	131
hr.30.5041	.5169	.5549	.5973	.6073	.6322	.6418
15.38	15.39	15.42	15.45	15.46	15.48	15.49
7.69	7.70	7.71	7.72	7.73	7.74	7.74
9.1265	9.1271	9.1276	9.1285	9.1287	9.1293	9.1293
8.2530	8.2542	8.2552	8.2564	8.2574	8.2586	8.2586
8.55	8.55	8.54	8.54	8.54	8.54	8.54
0.9320	0.9320	0.9315	0.9315	0.9315	0.9315	0.9315
9.1138	9.1150	9.1155	9.1167	9.1177	9.1189	9.1189
7	7	7	7	7	7	7
-15.	-15.	-15.	-15.	-15.	-15.	-15.
68.12	68.71	70.64	69.52	69.92	60.16	60.40
83	84	86	79.	79	75	75
9.0859	9.0192	8.8436	9.2806	9.2806	9.4130	9.4138
.00	.00	(7.9441 (.009) 6.1860	(.02)	(.02)	(.03)	(8.5174 (.033) 6.7593
	9.	9.744421 2.7563 9		9.		9.807440 2.7563 9
		2,2997 199.33 65.56 264.89				2,2627 6 183.13 65.56 248.69
		1.0485 1.7731 8.7485 1.5701 88.46				0.4088 1.7726 8.7486 0.9300 83.30
		0.0001				0.0030
		9.9999 8.2269				9.9970 8.2274

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No.	132	133	134	135	136	137
Date.	.6679	.6782	.7096	.7154	.7325	.7489
φ	15.50	15.51	15.54	15.54	15.55	15.56
½ φ	7.75	7.76	7.77	7.77	7.78	7.78
Log. sin ½ φ	9.1299	9.1304	9.1310	9.1310	9.1315	9.1315
2 log. sin ½ φ	8.2598	8.2608	8.2620	8.2620	8.2630	8.2630
	8.53	8.53	8.53	8.53	8.53	8.53
	0.9309	0.9309	0.9309	0.9309	0.9309	0.9309
	9.1195	9.1205	9.1217	9.1217	9.1227	9.1227
	7	7	7	7	7	7
	-15.	-15.	-15.	-15.	-15.	-15.
	6.86	7.06	2.94	3.10	0.48	0.02
	72.	72	68	68	65	65.
	9.4900	9.4900	9.5736	9.5736	9.6259	9.6259
				(8.6811) (.048)		
	.04	.04	.05	6.9230	.05	.05
Log. dec. day				9.8545		
" diff.				2.7563		
Sum logs.				2.3099		
number				204.13		
w				65.56		
w,				269.69		
Log. (a. w,				2.2668		
" a				1.7723		
a.c. log. b,				8.7489		
Sum logs.				2.7878		
P-p				89.91		
Co. log. sin. (P-p)				0.0000		
log. a						
" sin. w,				0.0000		
				8.2277		

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138	139	140	141	142	143	144
.7543	.7750	.7900	.8082	.8156	.8378	.8446
15.57	15.58	15.59	15.61	15.61	15.63	15.64
7.76	7.79	7.80	7.80	7.80	7.82	7.82
9.1315	9.1321	9.1326	9.1326	9.1326	9.1337	9.1337
8.2630	8.2642	8.2652	8.2652	8.2652	8.2674	8.2674
8.53	8.53	8.53	8.52	8.52	8.52	8.52
0.9309	0.9309	0.9309	0.9304	0.9304	0.9304	0.9304
9.1227	9.1239	9.1249	9.1244	9.1244	9.1266	9.1266
7	7	7	7	7	7	7
-15.	-15.	-15.	-15.	-15.	-15.	-15.
49.42	48.18	47.54	45.16	43.66	42.42	39.86
64.	63.	61.	60.	59.	57.	54.
9.6418	9.6570	9.6856	9.6990	9.7158	9.7361	9.7692
			(8.8096)			
			(.064)			
.05	.06	.06	7.0515	.07	.07	.07
			9.9072			
			2.7563			
			2,362.8			
			230.61			
			65.56			
			296.17			
			0.3086w			
			1.7719			
			8.7442			
			0.8293w			
			-81.57			
			0.0047			
			9.9973w			
			8.2281			

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No.	145	146	147	148	149	150
Date.	.8512	Dec. 1.5504	Dec. 4.4369	.4970	.5119	.5393
φ	15.64	16.16	18.21	18.25	18.27	18.28
½φ	7.82	8.08	9.10	9.12	9.14	9.14
Log. sin. ½φ	9.1337	9.1478	9.1991	9.2000	9.2010	9.2010
2 log. sin. ½φ	8.2674	8.2956	8.3982	8.4000	8.4020	8.4020
	8.55	8.47	8.25	8.25	8.24	8.24
	0.9304	0.9279	0.9165	0.9165	0.9159	0.9159
	9.1266	9.1523	9.2435	9.2453	9.2467	9.2467
	7.5	7.5	7.5	7.5	7.5	7.5
	−1.5.	16.5.	−1.5.	−1.5.	−1.5.	−1.5.
	40.58	21.24	5.769	5.314	5.158	4.950
	5.6.	4.6.	5.3.	6.8.	6.7.	6.5.
	9.7476	9.8418	9.4659	9.5736	9.5919	9.6259
		(8.9831) (.099)	.05	.07	(8.8394) (.069)	.08
	.07	7.2250			7.0813	
Log. dec. day.		0.19044			9.70919	
" diff.		2.7563 9			2.7563 2	
Sum logs.		2.64580			2.16448	
Number		442.38			146.04	
− w		65.56			126.86	
= w,		147.94			272.90	
Log. cos. w,		9.7968 u			1.2954 u	
" a		1.7691			1.7573	
a.c. log. b		8.7497			8.7549	
Sum logs.		0.3156 u			1.8076 u	
I − p		−64.20			−81.15	
Co. log. sin. (I−p)		0.0456 u			0.0052 u	
log. a						
" sin. w,		9.9544 u			9.9948 u	
		8.2309			8.2427	

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1-1	1-2	1-3	1-4	1-5	1-6	1-7
.5461	.5870	.6061	.6210	.6476	.6555	.7109
18.28	18.31	18.33	18.34	18.35	18.36	18.40
9.14	9.16	9.16	9.17	9.18	9.18	9.20
9.2010	9.2019	9.2019	9.2024	9.2029	9.2029	9.2038
8.4020	8.4038	8.4038	8.4048	8.4058	8.4058	8.4076
8.24	8.24	8.24	8.24	8.23	8.23	8.23
0.9159	0.9159	0.9159	0.9159	0.9154	0.9154	0.9154
9.2467	9.2485	9.2485	9.2495	9.2500	9.2500	9.2518
7-	7-	7-	7-	7-	7-	7-
-1.	-1.	-1.	-1.	-1.	-1.	-1.
48.66	44.46	42.76	41.00	38.48	36.30	30.60
64.	59.	58.	56.	53.	51.	46.
9.6418	9.7118	9.7242	9.7476	9.7795	9.7989	9.8418
		8.9739 (.994)			9.0503 (.112)	
.08	.09	7.2158	.10	.11	7.2922	.13
		9.7825 4			9.8165 7	
		2.7532			2.7532	
		2.2373			2.2718	
		172.92			187.01	
		126.86			126.86	
		299.78			313.87	
		0.2424 w			0.0172 w	
		1.7569			1.7567	
		8.7551			8.7552	
		0.7544 w			0.5291 w	
		-80.02			-73.52	
		0.0066 w			0.0182 w	
		9.9934 w			9.9818 w	
		8.2431			8.2433	

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log. $\frac{\delta}{3\pi} = 9.92882$

No.	157	159	160	161	162	163
Date.	.7194	.7644	Dec. 7.5271	.5843	.6105	.6539
φ	18.40	18.43	20.27	20.31	20.33	20.36
½φ	9.20	9.22	10.14	10.16	10.16	10.18
Log. sin ½φ	9.2038	9.2047	9.2456	9.2465	9.2465	9.2473
2 log. sin ½φ	8.4076	8.4094	8.4912	8.4930	8.4930	8.4946
	8.23	8.22	8.01	8.00	8.00	8.00
	0.9154	0.9149	0.9036	0.9031	0.9031	0.9031
	9.2518	9.2531	9.3236	9.3249	9.3249	9.3265
	75		74	74	74	74
	−15.		164.	164.	164	164.
	27.72		246.26	240.04	236.48	233.74
	43.		82.	76.	72.	70.
	9.8641		9.1436	9.3837	9.4900	9.5341
	9.1175 (.131)	,14	8.4806 (.030)	.06	8.8286 (.067)	.08
	7.3594		6.7225		7.0705	
Log. dec. day	9.8569n		0.18387		0.20697	
" diff.	2.7562		2.7562		2.7562	
Sum logs.	2.31226		2.63912		2.66222	
number	205.24		435.63		459.43	
w	126.86		337.44		337.44	
w,	332.10		53.07		76.87	
Log. tan w.	9.72384		0.1240		0.6322	
" a	1.7565		1.7447		1.7444	
a. c. log. r	8.7554		8.7622		8.7624	
Sum logs	0.2357n		0.6309		1.1390	
P − p	−59.84		76.83		85.85	
Co. log. sin. (P − p)	0.0631n		0.0116		0.0012	
log. a						
" sin. w,	9.9369n		9.9884		9.9988	
	8.2435		8.2553		8.2556	

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164	165	166	167	168	169	170
.7308	.7413	.7541	.7816	.7905	Dec. 9.4239	.4396
20.41	20.41	20.42	20.44	20.44	21.47	21.48
10.20	10.20	10.21	10.22	10.22	10.74	10.74
9.2482	9.2485	9.2486	9.2490	9.2490	9.2703	9.2703
8.4964	8.4964	8.4972	8.4980	8.4980	8.5406	8.5406
7.99	7.99	7.99	7.99	7.99	7.86	7.85
0.9025	0.9025	0.9025	0.9025	0.9025		0.8949
9.3277	9.3277	9.3285	9.3293	9.3293		9.3643
74	74	74	74	74		74
164.	164.	164.	164.	164.		161.
224.20	225.74	222.80	218.90	219.17		63.00
60.	62.	59.	55.	55.		79.
9.6990	9.6716	9.7118	9.7586	9.7586		9.2806
.10	9.0136 (.103)	.11	9.1024 (.127)	.13		.05
	7.2555		7.3443			
	0.2408		0.2581			
	2.7562		2.7562			
	2.69613		2.70606			
	496.74		508.23			
	337.44		337.44			
	114.18		125.67			
	0.3478w		0.1440w			
	1.7438		1.7436			
	8.7627		8.7628			
	0.8543w		0.6504w			
	−82.04		−77.39			
	0.0042w		0.0106w			
	9.9958		9.9894w			
	8.2562		8.2564			

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No.	171	172	173	174	175	176
Date,	.4586	.5110	.5390	.5512	.5839	.6209
φ	21,49	21,56	21,54	21,55	21,57	21,59
½φ	10.74	10,76	10.77	10.78	10,78	10.80
Log. sin ½φ.	9.2703	9.2711	9.2715	9.2719	9.2719	9.2727
2 Log. sin ½φ	8.5406	8.5422	8.5430	8.5438	8.5438	8.5454
	7.85	7.85	7.85	7.85	7.84	7.84
	0.8949	0.8949	0.8949	0.8949	0.8943	0.8943
	9.3643	9.3659	9.3667	9.3675	9.3669	9.3685
	74	74	74	74	74	74
	−16.	−16.	−16.	−16.	−16.	−16.
	62.06	56.74	53.04	53.00	50.24	44.54
	78.	73.	69.	69.	66.	61.
	9.3179	9.4659	9.5543	9.5543	9.6093	9.6856
	(8.7040) (.0551)	.096	(8.9432) (.088)	.09	.11	(9.0766) (.119)
	6.9459		7.1851			7.3185
Log. dec. day	0.16230		0.18724			0.20975
" diff.	2.75624		2.75624			2.75624
Sum logs.	2.61751		2.64245			2.66496
number	414.49		438.99			462.34
w	187.97		187.97			187.97
w_1	242.46		266.96			290.31
Log. tan w.	0.2828		1.2744			0.4317 w
" a	1.7560		1.7359			1.7356
a. c. log b	8.7678		8.7850			8.7683
Sum logs.	0.7869		1.7787			0.9356 w
P − p	80.72		89.05			−83.38
Co. log. sin (P−p)	0.0057		0.0001			0.0029 w
log. a						
" sin. w.	9.9943		9.9999			9.9971 w
	8.2637		8.2641			8.2644

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177	178	179	180	181	182	183
.6455	.6677	Dec. 12. 1961	.6298	.6416	.6761	.7003
21.61	21.62	23.36	23.38	23.34	23.40	23.42
10.80	10.81	11.68	11.69	11.69	11.70	11.71
9.2727	9.2731	9.3063	9.3067	9.3067	9.3070	9.3074
8.5454	8.5462	8.6126	8.6134	8.6134	8.6140	8.6148
7.84	7.84	7.60	7.60	7.60	7.60	7.59
0.8943	0.8943	0.8808	0.8808	0.8808	0.8808	0.8802
9.3685	9.3693	9.4222	9.4230	9.4230	9.4236	9.4238
74	74	74	74	74	74	74
16.	16.	164.	164.	164.	164.	164.
43.94	41.26	247.27	237.88	239.16	236.10	234.54
60.	57.	83.	74.	75.	72.	71.
9.6990	9.7361	9.0859	9.4403	9.4130	9.4900	9.5126
.13	(9.1281) (.134) 7.3700	.07	(8.8994) (.078) 7.1413	.08	.09	(8.9728) (.094) 7.2147
	0.22212		9.79920			9.84528
	2.75624		2.75616			2.75616
	2.67733		2.25433			2.30041
	475.70		179.61			199.42
	187.97		248.85			248.85
	303.67		68.46			88.57
	0.17645		0.40537			1.6027
	1.73554		1.72220			1.72217
	8.76844		8.77455			8.77784
	0.68024		0.9042			2.1032
	−78.21		82.89			89.55
	0.00938		0.0033			0.0000
	9.9907		9.9964			0.0000
	8.2646		8.2780			8.2783

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No.	184	185	186	187	188	189
Date.	.7192	.7385	.7527	.7731	.7964	Dec. 17.7434
φ	23.43	23.44	23.45	23.46	23.47	26.10
½φ	11.72	11.72	11.72	11.73	11.74	13.05
log. sin ½φ	9.3078	9.3078	9.3078	9.3081	9.3085	9.3537
2 log. sin ½φ	8.6156	8.6156	8.6156	8.6162	8.6170	8.7074
	7.59	7.59	7.59	7.59	7.59	7.19
	0.8802	0.8802	0.8802	0.8802	0.8802	0.8567
	9.4246	9.4246	9.4246	9.4252	9.4260	9.4929
	74	74	74	74	74	74
	164.	164.	164.	164.	164.	164.
	230.80	231.06	227.68	227.74	221.88	232.48
	67.	67.	64.	64.	58.	68.
	9.5919	9.5919	9.6418	9.6418	9.7242	9.5736
	.11	.12	(9.1030) (.127)	.14	(9.1770) (.154)	(9.1263) (.134)
			7.3449		7.4289	7.3682
Log. dec. day.			9.87662		9.90113	0.24140
" diff.			2.75616		2.75616	2.75608
Sum logs.			2,33175		2,35626	2.69645
number			214.66		227.12	497.11
w			248.45		248.45	309.53
w_1			103.51		115.97	86.64
Log. (arc. w_1			0.6193w		0.3124w	1.2313
" a			1.7215		1.7213	1.6980
a. c. log b			8.7790		8.7791	8.7992
Sum logs.			1.1198w		0.8128w	1.7288
T − t			−85.66		−81.25	79.42
C. log. sin (T − t)			0.0012w		0.0051	0.0075
log. a						
" sin w_1			9.9988		9.9949	9.9925
			8.2785		8.2357	8.3017

