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KG
11366
v.827

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Satellite IV

12. Sept. 1.78 d = .16204 = 4.20962 52 = 1.71600 9.97227
D = 4.23360 60 = 1.77815 9.97227
0.46632 = 18° 52' 0" = 9.97602 = 1.68827 = 48.8
9.96656 l cos v' = 1.75042 = 56.3

Satellite IV

50. Aug. 33 = 2.12385 9.95370 2.07755 = 119.6
80 = 1.90309 9.95370 1.85679 = 71.9
l cot v 0. 49 = 1.69020 9.95370 1.64390 = 44.0
9. 71 = 1.85126 9.95370 1.80496 = 63.8
l cot v' 0. 58 = 1.76343 9.95370 1.71713 = 52.1

51. Aug. 279 9.95370 2.03649 = 108.8

76 Oct. 2 3045 9.89974 2.13019 = 135.0
4139 9.89974 1.94113 = 87.3

0.149
9.966
0.11576 = 37 27 9 = 9.89974
cos v.

234 Oct. 5 '83 d = ~~13137~~ = ~~4.11850~~ 166 = 2.22011 ~~9.87050~~ ~~2.09061~~ ~~123.2~~
~~13087~~ = ~~4.11684~~ ~~9.86871~~ ~~2.08882~~ = ~~122.7~~
D = 4.23360 63 = 1.79934 ~~9.87050~~ ~~1.66984~~ ~~46.6~~
~~0.07776~~ ~~0.02773~~ ~~39° 54' 33"~~ ~~9.88490~~ ~~9.86871~~ ~~1.66805~~ = ~~46.6~~
~~0.07376~~ = ~~40 9 27~~ = ~~9.88324~~ 65 = ~~1.89291~~ ~~9.87050~~ ~~1.68341~~ ~~48.2~~
~~1.89291~~ ~~9.86871~~ ~~1.76162~~ = ~~57.8~~

9.96656
~~0.04422~~
~~0.04030~~ = ~~42° 5'~~ = ~~42 20 39~~ = ~~9.87050~~ = ~~9.86871~~
0.04436 = 42° 4' 53" = 9.87051
cos v'

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Satellite IV

12. Sept. 1.78 d = .16204 = 4.20962 52 = 1.71600 9.97227

D = 4.23360 60 = 1.77815 9.97227

0.46632 = 18° 52' 0" = 9.97602 = 1.68827 = 48.8

l cos. v

9.96656 = 1.75042 = 56.3

0.43288 = 20 15 29 = 9.97227

l cot. v' l cos v'

50. Aug. 2 '78 d = 15608 = 4.19334 133 = 2.12385 9.95370 | 2.07755 = 118.6

4.23360 80 = 1.90309 9.95370 | 1.85679 = 71.9

l cot v 0.34549 = 24° 17' 30" = 9.95974 49 = 1.69020 9.95370 | 1.64390 = 44.0

9.96656 71 = 1.85126 9.95370 | 1.80496 = 63.8

l cot v' 0.31205 = 25° 59' 17" = 9.95370 58 = 1.76343 9.95370 | 1.71713 = 52.1

cos v'

51. Aug 2 '78 121 = 2.08279 9.95370 2.03649 = 108.8

76 Oct. 25, '78 d = 13967 = 4.14511 170 = 2.23045 9.89974 2.13019 = 135.0

D 4.23360 110 = 2.04139 9.89974 1.94113 = 87.3

0.14920 = 35° 20' 47" = 9.91151

9.96656

0.11576 = 37 27 9 = 9.89974

cos v'

234 Oct. 5 '83 d = ~~13087~~ 13137 = ~~4.11750~~ 4.11684 166 = 2.22011 ~~9.87050~~ 9.86871 ~~2.09061~~ 2.08882 = ~~123.2~~ 122.7

D = 4.23360 63 = 1.79934 ~~9.87050~~ 9.86871 ~~1.66944~~ 1.66805 = ~~46.2~~ 46.6

~~0.07773~~ ~~39° 54' 33"~~ ~~9.88490~~

~~0.07374~~ = ~~40 9 27~~ = ~~9.88324~~ 65 = ~~1.81291~~ 1.89291 ~~9.87050~~ 9.86871 ~~1.68341~~ 1.68162 = ~~47.2~~ 57.8

9.96656

~~0.04428~~

~~0.04030~~ = ~~42° 5'~~ 42 20 39 = ~~9.87050~~ 9.86871

0.04434 = 42° 4' 53" = 9.87051

cos v'

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248. Dec 28'83 d=14978=4.17548

4.23360

9.74347^ = 61052 = 9.94188^

0.25653 = 28°58'43"

9.96656

0.22997 = 30° 53' 16" = 9.93359 CO2 v'

89= 1.94939 9.93358 1.88297^ = 76.4

265 Mar. 4'84 d=16026=4.20482

4.23360

9.57573^ = 69 21 12 = 9.97122^

0.42427^ = 20 37 48

9.96656

0.39083^ = 22 7 38^ = 9.96678^ CO2 v'

[61]

120 = 2.07918 | 9.96678 | 2.04596^ = 111.2

44 = 1.64345 | 9.96678 | 1.61023^ = 40.8

78 = 1.89209 | 9.96678 | 1.85887^ = 72.3

277 May 10'84 d=16727=4.22342

4.23360

0.65946^ = 12 21 20 = 9.98982^

9.96656

0.62602^ = 13 18 37^ = 9.98817^ CO2 v'

175 = 2.24304 | 9.98817 | 2.23121^ = 170.3

121 = 2.08279 | 9.98817 | 2.07096^ = 117

91 = 1.95904 | 9.98817 | 1.94721^ = 88.6

77 = 1.88649 | 9.98817 | 1.87466^ = 74.9

23 = 1.36173 | 9.98817 | 1.34990^ = 22.4

345 Apr. 30'86 d=715=2.85421

4.23360

1.37896^ = 2 23 35 = 8.62071^

8.62108

8.65595^ = 87 36 25

9.96656

8.62251^ = 87 35 3 = 8.62482 CO2 v'

8.58764

8.58732

216

235 = 2.37107 | 8.62482 | 0.99589^ = 9.9

249 = 2.39620 | 8.62482 | 1.02102^ = 10.5

224 = 2.35026 | 8.62482 | 0.97507^ = 9.4

167 = 2.22272 | 8.62482 | 0.84754^ = 7.0

100 = 2.00000 | 8.62482 | 0.62482^ = 4.2

323^ 9.8

1826^ 10.4

241^ 9.3

488^ 7.0

216^

435 Aug. 5'90 d=16460=4.21617

4.23360

9.46236 = 73 49 45 = 9.98257^

0.53894^ = 16 7 30^

9.96656

0.50550^ = 17 20 27^ = 9.97980^ CO2 v'

127 = 2.10380 | 9.97980^ | 2.08360^ = 121.2

82 = 1.91381 | 9.97980 | 1.89361^ = 78.3

98 = 1.99123 | 9.97980 | 1.97103^ = 93.6

59 = 1.77085 | 9.97980 | 1.75065^ = 56.3

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35 Nov. 7 '28 $d = 1678) = 4.22497$ $100 = 2.00000 | 9.99997 | 1.99997 = 97.7$

4.23360

$0.69609 = 11\ 23\ 0 = 9.99137$

9.99656

$0.66265 = 12\ 16\ 4 = 9.98997$ cor v'

36 (Same) $84 = 1.92428 | 9.99997 | 1.91425 = 82.1$

$80 = 1.90309 | 9.99997 | 1.89306 = 78.2$

$27 = 1.43136 | 9.99997 | 1.42133 = 26.4$

69 Oct. 8 '28 $d = 1435 = 4.15694$

4.23360

$9.81948\ 0.18652 = 56\ 56\ 32 = 9.92334$

0.18662

0.18653 $= 33\ 3\ 27$

9.99656

0.15309 $= 35\ 8\ 16 = 9.91284$

.15318 cor v'

$18 = 1.26527 | 9.91281 | 1.16808 = 14.7$

20 (Same) $124 = 2.09342 | 9.91281 | 2.00623 = 101.4$

228 Sept. 18 '83 $d = 12683 = 4.10322$ $154 = 2.18752 | 9.85389 | 2.04141 = 110.0$

4.23360 $137 = 2.13672 | 9.85389 | 1.99061 = 97.9$

$9.95767 = 47\ 47\ 16 = 9.86962$ $67 = 1.82607 | 9.85389 | 1.67996 = 47.9$

$0.04234 = 42\ 12\ 44$

9.99656

$0.00890 = 44\ 24\ 46 = 9.85389$

cor v'

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241 Nov. 24'83 d = 14321 = 4.15597

4.23360

~~9.81660~~ ^ = ~~66° 45' 13"~~ = 9.92237 ^

0.18340 ^ = 33 14 47

9.96656

0.14996 ^ = 35 ~~18~~ 56 ~~58~~ 8 ^ = 9.91178 ^
cos v'

265 = 2.40654	9.91175	2.31829 ^ = 208.1
121 = 2.08279	9.91175	1.99454 ^ = 98.7
72 = 1.85733	9.91175	1.76908 ^ = 58.1
80 = 1.90309	9.91175	1.81484 ^ = 65.3
29 = 1.46240	9.91175	1.37415 ^ = 23.7
43 = 1.63347	9.91175	1.54522 ^ = 35.1
19 = 1.27875	9.91175	1.14050 ^ = 15.5

271 Apr. 23'84 d = 16581 = 4.21961

4.23360

0.58839 ^ = 14 28 0 ^ = 9.98601 ^

9.96656

0.55495 ^ = 15 34 12 ^ = 9.98376 ^
cos v'

111 = 2.04532	9.98376	2.02908 ^ = 106.9
61 = 1.78533	9.98376	1.76909 ^ = 58.8
92 = 1.96379	9.98376	1.94765 ^ = 88.6
84 = 1.92428	9.98376	1.90804 ^ = 80.9
32 = 1.50515	9.98376	1.48891 ^ = 30.8

332 Feb 22'86 d = 7117 = 3.85230

209 = 2.32015 — 1.91083 ^ 81.4

4.23360

~~0.34012~~ ~~9.95882~~ = ~~24° 33' 31"~~ = 9.61870 ^

9.65988 ^ = 65 26 29 ^

9.96656

9.62644 ^ = 67 4 2 ^ = 9.59068 ^
cos v'

~~174~~ = ~~2.24055~~	~~9.59068~~	~~1.83123~~ = ~~67.8~~
240 = 2.38021	9.59068	1.97089 ^ = 93.5
121 = 2.08279	9.59068	1.67347 ^ = 47.1
16 = 1.20412	9.59068	0.79480 ^ = 6.2
70 = 1.84510	9.59068	1.43578 ^ = 27.3

344 Apr. 30'86 d = 715 = 2.

(Same as 345)

182 = 2.26007	8.62482	0.88489 ^ = 7.7

416 Aug. 18'89 d = 7546 = 3.87772

4.23360

0.30900 = 26 8 48 = 9.64412 ^

9.69100 ^ = 63 51 12 ^

9.96656

9.65756 ^ = 65 33 24 ^ = 9.61678 ^
cos v'

456 = 2.65896	9.61678 ^	2.27574 ^ = 188.7
193 = 2.28556	9.61678	1.90234 ^ = 79.9

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432 July 19 '90 d=16350=4.21352 86=1.93450 | 9.97676 | 1.91126 = 81.5
4.23360 57=1.75587 | 9.97676 | 1.73263 = 54.0
~~9.49307~~ = ~~72 42 46~~ = 9.97992 53=1.72428 | 9.97676 | 1.70104 = 50.2
0.30698 = 17 17 15 41=1.61278 | 9.97676 | 1.58954 = 38.9
~~9.96656~~ / ~~0.47357~~ = 18 34 ~~42~~ = 9.97676, 48=1.68124 | 9.97676 | 1.65800 = 45.5
0.47349 CO2 v

438 Sept. 24 '90 d=16828=4.22608 235=2.37107 | 9.99119 | 2.36226 = 230.3
4.23360 73=1.86332 | 9.99119 | 1.85451 = 71.5
~~9.27496~~ = ~~79 20 0~~ = 9.99243 78=1.89205 | 9.99119 | 1.88328 = 76.4
0.72584 = 10 39 30 64=1.80618 | 9.99119 | 1.79737 = 62.7
~~9.96656~~ 9.99120
~~0.69160~~ = 11 29 57 ~~0.69116~~
0.69194 CO2 v

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Sat. IV.

Uncorrected

	No of Eclipses	5-10	10-15	15-20	25-30	30-35
	12	52	60			
	50	133	80	49	71	58
	51	121				
Re	76	170	110			
Re	234	166	63	65		
Re	248	89				
	265	[61]	120	44	78	
	277	175	121	91	77	23
	345	235	249	224	167	100
	435	127	82	98	69	
	35	100				
	36	84	80	27		
	69	.	.	.	.	18
	70	124				
	228	154	137	67		
Dis	241	.	255	121	72	80 29 43 19
Dis	271	111	61	92	84	32
Dis	332	209	240	121	16	70
	344	182				
	416	456	193			
	432	86	57	63	41	48
	438	235	73	78	64	
Re.	S.	1268	885	571	452	181
Re.	M.	140.9	110.6	95.2	90.4	60.3
Dis.	S.	1741	841	693	326	222 98 29 43 19
Dis.	M.	174.1	120.1	99.0	65.2	55.5 49. 29. 43. 19.