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190	191	192	193	194	195	196
Dec. 18. 4386	.4470	.4727	.4677	.4798	.4890	.5081
26,44	26,44	26,47	26,47	26,46	26,46	26,47
13,22	13,22	13,22	13,22	13,23	13.23	13.24
9.3592	9.3592	9.3592	9.3592	9.3596	9.3596	9.3599
8.7184	8.7184	8.7184	8.7184	8.7192	8.7192	8.7198
7.14	7.14	7.14	7.14	7.14	7.14	7.14
0.8737	0.8737	0.8737	0.8737	0.8737	0.8737	0.8737
9.9009	9.9009	9.9009	9.9009	9.9017	9.9017	9.9023
74	74	74	74	74	74	74
-16.	-16.	-16.	-16.	-16.	-16.	-16.
47.04	47.74	47.28	47.20	42.96	43.00	42.22
64.	64.	61.	62.	59.	59.	58.
9.6418	9.6418	9.6856	9.6716	9.7118	9.7118	9.7242
.18	.18	(9.2744) (.180) 7.4963	.18	.19	(9.2816) (.191) 7.9235	.20
		9.6979 81 2.7960 4			9.689 31 2.7960 4	
		2.11082			2,14432	
		129.07			139.42	
		159.78			159.78	
		288.85			299.20	
		0.4664n			0.2527n	
		1.6902			1,6900	
		8,8024			8,8026	
		0.9594n			0,7453n	
		-83.73			-79.81	
		0.0026n			0,0069n	
		9.9974n			9.9931n	
		8.3098			8.3100	

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No.	197	198	199	200	201	202
Date,	Dec. 26.6329	Dec. 30.4393	.4786	Jan. 2.4627	.5049	Jan. 5.6649
φ	29.99	31.35	31.37	32.32	32.34	33.22
$\frac{1}{2}\varphi$	15.00	15.68	15.68	16.16	16.17	16.61
Log. sin. $\frac{1}{2}\varphi$	9.4130	9.4318	9.4318	9.4445	9.4448	9.4551
$\frac{1}{2}$ Log. sin. $\frac{1}{2}\varphi$	8.8260	8.8636	8.8636	8.8890	8.8896	8.9102
S. d. mean.	6.52	6.26	6.25	6.05	6.04	5.98
Log. (s. d. mean.)	0.8142	0.7966	0.7959	0.7818	0.7810	0.7767
+ Log. w =	9.5690	9.5890	9.5883	9.5996	9.5994	9.6157
$(90+\theta)$	74	74	74	74	74	74
θ =	164.	164.	164.	164	164	164
b =	226.84	227.94	224.44	45.22	55.24	230.24
$(b-\theta)$ =	63.	64.	60.	61	71	66
+ Log. cos. $(b-\theta)$ =	9.6570	9.6458	9.6990	9.6856	9.5126	9.6093
	9.3351 (.216)	9.3659 (.232)	9.1507 (.243)	9.4522 (.243)	9.2737 (.184)	9.3820 (.241)
	7.5770	7.6078	7.6936	7.6941	7.5156	7.6239
Log. dec. day						
" diff.						
Sum logs.						
number						
w						
w_1						
Log. (an) w_1						
" a						
a.c. log. b						
Sum logs.						
$P-p$						
Co. log. sin $(P-p)$						
log. a						
" sin. w_1						
+ Co. log. r_1	8.3510	8.3770	8.4063	8.4089	8.4036	8.3989

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203	204	205	206	
.6836	Jan. 7. .5648	.6688	.6960	Jan. 10. .7347
33.25	33.75	33.78	33.78	34.51
16.62	16.88	16.89	16.89	17.26
9.4564	9.4629	9.4632	9.4632	9.4723
8.9128	8.9258	8.9264	8.9264	8.9446
5.98	5.72		5.72	5.54
0.7767	0.7574		0.7574	0.7435
9.6183	9.6120		9.6126	9.6169
74	74		74	74
164	164		164	164
229.70	43.44		46.51	225.42
66	59		63	59
9.6093	9.7118		9.6570	9.7118
9.3794 (.240)	9.4879 (.307)	.30	9.4781 (.301)	9.5047 (.320)
7.6213	7.7298		7.7200	7.7466
8.3937	8.4060	8.4267	8.4504	8.4179

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ℓ Lobos. Cor. for

No.	1	2	3	4	5
Date.	Oct. 26. 6756	.6757	.6791	.8040	.8288
φ	15.14	15.09	15.09		14.92
½ φ	7.57	7.54	7.54		7.47
Log. sin. ½ φ	9.1197	9.1190	9.1198		9.1140
2 Log. sin. ½ φ	8.2394	8.2380	8.2396		8.2280
S. d. mars.	9.54.	9.54	9.54		9.55
Log. v. d. mars.	0.9795	0.9795	0.9795		0.9800
Log. w	9.1477	9.1463	9.1463		9.1368
(90 + θ)	258	258	258		258
θ	168	168	168		168
ρ	238	231			40
ρ − θ	70	63			52
Log. sin. (ρ − θ)	9.9341	9.6570			9.7893
	9.0307	9.2023w			9.4134w
	(.107)	(.159)	.16	.25	(.259)
w	75.58	120.46			316.30
P + ρ	87.20	−83.50			−78.70
co. log. sin. (P − ρ)	0.0005	0.0028w			0.0085w
log. a	1.4226	1.4226			1.4229
log. sin. w	9.9861	9.9337			9.8394
	1.4092	1.3591w			1.2708w
	8.5908	8.6409w			8.7292w

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Gibbosity.

6	7	8	9	10	11
Lon. 10. 6093	.6173	.6262	.6319	.640v	.6v60
1.52			1.49		1.46
0.76			.74		.73
8.1227			8.1111		8.10v2
6.2454			6.2222		6.2104
9.60			9.60		9.v9
0.9823			0.9823		0.9818
7.1v65			7.1333		7.1210
2v4			2v4		2v4
164			164		164
233			228		219
69			64		vv
9.v443			9.6418		9.7v46
7.0453			7.136v$_u$		7.3747$_u$
.001			.001		.002
85.v3			111.0v		13826
88.94			-84.78		-7v.11
0.0001			0.0018$_u$		0.0149$_u$
1.4248			1.4248		1.4248
9.9987			9.9701		9.8233
1.4236			1.3967$_u$		1.2630$_u$
8.v764			8.6033$_u$		8.7370$_u$

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No.	12	13	14	15	16	2
Date.	Nov. 16, 1916	.5274	.5366	.5499	.5604	
φ	3.73					
$\frac{1}{2}\varphi$	1.86					
Log. sin $\frac{1}{2}\varphi$	8.5113					
2 log. sin. $\frac{1}{2}\varphi$	7.0226					
r. d. mars	9.40					
Log. r. d. mars	0.9731					
Log. m.	7.9245					
$90 + \theta$	78					
θ	−12					
ρ	53					
$(\rho - \theta)$	65					
Log. cos $(\rho - \theta)$	9.6259					
	7.8926					
	.008	.01	.01	.01	.01	.01
ω	270.11					
$\Pi - \rho$	−89.97					
co. log. sin. $(\Pi - \rho)$	0.00000					
log. a	1.4159					
log. sin. ω.	0.00000					
	1.4159					
	5.5841					

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17	18	19	20	21	22	23
.6[illegible]72	.6[illegible]14	.6[illegible]87	.[illegible]203	.[illegible]3321	[illegible].21,[illegible]68	.[illegible]99[illegible]
3.87				4.03	[illegible].25	
1.94				2.02	4.12	
[illegible],[illegible]296				[illegible],[illegible]471	[illegible],[illegible]764	
7.0[illegible]92				7.0942	7.7128	
9.09				9.3[illegible]	9.14	
0.9727				0.9722	0.9609	
7.9607				7.99[illegible]2	[illegible].602[illegible]	
78				78.	76.	
-12				-12	-14	
238				50	56	
70				62	70	
9.[illegible]341				9.6716	9.[illegible]341	
7.[illegible]10				8.0100w	8.[illegible]47w	
(.007)	.01	.01	.01	(.010)	(.0349)	.04
7[illegible].18				271.99	240.60	
86.12				-89.7[illegible]	81.3[illegible]	
0.0010				0.0000	0.00[illegible]0	
1.41[illegible]6				1.41[illegible]2	1.4039	
9.9853				9.9997w	9.9401w	
1.4019				1.4149w	1.3490w	
[illegible].[illegible]981				[illegible].[illegible]71w	[illegible].[illegible]10w	

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No.	24	25	26	27	28
Date.	Jun. 21. 6014	.6087	.6154	.6218	.6268
φ					8.28
$\frac{1}{2}\varphi$					4.14
Log. sin $\frac{1}{2}\varphi$					8.8585
2 log. sin $\frac{1}{2}\varphi$					7.7170
v. d. mean.					9.14
Log. v. d. mean.					0.9609
Log. cos.					8.6067
$90+\theta$					76
θ					14
p					45
$p-\theta$					59
Log. cos. $(p-\theta)$					9.7118
					8.6881
	.04	.04	.04	.05	(.0488)
ω					245.77
$\Sigma - p$					-85.64
colog. sin. $(\Sigma-p)$					0.0013 ω
log. a					1.4038
log. sin. ω					9.9834 ω
					1.3885
					8.6115

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log. rad. in dep. = 1.7∨812

29	30	31	32	33	34	∨∨
.63∨2	.640∨	.6∨39	.7770	1∨v.22.∨42	.∨∨42	.∨72∧
			8.41	9.06		9.08
			4.20	4.∨2		4.∨4
			∧.∧647	∧.∧97∨		∧.∧9∧∨
			7.7294	7.79∨0		7.7970
			9.13	9.08		9.08
			0.960∨	0.9∨∧1		0.9∨∧1
			∧.6187	∧.6∧19		∧.6∧39
			76	76		76
			-14	-14		-14
			231	∨∨		∨1
			6∨	69		6∨
			9.62∨9	9.∨∨43		9.62∨9
			8.6011w	8.62∨∨		8.6677
.05	.05	.05	(.0399)	.042	.04	(.047)
			95.3∨	247.2∨		273.90
			-8∧.∨∨	∧3.4∧		-88.93
			0.0001w	0.002∧		0.0001w
			1.4034	1.4012		1.4011
			9.9981	9.9648w		9.9990w
			1.4016w	1.368∧w		1.4002
			∧.∨9∧4w	8.6312w		∧.∨99∧

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Iw.	36	37	38	39	40
Date,	Iwor. 23.5191	.5525	.5402	.5616	Iwo. 24.4628
φ	9.88		9.89	9.91	10.65
½ φ	4.94		4.94	4.96	5.32
Log. sin. ½ φ	8.93551		8.93551	8.93668	8.96771
2 log. sin. ½ φ	7.87102		7.87102	7.87336	7.93542
s. d. Iwors.	9.02		9.02	9.02	8.96
Log. s. d. Iwas.	0.95552		0.95552	0.95552	0.95523
Log. Iw.	8.75542		8.75542	8.75576	8.81553
90 + θ	76		76	76	76
θ	-14		-14	-14	-14
p	55		48	38	60
(p − θ)	69		62	52	74
Log. cos (p − θ)	9.55543		9.67163	9.78493	9.44038
	8.67222w		8.80173	9.01311w	8.64887w
	(.0477)	.05	(.0633)	(.1033)	(.0455)
w	262.34		286.16	310.33	247.45
I − p	89.79		−85.44	−76.84	83.55
colog. sin. (I − p)	0.0000		0.00143w	0.0116	0.0028
log. a	1.39883		1.39883	1.39852	1.39554
log. sin. w	9.99613w		9.98255w	9.88211w	9.96688w
	1.39443w		1.38222	1.29119w	1.36050w
	8.60566w		8.61728	8.70811w	8.63050w

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41	42	43	44	45	46	47
.4716	.4762	.4814	.4865	.4927	.5074	.5139
				10.67		
				5.34		
				8.9687		
				7.9374		
				8.96		
				0.9523		
				8.8185		
				76		
				-14		
				49		
				63		
				9.6570		
				8.8466		
.05	.06	.06	.06	(.070)	.09	.11
				241.61		
				-86.74		
				0.0007w		
				1.3953		
				9.9910w		
				1.3870		
				8.6130		

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No.	47	49	50	51	52	53
Date,	Nov. 24, 5251	Nov. 25, 4350	.5960	.6002	.6053	.6122
φ	10,70	11.45	11.58			11.59
½ φ	5.35	5.72	5.79			5.80
Log. sin. ½φ	8.9695	8.9985	9.0037			9.0046
2 log. sin. ½φ	7.9390	7.9970	8.0076			8.0092
S. d. Eccen.	8,96	8,90	8,89			8,89
Log. S. d. Eccen.	0.9523	0.9494	0.9489			0.9489
Log. w	8.8201	8.8752	8.8853			8.8869
90+θ	76	76	76			76
θ	-14	-14	-14			-14
ρ	41	51	233			228
(ρ-θ)	55	65	67			62
Log. cos.(ρ-θ)	9.7586	9.6259	9.5919			9.6716
	9.0977	8.8680w	8.8439			8.9398w
	(.1254)	(.0741)	(.0700)	.07	.08	(.0870)
w	318.19	265.53	87.31			105.60
P-ρ	-72.75	88.75	89.25			-85.53
colog. sin (P-ρ)	0,0200w	0,0001	0,0000			0,0013w
log. w	1.3952	1.3924	1.3919			1.3914
log. sin. w	9.8239w	9.9987w	9.9995			9.9837
	1.2391	1.3912w	1.3914			1.3764w
	8.7609	8.6088w	8.6086			8.6237w

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54	55	56	57	58	59	60
.6247	.6317	Lun. 26. 527	.5376	.5419	.5461	.5515
	11.61	12.34				
	5.80	6.17				
	9.0046	9.0378				
	8.0092	8.0626				
	8.89	8.83				
	0.9489	0.9460				
	8.8869	8.9374				
	76	75				
	-14	-15				
	220	239				
	54	74				
	9.7692	9.4403				
	9.1137	8.7864				
.10	(.130)	(.061)	.07	.07	.07	.08
	127.62	64.89				
	77.81	82.46				
	0.0099	0.0037				
	1.3918	1.3888				
	9.8988	9.9569				
	1.3005	1.3494				
	8.6995	8.6506				

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Eq.	61	62	63	64	65
Date,	Nov. 26, 1864	.1614	.1698	.1736	.1761
ϕ			12.36		
$\frac{1}{2}\phi$			6.18		
Log. sin $\frac{1}{2}\phi$			9.0320		
2 log. sin $\frac{1}{2}\phi$			8.0640		
s. d. mean.			8.17		
Log. s. d. mean.			0.9455		
Log. Δ,			8.9389		
$90+\theta$			75		
θ			−15		
ρ			228		
$(\rho-\theta)$			60		
Log. cos. $(\rho-\theta)$			9.6570		
			8.9820w		
	.08	.09	(.096)	.11	.11
w			106.78		
$\Pi-\rho$			−85.13		
colog. sin. $(\Pi-\rho)$			0.0016w		
log. a			1.3887		
log. sin. w			9.9811		
			1.3714w		
			8.6286w		

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1900phae.proj:1825.

66	67	68	69	70	71	72
.5507	.5850	.5847	.5930	Nov. 30.5707	Dec. 1.6562	.6662
			12.38	15.40	16.24	16.25
			6.19	7.70	8.12	8.12
			9.0327	9.1291	9.1500	9.1506
			8.0654	8.2542	8.3000	8.3000
			8.82	8.55	8.46	8.46
			0.9455	0.9320	0.9274	0.9274
			8.9397	9.1150	9.1562	9.1562
			75	75	75	75
			-15	-15	-15	-15
			219	X	227	230
			54		62	75
			9.7692		9.6716	9.4130
			9.1995u		9.2241u	8.9639u
.13	.14	.15	(.1758)		(.1688)	(.0922)
			132.97		258.74	100.68
			-75.26		89.82	-86.84
			0.0146u		0.0000	0.0007u
			1.3486		1.37 0.3	1.370 3
			9.8643		9.9915u	9.9924
			1.267 5u		1.3618u	1.3634u
			8.7325u		8.6382u	8.6366u

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No.	73	74	75	76	77	78
Date,	Dec. 4.6895	Dec. 7.5660	.5777			
φ	18.34	20.30	20.31			
$\frac{1}{2}\varphi$	9.19	10.15	10.16			
Log. sin. $\frac{1}{2}\varphi$	9.2033	9.2461	9.2465			
2 log. sin. $\frac{1}{2}\varphi$	8.4066	8.4922	8.4930			
s. d. hours,	8.23	8.00	8.00			
Log. s. d. hours	0.9154	0.9031	0.9031			
Log. w.	9.2508	9.3241	9.3249			
$90+\theta$	75	74	74.			
θ	-15	-16	-16			
p	49	50	50			
$(p-\theta)$	64	66	66			
Log. cos $(p-\theta)$	9.6418	9.6093	9.6093			
	9.2934	9.3530	9.3529			
	(.196)	(.225)	(.241)			
w	273.87	281.21	294.42			
$P-p$	-88.85	-86.58	-82.21			
colog. sin $(P-p)$	0.0001 w	0.0008 w	0.0040 w			
log. a	1.3582	1.3461	1.3461			
log. sin. w	9.9990 w	9.9916 w	9.9593 w			
	1.3573	1.3385	1.3094			
	8.6427	8.6615	8.6906			

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Deimos. (Distances.)

Date.	Nov. 21.7894	.7964	.8315	.8396	Nov. 24.4439	.4530
No.	1	2	3	4	5	6
(P − p)	81.57	82.26		86.15	−87.11	
P	322.7	322.7		322.7	322.7	
p	241	240		237	50.	
θ	−14	−14		−14	−14	
p − θ	75	74		71	64	
log. sin. (p − θ)	9.9849	9.9828		9.9757	9.9537	
" m	8.6196	8.6208		8.6248	8.8160	
	8.6045	8.6036		8.6005	8.7697	
	0.04	0.04	.04	0.04	0.059	.06

Date.	Dec. 4.7495	Dec. 7.5923	.6003	.6607	.6644	.7653
No.	40	41	42	43	44	45
(P − p)	−48.70	84.11			−88.95	79.39
P	322.6	322.6			322.6	322.6
p	11	238			52	243
θ	−15	−16			−16	−16
p − θ	26	74			68	79
log. sin. (p − θ)	9.6418	9.9828			9.9672	9.9919
" m	9.2529	9.3249			9.3267	9.3288
	8.8947	9.3077			9.2939	9.3207
	.08	.20	.20	.20	.20	.21

X

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Cor. for Gibbosity.

.5377	.5535	.5743	.5799	Cor. 25.5765	5432	.6475
7	8	9	10	11	12	13
-77.86			-71.78	81.64		88.09
322.7			322.7	322.6		322.6
41			34	241		235
-14			-14	-14		-14
55			48	75		69
9.9134			9.8711	9.9849		9.9702
8.8219			8.8242	8.8839		8.8843
8.7355			8.6955	8.8688		8.5555
.054	.05	.05	.05	.07	.07	.07
Dec. 9.4468	5266	.5442	.5605	.5973	.6275	.6558
46	47	48	49	50	51	52
80.01			-89.03			
322.6			322.6			
243			52			
-16			-16			
79			68			
9.9919			9.9672			
9.3643			9.3673			
9.3562			9.3345			
.227	.22	.22	.216	.21	.20	.20

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Date.	Nov. 25. 6	Nov. 29. 703	.5097	.5370	.5433	Nov. 30. 649
No.	14	15	16	17	18	19
I − p	88.74	−85.77		−82.81	−81.97	84.04
I	322.6	322.6		322.6	322.6	322.6
p	234	48		45	45	239
θ	−14	−15		−15	−15	−15
p − θ	68	63		60	60	74
log. sin. (p − θ)	9.9672	9.9499		9.9375	9.9375	9.9828
" in		9.0747		9.0753	9.0759	9.1190
	X	9.0246		9.0128	9.0134	9.1018
	.07	0.106	.11	.103	.10	.126
Date,	Dec. 9. 660					
No.	53	54	55	56	57	58
I − p	−79.10					
I	322.6					
p	42					
θ	−16					
p − θ	58					
log. sin. (p − θ)	9.9284					
" in	9.3690					
	9.2974					
	.198					

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.6769	.6895	.6968	.7205	.7264	.7370	.7424
20	21	22	23	24	25	26
				-89.15		
				322,6		
				52		
				-15		
				67		
				9.9640		
				9.1223		
				9,0463		
.13	.12	.12	.12	.122	.12	.12
59	60	61	62	63	64	65

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Date.	Nov. 30. 7½	.7666	.7945	.7998	.8206	.8288
No.	27	28	29	30	31	32
P − p						−79.31
P						322.6
p						42
θ						−15
p − θ						57
log. sin. (p − θ)						9.9236
log. r						9.1257
						9.0493
	.12	.12	.12	.11	.11	.112

Date.						
No.						
P − p						
P						
p						
θ						
p − θ						
log. sin. (p − θ)						
" r						

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Dec. 4.5914	.5977	.6271	.6362	.6631	.6718	.7325
33	34	35	36	37	38	39
-81.63				-72.31		~~-77.55~~
322.6				322.6		
44				35		
-15				-15		
59				50		
9.9331				9.8843		
9.2485				9.2503		
9.1816				9.1346		
.1512	.15	.14	.14	.136	.13	.09

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2m.
- P - p
- P
- p
- θ
- p - θ
log. sin. (p - θ)
log. m.

$$\tan.(P-p) = \frac{(a\tan.w).(a)}{b} = \frac{a}{b}\tan w$$

$$\sec.^2(P-p)\,d(P-p) = \frac{a}{b}\sec.^2 w\,dw$$

$$\therefore \frac{dw}{d(P-p)} = \sec.^2(P-p)\cdot\frac{b}{a}\cdot\cos.^2 w$$

$$= \left(1 + \frac{\tan^2 w\, a^2}{b^2}\right)\frac{b}{a}\cos^2 w$$

$$\sec^2(P-p)\,d(P-p) = \frac{a}{b}\sec^2 w\,dw$$

$$\left(1 + \frac{a^2}{b^2}\tan^2 w\right)d(P-p) = \frac{a}{b}\sec^2 w\,dw$$

$$\frac{d(P-p)}{dw} = \frac{a\sec^2 w}{b}\cdot\frac{b^2}{b^2 + a^2\tan^2 w}$$

$$\frac{ab(1+\tan^2 w)}{(b^2 + a^2\tan^2 w)} = \frac{ab}{(b^2 + a^2\tan^2 w)\cos^2 w}$$

$$= \frac{ab}{b^2\cos^2 w + a^2\sin^2 w}$$

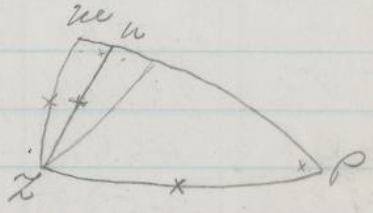
$$\frac{dw}{d(P-p)} = \frac{\cos^2 w\, b}{a} \quad \frac{b}{a}\cos^2 w + \frac{a}{b}\sin^2 w$$

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Correction of Obs. on Sat. of Mars for Refraction.

H. A.	altitude	Z
0	65°.6	24.4
1	62.5	27.5
2	54.6	35.4
3	44.8	45.2
4	34.0	56.0
4.5	28.5	61.5
5	22.9	67.1
6	12.0	78.0



sin. Zu = sin. PZ. sin. P.

sin. Pu = tan. Zu. cot. P.

cosin. m = cot. m Z tan. m u

Dec. Mars assumed as +18°

∴ Polar dist. Mars = 72° = P m

Cor. for dist. = .000276 r sec.² z cos.²(v − 2)

" " pos. ang. = .015 r sec.² z sin. 2(v − 2)

w₀

v = ~~Hour angle~~. Pos. Ang.

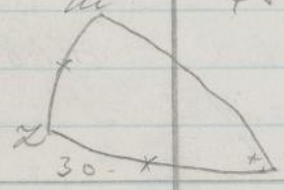
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$PZ = 47° 37' = Z$

Computation of m = Par. Angle.

	1h 15°	2h 30	3h 45	4h 60	5h 75	6h 90
sin. P.	9.4130	9.6990	9.8495	9.9375	9.9849	0.0000
sin. Z m.	9.2814	9.5674	9.7179	9.8059	9.8533	9.8684
Z m	11.02	21,67	31.48	39.76	45.51	47.61
tan. Z m	9.2895	9.5991	9.7870	9.9201	0.0084	0.0397
cot. P.	0.5719	0.2386	0.0000	9.7614	9.4281	0.0000
sin. P m	9.8614	9.8377	9.7870	9.6815	9.4365	
P m.	46.61	43.49	37.76	28.71	15.86	
m m	25.39	28.51	34.24	43.29	56.14	75.
tan. m m	9.6763	9.7350	9.8329	9.9741	0.1733	0.4882
cot ½ m Z	0.2835	0.1483	9.9970	9.8290	9.6257	9.3275
cos. m.	9.9598	9.8833	9.8299	9.8031	9.7990	9.8157
m	24.26	40.15	47.48	50.54	50.99	49.164
m Z	27.5	35.4	45.2	56.0	67.1	76.8



	15	30	45	60	75	90
sin. P.	9.4130	9.6990	9.8495	9.9375	9.9849	0.0000
" Z P	9.8684					
	9.2814	9.5674	9.7179	9.8059	9.8533	9.8684
sin Z m	9.6644	9.7629	9.8510	9.9186	9.9643	9.9904
sin. m	9.6170	9.8045	9.8669	9.8873	9.8890	9.8780
sin m	24.46	39.61	47.40	50.48	50.74	49.03
m	24.4	39.8	47.4	50.5	50.8	49.1

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	ν	ν	t	$(\nu - t)$
$2^h\ 3^m$	$= 30°$	$45' = 30.7\nu$	-39.61	$= -8.86$
$4^h\ 9^m$	$= 62°$	$15' = 62.2\nu$	$-\nu 0.45$	$= 11.77$
$6^h\ \nu^m$	$= 91°$	$15' = 91.2\nu$	-49.03	$= 42.22$

$(\nu - t)$	-8.86	11.77	42.22			
log. cos. $(\nu - t)$	9.9944	9.9908	9.8696			
2 log. cos. $(\nu - t)$	9.9896	9.9816	9.7392			
log. sec. z	0.0888	0.2524	0.6821			
2 log. sec. z	0.1776	0.5048	1.3642			
$2 + 4 +$ con.	$\bar{4}.6081$	$\bar{4}.9273$	$\bar{3}.5443$			

	$\nu 4.3$	32.4	11.2			
$z =$	35.7	$\nu 7.6$	78.8			
$\nu - t$	-9.8	11.6	42.4			
$2(\nu - t)$	-19.6	23.2	84.8			
log sin $2(\nu - t)$	$9.\nu 2\nu 6$	$9.\nu 9\nu 4$	9.9942			
log sec. z	0.1808	$0.\nu 420$	1.4234			
δ	$7.90\nu 1$	8.3361	9.6203			
	$.008$	$.022$	$.417$			

$t =$ 40.6 $\nu 0.6$ 48.8

30.8 62.2 91.2

9.8 11.6 42.4

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Computations of ordinates for chart to interpolate refraction.

	1 h	2 h	3 h	4 h	5 h	6 h
z	27,5	35,4	45,2	56,0	67,1	78,0
log. sec. z	0.0521	0.0888	0.1520	0.2524	0.4099	0.6821
2 log. sec. z	0.1042	0.1776	0.3040	0.5048	0.8198	1.3642
log .008 + 2 log. sec. z	8.0073	8.0807	8.2071	8.4079	8.7229	9.2673
rad.	.010	.012	.016	.026	.053	.185

	0 h	4.5 h		
z	24.4	61.5		
log. sec. z	0.0406	0.3213		
2 log. sec. z	0.0812	0.6406		
log .008 + 2 log. sec. z	7.9843	8.5437		
rad.	.010	.035		

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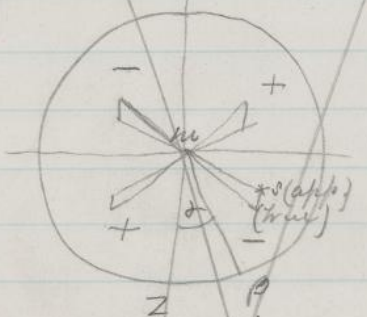
Cor. for Refraction.

Pos. Angles (Decimos.) West of

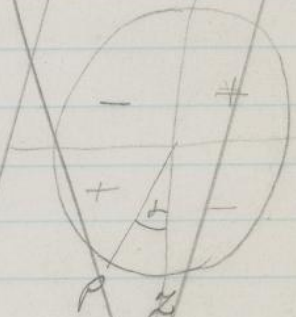
No.	1	2	3	4	5
Date.	Oct. 20. 7002	.7971	.8230	Oct. 25. .8607	Oct. 29. .6594
Hour Ang.	1^h 39^m	40^m	1^h 3^m	2 36	1 53
Pos. Ang.	235.7	228.0	227.0	230.1	228.3
Par. Ang.	39.8	17.2	33.8	45.2	38.4
(V − ϕ)	195.9	210.8	193.2	184.9	189.9
z(V − ϕ)	391.8	61.6	386.4	369.8	379.8
Ref.	.006	−.010	−.005	−.002	.004
M. S. Transit.	13^h 43^m			13^h 19^m	12^h 58^m
	12 4	14 23	15 15	15 55	11 5
M.		17.3	33.9	45.2	
		−	−	−	

Sign of correction for Refraction.

Stars East of Meridian.



Stars West of Meridian



∴ For telescope (or Stars) East

(360° − ϕ) to (180° − ϕ), sign is −

(180° − ϕ) to (360 − ϕ) " " +

For degs rej:

360, 180 to resp −

resent pos. angle.

For telescope (or Stars) West:

ϕ to (180° + ϕ) sign is −

(180° + ϕ) to (360° + ϕ) " " +

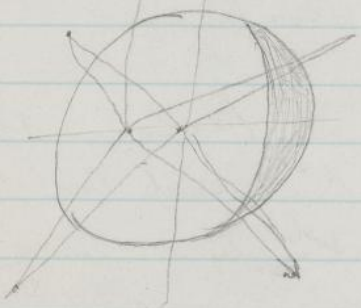
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Meridian.

6	7	8	9	10	11	12
.7239	Cor. 1.6271	.7439	.8805	Cor. 4.6530	.7901	Cor. 5.5746
20	2 23	2 5	3 41		1 47	3 17
221.5	61.1	51.8	38.9		239.1	47.1
9.5	43.7	11.4	5 0.0		37.3	49.0
112.0	17.4	40.4	-11.1		201.8	-1.9
224.0	34.8	80.8	-22.2		403.6	-3.8
+.0097	+.0058	-.0110	+.0069		-.0088	-.0011
	12h 42m				12 26	12h 20m
12 38	10 19	13 7	16 23		14 13	9 3
		11.3	5 0.0		37.3	
		-	- +		-	

Sign of correction for Gibbosity.
(Before opposition)



Sign before opposition

In first quadrant, i.e. for pos. angles from 0° to 90°, sign +
" from 90 to 180 " sign —
" " 180 " 270 " —
" " 270 " 360 " +

After opposition, signs reversed.