(For Tabulation of these results see p. 40)

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Corrected

No. of Eclipse	5-10	10-15	15-20	20-25					
12	49	56							
50	120	72	44	64	50				
51	109								
76	135	87							
234	123	47	48						
248	76								
265		111	41	72					
277	170	118	89	75	22				
345	10	10	9	7	4				
435	121	78	94	56					
35	98								
36	82	78	26						
69	.	.	.	.	.	15			
70	101								
228	110	98	48						
241			208	99	59	65	24	35	16
271	107	59	89	81	31				
332	81	94	47	6	27				
344	8								
416	189	80							
432	82	54	50	39	46				
438	230	72	76	63					
Re S.	913	579	335	274	76				
Re M.	101.4	72.4	55.8	54.8	25.3				
Dis S.	1088	535	544	288	163	80	24	35	16
Dis M.	108.8	76.4	77.7	57.6	40.8	40.0	24.0	35.0	16.0

$\frac{\Delta \pm}{m}$

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Satellite III.

1 June 23'78 d 12250 = 4.08814

D = 4.10789

17 8 0 9.98025

89 6 6 = 8.19603

0.51061 8.19609

9.96656

0.47717 18 25 58 9.97713 = cos v'

109 = 2.03743	9.97713	2.01456 =	103.4 / 105.8
65 = 1.81291	9.97713	1.79004 =	61.7
50 = 1.69897	9.97713	1.67610 =	47.4 / 47.4

(15) Same

95 = 1.97772	9.98937	1.96709 =	92.7
64 = 1.80618	9.98937	1.79555 =	62.4
22 = 1.34242	9.98937	1.33179 =	21.5

14 Sept. 10'78 d 12553 = 4.

(No material)

27 Oct. 16'78 d 12656 = 4.10229

9 11 0 4.10789 9.99446

89 4 14 = 8.21018

8.21018

0.78138

9.86656

0.75794 9 54 16 9.99347 cos v'

111 = 2.04532	9.99347	2.03879 =	109.3
40 = 1.60206	9.99347	1.54553 =	39.4
47 = 1.67210	9.99347	1.66557 =	46.3
24 = 1.38021	9.99347	1.37368 =	23.6
43 = 1.63347	9.99347	1.62694 =	42.4
22 = 1.34242	9.99347	1.33589 =	21.7
7 = 0.84510	9.99347	0.83857 =	6.9

45 (same)

44 July 15'78 d 12474 = 4.09601

13° 20' 4.10789

13 18 20 9.98818

8.20402 89 5 — 8.20396

0.02618 9.98812

9.96656

0.59274 14 19 42 9.98628 cos v'

104 = 2.01703	9.98628	2.00331 =	100.8
21 = 1.32222	9.98628	1.30850 =	20.3
31 = 1.49136	9.98628	1.47764 =	30.0
29 = 1.46240	9.98628	1.44868 =	28.1

44 =

31 = 1.49136	9.98628	1.47764 =	30.0
28 = 1.44716	9.98628	1.43344 =	27.1
22 = 1.34242	9.98628	1.32870 =	21.3
15 = 1.17609	9.98628	1.16237 =	14.6
18 = 1.25527	9.98628	1.24155 =	17.4
13 = 1.11394	9.98628	1.10022 =	12.6
9 = 0.95424	9.98628	0.94052 =	8.7

15 Sept 10'78 1'

d 12553 = 4.09875

D 4.10789

0.68321 11 43 0 = 9.99086

9.96656

0.64977 12 37 31 9.98937 cos v'

58 Aug. 20'78 d 12300 = 4.08991

4.10789

0.53188 16 22 30 9.98202

8.19786 89 5 — 8.19780

9.96656

0.49844 17 36 27 9.97916 cos v'

50 = 1.69897	9.97916	1.67813 =	47.7
54 = 1.73239	9.97916	1.71155 =	51.5

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64
Sept 25 '79 d 12150 = 4.08458

4.10789
18 36 15 ^ 9.97669 ^
8.19253 89 6 — 8.19247
0.47284 ^
9.96656

0.43940 ^ 19 58 49 9.97304

160 = 2.20412 9.97304 2.17716 = 150.4
30 = 1.47712 9.97304 1.45016 = 28.2
14 = 1.14613 9.97304 1.11917 = 13.2
28 = 1.44716 9.97304 1.42020 = 26.3
26 = 1.41497 9.97304 1.38801 = 24.4
15 = 1.17609 9.97304 1.14913 = 14.1

65
(Same)

64 = 1.80618 9.97304 1.77922 = 60.2
41 = 1.61278 9.97304 1.58582 = 38.5
29 = 1.46240 9.97304 1.43544 = 27.3
20 = 1.30103 9.97304 1.27407 = 18.8

68
Oct. 2, '79 d 12100 = 4.08279

4.10789
19 17 30 ^ 9.97490 ^
8.19074 89 6 — 8.19068
0.45590 ^
9.96656

0.42246 ^ 20 42 31 9.97099 cos v'

56 = 1.74818 9.97099 1.71918 = 52.4
35 = 1.54407 9.97099 1.51506 = 32.7
51 = 1.70757 9.97099 1.67856 = 47.7
22 = 1.34242 9.97099 1.31341 = 20.6
29 = 1.46240 9.97099 1.43339 = 27.1
21 = 1.32222 9.97099 1.29321 = 19.6
17 = 1.23045 9.97099 1.20144 = 15.9
20 = 1.30103 9.97099 1.27202 = 18.7

71
Oct. 9, '79 d 12037 = 4.07052

4.10789
23 25 48 ^ 9.96263 ^
8.17844 89 8 — 8.17841
0.36315 ^
9.96656

0.32971 ^ 25 4 55 9.95698 cos v'

97 = 1.98677 9.95698 1.94375 = 87.9

79
Nov. 7, '79 d 11851 = ~~4.07376~~ 4.07372 ^

4.10789
0.38452 ^ 22 25 10 ^ 9.96587 ^
8.18171 89 7 — 8.18165
9.96656

0.35108 ^ 24 1 0 9.96067 cos v'

329 = 2.51720 9.96067 2.47787 = 300.5
74 = 1.86923 9.96067 1.82990 = 67.6
36 = 1.55630 9.96067 1.51697 = 32.9
47 = 1.67210 9.96067 1.63277 = 42.9
37 = 1.56820 9.96067 1.52887 = 33.8

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81 (Same)

27 = 1.43136 9.96067 1.39203 = 24.7
49 = 1.69020 9.96067 1.65087 = 44.8

87 Dec. 20'79 d 11537 = 4.
no material

95
July 29,'80 d 9387 = 3.97253

0.03153 ^ 0.02144 42 55 42 8.08042 <
9.96656
9.99800 ^ 0.06488 45 > 55 9.84848 cos v'
9.99809

103 = 2.01284 9.84848 1.86132 = 72.7
50 = 1.69897 9.84848 1.54745 = 35.3
52 = 1.71600 9.84848 1.56448 = 36.7
39 = 1.59106 9.84848 1.43954 = 27.5

97 Aug. 5'80 d 9308 = 3.96886

0.02351 ^ 0.02361 43 26 35 8.07675 <
9.96656
9.99007 ^ 9.99017 45 38 55 9.84451 cos v'

135 = 2.13033 9.84451 1.97484 = 94.4
91 = 1.95904 9.84451 1.80355 = 63.6
69 = 1.83885 9.84451 1.68336 = 48.2
42 = 1.62325 9.84451 1.46776 = 29.4
34 = 1.53148 9.84451 1.37599 = 23.8
32 = 1.50515 9.84451 1.34966 = 22.4
23 = 1.36173 9.84451 1.20624 = 16.1
32 = 1.50515 9.84451 1.34966 = 22.4

105 Sept. 10'80 d 8899 = 3.94934

9.98421 ^ 46 2 28 8.05723 <
9.96656
9.95077 ^ 48 14 25 9.82348

[98] =

146 = 2.16435 9.82348 1.98783 = 97.2
38 = 1.57978 9.82348 1.40326 = 25.3
46 = 1.66276 9.82348 1.48624 = 30.6

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107 Sept. 17 '80 d 8750 = 3.94201

4.10788

9.83412

9.97029 46 57 30 ~~8.04490~~

9.96656

9.93685 46 9 5 9.81562 cos v'

177 = 2.24797	9.81562	2.06359 =	115.8
126 = 2.10037	9.81562	1.91599 =	82.4
52 = 1.71600	9.81562	1.53162 =	34.0
45 = 1.65321	9.81562	1.46883 =	29.4
46 = 1.66276	9.81562	1.47838 =	30.1
36 = 1.55630	9.81562	1.37192 =	23.5
8 = 0.90309	9.81562	0.71871 =	5.2
42 = 1.62325	9.81562	1.43887 =	2.7
28 = 1.44716	9.81562	1.26278 =	1.8

116 Oct 23 '80 d 8250 = 3.91645

4.10788

9.80856

9.92465 49 56 44 ~~8.02434~~

9.96656

9.89121 52 6 9 9.78835 cos v'

100 = 2.00000	9.78835	1.78835 =	61.4
70 = 1.84510	9.78835	1.63345 =	43.0
60 = 1.77815	9.78835	1.56650 =	36.8
52 = 1.71600	9.78835	1.50435 =	31.9
23 = 1.36173	9.78835	1.15008 =	14.1

125 Nov 21 '80 d ~~8060~~ 8070 = ~~3.90624~~ 3.90687

4.10788

9.90845 50 59 41 ~~9.79843~~

~~9.90767~~ ~~51 2 41~~ 8.01423

9.74848

9.96656

9.87501 53 8 0 9.77812

~~9.87423~~ ~~53 10 58~~ ~~9.77762~~

146 = 2.16435	9.77762	1.94197 =	87.5
100 = 2.00000	9.77762	1.77762 =	59.9
60 = 1.77815	9.77762	1.55577 =	35.9
50 = 1.69897	9.77762	1.47659 =	30.0
41 = 1.61278	9.77762	1.39040 =	24.6
35 = 1.54407	9.77762	1.32169 =	21.0

121 Jan. 10 '81 d ~~7500~~ 7499 = ~~3.87506~~ 3.87500

4.10788

9.85875 54 ~~11~~ ~~42~~ ~~9.76117~~

9.76295

9.76711

9.96656

9.82451 56 ~~15~~ ~~40~~ ~~9.74461~~ cos v'

140 = 2.14613	9.74461	1.89074 =	77.8
105 = 2.02119	9.74461	1.76580 =	58.3
87 = 1.93952	9.74461	1.68413 =	48.3
46 = 1.66276	9.74461	1.40737 =	25.5
63 = 1.79934	9.74461	1.54395 =	35.0
30 = 1.47712	9.74461	1.22173 =	16.7

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133 (Same)

95 = 1.97772 9.74461 1.72233 = 52.8

128 Feb. 22 '81 d ~~7028~~ 7037 = ~~3.84745~~ 3.84739

213 = 2.32838 9.71567 2.04405 = 110.7

107 = 2.02938 9.71567 1.74505 = 56.6

36 = 1.55630 9.71567 1.27197 = 18.7

31 = 1.49136 9.71567 1.20703 = 16.1

9.81735 ~~44~~ 42 ~~8~~ 18 4.10789 ~~9.73956~~ 8.95534 9.73950

~~9.81773~~ 56 ~~44~~ 6

9.96656

~~9.78400~~ 9.78391 58 42 0 9.71560 ~~9.71567~~ cos v'

~~58 41 40~~

139 July 15 '81 d 5860 = 3.76790

278 = 2.44404 9.63314 2.07718 = 119.4

132 = 2.12057 9.63314 1.75371 = 56.7

82 = 1.91381 9.63314 1.54695 = 35.2

70 = 1.84510 9.63314 1.47824 = 30.1

4.10789 ~~9.66801~~ 9.66807

9.71090

~~9.70964~~ 62 ~~52 4~~ 48 0 ~~7.87579~~

9.96656

9.67746 64 33 11 9.63314 cos v'

145 Sept. 25 '81 d 5602 = 3.

No material

147 Oct 9 '81 d 5586 = 3.74710

108 = 2.03342 9.61177 1.64519 = 44.2 change

107 = 2.02938 9.61177 1.64115 = 43.8

100 = 2.00000 9.61177 1.61177 = 40.9

68 = 1.83251 9.61177 1.44428 = 27.8

17 = 1.23045 9.61177 0.84222 = 6.9

70 = 1.84510 9.61177 1.45687 = 28.6

32 = 1.50515 9.61177 1.11692 = 13.1

4.10789 ~~9.63921~~ 9.63924

9.68498 64 10 ~~7~~ 7.85499

9.96656

9.65152 65 51 ~~21~~ 26 9.61174 ~~9.61177~~ cos v'

148 (Same)

141 = 2.14922 9.61177 1.76099 = 57.7

104 = 2.01703 9.61177 1.62880 = 42.5

123 = 2.08991 9.61177 1.70168 = 50.3

53 = 1.72428 9.61177 1.33605 = 21.7

69 = 1.83885 9.61177 1.45062 = 28.2

13 = 1.11394 9.61177 0.72571 = 53.2

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170 Feb. 1 '82 d 5894 = 3.77041

4.10789

9.66252

9.96656

9.62918 64 23 22 9.63573 CO2 v'

76 = 1.88018 9.63574 1.51592 = 32.8

98 = 1.99123 9.63574 1.62697 = 42.4

66 = 1.81954 9.63574 1.45528 = 28.5

70 = 1.84510 9.63574 1.48084 = 30.2

171 (Sana)

88 = 1.94448 9.63574 1.58022 = 38.0

133 = 2.12385 9.63574 1.76959 = 58.8

133 = 2.12385 9.63574 1.75959 = 57.5

179 Sept. 18 '82 d 8007 = 3.90347

4.10789

9.79558

9.90294 51 21 0 8.01136

9.96656

9.86950 53 28 54 9.77458 CO2 v'

189 = 2.27646 9.77458 2.05104 = 112.5

88 = 1.94448 9.77458 1.71906 = 52.4

88 = 1.94448 9.77458 1.71906 = 52.4

51 = 1.70757 9.77458 1.48215 = 30.3

43 = 1.63347 9.77458 1.40805 = 25.6

16 = 1.20412 9.77458 0.97870 = 9.5

181, 182 Oct. 24 '82 d 8399 = 3.92423

4.10789

9.81644

9.93828 49 4 8 8.03212

9.81634

9.96656

9.90467 51 13 29 14 18 9.79663 CO2 v'