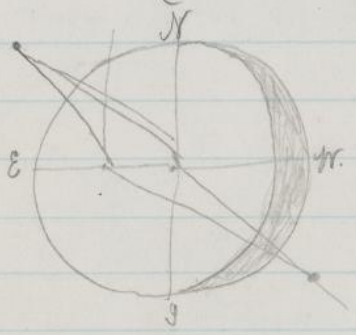
From 0° to 90° " —
" 90° " 180° " +
" 180° " 270° " +
" 270° " 360° " —

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No.	13	14	15	16	17	18
Date.	hor. .6892	hor. .6953	.6948	hor. .6991	.7133	.8780
Hour Ang.	3 2	2 3	3	1 4 2	1 3	0
Pos. Aug.	34.8	49.3	38.9		63.8	49.7
Par. Aug.	14.1	45.2	1.5		25.3	0.8
(v − p)	20.7	4.1	37.4		38.5	−1.1
2(v − p)	41.4	8.2	74.8		77.0	−2.2
Ref.	.007	.002	−.009		−.010	+.002
	12 20	11 43		11 40		
	11 48	9 14	11 56	9 34	12 23	16 20
Ecc			1.6		25.3	0.8
			−		−	+

Cor. for Gibbosity for Demino.
(Distances.)



Before opp.
1st " quad. Cor. +
3d " " " −

after opp.
1st " quad. Cor. −
3d " " " +

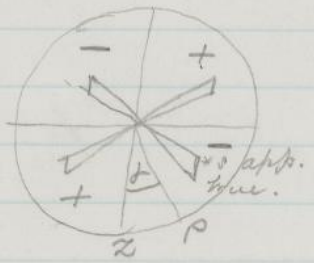
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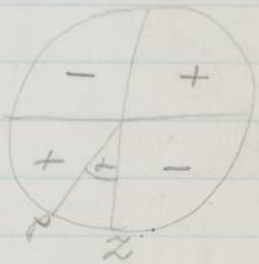
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19	20	21	22	23	24	25
Lower. 21. ν113	.7ν92	.8ν82	Lower. 22. ν184	.ν4ν7	Lower. 23. ν94ν	.7384
.3 22	2 35	4 ν7	3 6	2 28	1 12	2 15
X	6ν.4	ν4.8	232.4	230.9	X	23ν.9
	45.1	50.8	4f.1	444		42.6
	20.3	4.0	1f43	1f6.ν		1933
	40.6	8.0	3f8.6	3730		3f6.6
	−.009	−.007	.003	.003		−.006
10h ν4m			10h 49m		10h 44m	
7 32	13 29	15 ν1	7 43	8 21	9 32	12 ν9
	45°.2	ν0.8				42°.6

− Sign of Cor. for Refraction. −

Stars East of Meridian — Stars West of Mer.





∴ For telescope (or Stars) East.

(360° − t) to (90° − δ) sign −

(90° − t) " (180° − t) " +

(180° − t) " (270° − t) " −

(270° − t) " (360° − t) " +

For telescope (or Stars) West,

t to (90° + δ) sign −

(90° + δ) to (180° + δ) sign +

(180° + δ) to (270° + δ) " −

(270° + δ) " (360° + δ) " +

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1900phae.proj.1025.

No.	26	27	28	29	30	31
Date.	Nov. 23.8337	Nov. 24.4311	.5947	Nov. 25.5113	.6412	Nov. 26.4482
Hour Ang.	4 32	5 2	1 6	3 1	6	4 17
Pos. Ang.	227.3	50.6	33.4	69.9	55.0	220.1
Par. Ang.	50.8	50.8	26.2	47.5	3.5	50.7
(v − d)	176.5	− 0.2	7.2	22.4	51.5	169.4
2(v − d)	353.0	− 0.4	14.4	44.8	103.0	338.8
Ref.	+.004	−.001	.013	.011	−.010	+.012
	10 44	10h 38m		10h 33m		10h 28m
	15 16	5 36	9 32	7 32	10 39	6 11
	+50.8				3.5	

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32	33	34	35	36	37	38
Nov. 29. 4969	.5611	Nov. 30. .5044	.6322	.8156	Dec. 1. .5504	Dec. 4. .4369
3 3	1 30	2 48	17	4 41	1 36	4 5
47.8	42.8	64.1	60.2	43.7	211.2	57.7
- 47.2	33.3	46.4	7.8	50.9	34.8	50.6
= 0.6	9.5	21.7	52.4	- 7.2	176.4	7.1
0.9	19.0	43.4	104.8	- 14.4	352.8	14.2
	.005	.010	-.010	+.010	-.001	.007
10h 14m		10h 9m			10h 4m	9h 50m
7 11	8 44	7 21	10 26	14 50	8 28	5 45

8.2 50.9
— +

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No.	39	40	41	42	43
Date.	Dec. 4. .6061	.7194	Dec. 7. .5241	.6105	.7905
Hour Ang.	2	2 42	1 43	1 8	4 27
Pos. Ang.	42.8	27.7	246.3	236.5	219.2
Par. Ang.		45.8	38.5	8.5	50.8
(v − d)		−18.1	209.8	224.0	168.4
2(v − d)		−36.2	419.6	456.0	336.8
Ref.		+.009	.010	−.009	+.014
	9 50		9h 39m		
	9 48	12 32	9 54	9 55	14 4
		45.8		8.5	50.8
		+		−	+

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44	45	46	47	48	49	50
Dec. 9. .4239	.5839	.6677	Dec. 12. .5961	.7964	Dec. 17. .7434	Dec. 18. .4384
- 4 2	12	1 49	19	5 7	4 11	3 4
44.0	50.2	41.3	247.3	221.9	232.5	48.0
- 50.5	60	37.6	8.2	50.7	50.7	47.9
- - 6.5	44.2	3.7	239.1	171.2	181.8	0.1
-16.0	88.4	7.4	478.2	342.4	363.6	0.2
-.006	.008	-.002	-.007	+.015	-.005	0.0
9^h 28m			9^h 15m		8^h 55m	8^h 57m
-5 26	9 16	11 17	9 34	14 22	13 6	5 47
		37.6	9.2	50.7	50.6	
		-	-	+	-	

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No.	51	52	53	54	55
Date.	Dec. 18. .5081	Dec. 26. .6329	Dec. 30. .4393	.4786	Jan. 2. .4627
Hour Ang.	1 24	2 5	2 21	1 24	1 37
Pos. Ang.	42.2	226.8	227.9	224.4	4[illegible]
Par. Ang.	31.8	40.9	43.4	31.8	3[illegible].0
(v − t)	10.4	185.9	184.5	192.6	0.2
2(v − t)	20.8	371.8	369.0	385.2	20.4
Ref.	.004	−.002	.002	.005	.004
	8 51	8h 22m	8h 9m		7 59
	7 27	10 27	5 45	6 45	6 22

W 40.9 ~~31.8~~

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56	57	58	59	60	61	62
.5049	Jan.5..6649	.6836	Jan.7..5642	.6960	Jan.10..734	Jan.7..6644
37	3 23	3 50	1 5	4 14	5 18	3 35
55.2	230.2	229.7	43.4	46.5		45.1
16.0	49.3	50.2	25.8	50.7		49.8
39.2	180.9	179.5	17.6	−4.2		−4.7
78.4	361.8	359.0	35.2	−8.4		−9.4
.0111	−.0001	+0.0	−.006	+.004		+.004
	7 50		7 44		7 36	7 44
7 22	11 13	11 40	8 49	11 58	12 54	11 19
	49.3	50.2	25.8	50.7	50.6	49.8
	−	+	−	+		+

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Deimos Trist. Cor. for Pos. Angles, con.

No.	1	2	3	4	5
Date.	Nov. 16. 8850	.9311	Nov. 21. 8643	.9030	Nov. 30. 8374
Hour ang.	$5^h\ 10^m$	$6^h\ 16^m$	$5^h\ 6^m$	$6^h\ =$	$5^h\ 13^m$
Pos. ang.	50.3	40.6	55.1	53.1	42.4
Par. ang.	50.7	47.8	50.8	49.0	50.7
$(v-\phi)$	−0.4	−7.2	4.3	4.1	−8.3
$2(v-\phi)$	−0.8	−14.4	8.6	8.2	−16.6
Ref.					
M. S. Transit.	$11^h\ 20^m$	$11^h\ 20^m$	$10^h\ 54^m$		$10^h\ 9^m$
Time Obs.	$16^h\ 30^m$	$17^h\ 36^m$	$16^h\ 0^m$	$16^h\ 56^m$	$15^h\ 22^m$
log. sin. $2(v-\phi)$	8.1450 n	9.3977 n	9.1747	9.1542	9.4559 n
" sec. ζ	0.4437	0.8009	0.4302	0.6966	0.4557
2 log. sec. ζ	0.8874	1.6018	0.8604	1.3932	0.9114
log. dist $+\frac{1}{3}$ (2 diams.)	6.9335	8.9006	7.9382	8.4505	8.2704
Ref.	+.0009	+.080	−.009	−.028	+.019
alt. ☉.	21.1	9.1	21.8	11.6	20.5
~~Date.~~	68.9	80.9	68.2	78.4	69.5
Pos. ang. m =	50.7	47.8	50.8	49.0	50.7
Par. ang.	+	+	−	−	+
$(v+\phi)$					
$2(v-\phi)$					
Ref.					
M. S. Transit.					
Time Obs.					

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6	7	8			
.5512	Dec. 4.7644	Jan. 10.7347	Mar. 16.8975	.9158	.9232
15h 32m		21h 18m	5 28	5 54	6 21
40.6		22.4	49.0	47.1	46.3
50.3	X	50.6	50.4	49.5	48.8
-9.7		174.8	-1.4	-2.4	-2.5
-19.4		349.6	-2.8	-4.8	-5.0
		7 36	11 20		
15h 41m	13h 36m	12h 54m	16 48	17 14	17 29
9.5213u		9.2765u	8.7041u	8.9315u	8.9403u
0.5731		0.5744	0.5147	0.6446	0.7155
1.1462		0.9488	1.0294	1.2892	1.4310
8.5706		8.1084	7.6366u	8.1238u	
+.0317		+.0173	+.0094	+.0173	+.0199
15.5		19.6			11.1
-74.5		-70.4			-78.9
50.3		50.6	50.4	49.5	48.8
-		+	+	+	+

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Phobos. (Cor. for Refraction)

No.	1	2	3	4	5
Date.	Oct. 26. 6156	.6060	.6244	Nov. 10. 6093	.6560
Hour Ang.	3 12	1 25	1 55	2 0	53
Pos. Ang.	237.6	49.6	40.4	232.7	219.1
Par. Ang.	45.7	32.0	38.6	40.0	21.7
(v − d)	191.9	17.6	1.6	192.7	197.4
2(v − d)	383.8	35.2	3.2	385.4	394.8
Ref.	.005	−.006	−.001	.005	.006
Tr. V. Transit	13 14			11 53	
Time Obs.					
Time Obs.	10h 2m	14 39	15 9	9 53	11 0
		32.0	38.6		
		—	—		

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6	7	8	9	10	11
corr 16. √116	.6814	.8321	corr. 21. √684	.6√39	.7770
3 48	17	3 √4	1 34	3	3 0
√2.6	224.4	√0.3	√6.2	40.7	230.7
√0.2	8.1	√0.3	37.4	1.√	47.3
2.4	220.3	0.0	21.8	39.2	183.4
4.8	440.6	0.0	43.6	78.4	366.8
.002	−.010		.008	−.008	−.002
11 20		X	10 √4		
7 32	11 37	15 14	9 20	10 √7	13 √4
	8.1	√0.3		1.√	47.4
	—			—	—

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No.	12	13	14	15	16
Date.	Nov. 22. 4492	.5728	Nov. 23. 4519	.5616	Nov. 24. 4628
Hour Ang.	2 23	1 49	3 1	2 0	4 16
Pos. Ang.	55.1	51.4	55.5	37.7	59.6
Par. Ang.	43.5	47.6	47.5	40.0	50.7
(v − v)	11.3	3.8	7.0	−2.3	8.9
2(v − v)	22.6	7.6	16.0	−4.6	17.8
Ref.	.005	.001	.005	−.001	.005
M.T. Transit	10 49		10 44		10 34
Time Obs.					
	8 26	9 0	7 43	8 44	6 22

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17	18	19	20	21	22
.√2√1	Curr. 25. 45√0	.6317	Curr. 26. √327	.√930	Curr. 30. √307
2 46	4 √1	8	2 2√	√8	2 9
40,8	√1,2	220,2	239,4	218,7	
46,2	√0,8	44	44,0	24,4	
−5,4	0,4	21 √,8	19 √,4	19 √,3	
−10,8	0,8	431,6	390,8	390,6	
−.003	.004	.009	.007	.006	
	10 32		10 28		10 9
7 √2	√ 42	10 2√	8 3	9 30	8 0

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No.	23	24	25	26	27
Date,	Dec. 1. 6562	6662	Dec. 4. 6595	Dec 7. 6600	6777
Hour Ang.	6	1 11	1 5	4 6	30
Pos. Ang.	227.1	230.0	48.8	49.5	49.9
Par. Ang.	22.9	27.7	39.6	19.2	13.4
(r − t)	204.2	202.3	9.2	30.3	36.5
2(r − 2)	408.4	404.6	18.4	60.6	73.0
Ref.	−.007	−.007	−.004	.009	.009
M.T. Transit Limb Obs.	10 4		9 50	9 37	
				~~9 37~~	
	11 0	11 15	11 48	8 51	9 7
	22.9	27.7	39.5		

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[illegible] 28	[illegible] 29					
[illegible] 16.8975	.9158					
r 28	r 54					
49.0	47.1					
11 20						
~~11 20~~						
16 48	17 14					

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Deimos.

(Refraction for distances.)

No.	1	2	3	4	5
Date.	Nov. 21.7894	.8396	Nov. 24.4439	.5799	Nov. 25.5765
Gr. S. Transit.	12 42		10 38		10 33
Time Obs.	14h 12m	15 25	5 55	9 11	9h 6m
Hour Ang.	1 30	2 43	-4 43	-1 27	-1 27
Pos. Ang.	61.1°	56.9°	49.7°	34.8°	61.8°
Par. Ang.	32.0°	45.1°	50.7°	31.3°	31.3°
(v-t)	29.1°	11.8°	100.4°	66.1°	93.1°
log. cos.(v-t)	9.9414°	9.9907°	9.2565°	9.6076°	8.7330°
2 log. cos.(v-t)	9.8828°	9.9814°	8.5130°	9.2152°	7.4660°
d	56.7	62.1	60.8	44.8	54.8
log. d	1.7536	1.7931	1.7839	1.6513	1.7388
z	31	43	64	32	32
log. sec. z	0.0669	0.1359	0.3582	0.0716	0.0716
2 log. sec. z	0.1338	0.2718	0.7164	0.1432	0.1432
Final log.	8.2111°	8.4472°	7.4542°	7.4506°	5.7869°
Ref.	.016°	.037°	.003°	.003°	.000°

Formula for refraction in distances.