246 = 2.39094 9.79674 2.18768 = 154.1

80 = 1.90309 9.79674 1.69983 = 50.1

122 = 2.08636 9.79674 1.88310 = 76.4

81 = 1.90849 9.79674 1.70523 = 50.7

131 = 2.11727 9.79674 1.91401 = 82.0

24 = 1.53148 9.79674 1.32822 = 21.3

27 = 1.43136 9.79674 1.22810 = 16.9

34 = 1.53148 9.79674 1.32822 = 21.3

185 Oct. 31 '82 d 8478 = 3.92829

4.10789

9.82040

9.94526 48 36 4 8.03618

9.96656

9.91182 50 46 35 37 9.80095 CO2 v'

80 = 1.90309 9.80096 1.70405 = 50.6

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192

Dec. 6 '82 d 8800 = 3.94448 — 4.10789

9.97489 46 39 8.05237 — 9.83659

9.96656

9.94145 48 50 52 9.81826 cor v'

82 = 1.91381 9.81826 1.73207 = 54.0

63 = 1.79934 9.81826 1.61760 = 41.5

58 = 1.76343 9.81826 1.58169 = 38.2

55 = 1.74036 9.81826 1.55862 = 36.2

209 Jan. 4, '83 d 9100 = 3.95904 — 4.10789

0.00334 45 13 44 8.06693 — 9.85115 — 44 46 47

9.96656

9.96990 46 58 58 9.83393 cor v'

97 = 1.98677 9.83393 1.82070 = 66.2

75 = 1.87506 9.83393 1.70899 = 51.2

65 = 1.81291 9.83393 1.64684 = 44.3

17 = 1.23045 9.83393 1.06438 = 11.6

204 Jan. 11 '83 d 9200 = 3.96848 — 4.10789

0.02269 43 30 15 8.07637 — 9.86059 — 28 45

9.96656

9.99825 45 42 2 9.84411 cor v'

143 = 2.15534 9.84411 1.99945 = 99.9

88 = 1.94448 9.84411 1.78869 = 61.5

35 = 1.54407 9.84411 1.38818 = 24.4

54 = 1.73239 9.84411 1.57650 = 37.7

205 Jan. 18 '83 d 9335 = 3.97011 — 4.10789

0.02627 43 16 5 8.07800 — 9.86222

9.96656

9.99283 45 28 24 9.84587 cor v'

195 = 2.29003 9.84587 2.13590 = 136.7

206 (Pama)

79 = 1.89763 9.84587 1.74350 = 55.4

84 = 1.92428 9.84587 1.77015 = 58.9

56 = 1.74819 9.84587 1.59406 = 39.3

37 = 1.56820 9.84587 1.41407 = 25.9

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212
Feb. 23, '83 d 9709 = 3.98711 (9710 - 3.98722)

4.10788
9.87928

0.06484 60 ^ 40 45 16 ^ 8.09506 <
9.87934

9.96656

0.03090 ^ 42 56 46 9.86451
.03116 57 49 9.86438
cos v'

114 = 2.05690	9.86438	1.92128 =	83.4
77 = 1.88649	9.86438	1.75087 =	56.3
46 = 1.66276	9.86438	1.52714 =	33.7
23 = 1.36173	9.86438	1.22611 =	16.8
41 = 1.61278	9.86438	1.47716 =	30.0
11 = 1.04139	9.86438	0.90577 =	8.0

213
(Same)

44 = 1.64345	9.86438	1.50782 =	32.2
45 = 1.65321	9.86438	1.51759 =	32.9
38 = 1.57978	9.86438	1.44416 =	27.8

225
Aug. 28, '83 d 11380 = 4.05614

4.10788
9.94825

0.28502 ^ 27 25 9 ^ 8.16403

9.96656

0.25158 ^ 29 15 42 9.94071 cos v'

55 28 = 1.74036 1.57978	9.94071	1.68107 1.52049 =	48.0 33.2
71 = 1.85126	9.94071	1.79197 =	61.9

233
Oct. 3, '83 d (163) = 4.06584

4.10788
9.95795

0.33514 ^ 24 48 30 ^ 8.17373

9.96656

0.30170 ^ 26 31 46 9.95168 cos v'

134 = 2.12710	9.95168	2.07878 =	119.9
117 = 2.06819	9.95168	2.01987 =	104.7

235
Oct. 10, '83 d (1685) = 4.06762

4.10788
9.95973

0.34550 ^ 24 17 30 ^ 8.17551

9.96656

0.31206 ^ 25 59 15 9.95370

125 = 2.09691	9.95370	2.05061 =	112.4
61 = 1.78533	9.95370	1.73903 =	54.8

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249

Dec. 28'83 d. 12150 = 4.08458 163 = 2.21219 9.97305 2.18524 153.2

4.10789 71 = 1.85126 9.97305 1.82431 66.7

0.47287 18 36 15 9.99669 ^

~~0.92789~~ ~~6 44 0~~ ~~8.19247~~ 55 = 1.74036 9.97305 1.71341 51.7

9.96656 40 = 1.60206 9.97305 1.57511 37.6

0.43943 ^ 19 58 44 9.97305 cos v' 20 = 1.30103 9.97305 1.27408 18.8

22 = 1.34242 9.97305 1.31547 20.7

251

Jan. 4, 84 d 12200 = 4.08636 61 = 1.78533 9.97509 1.76042 57.6

4.10789 80 = 1.90309 9.97509 1.87818 75.5

9.97847 ^

0.49103 17 53 30 ~~8.19425~~ 31 = 1.49136 9.97509 1.46645 29.3

9.96656 26 = 1.41497 9.97509 1.39006 24.5

0.45759 ^ 19 13 19 9.97509 cos v' 22 = 1.34242 9.97509 1.31751 20.8

25 = 1.39794 9.97509 1.37303 23.6

~~253~~

Jan. 26'84 d 12350 = 4.09167 137 = 2.13672 9.98119 2.11791 131.2

4.10789 78 = 1.89209 9.98119 1.87328 74.7

9.98378 ^

0.55517 15 33 45 ~~8.19956~~

9.96656

0.52173 ^ 16 44 28 9.98119 cos v'

266

Feb. 2, 84 d d 12350 = 4. 122 = 2.08636 9.98119 2.06755 116.8

(Same) 57 = 1.75587 9.98119 1.73706 54.6

23 = 1.36173 9.98119 1.34292 22.0

49 = 1.69020 9.98119 1.67139 46.8

99 = 1.99564 9.98796 1.98360 96.3

266 Mar. 16, 84 d ~~12518~~ 12519 = 4.09755 7 48 = 1.68124 9.98796 1.66920 46.7

4.10789 26 = 1.41497 9.98796 1.40293 25.3

0.65634 26 30 ~~9.99964~~ ^

~~0.65544~~ 12 ~~28 0~~ ~~8.30642~~ 9.98968 < 68 = 1.83275 9.98796 1.82047 66.1

9.96656 46 = 1.66276 9.98796 1.65072 44.7

0.62290 ^ 24 11 4.98810

~~0.62200~~ 13 ~~25 47~~ ~~9.98796~~ cos v' 11 = 1.04139 9.98796 1.02935 10.7

10 = 1.00000 9.98796 0.98796 9.7

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268
(Same)

95 = 1.97772 9.98796 1.96568 = 92.4
23 = 1.36173 9.98796 1.34969 = 22.4
36 = 1.55630 9.98796 1.54426 = 35.0
40 = 1.60206 9.98796 1.59002 = 38.9
19 = 1.27875 9.98796 1.26671 = 18.5
29 = 1.46240 9.98796 1.45036 = 28.2
11 = 1.04139 9.98796 1.02935 = 10.7

272
Apr. 28'84 d 12660 = 4.10243

4.10788
9.99454
8.21032

0.79703 9 0 0
9.96656

0.76359 9 46 44 9.99365 Co2 v'

(This cannot be improved.)

48 = 1.68124 9.99365 1.67489 = 47.3
47 = 1.67210 9.99365 1.66575 = 46.3
39 = 1.59106 9.99365 1.58471 = 38.4
129 = 2.11059 9.99365 2.10424 = 127.1

273
Apr. 28'84 (Same)

189 = 2.27646 9.99365 2.27011 = 186.3
26 = 1.41497 9.99365 1.40862 = 25.6
36 = 1.55630 9.99365 1.54995 = 35.5

275
May 5'84 d 12680 = 4.10312
(m.g)

294
Jan. 18, '85 d 12675 = 4.10295

4.10788
9.99506
8.21084

0.81907 8 37 30
9.96656

0.78563 9 18 13 9.99425 Co2 v'

117 = 2.06819 9.99425 2.06244 = 115.5
55 = 1.74036 9.99425 1.73461 = 54.3
56 = 1.74819 9.99425 1.74244 = 55.3
34 = 1.53148 9.99425 1.52573 = 33.6
11 = 1.04139 9.99425 1.03564 = 10.9
38 = 1.57978 9.99425 1.57403 = 37.5
16 = 1.20412 9.99425 1.19837 = 15.8
6 = 0.77815 9.99425 0.77240 = 5.

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300 Feb. 23'85 d 12550 = 4.09864

4.10789
9.99075^
8.20653

0.68067 11 47 0

9.96656

0.64723^ 12 41 50 9.98925 CO2 v'

70 = 1.84510	9.98925	1.83435 =	68.3
53 = 1.72428	9.98925	1.71353 =	51.7
40 = 1.60206	9.98925	1.59131 =	39.0
25 = 1.39754	9.98925	1.38719 =	24.4

302 Mar. 2'85 d 12475 = 4.09594

4.10789
9.98805^
8.20383

0.62357 13 22 40

9.96656

0.59013^ 14 24 40 9.98611 CO2 v'

90 = 1.95424	9.98611	1.94035 =	87.2
39 = 1.59106	9.98611	1.57717 =	37.8
33 = 1.51851	9.98611	1.50462 =	32.0
17 = 1.23045	9.98611	1.21656 =	16.5
32 = 1.50515	9.98611	1.49126 =	31.0
12 = 1.07918	9.98611	1.06529 =	11.6

309 Apr. 14'85 d 12386 = 4.09328

4.10789
9.98539^
8.20117

0.57873 14 46 40

9.96656

0.54529^ 15 54 10 9.98305 CO2 v'

46 = 1.66276	9.98305	1.64581 =	44.2
30 = 1.47712	9.98305	1.46017 =	28.9
30 = 1.47712	9.98305	1.46017 =	28.9
32 = 1.50875	9.98305	1.48820 =	30.8
9 = 0.95424	9.98305	0.93729 =	8.7

310 (Same)

43 = 1.63347	9.98305	1.61652 =	41.4
39 = 1.59106	9.98305	1.57411 =	37.5
27 = 1.43136	9.98305	1.41441 =	26.0
14 = 1.14613	9.98305	1.12918 =	13.5
21 = 1.32222	9.98305	1.30527 =	20.2

315 May 27'85 d 12208 = 4.08665

4.10789
9.97876
8.19454

0.49406 17 46 30

9.96656

0.46062^ 19 5 53 9.97541 ~~47 9.97542~~

61 = 1.78533	9.97542	1.76075 =	57.6
72 = 1.85733	9.97542	1.83275 =	68.0
27 = 1.43136	9.97542	1.40678 =	25.5

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320 Nov. 29 '85 d 11030 = 4.04258

4.10789
9.93469
0.22747 30 38 26 8.15047
9.96656
0.19397 32 36 37 9.92550 cos v'
9.92548

161 = 2.20683	9.92548	2.13231 =	135.6
29 = 1.46240	9.92548	1.38788 =	24.4
35 = 1.54407	9.92548	1.46955 =	29.5
41 = 1.61278	9.92548	1.53826 =	34.5
11 = 1.04139	9.92548	0.96687 =	9.3
9 = 0.95424	9.92548	0.87972 =	7.6

327 Feb. 16 '86 d 10391 = 4.01666

4.10789
9.90877
0.14104 35 51 28 8.12455
9.96656
0.10760 37 58 12 9.89671 cos v'
9.89669

67 = 1.82607	9.89669	1.72276 =	52.8
30 = 1.47712	9.89669	1.37381 =	23.6
20 = 1.30103	9.89669	1.19772 =	15.8
40 = 1.60206	9.89669	1.49875 =	31.5
24 = 1.38021	9.89669	1.27690 =	18.9
16 = 1.20412	9.89669	1.10081 =	12.6

333 Feb. 23 '86 d = 10350 = 4.01494

4.10789
9.90705
0.13611 36 9 53 8.12283
9.96656
0.10267 38 47 22 9.89481 cos v'
9.89481

158 = 2.19866	9.89481	2.09347 =	124.0
57 = 1.75587	9.89481	1.65068 =	44.7
58 = 1.76343	9.89481	1.65824 =	45.5
20 = 1.30103	9.89481	1.19584 =	15.7
35 = 1.54407	9.89481	1.43888 =	27.5
34 = 1.53148	9.89481	1.42629 =	26.7

337 Mar. 24 '86 d 10050 = 4.00217

4.10789
9.89428
0.10173 38 27 2 42 18 8.11006
9.96656
0.06769 40 32 32 9.88077 cos v'
9.88077

174 = 2.24055	9.88077	2.12132 =	132.2
48 = 1.68124	9.88077	1.56201 =	36.5
77 = 1.88126	9.88077	1.73203 =	54.0
26 = 1.41497	9.88077	1.29574 =	19.8
12 = 1.07918	9.88077	0.95995 =	9.1

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343

Apr. 29, '86 $d_{9763} = 3.98914$

4.10789

9.88125^

0.06899^ 40 28 6^ 8.09703

9.96656

0.03555^ 42 39 28 9.86653 Co2 v'

101 = 2.00432	9.86653	1.87085^ =	74.2
51 = 1.70757	9.86653	1.57410^ =	37.5
88 = 1.94448	9.86653	1.81101^ =	64.7
63 = 1.79934	9.86653	1.66587^ =	46.3
27 = 1.43136	9.86653	1.29789^ =	19.9
23 = 1.36173	9.86653	1.22826^ =	16.9
25 = 1.39794	9.86653	1.26447^ =	18.4

345

May 6, '86 $d_{9687} = 3.98619$

4.10789

55 17 9.87830^

04

0.06228^ 40 54 21 8.09408

9.96656

0.02860^ 43 6 52 9.86331 Co2 v'

140 = 2.14613	9.86331	2.00944^ =	102.2
77 = 1.88649	9.86331	1.74980^ =	56.2
58 = 1.76343	9.86331	1.62674^ =	42.3
24 = 1.38021	9.86331	1.24352^ =	17.5
38 = 1.57978	9.86331	1.44309^ =	27.7
29 = 1.46240	9.86331	1.32571^ =	21.2

350

(Same)

114 = 2.05690	9.86331	1.92021^ =	83.2
126 = 2.10037	9.86331	1.96368^ =	92.0
82 = 1.91381	9.86331	1.77712^ =	59.9
35 = 1.54407	9.86331	1.40738^ =	25.5
32 = 1.50515	9.86331	1.36846^ =	23.3
15 = 1.17609	9.86331	1.03940^ =	10.9
19 = 1.27875	9.86331	1.14206^ =	13.9
10 = 1.00000	9.86331	0.86331^ =	7.3

358

Dec. 21, '86 $d_{7459} = 3.87268$

4.10789

9.76479^

9.85453^ 54 25 17 7.98057^

9.96656

9.82109^ 56 28 53 9.74210 Co2 v'

84 = 1.92428	9.74210	1.66638^ =	46.4
42 = 1.62325	9.74210	1.36535^ =	23.2
50 = 1.69897	9.74210	1.44107^ =	27.6
59 = 1.77085	9.74210	1.51295^ =	32.6

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359 Jan. 26, 87 d 7126 = 3.85285 90 = 1.95424 9.99441 1.94863^ = 88.8

4.10789 117 = 2.06819 9.99441 2.06260^ = 115.5

9.74496^

9.82521^ 56 13 51^ 7.96074

9.96656

9.79177^ 58 14 9.72137

9 10 30 9.99441 cos v'

368 Apr. 22 87 d 6350 = 3.80277 226 = 2.35411 9.99234 2.34645^ = 222.0

4.10789 110 = 2.04139 9.99234 2.03373^ = 108.1

9.69488^

9.75600^ 60 18 35^ 7.91066 57 = 1.75587 9.99234 1.74821^ = 56.0

9.96656 32 = 1.50515 9.99234 1.49749^ = 31.4

9.72256^ 62 10 9.66922

10 43 35 9.99234 cos v'

383 Mar. 31 88 d 5706 = 3.75633 97 = 1.98677 9.98998 1.97675^ = 94.8

4.10789 111 = 2.04532 9.98998 2.03530^ = 108.5

9.64844^

9.69638^ 63 34 17^ 7.86422 79 = 1.89762 9.98998 1.88761^ = 77.2

9.96656

9.66294^ 65 17 9.62131

12 15 35 9.98998 cos v'

384 Apr. 7 88 d 6745 = 2.75929 149 = 2.17315 9.99015 2.16334^ = 145.7

4.10789 129 = 2.11059 9.99015 2.10074^ = 126.1

9.65140^

9.70013^ 63 22 26^ 7.86718 55 = 1.74036 9.99015 1.73051^ = 53.8

9.96656 96 = 1.98227 9.99016 1.97242^ = 93.8

9.66669^ 65 6 9.62432

12 9 28 9.99016 cos v'

385 (Comet)

173 = 2.23805 9.99015 2.22820^ = 169.1

118 = 2.07188 9.99015 2.06203^ = 116.4

59 = 1.77085 9.99015 1.76100^ = 57.7

68 = 1.83251 9.99015 1.82266^ = 66.6

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392

May 20, 88 d 6000 = 3.77815 154 = 2.18752 9.64371 1.83123 = 67.8

4.10789 49 = 1.69020 9.64371 1.33391 = 21.6

9.72394 62 54 40 7.88604 30 = 1.47712 9.64371 1.12083 = 13.2

9.96656

9.69050 63 52 46 9.64371 cos v'

397 June 25, 88 d 6288 = 3.79858 148 = 2.17026 9.66487 1.83513 = 68.4

4.10789 121 = 2.08279 9.66487 1.74766 = 55.9

9.75047 60 37 22 7.90647 127 = 2.10380 9.66487 1.76867 = 58.4

9.96656 47 = 1.67210 9.66487 1.33697 = 21.7

9.71703 62 28 12 9.66485 cos v' 48 = 1.68124 9.66487 1.34611 = 22.2

45 = 1.65321 9.66487 1.31808 = 20.8

10 = 1.00000 9.66487 0.66487 = 4.6

398 (Same)

84 = 1.92428 9.66487 1.58915 = 38.8

87 = 1.93952 9.66487 1.60439 = 40.2

86 = 1.93450 9.66487 1.59937 = 39.8

43 = 1.63347 9.66487 1.29834 = 19.9

63 = 1.79934 9.66487 1.46421 = 29.1

402

Sept. 12, 88 d 6980 = 3.

(no material)

405 Apr. 29, 89 d 9319 = 3.96937 165 = 2.21748 9.84506 2.06254 = 115.5

4.10789

0.02465 43 22 30 9.86148

9.96656

9.99125 45 34 39 · 9.84506 cos v'

412 July 17, 89 d 10.200. = 4.00860 77 = 1.88649 9.88783 1.77432 = 59.5

4.10789 83 = 1.91908 9.88783 1.80691 = 64.1

0.11839 37 17 7 9.90071 50 = 1.69897 9.88783 1.58680 = 38.6

9.96656

0.08495 39 25 54 9.88783 45 = 1.65321 9.88783 1.54104 = 34.8

cos v

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419
Aug. 22, '89 d 10438 = 4.01862

4.10789
9.91073
0.14685 35 29 33 8.12651

9.96656
0.11341 37 36 9 9.89988 CO2 v'

99 = 1.99564 9.89887 1.89451 = 78.4
45 = 1.65321 9.89887 1.55208 = 35.7
57 = 1.75587 9.89887 1.65474 = 45.2
28 = 1.44716 9.89887 1.34603 = 22.2
15 = 1.17609 9.89887 1.07496 = 11.9

421
Aug. 29, '89 d 10503 = 4.02131

4.10789
9.91342
0.15485 34 59 33 8.12920

9.96656
0.12145 37 6 14 9.90185 CO2 v'

118 = 2.07188 9.90185 1.97373 = 94.1
69 = 1.83885 9.90185 1.74070 = 55.0
76 = 1.88081 9.90185 1.78266 = 60.6
98 = 1.99123 9.90185 1.89308 = 78.2

424
Apr. 15, '90 d 12195 = 4.08618

4.10789
9.97829
0.48908 17 58 0 8.19407

9.96656
0.45564 19 18 8 9.97488 CO2 v'

57 = 1.75587 9.97488 1.73075 = 53.8
123 = 2.08991 9.97488 2.06479 = 116.1
58 = 1.76343 9.97488 1.73831 = 54.7
18 = 1.25527 9.97488 1.23015 = 17.0
15 = 1.17609 9.97488 1.15097 = 14.2
36 = 1.55630 9.97488 1.53118 = 34.0
7 = 0.84510 9.97488 1.81998 = 6.6

426
May 21, '90 d 12371 = 4.
(no material)

437
Sept. 20, '90 d ~~12741~~ 12740 = 4.10517 ~~4.0~~

0.95242 013 6 ~~42~~ 20 4.10789
0.96052 6 150 8.21307
9.99728

9.96656
0.91669 6 54 9.99684 = log. corr.
0.91898 6 52 18 9.1875
9.99687 CO2 v'

94 = 1.97313 9.99687 1.97000 = 93.3
64 = 1.80618 9.99687 1.80305 = 63.5
36 = 1.55630 9.99687 1.55317 = 35.7
29 = 1.46240 9.99687 1.45927 = 28.8
16 = 1.20412 9.99687 1.20099 = 15.9
33 = 1.51855 9.99687 1.51538 = 32.8

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Sat III

Uncorrected

Re No. of Eclipse	5-10	10/15	15/20	20/25			
15	95	64	22				
27	111	40	47	24	43	22	7
45	104	21	31	29			
64	160	30	14	28	26	15	
65		64	41	25	20		
68	56	35	51	22	29	21	17 22
81		27	49				
95	103	50	52	39			
105	[98]	146	38	46			
116	100	70	90	52	23		
125	146	100	60	50	41	35	
133	95						
148	141	104	123	53	69	13	
171	88	133	133				
182	122	81	131	34	27	34	
200	97	75	65	17			
201	143	88	35	54			
206	79	84	56	37			
213			44	45	38		
232	134	117					
259	137	78					
261	122	57	23	49			
268	95	23	36	40	19	29	11
273	189	26	26				
300	70	53	40	25			
302	90	39	33	17	32	12	
310	43	39	27	14	21		
	2520	1644	1277	704	388	181	35 27 22

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Corrected

Re

15 93 62 22

27 109 39 46 24 42 22 7

45 101 20 30 28

64 150 28 13 26 24 14

65 - 60 38 27 19

68 52 33 48 21 27 20 16 19

81 25 45

95 73 35 37 28

105 [ ] 97 26 31

116 61 43 56 02 14

125 88 60 36 30 25 21

133 53

148 58 42 50 22 28 53

171 38 59 58

182 76 51 82 21 17 21

200 66 51 44 12

201 100 62 24 38

206 55 59 39 26

213 32 03 28

232 120 105

259 131 75

261 117 55 22 47

268 92 22 35 39 18 28 11

273 186 26 36

300 68 52 39 24

302 87 38 22 16 31 12

310 41 38 26 14 20

2015 1237 914 599 293 191 34 19

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Sat. III.

Re

Uncorrected

No. of Eclipse	~~5~~ 10	10 to 15	15 to 20	20 to 25
337	174	48	71	26 12
343	101	51	88	63 27 23 25
350	114	126	82	35 32 15 19 10
359	90	117		
368	226	110	57	32
383	97	111	79	
385	173	118	59	68
398	84	87	86	43 63
405	165			
412	77	83	50	45
419	99	45	57	28 15
	1400	896	629	340 149 38 44 10
	3920	2540	1906	1044 537 219 79 32
	34	35	33	28 17 10 5 2
	115.3	72.6	57.8	37.3 31.6 21.9 15.8 16.0

Dei

1	109	65 50
44	[126 ~~38~~ ~~103~~]	31 28 22 15 18 13 9
58	50	54
71	97	
79	329	74 36 47 37
97	135	91 69 42 34 32 23 32
107	177	126 52 45 46 36 8 42 28
131	140	105 87 46 63 30
138	213	107 36 31
139	278	132 82 70
147	108	107 100 68 17 70 32
170	76	98 66 70
179	189	88 88 51 43 16
181	246	80
	2447	1127 666 501 268 206 78 92 41 9

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Ne

337 132 36 54 20 9

343 74 38 65 46 20 17 18

350 83 52 60 26 23 11 14 7 46 23 28 33

359 89 116

368 222 108 56 31

383 95 108 77

385 169 115 58 66

398 39 40 40 20 29

405 116

412 60 64 39 35

419 78 36 45 22 12
1157 753 494 266 93 28 32 7
3172 1990 1408, 805, 386, 21966, 26

933 667 421 288 227, 218, 132, 130

1 ~~106~~ 103 62 47

44 [- - -] 30 27 21 14 17 13 9

58 48 52

71 88

79 300 68 33 43 34

97 94 64 48 29 24 22 16 22

107 116 82 34 29 30 24 5 3 2

131 78 58 48 26 35 17

138 111 56 19 16

139 119 57 35 30

147 44 44 41 28 7 29 13

170 33 42 28 30

179 112 52 52 30 26 10

181 154 50
1400 687 379 285 291 193 123 48 42 15 9

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185 80

192 82 63 58 55

205 195

212 114 77 46 23 41 11

225 55 71

235 125 61

249 163 71 55 40 20 22

251 61 80 31 26 22 25

266 99 48 26 68 46 11 10

(272 sep)
294 117 55 56 34 11 38 16 6

309 46 30 30 32 9

315 61 32 27

320 161 29 35 41 11 9

327 67 30 20 40 24 16

333 158 57 58 20 35 34

349 140 77 58 24 38 29

358 84 42 50 59

384 149 129 55 96

392 154 49 30

397 148 121 127 47 48 45 10

421 118 69 76 98

424 [57] 123 58 18 15 36 7

437 94 64 36 29 16 33

2310 1550 926 744 366 311 82 6

445 4,2677, 159 8,1245,634.517,130,98,41,9

34 33 29 55.1 27 29 34 18 9 120

1360 81.1 ~~549~~ 46.1 31.7 28 14.4 ~~2445~~ 20.5 9.0

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185 51

192 54 42 38 36

205 137

212 83 56 34 17 30 8

225 48 62

235 112 55

249 153 67 62 38 19 21

251 58 76 29 24 21 24

266 96 47 25 66 45 11 10

272
294 116 54 55 34 11 38 16 6

309 44 29 29 31 9

315 58 68 26

136 24 29 24 9 8
320 ~~136~~ ~~24~~ ~~29~~ ~~34~~ ~~9~~ ~~8~~

327 53 24 16 32 19 13

333 124 45 46 16 28 27

349 102 56 42 18 28 21

358 46 23 28 33

384 146 126 54 94

392 68 22 13

397 68 56 58 22 22 21 5

421 94 55 61 78

424 [54] 116 55 17 14 34 7

437 93 64 36 29 16 33

1940 1279 721 674 296 260 46 6
3343, 1966, 1100, 905, 479, 383, 94, 48, 15, 9

98.3 59.6 37.9 33.5 24.0 21.3 10.4 12.0 7.5 9.0

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Weighting the Observations.