.000 276 sec.^{2} z. d. cos.^{2}(v-t)

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6	7	8	9	10	11	12
.6 5 5 3	Nov. 29. 5 0 3 5	5 4 3 3	Nov. 30. 649	− .8 2 8 8	Dec. 4. 5 9 14	.7 4 9 5
	10 14		10 9		9 5 0	
10h 5 9	7h 20	8h 18	10h 5 1	15h 9	9h 27	13 15
26	−2 5 4	−1 5 6	42	5 0	−0 2 3	3 2 5
54	47.6	44.8	59.5	43.	44.0	9.9
11	46.6	38.5	17.1	51	10.0	48.6
43 5	94.2	83.3	42.4	− 8	54.0	−38.7
9.8646	8.8647	9.0670	9.8683	9.995 8	9.7692	9.8923
9.7282	7.7294	8.1340	9.7366	9.9916	9.538 4	9.7846
60.8	58.9	55.2	56.5	51.9	52.4	41.4
1.7839	1.7701	1.7419	1.7520	1.7152	1.7193	1.6570
26	44	35	27	67	32	50
0.0463	0.1431	0.0766	0.0501	0.4081	0.0716	0.1919
0.0926	0.2862	0.1532	0.1002	0.8162	0.1432	0.3838
8.0456	6.2266	6.4900	8.0297	8.9639	7.8418	8.2263
.011	.0002	.0003	.011	.092	.007	.017
x			x	x		x

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No.	13	14	15	16	16
Date.	Dec. 7. 1823	.76 3	Dec. 9. 4468	.6603	Nov. 24. .5 37
Mn. S. Transit	9 37		9 27		10 38
Time Obs.	9h 28m	13h 37m	5h 59m	11h 6m	8h 10m
Hour Aug.	−0 9	4 1	−3 29	1 38	−2h 28m
Pos. Aug.	239.3	222	62.4	41.5	40.5
Par. Aug.	3.7	51	48.9	34.0	43.3
(v − H)	243.0	171	111.3	7.5	83.8
log. cos.(v − H)	9.6570	9.9946	9.5602	9.9963	9.0338
2 log. cos.(v − H)	9.3140	9.9892	9.1204	9.9926	8.0668
d	51.6	49.5	47.9	148.7	51.29
log. d	1.7126	1.6946	1.6803	1.6787	1.7101
z	24	56	51	32	36.6
log. sec. z	0.0393	0.2524	0.2011	0.0716	0.0954
2 log. sec. z	0.0786	0.5048	0.4022	0.1432	0.1908
Final log.	7.5461	8.6295	7.6438	8.2642	6.4086
Ref.	.004	.043	.004	.018	.0003

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17	18
Nov. 30.4424	Nov. 30.7998
10 9	
13^h $\sqrt{}^m$	14 27
2^h $\sqrt{}6$	4 18
$\sqrt{}0.0$	$4\sqrt{}$
$46.6\sqrt{}$	$\sqrt{}1$
$3.4\sqrt{}$	$-\ 06\sqrt{}$
$9.9992\sqrt{}$	$9.9976\sqrt{}$
$9.9984\sqrt{}$	$9.99\sqrt{}2\sqrt{}$
$\sqrt{}9.98$	$\sqrt{}\sqrt{}.8$
1.7782	1.7466
$44.\sqrt{}$	$\sqrt{}9.4$
0,1468	0,2932
0,2936	$0,\sqrt{}864$
$8.5111\sqrt{}$	$8.7691\sqrt{}$
$.032\sqrt{}$	$.0\sqrt{}9\sqrt{}$
x	x

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1900phae.proj.1825.

Denios. Cor. for Refraction.
Pos. angles. East of Meridian.

No.	1	2	3	4	5
Date,	Oct. 20.7002	Oct. 29.6594	.7239	Nov. 1.6276	Nov. 5.5746
Hour ang.	1 39	1 53	20	2 23	3 17
Pos. ang.	235.7	224.3	221.5	61.1	47.1
Par. ang.					
ν + +	275.5	266.7	231.0	104.4	96.1
$2(r+t)$	191.0	173.4	102.0	209.6	192.2
Ref.	+.002	−.001	−.009	+.004	+.004
M. S. Transit.					
Time obs.					
2ν	35.5	38.5	9.5	43.7	48.9
	+	−	−	+	+

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6	7	8	9	10	11	12
.689√	Nov. 10. √√√3	Nov. 16. √991	Nov. 21. √113	Nov. 22. √18	√4√7	Nov. 23. √94.
32 2 3√		1 42		3 6	2 2	
34.8	49.3	X	X	232.4	230.9	X
48.9	94.√			280.√	27√.3	
97.8	189.0			201.0	190.6	
-.011	+.002			+.006	+.003	
14.1	45.2			48.1	44.4	
−	+			+	+	

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1900phae.proj.1825.

No.	13	14	15	16	17	
Date.	Nov. 24. 4311	5947	Nov. 25. 5113	Nov. 26. 4473	Nov. 29. 4969	
Hour aug.	5 2	1 6	3 1	4 17	3 3	
Pos. aug.	−0.6	33.4	69.9	220.1	47.8	
Par. aug.						
v + a	101.4	−9.6	117.4	270.8	95.6	
2(v + a)	202.8	119.2	234.8	181.6	191.2	
Ref.	+.021	−.009	+.013	+.001	+.004	
M. T. Trans.						
Time Obs.						
m	−0.8	26.2	47.5	−0.7	47.8	
	+	−	+	+	+	

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18	19	20	21	22	23	24
.5611	Nov. 30.5041	Dec. 1.5504	Dec. 4.4369	Dec. 4.6061	Dec. 7.5271	Dec. 9.4239
1 30	2 48	1 36	4 5	2	1 43	4 2
42.8	68.1	211.2	57.7	42.8	246.3	X
76.1	114.5	246.0	108.3	43	282.8	94.5
152.2	229.0	132.0	216.6	86	205.6	189.0
−.005	+.011	−.009	+.016	−.010	+.005	−.008
33.3	46.4	34.7	50.6	1.0	36.3	50.5
−	+	−	+	−	+	X

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Obs.	25	26	27	28	29	
Date.	Dec. 9. 1839	Dec. 18. 4396	.1841	Dec. 30. 4393	4946	
Hour Aug.	12	3 4	1 24	2 21	1 24	
Pos. Aug.	150.2	48.0	42.2	227.9	224.4	
Par. Aug.						
(V+v)	56.2	95.9	74.0	271.3	256.2	
2(V+v)	112.4	191.8	148.0	182.6	152.4	
Ref.	−.009	+.004	−.005	+.001	−.005	
M. S. Transit						
Time Obs.						
M.	6.2	47.9	31.8	43.4	31.9	
	−	+	−	+	−	

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30	31	32	33	34	35	36
Jan. 2.4627	.5049	Dec. 9.4396				
1 37	37	3h 38				
45.2	55.2	63.0				
		50.0				
80.5	71.2	113.0				
161.0	142.4	226.0				
−.004	−.007	+.016				
		9 28				
		5h 49m				
35.0	16.0	50.0				
−	−	+				

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1900phae.proj.1825.

Phobos. Cor. for Refraction.

Pos. angles – East of Meridian.

Eq.	1	2	3	4	5	
Date.	Oct. 26. 6√6	Nov. 10. 6093	.6√60	Nov. 16. .√116	Nov. 21. .√A6A	
Av. √. Transit.					√6.2	
Limb Obs.						
Hour Ang.	3 12	2 0	53	3 48	1 34	
Pos. Ang.	237.6	232.7	219.1	√2.6	56.2	
Par. Ang.	48.7	40.0	21.7	√0.2	34.4	
v+t	286.3	272.7	240.A	102.A	90.6	
2(v+t)	√72.6	√45.4	481.6	205.6	181.2	
Ref.	+.010	+.001	−.00A	+.010	+.000+	
Eq.	48.7	40.0	21.7	√0.2	34.4	
	+	+	−	+	+	

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1900phae.proj.1825.

6	7	8	9	10	11
Lun. 22, 5492	.5724	Lun. 23. 5191	.5616	Lun. 24. 4628	.5251
2 23	1 49	3 1	2 0	4 16	2 46
55.1	51.4	55.5	37.7	59.6	40.4
43.4	37.6	47.5	40.0	50.7	46.2
98.9	89.0	103.0	77.7	110.3	87.0
197.8	178.0	206.0	155.4	220.6	174.0
+.004	−.0004	+.007	−.005	+.020	−.002
43.7	37.6	47.5	40.0	50.7	46.2
+	−	+	−	+	−

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No.	12	13	14	15	16
Date,	Nov. 25. 43750	,6317	Nov. 26.5327	7930	Dec. 7. 7660
M. S. Transit.					
Sun's Obs.					
Hour Aug.	4 71	8	2 25	78	46
Par. Aug.	712	220,2	239,4	218,7	49.7
Par. Aug.	70.8	4,4	44,0	23,4	19,2
(v + a)	102,0	224,6	283,4	242,1	68,7
2(v+a)	204,0	449,2	766,8	484,2	137,4
Ref.	+.020	−.010	+.006	−.008	−.007
M.	70.8	4,3	44,0	23,4	19,2
	+	−	+	−	−

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17	18	19	20	21	22	23
.777	Eccn. 16.8	.9				
30						
49.9	49.0	47.1				
13.4						
63.3						
126.6						
.008						
13.						

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Phobos.

60 to 70

No.	Date.	No. Settings	av. Sum.	Av. Dev.	Resid. I.	Dist.	Obs.			Mean
56	Nov. 26.	5	1.8	1.8°	+.43	3	P.	15	+6.45	+.43

70 to 80

X1	Oct. 26.	3	6	2.43	+2.02	2	P.	6	+12.12	
X57	Nov. 26.	5	1.4	.36	+.60	4	P.	20	+12.00	
X58	" "	5	1.0	.88	+1.11	4	P.	20	+22.20	
								46	+46.32	+1.01
X17	Nov. 16.	2	2.9	1.6	+2.12 ~~+4.24~~	2	M.	4	8.48 ~~+16.96~~	~~+4.24~~ +2.12

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60° to 90°

No.	Date.	No. Settings.	Av. Time	Av. Dev.	Resid. I	Dist.	Obs.		
X46	Nov. 10.	5	1.4	1.08	−.33	4	P.	20	−6.60
X50	Nov. 25.	5	0.8	.80	+.32	5	P.	25	+9.50
X59	" 26.	5	1.4	1.48	+.50	5	P.	25	+12.50
X60	" "	5	0.8	.72	−.16	5	P.	25	−4.00
X71	Dec. 1.	3	3.9	2.27	−4.35	2	P.	6	−26.10
								101	−14.70
									−0.15

90° to 100°

X32	Nov. 21.	2	1.2	1.85	+.57	2	P.	4	+2.28
X52	" 25.	5	1.5	.68	+1.36	4	P.	20	+27.20
X61	Nov. 26	5	1.5	.76	+.97	5	P.	25	+24.25
X62	" "	5	1.0	.66	+.66	5	P.	25	+16.50
								74	+70.23
									+.95
X7	Nov. 10.	5	1.8	.88	−.58	4	W.	20	−11.60
X51	" 25.	5	1.4	.72	+.60	5	W.	25	+15.00
								45	+3.40
									+.08

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100° to 110°

No.	Date.	No. Settings.	Av. Time.	Av. Dev.	Resid. I.	Dist.	Obs.		
X63	Nov. 26.	5	3.0	1.32	+1.25	4	P.	20	+37.00
									+1.85
X18	Nov. 16.	4	4.3	1.55	−.25	3	W.	12	−3.36
X53	" 25.	5	3.7	.52	+1.15	4	W.	20	+23.00
X72	Dec. 1.	2	6.0	.30	+1.81	1	W.	2	+3.62
								34	+23.26
									+0.68
[8	Nov. 10.	3	4.0	2.90	+2.31	3	S]		

110° to 120°

X9	Nov. 10.	5	0.9	.98	+1.04	5	P.	25	+26.00
X54	" 25.	5	3.2	2.64	+1.04	3	P.	15	+15.60
X64	" 26.	5	0.6	.44	+1.14	5	P.	25	+28.50
X65	" "	5	0.8	1.36	+.80	4	P.	20	+16.00
X66	" "	5	1.2	.68	−.19	3	P.	15	−2.85
								100	+83.25
									+.83

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120 to 130

No.	Date.	No. Settings.	Av. Time.	Av. Dev.	Resid. T.	Dict.	Obs.		
X2	Oct. 26.	1	—	—	+5.00	2	P.	2	+10.00
X3	[" "]	1	—	—	[+24.37]	1	P.	[1]	
~~X10~~	~~Nov. 10.~~	~~5~~	~~2.8~~	~~.68~~	~~+1.73~~	~~4~~	~~W.~~	~~20~~	~~+34.60~~
X19	Nov. 16.	1	—	—	+2.16	2	P.	2	+4.32
X67	" 26.	5	1.4	.54	+.29	3	P.	15	+4.35
X68	" "	5	0.9	1.04	+1.42	3	P.	15	+27.30
					X			34	+45.97
									+1.35
X55	Nov. 25.	1	—	—	+1.01	1	W.	1	+1.01
X10	Nov. 10.	5	2.8	.68	+1.73	4	W.	20	+34.60
								21	35.61
									+1.70
					X				

130 to 140

X69	Nov. 26.	3	2.4	.43	+2.04	1	P.	3	+6.12
									+2.04
X11	Nov. 10.	2	6	2.30	+1.98	1	W.	2	+3.96
									+1.98

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240° to 250°

No.	Date	No. Settings	Av. Vine.	Av. Dev.	Resid. I.	Dist.	Obs.		
X22	Nov. 21.	5	2.1	1.66	−4.07	3	P.	15	− 61.05
X33	" 22.	5	1.0	1.04	− 3.05	5	P.	25	− 76.25
X40	" 24.	5	1.4	1.46	+1.53	3	P.	15	+ 22.95
								55	−114.35
									− 2.08

250° to 260°

X20	Nov. 16.	2	1.1	1.45	−2.52	1	P.	2	− 5.04
X24	" 21.	5	1.0	.88	−1.91	4	P.	20	− 38.20
X34	" 22	5	0.7	.57	−1.40	5	P.	25	− 35.00
X41	Nov. 24.	5	1.3	1.02	+.39	4	P.	20	+ 7.80
X70	[" 30.]	4	3.3	1.40	[+17.31]	1	P.	[4]	−70.44
								67	− 1.05
X23	Nov. 21.	5	2.0	.64	−1.35	4	M.	20	− 27.00
									− 1.35

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1900phae.proj.1025.

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1900phae.proj.1825.