Desafr. I

	No	Mean	log M	log diff o. sin	prod fico.		log of no.	log of wt.
5-10	89	8469	1.66932	$\bar{1}$.56585	2.10347	126.903	1.94939	0.49693
10-15	84	260	1.41497	$\bar{1}$.38202	2.03295	107.868	1.92428	0.76686
15-20	58	220	1.34242	$\bar{1}$.22272	2.11970	131.733	1.76343	1.14145
20-25	49	140	1.14613	$\bar{1}$.07188	2.07426	118.646	1.69020	1.45194
25-30	24	113	1.05308	$\bar{2}$.92942	2.12366	132.942	1.38021	1.73719
30-35	6	11.2	1.04922	$\bar{2}$.78633	2.26389	183.608	0.69897	2.01745
35-40	3	7.0	0.84510	$\bar{2}$.65321	2.19189	155.555	0.47712	2.29469

Reafr I

5-10	107	443	1.64640	$\bar{1}$.56585	2.08055	120.378	2.02938	0.49693
10-15	95	26.7	1.42651	$\bar{1}$.38202	2.04449	110.787	1.97772	0.76686
15-20	76	17.1	1.23300	$\bar{1}$.22272	2.01028	102.399	1.88081	1.14145
20-25	52	13.8	1.13988	$\bar{1}$.07188	2.06800	116.950	1.71600	1.45194
25-30	22	12.7	1.10380	$\bar{2}$.92942	2.17438	149.410	1.34242	1.73719
30-35	11	9.2	0.96379	$\bar{2}$.78633	2.17846	150.821	1.04139	2.01745
35-40	6	5.3	0.72428	$\bar{2}$.65321	2.07107	117.765	0.77815	2.29469

Desafr. II

5-10	42	43.1	1.63448	$\bar{1}$.56585	2.06863	117.119	1.62325	0.49693
10-15	38	31.1	1.49276	$\bar{1}$.38202	2.11074	129.044	1.57978	0.76686
15-20	32	23.1	1.36361	$\bar{1}$.22272	2.14089	138.322	1.50515	1.14145
20-25	21	18.6	1.26951	$\bar{1}$.07188	2.19763	157.626	1.32222	1.45194
25-30	13	16.1	1.20683	$\bar{2}$.92942	2.27741	188.413	1.11394	1.73719
30-35	3	12.7	1.10380	$\bar{2}$.78633	2.31847	208.195	0.47712	2.01745
35-40								

Reafr II

5-10	43	43.8	1.64147	$\bar{1}$.56585	2.07562	~~119.019~~ 119.	1.63347	0.49693
10-15	44	28.1	1.44871	$\bar{1}$.38202	2.06669	116.597	1.64345	0.76686
15-20	35	21.8	1.33846	$\bar{1}$.22272	2.11574	130.539	1.54407	1.14145
20-25	27	15.0	1.17609	$\bar{1}$.07188	2.10421	127.118	1.43136	1.45194
25-30	17	18.0	1.25527	$\bar{2}$.92942	2.32585	211.762	1.23045	1.73719
30-35	5	17.6	1.24551	$\bar{2}$.78633	2.46018	288.520	0.69897	2.01745
35-40	2	13.5	1.13033	$\bar{2}$.65321	2.47712	300.000	0.30103	2.29469
40-45	1	9.0	0.95424					

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Sum of two fro. cols.

~~Prod. four.~~	same as col. 5				
2.44632	2.10347	4.54979	35,465.	279.5	
2.69114	2.03295	4.72409	52,977.	491.1	
2.90488	2.11970	5.02458	105,820.	803.3	
3.14214	2.07425	5.21639	164,590.	1387.2	
3.11740	2.12366	5.24106	174,210.	1310.4	
2.71642	2.26389	4.98031	95,567.	520.5	
2.77181	2.19189	4.96370	91,981.	591.3	5.85770~~03~~
			720,610.	5383.3	3.73102
2.52631	2.08055	4.60686	40,445.	336.0	2.12668 133.87
2.74458	2.04449	4.78907	61,528.	555.4	
3.02226	2.01028	5.03254	107,780.	1052.6	
3.16794	2.06800	5.23594	172,160.	1472.1	
3.07961	2.17438	5.25399	179,470.	1201.2	
3.05884	2.17846	5.23730	172,700.	1145.1	
3.07284	2.07107	5.14391	139,290.	1182.6	5.941~~49~~~~98~~
			873,373.	6945.0	3.84167
2.12018	2.06863	4.18881	15446.	131.9	2.09953 125.73
2.34664	2.11074	4.45738	28667.	222.1	129.8 130
2.64660	2.14089	4.78749	61304.	443.2	
2.77416	2.19763	4.97179	93711.	594.5	
2.85113	2.27741	5.12854	134440.	709.8	
2.49457	2.31847	4.81304	65020.	312.3	5.60052~~47~~
			398,588.	2413.8	3.38270
2.13040	2.07562	4.20602	16.070.	135.0	2.21782 165.3
2.41031	2.06669	4.47700	29,992.	257.2	
2.68552	2.11574	4.80126	63,279.	484.8	
2.88330	2.10421	4.98751	97,165.	764.4	
2.96764	2.32586	5.29349	196,560.	928.2	
2.71642	2.46018	5.17660	150,180.	520.5	5.82704~~99~~
2.59572	2.47712	5.07284	118,260.	394.2	3.54212
			671,506.	34843	2.28493 192.72

3.57145
178.72
180

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Vers Sin Corresponding to Mag.

Magn		Magn	
0.0	266-237	2.9	32-31
.1	236-212	3.0	30-29
.2	211-193	3.1	28-27
.3	192-177	3.2	26-25
.4	176-163	3.3	24
.5	162-151	3.4	23-22
.6	150-140	3.5	21
.7	139-132	3.6	20
.8	131-121	3.7	19
.9	120-113	3.8	18-17
1.0	112-105	3.9	16
1.1	104-98		
1.2	97-92		
1.3	91-86		
1.4	85-80		
1.5	79-75		
1.6	74-70		
1.7	70-66		
1.8	65-62		
1.9	61-58		
2.0	57-54		
2.1	53-51		
2.2	50-48		
2.3	47-45		
2.4	44-42		
2.5	41-39		
2.6	38-37		
2.7	36-35		
2.8	34-33		

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130 × Vers Sin Corresponding (For use in getting $\frac{130}{1}$ vers sin
to Mag. from mag.
Mag.

Mag.		Mag.	
0		2.9	32
.1	223	3.0	30
.2	202	3.1	28
.3	184	3.2	26
.4	170	3.3	25
.5	157	3.4	23
.6	145	3.5	22
.7	135	3.6	20
.8	126	3.7	19
.9	117	3.8	18
1.0	109	3.9	17
1.1	104	4.0	16
1.2	95		
1.3	89		
1.4	83		
1.5	78		
1.6	73		
1.7	68		
1.8	64		
1.9	60		
2.0	56		
2.1	52		
2.2	49		
2.3	46		
2.4	43		
2.5	41		
2.6	38		
2.7	36		
2.8	34		

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Nr.

Computation to obtain const. of seconds for reducing eclipses of Sat. I

1878

List of Ecl. of 1st Sat in 1st year

2 Dec. ^
6 " ^
6 Re. ^
7 " ^
8 " ^
9 " ^
11 " ^
13 " ^
17 " ^
18 " ^
21 " ^
22 " ^
23 " ^
24 " ^
28 " ^
29 " ^
31 " ^
32 " ^
33 " ^
34 " ^

2

-78 +0.9 +11 117 104 +26 -3
55 +13 15 89 78 +23 -6
31 +17 19 28 60 +29 0
-08 23 25 46 41 +33 +4
+11 32 24 26 23 +34 +5
+29. +9 -9 / 5 ±3.6

5

-94 +10 109 +15 -3
75 14 83 +08 -10
53 18 64 +9 -9
37 19 60 +23 +5
-20 +20 56 +36 +18
+18.2 +23-22 / 5 ±.80

6

112 +15 78 +34 -14
128 +13 89 39 -9
143 +11 104 39 -9
155 +13 89 66 +18
177 +9 117 60 +12
476 +30-32 / 5
±12.4

7

+86 -5 +15 78 +8 +1.6
102 -11 +9 117 -15 -7 -23
114 -10 +1.0 109 +5 +1.3
125 -15 +.5 157 -32 -2.4
142 +46-43 / -8.5 ±1.4

8

+16 73 +16
-57 -4 260 -317 -56 -130 -34
+23 46 +14
-32 +3 +84 -216 +45 -78 +18
+15 78 +65
-13 -5 260 -273 -12 -91 +5
+12 95 +
+4 -8 260 -256 +5 -91 +5
+10 109
+18 +10 260 -242 +19 -91 +5
-260.8 +69-68 / 5 ±27.4 -96.2 +33-34 / 5 ±12.4

9

+20 +20 56 -36 +8
68 -5 6 145 -77 -33
108 -6 7 135 -27 +17
151 -9 4 170 -19 +25
197 -15 -2 260 -63 -19
-44.4 +50-62 / 5 ±20.4

11

-123 +9 117 -6 -14 -21 +4.5
-94 +1.1 104 +10 +2 -11 +4.1 15 -26 -2
-75 +1.4 83 +8 0 -1 +30 30 -31 -7
-53 +1.8 64 +11 +3 +10 +28 34 -24 0
-37 +20 66 +19 +11 +21 +26 38 -17 +7
+8.4 +16-14 / 5 ±0.6 -24.5 +7-9 / 4 ±4.0

13

+6 +40 16 -10 -7
19 33 25 -6 -3
40 25 41 -1 +2
53 20 56 -3 0
67 19 60 +7 +10
-2.6 +12-10 / 5 ±4.4

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Yr.

17

+20 +23 46 -26 +8
+35 16 73 -38 -4
+48 15 78 -30 +4
+62 13 89 -27 +7
+79 0.8 126 -47 -13
-336 +19-17/5

±7.2

18

+66 +13 89 -23 -24
105 +6 145 -40 -41
145 8 126 +19 +18
179 4 170 +9 +8
224 3 184 +40 +39
+1.0 +65-65
26.0

2

-66 +11 104 38 -2
-43 15 78 35 -6
-19 19 60 41 +1
+2 25 41 43 +3
20 34 23 43 +3
40.0
+7-7/5 ±2.8

21

+15 +29 32 -16 +8
33 19 60 -27 -3
49 18 64 -15 +9
68 10 109 -41 -17
86 10 109 -23 +1
-244 +18-20/5
±7.6

22

+50 13 89
72 .6 145
95 .4 170
120 .3 184
144 .2 201 -57
172 .1 223 -51
202 .2 202 0
226 .2 202 +24
264 .1 223 +41

5

-32 +6 145 +13 +20
+3 +14 83 +86 -3 -3
+24 +20 56 +80 +3 +8
+930
+20-20/3
±13.3

23

+33 25 -28 -12
35 22 -14 +2
+16 29 32 -16 0
+27 27 36 -9 +7
+34 23 46 -12 +4
-15.8 +13-12/5 ±5.0

22

50 +1.3 89 -39 +23
72 +0.6 145 -73 -11
95 +0.4 170 -75 -13
120 +0.3 184 -64 -2
144 +0.2 202 -58 +4
-61.8 +27-26/5
±10.6

28

+44 +38 18 +26 -14
69 29 32 +37 -3
87 24 43 +44 +4
106 19 60 +46 +6
118 16 73 +45 +5
39.6

24

-160 +.3 184 344
-120 -.6 [260]
-86 -.4 [260]
-50 +.1 223 273
group +4 +85 .0 [260]

28

+44 +1.2 95 -51 +76
69 +.3 184 -115 +12
87 -.2 [260] -173 -46
106 -.7 [260] -154 -27
118 -1.0 [260] -142 -15 +88-88
±35.2

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38

Sat 1

Yr.

34

38	+2.2	49	-11	+5	+69	+1.4	83	-14	+29
53	2.0	56	-3	+13	72	+1.0	109	-37	+6
70	1.2	95	-25	-9	100	+.5	157	-57	≠14
85	1.1	104	-19	-3	120	+.3	184	-64	-21
102	.8	126	-24	-8	128	+.4	170	-42	+1

-16.4 +18-20/5 ± 7.6

29

-42.8 +26-35/5 ≠14.2

31

+27	+2.5	41	-14	-15
38	+3.0	30	+8	+7
49	+2.3	46	+3	+2
58	+1.9	60	-2	-3
68	+2.0	56	+12	+11

+1.2 +20-18/6 ≠7.6

List of Ecl. of Sat 1 for 1879

32

+25	+12	95	-70	-7
35	13	89	-54	+9
48	7	135	-87	-24
63	9	117	-54	+9
75	8	126	-51	+12

-6.2 +20-31/5 ≠12.5

33

+20	+2.3	46	-26	+5
34	+1.8	64	-30	+1
48	1.5	78	-30	+1
58	1.3	89	-31	0
68	1.1	104	-36	-5

-30.6 +7-5/5 ± 2.4

39 Dec ^
41 " ^
46 " ^
47 " ^
54 " ^
55 " ^

1879

39

56 "	-44	+.7	135	+91	+19
57 "	-30	1.1	104	74	+2
60 "	15	1.6	73	58	-14
61 Ne	4	1.9	60	56	-16
63 "	+7	1.6	73	80	+8
66 "	[+17	-7.4]			

71.8 +29-30/5 ± 11.8

41

-23	+2.1	52	+29	-1.8
-10	+1.9	60	+50	+3
0	+2.2	49	+49	+2
+8	+2.4	43	+51	+4
[17	-7]			
26	+2.9	32	+58	+11

47.4 +20-18/5 ≠7.6

67 "
72 "
73 "
75 "
77 "
78 "
83 "
84 "
86 "
88 "

46

-35	+1.7	68	+33	-1
24	+1.9	60	+36	+2
13	+2.4	43	+30	-4
-7	+2.7	36	+29	-5
+11	+3.0	30	+19	+7

33.8 +9-10/5 ± 3.8

47

-109	+13	89	-20	-11
94	15	78	-16	-7
72	21	52	-20	-12
-21	37	19	-2	+7
+5	47	10	+15	+24

-8.6 +31-30/5 ± 12.2

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Jrr. Sat 1

54

			+3	-47	+8	126	+79	0
-36	+8	126	+90	-24	+11	104	+80	+1
			+1					
-16	+11	104	+88	-7	15	78	+71	-8
			-9					
0	15	78	+78	+7	15	78	+85	+6
			+6					
+15	15	78	+93	23	20	56	+79	0
			-1					
+30	20	56	+86	37	[-7]			

54

+87.0 $\frac{+10-10}{5} \pm 4$

+78.8 $\frac{+7-8}{5} \pm 3.0$

55

-54	+15	78	+24	+1
42	16	73	+31	+8
29	21	52	+23	0
15	25	41	+26	+3
+9	25	22	$\frac{+13}{+23.4}$	$\frac{-10}{+12-10}$

$\frac{+12-10}{5} \pm 4.4$

56

57

60

61

63

66

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Sat IV (see pp 607)

	Re Nos	Re Δ± / n values uncor	Re Δ± / n values cor.	Dis Nos	Dis Δ± / n values uncor.	Dis Δ± / n values cor.	IV Re ÷497.4	IV Dis ÷513.9		
(5-10	9	140.9	101.4	10	174.1	108.8	28.3	33.9	-7.2	-1.6
10-15	8	110.6	72.4	7	120.1	76.4	22.2	23.4	+.6	±.6
15-20	6	95.2	55.8	7	99.0	77.7	19.1	19.3	-1.6	+1.8
20-25	5	90.4	64.8	5	65.2	57.6	18.2	12.7	+4.7	±.8
25-30	3	60.3	25.3	4	55.5	40.8	12.1	10.8	+1.5	+?
30-35				2	49.0	40.0		9.5		±4
35-40				1	29.	24.0		5.6		±.6
40-45				1	43.	35.0		8.4		+
45-60				1	19	16.0		3.7		
		497.4			513.9			99.9		

Sat III (see pp 24-29)

	Re Nos.	Re Δ± / n values uncor.	Re Δ± / n values cor.	Dis Nos	Dis Δ± / n values uncor.	Dis Δ± / n values cor.				
5-10	34	115.3	93.3	34	131.1	98.3	36.7	38.0	+1?	+2.5
10-15	35	72.6	56.7	33	81.1	59.6	23.1	23.5	+3	+.7
15-20	33	57.8	42.7	29	54.9	37.9	18.4	15.9	+9	-1.6
20-25	28	37.3	28.8	27	46.1	33.5	11.8	13.4	-17	-.1
25-30	17	31.6	22.)	20 ~~24~~	31.7	24.0	10.0	9.2	-.6	-1.4
30-35	10	21.9	21.9	18	28.7	21.3	7.0	8.3	-2.9	+.6
35-40	5	15.8	13.2	9	14.4	10.4	5.0	4.2	-1.2	±2.0
40-45	2	16.0	13.0	4	24.5	12.0	5.1	7.1	-2.0	±0
				2	20.5	7.5		6.0	.	+2.3
				1	9.0	9.0		2.6		-1.0
		314.6	244.2		344.9					

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Reductions of Time Intervals of Eclipses by Means of Empirical Curve (factor 101)

Satellite I Opp. of 1885

318

-78	+1.3	-26	-104	+17
70	1.2	22	92	+5
62	1.1	18	80	-7
55	1.2	22	77	-10
48	1.5	33	81	-6

-86.8 $\frac{+22-23}{5}$

± 9.0

319

-117	+.2	+.46	-71	-27
65	.7	+3	62	-15
29	.9	-9	38	+9
+2	1.1	-18	16	+31

-46.8 $\frac{+40-42}{4}$

± 26.5

321

+6	+1.0	-.13	-7	+18
14	1.8	-.42	-28	-3
21	2.1	-.61	-30	-5
28	2.3	-.56	-28	-3
36	2.8	-.66	-30	-5

-24.1 $\frac{+18+6}{5}$

± 6.8

323

-22	+1.3	-26	-48	-4
-16	1.4	-29	-45	-1
-9	1.5	-33	-42	+2
4	+1.7	-39	-43	+1
+4	1.9	-45	-41	+3

-43.8 $\frac{+6-5}{5}$

± 2.2

324

-58	+.8	-3	-61	-11
48	.7	+3	-45	+5
38	1.0	-13	-51	-1
24	1.3	-26	-50	0
-9	1.5	-33	-42	+8

-49.8 $\frac{+13-12}{5}$

± 5.0

326

+18	+2.3	-.56	-.38	-2
24	2.6	-.62	-38	-2
30	2.9	-.68	-38	-2
36	3.0	-.70	-34	+2
44	4.0	-.84	-30	+6

-35.6 $\frac{+8-6}{5}$

± 2.8

330

+8	1.4	-.29	-21	+3
14	1.8	-.42	-28	-4
23	2.0	-.48	-25	-1
32	2.3	-.56	-24	0
39	2.6	-.62	-23	+1

-24.2 $\frac{+4-5}{5}$

± 1.4

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Yr. Sat I

331

-26	+1.3	-26	-52	-6
18	1.6	-36	54	-8
10	1.5	-33	43	+3
-2	1.7	-39	41	+5
+6	2.0	-48	-42	+4

-46.4 +12-14 / 5

±5.2

334

-122	+16	-13	-135	-6
114	1.1	-18	132	-3
106	1.1	-18	124	+5
96	1.6	-36	132	-3
-82	1.7	-39	121	+8

128.8 +13-12 / 5

±5.0

335

-37	+1.3	-26	-63	-9
29	1.2	-22	-51	+3
21	1.5	-33	-54	0
14	1.8	-42	-56	-2
6	1.8	-42	-48	+6

-54.4 +9-11 / 5

±4.0

yet Reafs.

336

+98	+.6	+10	+88	-12
114	.5	+16	98	-2
126	.4	+24	102	+2
134	.3	+34	100	0
144	.3	+34	110	+10

99.6 +12-14 / 5

±5.2

339

+212	+.3	+34	+178	+8
228	0	+101	+127	-43
245	+.3	+34	+211	+40
260	0	+101	+159	-11
276	-.2	+101	+175	+5

170 +53-54 / 5

±21.4

341

+14	1.9	-45	+59	+15
27	.8	-3	30	-14
37	.8	-3	40	-4
45	.7	+3	43	-1
53	.8	-3	50	+6

+44.4 +21-19 / 5

±.8

342

+6	+2.7	-64	+70	-4
12	+2.5	-60	+72	-2
18	+2.3	-56	+74	0
24	+2.1	-51	+75	+1
29	+2.0	-48	+77	+3

+73.6 +4-6 / 5

±2.0

346

+34	+1.5	-33	+67	-1
40	1.0	-13	+53	-15
46	1.1	-18	+64	-4
52	1.3	-26	+78	+10
60	1.1	-18	+78	+10

+68.0 +20-20 / 5

±8.0

347

+1	+3.3	-75	+76	+3
8	2.8	-66	+74	+1
14	2.5	-60	+74	+1
20	2.2	-53	+73	0
28	+1.7	-39	+67	-6

+72.8 +5-6 / 5

±2.2

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Yr.

351

-2	+34	-76	+74	-6
+6	32	-73	+79	-1
12	30	-70	+82	+2
18	26	-62	+80	0
26	25	-60	+86	+6

+80.2 $\frac{+8-2}{5}$

±3.0

352

+6	+27	-64	+70	-3
14	24	-58	+72	-1
22	21	-51	+73	0
30	18	-42	+72	-1
37	17	-39	+76	+3

+72.6 $\frac{+3-5}{5}$

±1.6

353

+7	+2.8	-66	+73	+17
13	1.9	-45	+68	+12
20	.9	-9	+29	-27
26	12	-22	+48	-8
34	13	-26	+60	+4

+55.6 $\frac{+33-35}{5}$

±13.6

354

+38	+.7	+3	-21	+35	-22	+10
56	+.1	+63	+29	[-7]		17
70	+.6	+10	-14	+60	+3	24
82	+.6	10	-4	+72	+15	30
94	+.3	34	+10	+60	+3	37

+24 +56.8 $\frac{+21-22}{4}$

±10.8

356

+2.7	~~-64~~	~~+74~~	~~-7~~	~~-5~~
2.6	~~-62~~	~~+79~~	~~-1~~	~~-5~~
2.5	~~-60~~	~~+84~~	~~+3~~	~~+4~~
2.4	~~-58~~	~~+88~~	~~+7~~	~~+7~~
1.9	~~-46~~	~~+82~~	~~+1~~	~~-4~~

~~+8.44~~ ~~$\frac{+11-9}{5}$~~

+10.2 ~~±4.0~~ $\frac{+11-10}{\sqrt{}}$

±1.~

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Satellite I. 1885-6.

Reduction of Time Intervals by Empirical Curve. (factor 135)

I+3 II — 318

-78	+1.3	-.34	-112	-18
70	1.2	-.29	-99	-5
62	1.1	-.23	-85	+9
55	1.2	-.29	-84	+10
48	1.5	-.44	-92	+2

-94.4 +21-23/5

±8.8

I+3 II — 319

-117	+.2	+62	-55	-11
-65	.7	+05	-60	-18
-29	.9	-12	-41	+2
+2	1.1	-23	-21	+23

-44.2 +26-27/4

±13.8

I+3 II — 321

~~+6~~	~~+1.0~~	~~-18~~	~~-12~~	~~+24~~ ~~28~~
14	1.8	-6)	-43 ~~-33~~	~~+3~~ ~~+3~~ +4
21	2.1	-68	-47	~~+1~~ ~~+7~~ 0
28	2.3	-)4	-46 ~~-86~~	~~0~~ ~~+6~~ +1
+26	28	-89	-53	~~+7~~ ~~+13~~ -6

~~-362~~ ~~127 28~~ / 5
~~-201~~
~~-462~~ ~~+11.0~~ +5-6
-47.2 ~~29 28~~ / 5 K
~~±11.4~~ ±2.8

I+3 II — 323

-22	+1.3	-34	-56	-1
16	1.4	-39	-55	0
9	1.5	-44	-53	+2
-4	1.7	-52	-56	-1
+4	1.9	-60	-56	-1

-55.2 +2-3/5

±1.0

I+3 II — 324

-58	+8	-4	-62	-8
48	.7	+5	~~-44~~ ~~48~~	11 ~~+8~~
38	1.0	-18	-56	-2
24	1.3	-34	-58	-4
-9	1.5	-44	-53	+1

-54.4 +12-14/5

±4.8

I+3 II — 326

+18	+2.3	-.74	-56	-4
24	2.6	-.83	-59	-1
30	2.9	-.91	-61	+1
36	3.0	-.94	-58	-2
44	4.0	-1.12	-68	+8

-60.4 +9-7/5

±3.2

I+3 II — 330

+8	1.4	-39	-31	+9
14	1.8	-57	-43	-3
23	2.0	-64	-41	-1
32	2.2	-74	-42	-2
39	2.6	-83	-44	-4

-40.2 +9-10/5

±3.8

I+3 II — 331

-26	+1.3	-34	-60	-2
18	1.6	-48	-66	-8
10	1.5	-44	-54	+4
2	1.7	-52	-54	+4
+6	2.0	-64	-58	0

-58.4 +8-10/5

±3.6

I+3 II — 334

~~-121~~ ~~+122~~	+1.0	-18	~~-139~~ ~~146~~	-3
~~-113~~ ~~+114~~	1.1	-23	~~-136~~ ~~137~~	0
~~-105~~ ~~+106~~	1.1	-23	~~-128~~ ~~129~~	+8
~~-95~~ ~~96~~	1.6	-48	~~-143~~ ~~144~~	-7
~~-81~~ ~~82~~	1.7	-52	~~-133~~ ~~134~~	+3

~~1368~~ ~~111 16~~ / 5
~~-135.2~~
~~±42~~

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Reap.

1 – 3

336 R

+98 +3 +6 +13 +53 +85 -7
114 +5 +22 +92 0
126 +5 +2 +104 +1
134 +6 +33 +101 -3
144 +6 +33 +89 +7

91.6 +8 -10 / 5
+8.6
To be read graphically. ±3.6

1 – 3

"omit." 339 R

+212 +3 +45 167 +9
228 0 135 [93]
245 +3 45 200 +42
260 0 135 125 -23
275 -2 135 140 -18

158.0 +51-57 / 4
±25.5

1 – 3

341 R

+16 +14 +1.9 -60 +76 +74 +2.3 +25 +15
29 .8 -4 +33 -18
39 .8 -4 +43 +41 -8
+4 +44 -7
45 .7 -1 -8
+6 +60 +9
53 .8 -4 +57 +18

+48.8 +29-31 / 5
±1.2 ±13.4
+34-33 / 5

1 – 3

342 R

+6 +27 -86 +96 0
14 25 -81 +95 +1
19 23 -74 +93 -1 0
24 21 -68 +93 -1 0
+30 29 2.0 -64 +94 0 +2

+92.4 +2-2 / 5
+93.2 ±0.4 ±0.6

1 – 3

346 R

+34 +1.5 -44 +78 +3
40 1.0 .18 +58 -17
46 1.1 .23 +69 -6
52 1.3 .34 +86 +11
60 1.1 .23 +83 +8

+74.8 +22-23 / 5
±9.0

1 – 3

347 R

+1 +3.3 -100 +101 +8
8 2.8 89 97 +4
14 2.5 81 95 +2
20 2.2 -71 91 -2
28 1.7 52 80 -13

+92.8 +14-15 / 5
±5.8

1 – 3

351 R

-2 +34 -102 +100 -4
+6 32 -98 +104 0
12 30 -94 +106 +2
18 2.6 -83 +101 -3
26 2.5 -81 +107 +3

+103.6 +5-7 / 5
±2.4

1 – 3

352 R

+6 +27 -86 +92 +2
14 2.4 -78 +92 +2
22 2.1 -68 +90 0
30 1.8 -57 +87 -3
37 1.7 -52 +89 -1

+90.8 +4-4 / 5

1 – 3

353 R

+7 +28 -89 +96 +31
13 1.9 -60 73 +8
-11 1 -34
20 .9 -12 38 -33
26 1.2 -29 55 -10
34 1.3 -34 68 +3

+64.8 +42-44 / 5
±12.8

335

-2) +13 -34 -71 -5
-28 +1.2 -29 -58 +8
-21 +1.5 -44 65 +1
-14 +1.8 -57 -71 -5
-6 +1.8 -57 -63 +3

-65.6 +12-10 / 5
±4.4

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1+3

Deiph

Sat. I.