260° to 270°

No.	Date.	No. Settings.	Av. Time.	Av. Dev.	Resid. ±	Dist.	Obs.	No. Sets × Dist.	
X36	Nov. 23	3	3.5	.70	+3.65	2	P.	6	+21.90
X42	" 24.	5	1.1	.70	+1.40	4	P.	20	+28.00
X43	" "	5	1.0	.80	+.95	4	P.	20	+19.00
X49	" 25.	3	6.0	3.23	−1.64	2	P.	6	−9.84
						52			+59.06
									+1.14
X25	Nov. 21.	5	1.5	.56	−.02	4	Wr.	20	−0.40
									−.02

270° to 280°

X12	Nov. 16.	5	2.2	.52	+.87	3	P.	15	+13.05
X26	" 21.	5	1.2	1.32	−1.25	4	P.	20	−25.00
X44	" 24.	5	1.2	22	−.21	4	P.	20	−4.20
X73	Dec 4.	5	3.6	1.40	−1.65	2	P.	10	−16.50
						65			−32.65
									−.50
X21	Nov. 16.	1	—	—	−1.18	1	Wr.	1	−1.18
X35	" 22.	3	4.3	.70	+.80	3	Wr.	9	+7.20
X37	" 23.	2	4.0	.75	−3.22	2	Wr.	4	−12.88
						14			−6.86
									−.49

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280° to 290°

No.	Date.	No. Settings	Av. Error	Av. Dev.	Resid. I.	Dist.	Obs.		
X28	Nov. 21.	5	1.5	.48	-1.82	3	P.	15	- 27.30
X34	" 23.	1	—	—	+1.37	1	P.	1	+ 1.37
X45	" 24.	5	1.0	1.00	+.18	3	P.	15	+ 2.70
								31	~~31.37~~
									~~1.01~~
									-23.23
									-.75
X13	Nov. 16.	5	3.0	2.94	-.97	3	W.	15	- 14.55
X27	" 21.	5	1.6	.58	-.08	3	W.	15	- 1.20
X74	Dec. 7.	5	2.2	.52	+1.26	1	W.	5	+ 6.30
								35	~~20.04~~
									~~.68~~
									-9.45
									-.27

290° to 300°

X4	Oct. 26.	3	6.2	1.57	+1.71	2	P.	6	+ 10.26
X14	[Nov. 16.]	2	5.2	1.40	[-10.31]	2	P.	[4]	+ 1.71
X29	Nov. 21.	5	1.3	.50	-.79	3	W.	15	- 11.85
X46	" 24	5	1.8	.48	+2.36	3	W.	15	+ 35.40
X75	Dec. 7.	2	2.9	1.20	+6.06	1	W.	2	+ 12.12
								32	~~59.37~~
									~~1.86~~
									+35.67
									+1.11

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300° to 310°

No.	Date.	No. Settings	Av. Vars.	Av. Dev.	Resid. I.	Dist.	Obs.		
30	Nov. 21.	4	1.5	1.52	−1.24	3	P.	12	− 22.08
X47	" 24.	1	—	—	−.51	2	P.	2	− 1.02
								14	− 23.10
									− 1.65

310° to 320°

X5	Oct. 26.	1	—	—	[−.73]	1	P.	[1]	[= 0.73]
X15	Nov. 16.	4	3.7	2.92	−1.14	2	P.	8	− 9.12
								8	− 9.12
						X			−1.14
X31	Nov. 21.	5	2.4	.60	+4.44	2	W.	10	+ 48.40
X39	" 23	2	1.4	.40	−.74	2	W.	4	− 3.08
X48	" 24.	2	2.0	1.30	+6.41	1	W.	2	+ 12.82
								16	~~54.30~~
									~~4.02~~
									+58.14
									+3.63

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320° to 330°

Cir.	Date,	No. Letters.	Av. Time.	Av. Dev.	Resid. I.	Dist.	Obs.		
X16	Nov. 16.	1	~	~	+.52	1	Yr.	1	+.52

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Phobos. Pos. Angles.

P. W.

Date,	w	log. a	colog. b
Nov. 26			
" 16			
" 24			
~~" 24~~			
~~" 26~~			
" 23			
" 11			
~~" 26~~			
" 22			
~~" 23~~			
~~" 24~~			
~~" 24~~			
~~" 23~~			
" 5			
~~" 22~~			
~~" 5~~			

Date,	w	log. a	co. lg b
~~Nov. 16.~~			
" 16.			
~~" 24~~			
" 25.			
" 10.			
" 21.			
" 20.			
~~" 25~~			
" 27			
~~" 26~~			
~~" 16~~			

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P. Yr.

(Phobos. Pos. angles.)

Mean Long.	Yrs.	(O−C)	Yrs	(O−C)
65°	15	+0.43	—	—
75	46	+1.01	4	+2.12
85	101	−0.15	—	—
95	74	+0.95	45	+0.05
105	20	+1.45	34	+0.65
115	100	+0.83	—	—
125	34	+1.35	21	+1.70
135	3	+2.04	2	+1.95
245	55	−2.05	—	—
255	67	−1.05	20	−1.35
265	52	+1.14	20	−0.01
275	65	−0.50	14	−0.49
285	31	−0.75	35	−0.27
295	6	+1.71	32	+1.11
305	14	−1.65	—	—
315	8	−1.14	16	+3.63
325	—	—	1	+0.52
	691		244	

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Phobos.

Mean. day for different Longitudes. P. W.

	Mid. day.	No. ~~sets.~~	Mid. day.	No. ~~sets.~~		
65°	Nov. 26.	1	—	—		
7	Nov. 16.	3	Nov. 16.	1.		
8	Nov. 24.	5	—	—		
9	Nov. 24.	4.	Nov. 18.	2		
10	Nov. 26.	1	Nov. 24.	3		
11	Nov. 23.	5	—	—		
12	Nov. ~~16~~	~~4~~	Nov. ~~18~~	~~2~~		
13	Nov. 26.	1	Nov. 10.	1		
24	Nov. 22.	3	—	—		
25	Nov. ~~23.~~ 1	~~4~~	Nov. 21.	1		
26	Nov. 24.	4	Nov. 21.	1		
27	Nov. 24.	4	Nov. 20	3		
28	Nov. 23.	3	Nov. 25.	3		
29	~~Nov. 5.~~ Oct. 26	1	Nov. 27	3		
30	Nov. 22.	2	—	—		
31	Nov. ~~16.~~	1	Nov. 23.	3		
32	—	—	Nov. 16.	1		
		~~46~~		24		

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Phobos.

		No. setts 5 settings.	No. setts 4 settings.	No. setts 3 settings.	No. setts 2 settings.	No. setts 1 setting.	Total No. setts.	Total No. settings.
P.	5	9	—	—	—	—	9	45
	4	12	—	—	—	—	12	60
	3	10	1	—	—	—	11	~~54~~
	2	1	1	5	1	3	11	29
	1	—	—	1	1	1	3	6
		32	2	6	2	4	46	194 ~~194~~
Pr.	5	1	—	—	—	—	1	5
	4	5	—	—	—	—	5	25
	3	4	1	1	—	—	6	27
	2	1	—	—	3	—	4	11
	1	1	—	—	4	3	8	16
		12	1	1	7	3	24	84

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Phobos.

No. setts rejected.	Total Weight	Av. Error per setting.	Av. Dev. 1 Setting.	Av. Dev. 1 set. (Period I).	Av. Dev. 1 set. Period II.
	225	0.97	0.83	1.03	
	240	1.32	0.89	1.01	
	162				
	~~177~~	1.68	1.14	1.28	
	58	4.26	2.05	2.22	
4	6	1.75	0.94	1.98	
4	691	1.92	1.18	1.43	
	25	1.40	0.72	0.60	
	100	2.36	0.66	0.96	
	81	2.65	1.12	0.88	
	22	2.64	0.75	2.74 ~~3.24~~	
	16	3.42	1.12	2.53	
	244	2.40	0.92	1.74 ~~1.80~~	

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Dist. 5			Dist. 5.		
Av. Time per Setting.	Av. Dev. 1 setting.	Av. Dev. 1 set.	Av. Time per Setting.	Av. Dev. 1 setting.	Av. Dev. 1 set.
0.9	.98	+1.04	1.4	.72	+.60
1.0	1.04	−3.05			
0.7	.58	−1.40			
0.8	.80	+.38			
1.4	1.48	+.50			
0.8	.72	−.16			
1.5	.76	+.97			
1.0	.66	+.66			
0.6	.44	+1.14			
9 | 8.7	7.46	9.30			
0.97	0.83	1.03	1.4	.72	.60

Dist. 4.			Dist. 4.		
1.4	1.08	−.33	1.8	.88	−.58
1.0	.88	−1.91	2.8	.68	+1.73
1.2	1.38	−1.25	2.0	.64	−1.35
1.3	1.02	+.39	1.5	.56	−.01
1.1	.70	+1.40	3.7	.52	+1.15
1.0	.80	+.95			
1.2	.22	−.21			
1.5	.68	+1.36			
1.4	.36	+.60			
1.0	.88	+1.11			
3.0	1.32	+1.85			
0.8	1.36	+.80			
12 | 15.9	10.68	12.16	5 | 11.8	3.28	4.82
1.32	0.89	1.01	2.36	0.66	0.96

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Dist. 3.

Av. √ mic per setting.	Av. Dev. 1 setting.	Av. Dev. 1 ast.
2.2	.52	+.87
2.1	1.66	−4.07
1.5	.48	−1.42
1.8	1.82	−1.84
1.4	1.46	+1.53
1.0	1.00	+.18
3.2	2.64	+1.04
1.8	1.10	+.43
1.2	.68	−.19
1.4	.58	+.29
0.9	1.04	+1.82
11 / 18.5	12.98	14.08
	1.68	1.18	1.28

Dist. 3.

Av. √ mic per setting.	Av. Dev. 1 setting.	Av. Dev. 1 ast.
3.0	2.94	−.97
4.3	1.55	−.28
1.6	.58	−.08
1.3	.50	−.79
4.3	.70	+.80
1.4	.48	+2.36
6 / 15.9	6.75	5.28
	2.65	1.12	0.88

Dist. 2.

6.	2.43	+2.02
~	~	+5.00
6.2	1.57	+1.71
3.7	2.92	−1.14
~	~	+2.16
1.2	1.85	+.57
3.5	.70	+3.65
~	~	−.51
6.0	3.23	−1.64
3.9	2.27	−4.35
3.6	1.40	−1.65
4 / 34.1	16.37	24.40
	4.26	2.05	2.22

Dist. 2.

2.9	1.65	+2.12
2.4	.60	+4.84
4.0	.35	−3.22
1.4	.40	−.77
4 / 10.7	3.00	10.95
	2.68	0.75	2.74

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Dist. 1			Dist. 6		
Av. √ time per setting.	Av. Dev. 1 setting.	Av. Dev. 1 set.	Av. √ time per setting.	Av. Dev. 1 setting.	Av. Dev. 1 set.
1.1	1.45	−2.52	6.	2.30	+1.98
—	—	+1.37	—	—	+.52
2.4	.43	+2.04	—	—	−1.18
			2.0	1.30	+6.41
			—	—	+1.01
			6.0	.30	+1.21
			2.2	.52	+1.26
			2.9	1.20	+6.06
3.5	1.88	5.93	19.1	5.62	20.23
1.75	0.94	1.98	3.82	1.12	2.53

20.23
12.47
6) 7.76
1.30

P

8.7 (9)	7.46 (9)	9.30 (9)
15.9 (12)	10.68 (12)	12.16 (12)
14.5 (11)	12.98 (11)	14.08 (11)
24.1 (8)	16.37 (8)	24.40 (11)
3.5 (2)	1.88 (2)	5.93 (3)

42) 80.7 (1.94 — 42 — 38.7 — 37.8 — 9.0

42) 49.37 (1.18 — 42 — 7.3 — 29.4 — 2.3

46) 65.87 (1.43 — 46 — 19.8 — 18.4 — 14.7 — 13.8 — 9

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W.

1.4 (1)	.72 (1)	.60 (1)
11.8 (5)	3.28 (5)	4.92 (5)
15.9 (6)	6.75 (6)	5.28 (6)
10.7 (4)	3.00 (4)	12.95 (4)
19.1 (5)	5.62 (5)	20.23 (8)
21 | 58.9 (2.80	21 | 19.37 (.92	24 | 43.88 (1.83
42	19	24
169	47	198
168		192
1.		68
		72

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Decimos. (Pos. angles.)

		No. setts. 5 settings.	No. setts. 4 settings.	No. setts 3 settings.	No. setts 2 settings.	No. setts 1 setting.	Total No. setts.	Total No. settings.
P.	5	7	—	—	—	—	7	35
	4	28	—	—	—	—	28	140
	3	32+1	1	—	1	—	34	172
	2	8	1	3	2	12	15	58
	1	1	1	—	1	5	8	16
(One dist. 2. 6 settings)		77	3	3	4	6	93	421
W.	5.	16	—	—	—	—	16	80
	4	25	—	—	—	—	25	125
	3	22	1	1	—	—	24	117
	2	12	—	2	1	1	16	69
	1	1	—	1	—	5	7	13
		76	1	4	1	6	88	404
W.	5	16	—	—	—	—		
	4	25	—	—	—	—		
	3	22	1	1	—	—		
	2	12	—	2	1	1		
	1	1	—	1	—	5		

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Deimos. (Pos. Angles)

No. setts rejected.	Total weight.	Av. time per setting.	Av. Dev. 1 setting.	Av. Dev. 1 set. Resid. I.	Av. Dev. 1 set. Resid. II.
	175	1.10	0.59	0.38	
	560	1.24	0.50	0.37	
I 1	516 ~~449~~	1.87	0.69	0.59	
II 2	116	2.39	1.20	1.11	
III 4	16	3.17	1.76	1.52	
7	1383	1.74	0.74	0.67	
	400	2.06	0.28	0.32	
	500	2.25	0.44	0.49	
I 1 6	351	3.05	0.68	0.86	
III I	138	4.19	0.65	1.10	
III II 7	13	5.35	4.18	2.90	
14	1402	2.88	0.61	0.86	

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P.

Dist. 5.

Av. time per setting.	Av. Dev. 1 setting.	Av. Dev. 1 set.
1.2	.52	-.64 +
1.0	.70	-.41 +
1.2	.40	+.32 +
1.1	.50	-.22 +
1.4	.52	+.08 +
0.8	.82	-.13 +
1.0	.68	-.84 +
7 7.7	4.14	2.68
1.10	0.59	0.38

W.

Dist. 5.

Av. Time per Setting.	Av. Dev. 1 setting.	Av. Dev. 1 set.
1.4	.34	+.26
1.7	.42	+.16
1.6	.24	-1.07
1.6	.12	-.57
1.5	.22	-.67
1.6	.12	-.09
1.3	.18	+.12
1.3	.36	+.73
3.2	.20	-.17
2.8	.36	+.11
2.2	.42	+.34
2.3	.18	+.22
3.0	.40	+.12
2.4	.32	-.22
1.6	.42	+.03
3.1	.18	-.18
16 33.0	4.48	5.10
2.06	0.28	0.32

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P. Yr.

Dist. 4.

av. time per setting	av. Dev. 1 setting	av. Dev. 1 set.
1.4	.36	+16 +
1.0	.58	+1.55 +
1.08	.80	+.17 +
1.3	.36	+.06 +
1.4	.30	−.39 +
1.5	.42	−.68 +
1.7	.72	−.15 +
1.9	.48	+.44 +
1.3	.36	−.18 +
1.1	.38	−.84 +
1.8	.36	−.36 +
0.8	.56	−.04 +
1.0	.54	−.33 +
1.3	.40	−.24 +
0.7	.42	+.24 +
0.9	.28	−.23 +
1.0	.40	−.01 +
1.6	.54	−.75 +
1.5	.84	−.07 +
1.0	.76	+.06 +
1.2	.30	−.18 +
0.9	.40	−.30 +
1.2	.48	−.79 +
1.0	.86	+.06 +
1.4	.72	−.52 +
1.4	.58	+.21 +
1.2	.26	−.30 +
1.4	.48	+1.15 +
18 34.7	13.94	10.46
1.24	0.550	0.37

Dist. 4.

av. time per setting	av. Dev. 1 setting	av. Dev. 1 set.
2.0	.36	+.62 .
1.4	.64	+.50 .
2.0	.40	+.45 .
4.4	.66	+.71 .
5.5	1.16	−.48 .
2.6	.72	+.19 .
4.4	.80	+.75 .
1.6	.72	+.12 .
2.2	.48	+.41 .
1.4	.22	+.57 .
1.9	.82	+.41 .
1.8	.12	+.63 .
1.9	.16	−.03 .
1.2	.40	+1.26 .
1.4	.28	+1.00 .
1.6	.20	+.36 .
1.6	.66	+.18 .
1.8	.36	+.70 .
1.9	.18	+.94 .
2.3	.34	−.04 .
2.2	.30	+.06 .
2.1	.40	−.17 .
3.5	.08	+.60 .
1.6	.28	−.57 .
1.9	.32	+.49 .
25 56.2	11.06	12.24
2.25	0.44	0.49

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P.

Dist. 3.