1886-7

357 II

4	+1.0	-18	-22	0	-1
6	+1.4	-39	-34	-4	-2
+12	+1.4	-39	-27	-5	+5
+18	+1.5	-44	-26	+1	+6
+26	+2.0	-64	-38	+4	-6

-31.6 +5.7

-22.4 5

+2.4

+11-9

±4.0

1+3

361 II

-83	+0.4	+.33	-50	0	
66	0.6	+.13	-53	-3	
50	0.7	+.5	-48	+5	
35	0.9	-1.2	-47	+2	
22	1.3	-34	-56	-6	

-50.2 +9.9 5

+3.0

+2-9 = ±3.5

1+3

363 II

-7	+1.7	-52	-59	-11	
0	+1.6	-48	-48	0	
+7	+1.7	-52	-45	+3	
16	+2.1	-68	-52	-4	
29	+2.0	-64	-35	+13	

-47.8 +16-15 5

±6.2

1+3

365 II

-29	+1.1	-23	-52	0
19	1.4	-39	-58	-6
11	1.3	-34	-45	+1
-4	1.5	-44	-48	+4
+9	2.1	-68	-59	-7

-52.4 +11-13 5

±4.8

1+3

367 II

-49	+0.7	+5	-44	+17
35	1.1	-23	-58	+3
20	1.5	-44	-64	-3
-6	1.9	-60	-66	-5
+7	2.5	-81	-74	-13

-61.2 +19-22 5

±8.0

Reap. 1-3

✓ 369 R

+114	+0.1	+85	+29	-24
131	+0.2	+62	+6.9	+16
145	+0.1	+85	+6.0	+7
158	-0.5	+135	23	
172	-0.5	135	37	

+√27 +23-24 3

±16.

1-3

371 R

+30	+23	-74	+104	-23
39	2.5	-81	+120	-7
47	2.9	-91	+138	+11
56	2.7	-86	+142	+15
63	2.1	-68	+131	+4

+127.0 +30-30 5

±12.0

1-3

372 R

+74	+.6	+.13	+61	-1
91	+.5	+22	+69	+7
101	+.3	+45	+56	-6
110	+.1	+85	+25	0
+21	+.1	+85	+36	0

+62.0

372 +7-7 3

±4.7

1-3

373. R

+17	+1.7	-52	+69	-14
26	2.2	-71	+97	+4
32	2.0	-64	+96	+3
38	+2.1	-68	+106	+13
44	1.7	-52	+96	+3

928 +23-24

±9.4

3√ R.

+62√

+3	+1.√	-44	+34	-7	+17
+√6	+.9	-11	+67√	+2	
+70	+6	+13√	+57√	+6	-4
+62	+6	+13√	+69√	+4	+4
+94	+.3	+4√	+49√	-2	-16

+66.4 +23-24 5 ± 9.4

Use 1st 3 for com.

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1000phae:proj:1891:

Sat I. 1887-8

Disap.

1+3

376 d

~~-32~~	~~-66~~	~~-22~~	
~~+36~~	+1.3 -34	~~+4~~	~~-23~~
~~-24~~		~~-22~~	~~+16~~
~~49~~	+0.8 -4	~~+43~~	~~+16~~
~~-16~~		~~-80~~	~~-6~~
~~54~~	+1.3 -34	~~+20~~	~~-7~~
~~-7~~		~~-41~~	~~+3~~
~~66~~	+1.3 -34	~~+22~~	~~+5~~
~~+8~~		~~-36~~	~~+2~~
~~79~~	+1.5 -44	~~+25~~	~~+8~~

~~+26.8~~ ~~+29 36~~ / 5

~~-44.2~~ ~~+118~~ +27 -26

±11.0

1+3

377 d

+10	+1.9	-60	-50	+6
15	2.2	-71	-56	0
20	2.5	-81	-61	-5
27	2.5	-81	-54	+2
33	3.0	-84	-61	-5

-56.4 +8-10 / 5

±3.6

Sat I 1+3

379 d

+1	+1.7	-52	+11	-51 -3.
+8	1.8	-57	+6	-49 -1
+16	2.0	-64	-1	-48 0
+22	2.1	-68	-5	-46 +2
+29	2.3	-74	-11	-45 +3

~~-62~~ ~~+17-17~~ / 5

~~±6.8~~ +5-8 / 5

±1.8

1+3

386 d

+3	+1.2	-29	-26	+16
7	+1.6	-48	-41	00
15	+1.8	-57	-42	-1
22	+2.1	-68	-46	-5
27	+2.4	-78	-51	-10

-41.2 +15-16 / 5

±6.2

1+3

382 d

+29	+2.4	-78	-49	+2	
34	2.6	-83	49	+2	
40	3.0	94	54	-3	
46	3.3	100	54	-3	
54	3.5	104	-50	+1	-156

-51.2 +5-6 / 5

±2.2

1+3

388 d

-182	+0.3	+45	-137	-13	
172	+0.4	+33	139	-15	
165	+0.4	+33	132	-8	
157	+0.4	+33	124	0	
48					
~~-156~~	+0.2	+62	-86	+38	

~~-123.6~~ ~~-124~~

+38-36 / 5

±14.8

Asas.

1+3

390 d

-1	+2.4	-78	-79	0
+3	+2.7	-86	-83	-4
7	+2.8	-89	-82	-3
16	+2.9	-91	-75	+4
23	+3.2	-98	-75	+4

8.8

-78 +8-7 / 5

±1.30

393 d

~~+134~~	+0.6	+13	+121	~~-1~~
145	+0.4	+33	112	-10
156	+0.4	+33	123	+1
167	+0.4	+33	134	~~+14~~ 2
~~176~~	-0.1	135	[41]	

+122.5 +13-11 / 4

±6.2

1-3

393 d.

49	+1.3	-34	+15	+83 -2
61	+1.2	-29	+32	+90 +5
73	+1.0	-18	+55	+91 +6
83	+0.8	-4	+76	+87 +2
94	+0.5	+22	+72	+72 -13

+84.6

±5.6

376 d.

~~-42~~	~~+1.4~~	~~-39~~	~~-21~~
-32	+1.3	-34	-66
-16	+1.3	-34	-50
-7	+1.3	-34	-41
+8	+1.5	-40	~~-52~~

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Pat I

1 – 3

394 R

48	+1.0	-18	66
55	+1.0	-18	73
60	+0.4	+33	27
66	+0.3	+45	21
71	+0.9	-11	82

1 – 3

395 R

16	+2.3	-74	+90	+8
25	+1.4	-39	64	-18
37	+1.4	-39	76	-6
48	+1.6	-48	96	+14
55	+1.2	-29	84	+2

+82.0 $\frac{+24-24}{5}$

≠9.6

1 – 3

400 R

+9	+2.5	-81	+90
18	+1.7	-52	+70
26	+1.1	-23	+59
37	+0.9	-11	+48
46	+0.6	+13	+33

1 – 3

401 R

-2	+2.0	-64	+62	-13
+7	+1.9	-60	+67	-8
16	+1.9	-60	[illegible]	+1
24	+1.9	-60	84	+9
33	+1.7	-52	85	+10

+74.8 $\frac{+20-21}{5}$

≠8.2

1889

1 + 3

404 2

-62	+1.6	+13	-49	+22
53	+1.8	-4	-49	+14
44	+1.6	-48	-92	-21
33	+1.7	-52	-85	-14
-23	+1.6	-48	-71	0

-70.8 $\frac{+36-35}{5}$

≠14.2

1 + 3

406 2

-53	+0.9	-11	-64	+2
40	1.2	-29	-69	-3
28	1.4	-39	-67	-1
15	1.6	-48	-63	+3
+3	2.1	-68	-65	+1

-65.6 $\frac{+6-4}{5}$

≠.20

1 + 3

408 2

~~+129~~ -131	+0.4	+33	~~-96~~ -94
~~+111~~ -113	+0.6	+13	~~-98~~ -100
~~+94~~ -96	+0.3	+45	~~-49~~ -51
~~-80~~ -82	+0.3	+45	~~-35~~ -37
~~-68~~ -70	+0.5	+22	~~-46~~ -48

no curve to this obs.

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Reap

1 – 3

409 R

+30	+1.3	-34	+64	-6
38	+1.1	-23	+61	-9
46	+1.1	-23	+69	-1
54	+1.2	-29	+83	+13
+60	+1.9	-11	+71	+1

+64.6 $\frac{+14-16}{5}$ ±.60

1 – 3

410 R

+3	3.0	-94	+97	+10
10	2.5	-81	+91	+4
16	2.1	-68	+84	-3
24	1.9	-60	+84	-3
32	1.6	-48	+80	-7

+87.2 $\frac{+14-13}{5}$ ±5.4

1 – 3

413 R

+7	+2.8	-89	+97	+7
17	+2.4	-78	+95	+5
26	+1.8	-57	+83	-7
35	+1.5	-44	+79	-11
46	+1.7	-52	+98	+8

+90.4 $\frac{+20-18}{5}$ ±7.6

1 – 3

414 R

+6	+2.5	-81	+87	0
+15	+2.2	71	86	-1
+22	+2.2	71	93	+6
+30	+1.9	60	90	+3
+36	+1.5	-44	+80	-7

+87.2 $\frac{+9-8}{5}$ ±3.4

1 – 3

418 R

28	+1.9	-60	+87	+3
40	+1.7	52	92	+13
52	+1.2	29	81	+2
62	+0.9	-11	73	-6
72	+0.7	+4	68	-11

+79.2 $\frac{+18-17}{5}$ +7.0

$\frac{+21-19}{5}$ = ±.0

1 – 3

420 R

+23	+1.3	-34	+57	-9
31	+1.4	34	+70	+4
40	+1.0	-18	+58	-8
50	+1.0	-18	+68	+2
57	+1.0	-18	+75	+9

+65.6 $\frac{+15-17}{5}$ ±6.4

1 – 3

422 R

30	+1.1	-23	+53	-30
42	+1.5	-44	+86	+3
54	+1.1	-23	+77	-6
66	+1.5	-44	+110	+27
76	+0.9	-11	+87	+4

+82.6 $\frac{+34-36}{5}$ ±14.0

Desap 43 1890

1 – 3

423 R

-63	+0.8	-4	-66	+8
-51	+1.0	-18	-69	+5
-100	+1.2	-29	-68	+6
-20	+1.6	-48	-78	-4
-20	+2.1	-68	-88	-14

-73.6 $\frac{+20-18}{5}$ ±7.6

-74.2 $\frac{+17-12}{5}$ = ±7.0

1 – 3

427 R

-63	+0.4	+33	-30	+9
50	+0.5	22	-28	+11
36	+0.9	-11	-47	-1
20	+1.2	-29	-49	-10
-4	+1.5	-44	-48	-9

-34 $\frac{+20-20}{5}$ ±8.0

$\frac{+22-24}{5}$ ±9.2

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Sat I.

1+3

428 δ

−31	+1.4	−39	−70	+13
21	1.9	60	−81	+2
12	2.3	74	−86	−3
2	2.8	89	−91	−8
+10	+3.2	−98	−88	−5

−83.2 $\frac{+15-16}{5}$ ±6.2

1+3

Desap. 430 δ

+48	+2.0	−64	−16	+3
56	2.3	74	−18	+1
64	2.7	86	−22	−3
72	2.9	91	−19	0
81	+3.4	−102	−21	−2

−19.2 $\frac{+4-5}{5}$ ±1.8

1+3

433 δ

−32	+1.2	−29	−61	+12
22	1.8	57	79	−6
14	1.9	60	74	−1
−6	2.1	68	74	−1
+4	2.6	−83	−79	−6

−73.4 $\frac{+12-14}{5}$ ±5.2

1−3

Reap.

436 R

0	+2.7	−86	+86	−4	+10
7	2.8	−89	+96	+7	+6
13	2.5	81	+94	+5	+4
20	2.1	68	+84	−5	−2
27	+1.8	−57	+84	−5	−6

~~+88.8~~ ~~$\frac{+12-12}{5}$~~ ~~±5.6~~ $\frac{+10-12}{\sqrt{}}$ ±4.4

1−3

439 R

16	+2.0	−64	80	−2	
22	+1.6	−48	70	−12	
28	+1.7	−62	80	−2	
33	+1.8	−57	+90	+8	

+82.2 $\frac{+17-16}{5}$ ±6.6

1−3

440 R

15	+2.6	−83	+98	+7
22	+2.1	−68	+90	−1
28	+1.9	−60	88	−3
34	+1.7	−52	86	−5
42	+1.7	−52	94	+3

+91.2 $\frac{+10-9}{6}$ ±3.8

1−3

441 R

+52	+1.6	−48	+100	+2
61	+1.6	−48	+109	+11
69	+1.2	−29	98	0
78	+0.8	−4	82	−16
89	+0.9	−11	+100	+2

+97.8 $\frac{+15-16}{5}$ ±6.2

1+3

444 δ

−7	+1.6	−57	−64	−1
−2	+1.9	−60	−62	+1
+4	+1.9	−60	−56	+7
+10	+2.2	−71	−61	+2
+21	+2.9	−91	−70	−7

−62.6 $\frac{+10-.4}{\sqrt{}}$ ±3.6

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1884-5

1+3 Disaf.