Av. Time per setting.	Av. Dev. 1 setting.	Av. Dev. 1 set.	
1.6	.50	+.25	+
2.8	.20	−2.05	+
4.6	1.80	+1.54	+
3.0	.68	+.10	+
2.5	1.00	−1.00	+
1.4	.28	+.59	+
1.0	.32	+.09	+
1.6	.44	−.21	+
1.3	.42	−.59	+
1.3	.58	−.54	+
1.1	1.46	−1.92	+
1.3	.66	+.20	+
1.6	.54	+.99	+
0.7	.56	−.40	+
1.4	.52	−.14	+
2.0	.46	+.09	+
0.6	.36	+.53	+
2.1	.22	−.24	+
0.8	.80	−.23	+
1.4	1.18	−.39	+
1.0	.62	+.61	+
1.2	.44	−1.25	+
1.5	.90	−.68	+
1.9	1.06	−.14	+
2.3	.58	−.04	+
1.6	.78	−.67	+
3.7	.35	−.79	+
3.2	.28	+.08	+
1.5	.16	+.04	+
2.1	.72	+.09	+
1.5	.56	+1.02	+
2.0	.96	−1.53	+
4.8	1.38	+.37	+
1.4	.56	+.15	+
1.8	1.84	−1.21	+
57 | 65.6	24.17	20.78	
1.87	0.69	.59	

N.

Dist. 3.

Av. Time per setting.	Av. Dev. 1 setting.	Av. Dev. 1 set.	
2.8	1.57	−1.18	.
1.6	.44	−.85	.
1.9	.60	+.78	.
2.5	.50	+.58	.
1.8	.52	+1.39	.
1.5	.44	+1.59	.
1.9	.36	−.28	.
1.8	.22	+.38	.
2.0	.26	+.96	.
1.8	.30	+.97	.
2.2	.52	+1.06	.
3.6	.58	+1.09	.
3.2	.28	−.18	.
2.0	.28	+.17	.
2.2	.40	+1.08	.
1.8	.36	+.45	.
4.1	.90	+.78	.
3.5	1.00	−.38	.
4.8	2.12	−1.74	.
13.8	1.84	−.98	.
1.8	.44	+.28	.
3.5	.60	+.83	.
4.2	.60	−1.99	.
24 | 73.1	16.37	20.64	
3.05	0.68	0.86	

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Ar. time per setting.	Dist. 2. Ar. Dev. / setting.	Dist. 2. Ar. Dev. / set.
~	~	+2.19 +
2.1	1.50	−.20 +
3.2	1.06	+.56 +
4.0	.98	+2.24 +
1.4	1.25	+.04 +
2.5	.38	−.59 +
1.4	.90	+.57 +
2.3	1.20	+1.25 +
3.6	1.17	+.53 +
1.8	1.08	−.41 +
1.2	1.18	+.13 +
3.9	2.17	+3.98 +
1.9	.36	+1.64 +
1.6	2.60	+1.67 +
2.6	.94	−.70 +
14 / 33.5	16.77 // 15	16.70
2.39	1.20	1.11

Yr.

Ar. time per setting.	Dist. 2. Ar. Dev. / setting.	Dist. 2. Ar. Dev. / set.
~	~	+1.62 .
5.0	.35	+.87 .
2.4	.20	+.08 .
2.2	.44	+1.62 .
4.4	.82	−.58 .
1.5	.38	+1.53 .
1.4	.44	+1.41 .
3.3	.72	−1.37 .
3.2	.56	−.30 .
2.6	1.20	−.91 .
4.7	.56	+1.00 .
4.9	.76	−.37 .
2.8	.36	+.38 .
2.3	.90	+1.90 .
9.9	.86	−1.16 .
12.2	1.17	+3.03 .
15 / 62.8	9.72 // 16 / 17.63	
4.19	0.65	1.10

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P.

Dist. 1.

Av. Time / setting.	Av. Dev. / setting.	Av. Dev. / set.	
—	—	+1,61	+
—	—	−.11	+
—	—	−4,84	+
—	—	+.84	+
2,2	2,90	+.65	+
3,5	1,40	−1,69	+
3,8	.98	+1,66	+
—	—	+.69	+
3/9.5	5.28	+12,09	
3,17	1,76	1,52	

Yr.

Dist. 1.

Av. Time / setting.	Av. Dev. / setting.	Av. Dev. / set.	
—	—	+1,05	.
—	—	+.85	.
—	—	+4,53	.
—	—	+1,24	.
—	—	−4,20	.
5,4	7,53	−4,63	.
5,3	.84	−3,82	.
2/10,7	8,37	7/20,32	
5,35	4,18	2,90	

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50° to 60° Dawes. Pos. Aug.

No.	Date.	No. Settings.	Av. Time.	Av. Dev.	Resid. I.	Dist.	Obs.	No. set. × Dist.	
+160	Dec. 7.	5	1.4	.90	+ .57	2	P.	10	+ 5.70
+179	" 12	3	3.9	2.17	+ 3.92	2	P.	6	+ 23.52
								16	+ 29.58
									+ 1.85

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60 to 70

No.	Date.	No. Settings.	Av. Time.	Av. Dev.	Resid. I.	Dist.	Obs.	No. set. x Dist.	
+80	Dec. 12.	5	3.5	1.40	−1.69	1	P.	5	−8.45
									−1.69
+27	Nov. 4.	2	5.0	.35	+.87	2	W.	4	+3.48
									+0.87

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No.	Date.	No. Settings.	Av. Value.	Av. Dev.	Resid. I.	Dist.	Obs.	No. set. × Dist.	
+161	Dec. 7.	5	1.4	.48	+1.15	4	P.	20	+23.00
									+ 1.15
+96	Nov. 23.	5	3.2	.20	− .17	5	W.	25	− 4.25
+162	Dec. 7.	5	2.1	.40	−.17	4	W.	20	− 3.40
+181	" 12.	5	4.1	.90	+ .75	3	W.	15	+11.70
+202	Jan. 5.	3	5.4	1.53	−4.63	1	W.	3	−13.89
								63	− 9.84
									− .16

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δ 0 to 90

No.	Date.	No. Settings.	Av. Time.	Av. Dev.	Resid. T.	Dist.	Obs.	No. Set. × Dist.	
1	Oct. 20.	5	1,6	.50	+ .25	3	P	15	+3.75
~~2~~	~~" "~~	~~5~~	~~2,8~~	~~.20~~	~~− 2.05~~	~~3~~	~~P~~	~~15~~	~~− 30.75~~
+163	Dec. 7.	5	1,5	.56	+ 1.02	3	P.	15	+ 15.30
+183	" 12.	5	1.9	.36	+ 1.64	2	P.	10	+ 16.40
								~~25~~	~~+ 4.70~~
								40	~~+ 3.5.45~~
									+ 0.69
+94	Nov. 23.	5	2,8	.36	+ .11	5	Yr.	25	+ 2.75
+98	" "	5	2.2	.42	+ .38	5	Yr.	25	+ 9.50
+99	" "	5	2,3	.18	+ .22	5	Yr.	25	+ 5.50
+172	Dec. 12.	5	4.4	.56	+ 1.00	2	Yr.	10	+ 10.00
+189	" 17.	5	13.8	1.84	− .98	3	Yr.	15	− 14.70
+203	Jan. 5.	5	5.3	.84	− 3.82	1	Yr.	5	− 19.10
								105	− 6.05
									− .06

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No.	Date.	No. Settings	Av. Time	Av. Dev.	Resid. T.	Dist.	Obs.	No. x Dist.	
+91	Nov. 22.	5	1.4	.52	− .14	3	P.	15	−2.10
+92	" "	5	2.0	.46	+ .09	3	P.	15	+1.34
+93	" "	5	0.6	.36	+ .53	3	P.	15	+7.95
+185	Dec. 12.	4	3.8	.98	+1.66	1	P.	4	+6.64
								49	+13.83
									+ .28
+100	Nov. 23.	5	3.0	.40	+ .12	5	W.	25	+3.00
+101	" "	5	2.4	.32	− .22	5	W.	25	−5.50
+102	" "	5	1.6	.42	+ .03	5	W.	25	+0.75
+184	Dec. 12.	5	4.9	.76	− .37	2	W.	10	−3.70
								85	−5.45
									− .06

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100 to 110

No.	Date	No. Settings	Ar. Time	Ar. Dec.	Resid. I.	Dist.	Obs.	No. Set. x Dist.	
+104	Nov. 23.	5	1.6	.54	−.75	4	P.	20	−15.00
+84	Dec. 12,	3	1.6	2.60	+1.67	2	P.	6	+10.02
+98	" 30.	1	—	—	+.69	1	P.	1	+.69
								27	−4.29
									−.16
+103	Nov. 23.	5	3.1	.14	−.14	5	W.	25	−4.50
+86	Dec. 12,	5	3.5	1.00	−.32	3	W.	15	−5.70
+97	" 26.	5	4.2	.60	−1.99	3	W.	15	−29.85
								55	−40.05
									−.73

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No.	Date.	No. Settings.	Av. Time	Av. Dev	Resid. T.	Dist	Hrs.	No. of Obs. x Dist.	
+7	Oct. 29.	5	4.6	1.40	+1.54	3	P	15	+23.10
+165	Dec. 7.	5	2.3	1.20	+1.25	2	P.	10	+12.50
								~~25~~	~~+35.60~~
									+1.42
+3	Oct. 20.	5	2.8	.20	−2.05	3	P.	15	−30.75
								40	+.12
+164	Dec. 7.	5	3.3	.72	−1.37	2	W.	10	−13.70
+166	" "	5	3.2	.56	−.30	2	W.	10	−3.00
+188	" 12.	5	4.5	2.12	−1.74	3	W.	15	−26.10
+199	" 30	1	~	~	+1.24	1	W.	1	+1.24
								36	−41.56
									−1.15

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120 to 190

No	Date.	No. Settings	Av. Times	Av. Dev.	Resid. T.	Deist.	Obs.	No. set. x Deist.	
+1 8	Oct. 29.	5	3.0	.68	+ .10	3	P.	15	+ 1.50
+1 468	Dec. 7	3	3.6	1.17	+ .53	2	P.	6	+ 3.18
+1								21	+ 4.68
									+ .22
+1 467	Dec. 7.	5	2.6	1.20	− .91	2	W.	10	− 9.10
+1									− .91
+1									

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130 to 140

Mr.	Date	No. Settings	Av. Time	Av. Dev.	Resid. I.	Dist.	Obs.	Mr. Dist. × Dist.	
+119	Nov. 26,	5	4.0	.9+	+ 2.24	2	L.	10	+22.40
									+ 2.24
+9	Oct. 29.	1	~	~	+ 1.05	1	W.	1	+1.05

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1900 to 1950

Hrs.	Date.	No. Settings	Av. Vernier	Av. Dec.	Resid. I.	Dist.	Obs.	No. set x Dist.	
+146	Dec. 1.	1	—	—	+ 4.V-3	1	W.	1	+ 4.53

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220 to 230

No.	Date.	No. Settings.	Av. Vernier.	Av. Dev.	Resid. I.	Dist.	Obs.	Wt. x Dist.	
+112	Nov. 25.	1	—	—	+ .84	1	P.	1	+0.84
+124	" 30.	2	2,2	2,90	+ .65	1	P.	2	+1,30
								3	+2,14
									+.71

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230 to 240

No.	Date	No. Settings	Av. Time	Av. Dev.	Resid. I.	Dist.	Obs.	Corrected Dist.	
+47	Nov. 16.	5	1.8	.36	− .36	4	P.	20	−7.20
+49	" "	5	1.2	.52	− .68	5	P.	25	−17.00
+79	" 21	5	1.6	.54	+ .99	3	P.	15	+14.85
+14	" 25.	5	3.2	1.06	+ .56	2	P.	10	+ 5.60
+28	" 30.	5	2.5	.38	− .59	2	P.	10	− 5.90
+70	Dec. 9.	5	1.8	1.08	− .41	2	P.	10	− 4.10
								90	−13.75
									− .15
+48	Nov. 16.	5	1.8	.34	+ .26	5	W.	25	+6.50
+80	" 21	5	1.5	.44	+1.59	3	W.	15	+23.85
+15	" 25.	5	4.4	.82	− .58	2	W.	10	− 5.80
+29	" 30	5	1.8	.30	+ .97	3	W.	15	+14.55
								65	+39.10
									+ .60

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No.	Date	No. Settings	Av. Time	Av. Dev	Resid. T.	Dist.	Obs.	Wt. x Dist.	
+10	Nov. 1.	1	—	—	+2.19	2	P.	2	+4.38
+51	" 16	5	1.0	.70	− .41	5	P.	25	−10.25
+53	" "	5	1.2	.40	+ .32	5	P.	25	+8.00
+55	" "	5	1.1	.50	− .22	5	P.	25	−5.50
+81	" 21.	5	1.3	.40	− .24	4	P.	20	−4.80
+116	" 25.	6	1.0	.62	+ .61	3	P.	18	+10.98
+130	" 30.	5	1.9	1.06	− .14	3	P.	15	−2.10
+171	Dec. 9	4	1.2	1.18	+ .13	2	P.	8	+1.04
								138	+1.75
									+.01
+50	Nov. 16.	5	1.7	.42	+ .16	5	W.	25	+4.00
+52	" "	5	1.6	.24	− 1.07	5	W.	25	−26.75
+54	" "	5	1.6	.12	− .57	5	W.	25	−14.25
+82	" 21.	5	1.4	.22	+ .57	4	W.	20	+11.40
+117	" 25.	5	1.4	.28	+1.00	4	W.	20	+20.00
+131	" 30.	5	2.2	.52	+ 1.06	3	W.	15	+15.90
								130	+10.30
									+.08

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250 to 260

No.	Date.	No. settings.	Av. Time	Av. Dev.	Resid. I.	Dist.	Obs.	No. Set x Dist.	
+252	Nov. 1.	5	2.5	1.00	−1.00	3	P.	15	−15.00
+257	" 16.	5	1.4	.52	+ .08	5	P.	25	+2.00
+263	" 21.	5	0.7	.42	+ .24	4	P.	20	+4.80
+232	" 30.	5	2.3	.54	− .04	3	P.	15	−0.60
+247	Dec. 4.	2	3.7	.35	− .79	3	P.	6	−4.74
								81	−13.54
									−.17
+211	Nov. 1.	1	—	—	+1.12	2	W.	2	+2.24
+256	Nov. 16.	5	1.5	.22	− .67	5	W.	25	−16.75
+258	" "	5	1.6	.12	− .09	5	W.	25	−2.25
+233	" 30.	5	3.6	.58	+1.09	3	W.	15	+16.35
+272	Dec. 9.	5	3.5	.08	+ .60	4	W.	20	+12.00
+201	Jan 2,	1	—	—	−4.20	1	W.	1	−4.20
								88	+7.39
									+.08

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No.	Date	No. Settings.	Av. Time	Av. Dev.	Resid. I.	Dist.	Obs.	No. set x Obs.	
+85	Nov. 21.	5	0.9	.25	− .23	4	P.	20	-4.60
+87	" "	5	1.0	.40	− .01	4	P.	20	-.20
+114	" 25.	5	1.2	.30	− .14	4	P.	20	-3.60
+134	" 30.	5	0.9	.40	− .30	4	P.	20	-6.00
+148	Dec. 4	5	3.2	.24	+ .04	3	P.	15	+1.20
								95	-13.20
									-.14
+84	Nov. 21.	5	1.9	.42	+ .41	4	W.	20	+8.20
+86	" "	5	1.4	.12	+ .63	4	W.	20	+12.60
+88	" "	5	1.9	.16	− .03	4	W.	20	-0.60
+135	" 30.	5	1.6	.20	+ .36	4	W.	20	+7.20
+173	Dec. 9.	5	1.6	.24	− .57	4	W.	20	-11.40
								100	+16.00
									+.16

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270 to 280

No.	Date.	No. Settings.	Av. Time.	Av. Dev.	Resid. I.	Dist.	Obs.	No. set. × Dist.	
+53	Nov. 1.	5	1.4	.28	+.59	3	P.	15	+8.85
+59	" 16.	5	0.8	.82	−.13	5	P.	25	−3.25
+61	" "	5	1.0	.68	−.84	5	P.	25	−21.00
+63	" "	5	0.8	.56	−.04	4	P.	20	−0.80
+89	" 21.	5	0.7	.56	−.40	3	P.	15	−6.00
+05	" 24.	5	2.1	.22	−.24	3	P.	15	−3.60
+06	" "	5	1.5	.84	−.07	4	P.	20	−1.40
+36	" 30.	5	1.2	.48	−.79	4	P.	20	−15.80
								155	−43.00
									−.28
+60	Nov. 16.	5	1.3	.18	+.12	5	W.	25	+3.00
+62	" "	5	1.3	.36	+.73	5	W.	25	+18.25
+64	" "	5	2.2	.48	+.41	4	W.	20	+8.20
+90	" 21.	4	1.9	.36	−.28	3	W.	12	−3.36
+37	" 30.	5	1.6	.66	+.18	4	W.	20	+3.60
+49	Dec. 4.	5	3.2	.25	−.18	3	W.	15	−2.70
+174	" 9.	5	1.9	.32	+.49	4	W.	20	+9.80
+175	" "	5	2.8	.40	+.65	3	W.	15	+9.75
								152	+46.54
									+.31

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No.	Date	No. Settings	av. Time	av. Dev.	Resid. I	Dist.	Obs.	No. Rts. x Dist.	Corr.
+15	Nov. 1.	5	1.0	.32	+ .09	3	P.	15	+ 1.35
+17	" "	5	1.4	.36	+ .16	4	P.	20	+ 3.20
+37	" 10.	5	1.3	.36	− .18	4	P.	20	− 3.60
+40	" "	5	1.1	.38	− .84	4	P.	20	− 16.80
+65	" 16	5	1.0	.54	− .33	4	P.	20	− 6.60
+67	" "	5	1.3	.58	− .54	3	P.	15	− 8.10
+69	" "	5	1.1	1.46	−1.92	3	P.	15	− 28.80
+107	" 24.	5	1.0	.76	+ .06	4	P.	20	+ 1.20
+120	" 29	5	1.2	.44	−1.25	3	P.	15	− 18.75
+138	" 30.	5	1.0	.86	+ .06	4	P.	20	+ 1.20
+190	Dec 14.	5	1.4	.56	+ .17	3	P.	15	+ 2.55
+192	" "	5	1.8	1.84	− 1.21	3	P.	15	− 18.15
								210	− 91.30
									− .43
+14	Nov. 1.	5	2.0	.36	+ .62	4	W.	20	+ 12.40
+16	" "	3	2.8	1.57	− 1.18	3	W.	9	− 10.62
+39	" 10.	5	1.6	.72	+ .12	4	W.	20	+ 2.40
+66	" 16.	5	1.9	.60	+ .78	3	W.	15	+ 11.70
+68	" "	5	2.5	.50	+ .58	3	W.	15	+ 8.70
+70	" "	5	1.8	.52	+ 1.39	3	W.	15	+ 20.85
+121	" 29.	5	1.8	.22	+ .38	3	W.	15	+ 5.70
+139	" 30.	5	1.8	.36	+ .70	4	W.	20	+ 1.40
+150	Dec. 4.	5	2.0	.28	+ .17	3	W.	15	+ 2.55
+151	" "	5	2.3	.34	− .04	4	W.	20	− 0.80
+191	" 18	5	1.8	.84	+ .28	3	W.	15	+ 4.20
	Jan. 2	5	9.9	.86	−1.16	2	W.	10	−11.60
	" "	3	12.2	1.17	+3.03	2	W.	6	+ 18.18
								195	+ 65.06
									+ 58.48
								179	+ .33

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290 to 300

Pro.	Date.	No. Settings.	Av. Time.	Av. Dev.	Resid. I.	Dist.	Obs.	No. set. × Dist.	
+18	Nov. 1.	5	1.0	.54	+1.55	4	P.	20	+31.00
+20	" "	5	0.8	.80	+ .17	4	P.	20	+ 3.40
+28	" 5	5	1.4	.30	- .39	4	P.	20	- 7.80
+71	" 16.	5	1.3	.66	+ .20	3	P.	15	+ 3.00
+73	" "	1	—	—	-4.84	1	P.	1	- 4.84
+122	" 29.	5	1.5	.90	-.68	3	P.	15	-10.20
+140	" 30.	5	1.4	.72	-.52	4	P.	20	-10.40
+142	" "	5	1.4	.58	+ .21	4	P.	20	+ 4.20
+152	Dec. 4.	5	1.2	.26	- .30	4	P.	20	- 6.00
+176	" 9.	5	2.0	.96	-1.53	3	P.	15	-22.95
+194	" 18.	5	2.6	.94	- .70	2	P.	10	- 7.00
								176	-27.59
									- .16
+19	Nov. 1.	5	1.4	.64	+ .50	4	Yr.	20	+ 1.00
+29	" 5	5	5.5	1.16	- .48	4	Yr.	20	- 9.60
+72	" 16	3	2.4	.20	+ .08	2	Yr.	6	+ 0.48
+123	" 29.	5	2.0	.26	+ .96	3	Yr.	15	+ 14.40
+141	" 30.	5	1.9	.18	+ .94	4	Yr.	20	+ 18.80
+153	Dec. 4.	5	2.2	.30	+ .06	4	Yr.	20	+ 1.20
+177	" 9.	5	1.8	.36	+ .47	3	Yr.	15	+ 7.05
+193	" 18.	5	3.5	.60	+ .83	3	Yr.	15	+ 12.45
+195	" "	5	2.8	.36	+ .38	2	Yr.	10	+ 3.80
+205	Jan. 7.	5	9.9	.86	-1.16	2	Yr.	10	- 11.60
+206	" "	3	12.2	1.17	+3.03	2	Yr.	6	+ 18.18
								157	+ 56.16
									+ .36

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300 to 310

No.	Date	No. Settings.	Av. Time	Av. Dev.	Resid. T.	Dec't.	Obs.	Weight x Dist.	
+22	Nov. 1.	5	1.3	.36	+ .06	4	P.	20	+ 1.20
+30	" 5	5	1.5	.42	− .68	4	P.	20	−13.60
+32	" "	5	1.7	.72	− .15	4	P.	20	− 3.00
+41	" 10	5	1.3	.42	− .59	3	P.	15	− 8.85
+108	" 24.	5	0.8	.80	− .23	3	P.	15	− 3.45
+124	" 29.	2	1.4	1.25	+ .04	2	P.	4	+ 0.16
+144	" 30.	5	1.6	.78	− .67	3	P.	15	− 10.05
+154	Dec. 4.	5	1.5	.16	+ .04	3	P.	15	+ 0.60
+178	" 9.	4	4.8	1.38	+ .37	3	P.	12	+ 4.44
								136	−32.55
									−.24
+21	Nov. 1.	5	2.0	.40	+ .45	4	W.	20	+ 9.00
+23	" "	5	4.4	.66	+ .71	4	W.	20	+14.20
+31	" 5	5	2.6	.72	+ .19	4	W.	20	+ 3.80
+42	" 10	5	1.6	.44	− .85	3	W.	15	−12.75
+140	" 30	5	1.5	.38	+1.53	2	W.	10	+15.30
+145	" "	5	1.4	.44	+1.41	2	W.	10	+14.10
+196	Dec. 18	5	2.3	.90	+1.90	2	W.	10	+19.00
								105	+62.65
									+ .60

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310 to 320

No.	Date.	No. Settings.	av. Value.	av. Dev.	Resid. I.	Dist.	Ob.	No. set. x Dist.	
+24	Nov. 1.	5	1.6	.44	−.21	3	P.	15	− 3.15
+25	" "	2	2.1	1.50	−.20	2	P.	4	− .80
+34	" 5	5	1.9	.48	+.44	4	P.	20	+ 8.80
+43	" 10.	1	—	—	−.11	1	P.	1	− .11
+10	" 24.	5	1.4	1.18	−.39	3	P.	15	− 5.85
+56	Dec. 4.	5	2.1	.72	+.09	3	P.	15	+ 1.35
								70	+ 0.24
									.00
+33	Nov. 5.	5	4.4	.80	+.75	4	Yr.	20	+ 15.00
+09	" 24.	5	1.2	.40	+1.26	4	Yr.	20	+25.20
+55	Dec. 4.	5	2.2	.84	+1.08	3	Yr.	15	+ 16.20
								55	+56.40
									+ 1.03

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320 to 330

Hr.	Date	No. Settings	Av. Time	Av. Dev.	Resid. T.	Deit.	Obs.	No. of Deit.	Deit.
+35	Nov. 5,	1	—	—	+1.61	1	P.	1	+1.61
+36	Nov. 5,	1	—	—	+.85	1	W.	1	+0.85
+111	" 24.	5	2.2	.44	+1.62	2	W.	10	+16.20
								11	+17.05
									+1.55

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Decimes. Pos. Angles.

Mean Long.	P. Wts.	P. (O-C)	W. Wts.	W. (O-C)	P.	W.
55°	16	+1.85	—	—	+29.52	—
65	5	−1.69	4	+0.87	− 8.45	+3.48
75	20	+1.15	63	− .16	+23.00	−9.84
85	40	+ .89	105	− .06	+35.45	−6.05
95	49	+.28	85	− .06	+13.83	−5.45
105	27	−.16	55	−.73	− 4.29	−40.05
115	40	+.12	36	−1.15	+ 4.85	−41.56
125	21	+ .22	10	− .91	+ 4.64	− 9.10
135	10	+2.24	1	+1.05	+22.40	+ 1.05
145	—	—	1	+4.53	—	+4.53
	228		360		+121.05	−102.99
					+ .53	− .29
225	3	+ .71	—	—	+ 2.14	—
235	90	−.15	65	+ .60	−13.75	+39.10
245	138	+ .01	130	+ .08	+ 1.75	+10.30
255	81	−.17	88	+ .08	−13.54	+ 7.39
265	95	−.14	100	+ .16	−13.20	+16.00
275	155	− .28	152	+ .31	−43.00	+46.54
285	210	−.43	179	+ .33	−91.30	+58.48
295	176	−.16	157	+ .36	−27.59	+56.16
305	136	−.24	105	+ .60	−32.55	+62.65
315	70	.00	55	+1.03	+ 0.24	+56.40
325	1	+1.61	11	+1.55	+ 1.61	+17.05
	1155		1042		−229.19	+370.07
	1383		1402		− .20	+ .36
					−108.14	+67.04

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1343) 108.14 (.08
1064

1402) 267.08 (.19
1402
1268



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Decios.

Mean day for different longitudes.

	Mean Date	No. Sets	Mean day	No. sets
55°	Dec. 10.	2	—	—
65	Dec. 12.	1	Nov. 4.	1
75	Dec. 7.	1	Dec. 12.	4
85	Nov. 23	3	Dec. 7	6
95	Nov. 27	4	Nov. 28.	4
105	Dec. 12.	3	Dec. 10.	3
115	Nov. 8.	3	Dec. 14.	4
125	Nov. 17.	2	Dec. 7.	1
135	Nov. 26.	1	Oct. 29.	1
145	—	—	Dec. 1.	1
225	Nov. 28.	2.	—	—
235	Nov. 24.	6	Nov. 23.	4
245	Nov. 20	8	Nov. 21.	6
255	Nov. 20.	5	Nov. 28.	6
265	Nov. 26.	5	Nov. 26.	5
275	Nov. 18.	8	Nov. 26.	8
285	Nov. 21.	12	Nov. 21.	11
295	Nov. 23.	11	Dec. 5.	11
305	Nov. 20.	9	Nov. 18.	7
315	Nov. 12.	6	Nov. 21.	3
325	Nov. 5.	1	Nov. 14.	2
		93		88

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2.17 11111111 2.17 2.19
8.19

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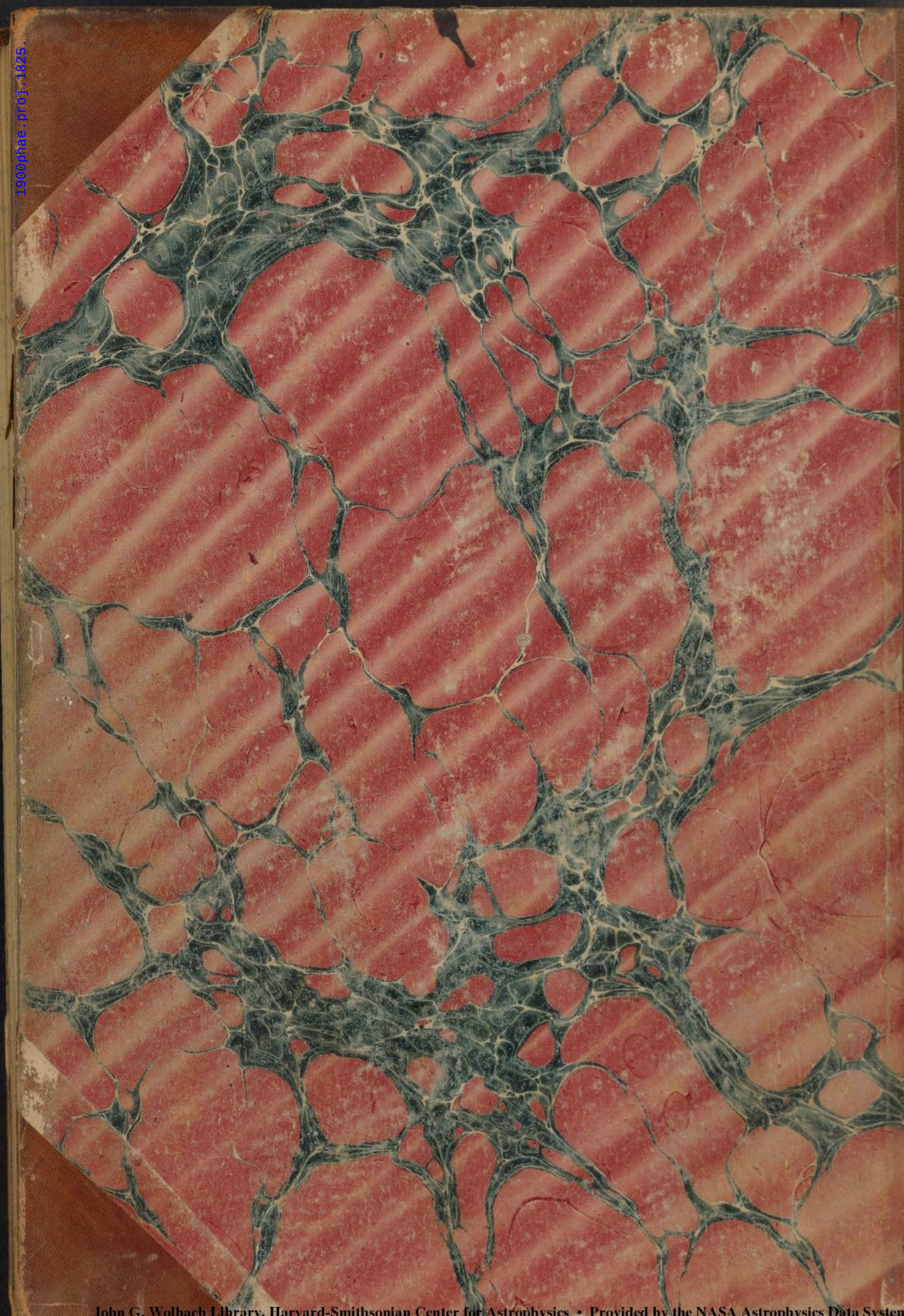
12	9,3	+47°	47′	(9596
12	29.4	+37	3	20196
12	36.4	+28	59	
15	49,6	+9	35	25046
16	38.8	+36	44	26396
18	22,2	+6	30	C.

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