281 ☌

-57 +9 -11 -68 -18
44 10 -18 62 -12
32 11 -23 55 -5
20 +9 -11 31 +19
-6 +12 -29 35 +15

-50.2 $\frac{+34-35}{5}$ ±13.8

1+3

282 ☌

-94 +3 +45 -49 -11
-70 +2 +62 -32 -5
-52 +4 +33 -37 +1
-24 +4 +22 -30 +8
-12 +1.4 -4 -38 0
-23 -25
+1.0 -18 -30 +3

-37.8 $\frac{+10-11}{5}$ $\frac{+12-11}{5}$ = ± 4.6
-27.2

∓.42

1+3

284 ☌

+6 +1.6 -48 -42 +9
12 +1.7 -52 -40 +11
18 +2.1 -68 -50 +1
24 +2.8 -89 -65 -14
31 +2.9 -91 -60 -9

-51.4 $\frac{+21-23}{5}$

± 8.8

1+3

286 ☌

+12 +1.5 -44 -32 +10
20 +1.7 -52 -32 +10
28 +2.4 -78 -50 -8
38 +2.8 -89 -51 -9
49 +3.0 -94 -45 -3

-42.0 $\frac{+20-20}{5}$

±8.0

1+3

288 ☌

+4 +2.0 -64 -60 +1
14 +2.2 -71 -57 +4
23 +2.5 -81 -58 +3
32 +2.1 -96 -64 -3
40 +3.5 -104 -64 -3

-60.6 $\frac{+8-6}{5}$

± 2.8

1+3

289 ☌

+8 +1.9 -60 -52 -6
12 +1.9 -60 -48 -2
18 +1.9 -60 -42 +4
22 +2.1 -68 -46 0
28 +2.2 -71 -43 +3

-46.2 $\frac{+7-8}{5}$

± 3.0

1+3

291 ☌

+9 +2.3 -74 -65 -7
16 +2.4 -78 -62 -4
22 +2.4 -78 -56 +2
29 +2.5 -81 -52 +6
34 +2.9 -91 -57 +1

-58.4 $\frac{+9-11}{5}$

± 4.0

292 ☌

-1 +1.8 -57 +11
+6 2.1 -68 0
+12 2.1 -68 0
+20 2.0 -64 +4
+27 +2.5 -81 -13

-67.6 $\frac{+18-13}{5}$

±5.6

1+3

-1 1.8 -57 -52 -3
+6 2.1 -68 -62 -7
+12 2.1 -68 -56 -1
+20 2.0 -64 -44 +11
+27 2.5 -81 -54 +1

-54.0 $\frac{+12-11}{5}$ = ± 4.6

1+3

293 ☌

-33 +1.2 -29 -62 +1
27 1.5 -44 -71 -9
26 1.5 -44 -64 -1
12 1.5 -44 -56 +7
-4 +1.8 -57 -61 +2

-62.8 $\frac{+10-9}{5}$

± 4.0 ∓.3

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Pat I.

1+3

295 ☽

~~-10~~	~~+1.3~~	~~-34~~	~~-44~~	~~+10~~
~~-18~~	~~+1.6~~	~~-18~~	~~-36~~	~~+2~~
~~-2~~	~~+1.7~~	~~-22~~	~~-24~~	~~0~~
~~10~~	~~+1.1~~	~~-23~~	~~-33~~	~~+6~~
~~+5~~	~~+1.7~~	~~-22~~	~~-43~~	~~+7~~
~~2~~	~~+1.5~~	~~-44~~	~~-46~~	~~-7~~
~~+13~~	~~+2.1~~	~~-64~~	~~-22~~	~~-1~~
~~+5~~	~~+1.5~~	~~-44~~	~~-39~~	~~0~~
~~+21~~	~~+2.0~~	~~-49~~	~~-64~~	~~-14~~
~~21~~	~~+1.9~~	~~-66~~	~~-39~~	~~0~~

~~-36.6~~ ~~38.6~~ ~~+9-7~~ / 5

~~±3.2~~ ~~+17-15~~ / √ = ±.64

1+3

296 ☽

-87	-0.1	+135	[+48]	
75	+0.4	+33	-42	+2
62	+0.6	+13	-49	-5
52	+0.6	+13	-39	+5
42	+0.8	-4	-46	-2

-44.0 +7-7 / 4

±3.5

1+3

297 ☽

-34	+1.3	-34	-68	-11
26	+1.0	-18	-44	+13
18	+1.3	-34	-52	+5
10	+1.5	-44	-54	+3
-1	+2.1	-68	-69	-12

-57.4 +21-23 / 5

±8.8

Rear 1-3

303 R

+27	+2.2	-71	+98	+6
33	+2.0	-64	97	+5
39	+1.6	-48	87	-5
48	+1.6	-48	96	+4
54	+1.2	-29	+83	-6

+92.2 +16-14 / 5

~~±6.0~~ ±5.2

1-3

304 R

+16	+2.2	-71	+87	-9
23	2.4	-78	101	+5
30	2.1	-68	98	+2
38	1.7	-57	90	-6
46	1.8	-57	103	+7

+95.8 +14-15 / 5

±5.8

1-3

305 R

+36	+2.2	-71	+107	+13
44	1.5	-44	88	+6
54	1.2	-29	83	+11
63	1.2	-29	92	-2
70	1.2	-29	99	+5

+92.8 +18-19 / 5

±7.4

1-3

311 R

+31	+1.9	-60	+91	+2
39	1.9	-60	+99	+10
46	1.5	-44	+90	+1
53	1.2	-29	+82	-1
60	1.1	-23	+83	-6

+89.0 +13-13 / 5

1-3

312 R

+16	+2.9	-91	+107	+27
22	+1.8	-57	79	-1
27	+1.7	-52	79	-1
34	+1.3	-34	68	-12
40	+1.2	-29	+69	-11

+80.4 +27-25 / 5

±10.4

1-3

312 R

+22	+1.8	-57	+79	+7
27	+1.7	-52	79	+7
34	+1.3	-34	68	-4
40	+1.2	-29	69	-3
46	+1.0	-18	64	-8

+71.8 +14-15 / 5

±5.8

1-3

317 R ±5.2

~~+46~~	+1.3	-34	+76	+8
56	.9	-11	67	-1
65	.8	-4	69	+1
73	.7	+4	69	+1
82	.5	+22	60	-8

+68.2 +10-9 / 5 ±3.8

2 ☌

-76	+1.1	-23	-99	-5
-53	+1.5	-44	-97	-3
-30	+1.9	-60	-90	+4
-10	+2.5	-81	-91	+3
+10	+3.4	-102	-92	+2

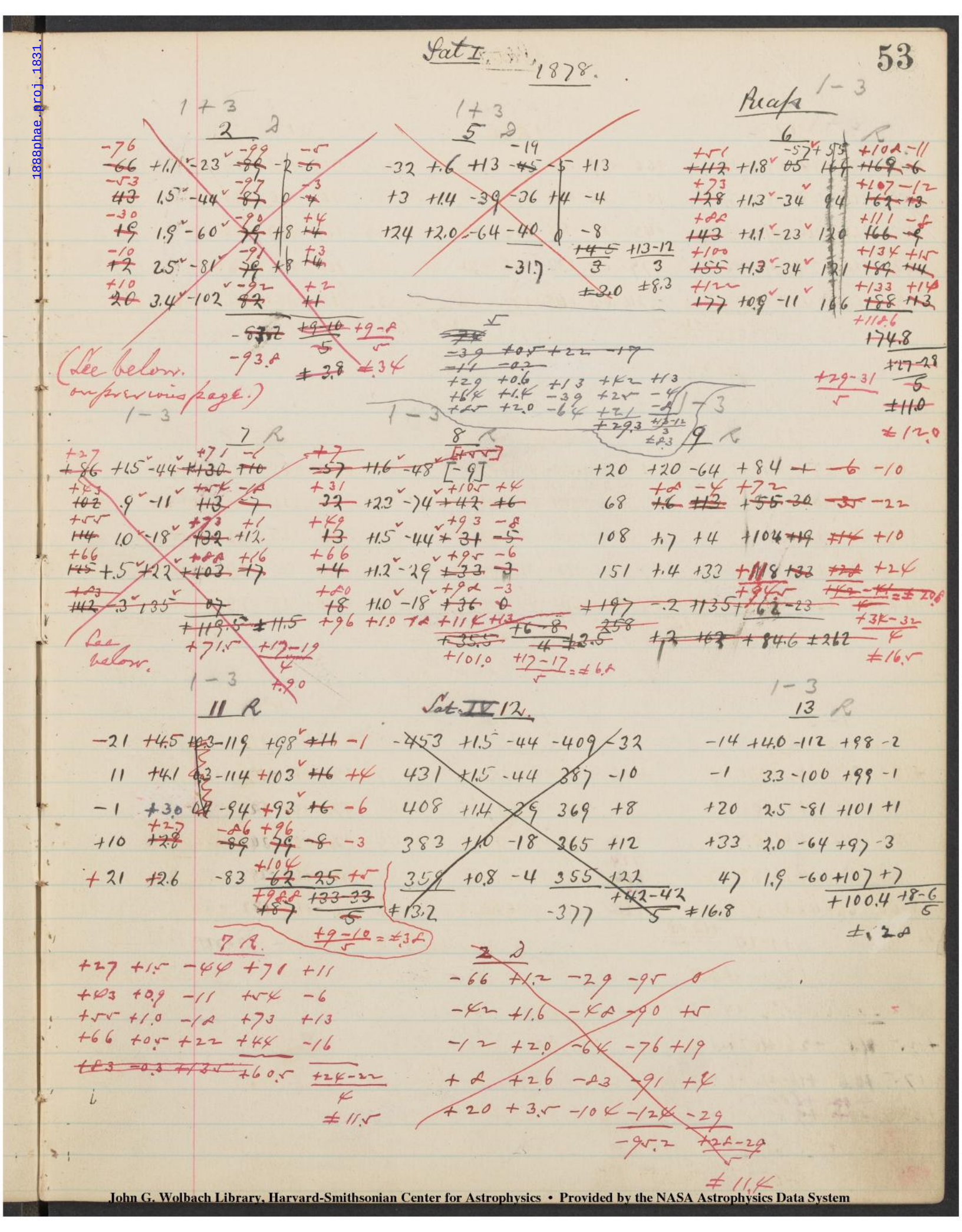
-93.8 +9-8 / 5 = ±3.4

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Sat I. 1878.

Recap 1-3



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Pat. I

1-3

17 R

+20 +2.3 -74 +94 +4
35 +1.6 -48 83 -7
48 +1.5 -44 92 +2
62 +1.2 -34 96 +6
79 +0.8 -4 +83 -7

+89.6 +12-14 / 5

±5.2

1-3

18 R

+66 +1.3 -34 +100 -33
105 0.6 +13 92 -41
145 0.8 -4 149 +16
179 0.4 +33 146 +13
224 0.3 +45 +179 +46

+133.2 +7-7 / 5

±29.8

1-3

21 R

+15 +2.9 -91 +106 +7
33 +1.9 -60 93 -6
49 +1.8 -57 106 +7
68 +1.0 -18 86 -13
86 +1.0 -18 +104 +5

+99.0 +19-19 / 5

±7.6

1-3

22 R

+50 +1.3 -34 +84 +12
72 0.6 +13 59 +13
95 0.4 +33 62 +10
120 0.3 +45 75 +3
144 0.2 +62 +82 +10

+72.4 +25-23 / 5

±9.6

1-3

23 R

+3.0 -94 +96 -7
-3 +23 +60 +97 +10
+3.2 -94 +106 +6
+8 +25 +64 +112 +5
+2.6 -83 +99 -1
16 +29 -91 +107 0
+2.4 -78 +105 +5
27 +27 -86 +113 +6
+2.0 -64 +96 -2
34 +23 -74 +108 +1

+99.2 +12-10 / 5

+44 +11-10 / 5

±4.2

1-3

24 R

-200 +0.3 +45 -245 -15
160 -0.6 135 295 -65
120 -0.4 135 255 -25
86 +0.1 85 -171 +59
51 -0.3 +135 -186 +44

-230.4 +103-105 / 5

±41.6

1-3

28 R

+28 +3.8 -109 +137 -14
59 2.9 -91 150 -1
78 2.4 -78 156 +5
96 1.9 -60 156 +5
110 1.6 -48 +158 +7

+151.4 +17-15 / 5

±6.4

1-3

29 R

+70 +1.3 -34 +104 +2
+69 +0.8 -4 +72
86 +0.9 -11 +97 -5
72 +0.4 +23 +39
110 +0.5 +22 +88 -14
100 0.0 +35 -35
124 +0.5 +22 +102 0
120 0.0 +35 -15
134 +0.6 +13 +121 +19
128 +0.1 85 +43

+102.4 +21-19 / 5

±8.0

29 R.

+70 +0.4 -4 +74 +10
+86 +0.4 +33 +73 -11
+110 0.0 +35 -25
+124 0.0 +35 -11
+34 +0.1 +45 +49

+63.5 +10-11 / 2 = ±10.5

1-3

31 R

+27 +2.5 -81 +108 -15
38 +3.0 -94 132 +9
49 +2.3 -74 123 0
58 +1.9 -60 118 -5
68 +2.0 -64 +132 +9

+122.6 +18-20 / 5

±7.6

20 R. II.

+125 +1.6 -26 +151 -5
175 +0.6 +1 +161 +3
+5
+2 +6 +57 +1
225 +0.1 +9 +132 +6

+154.3

+6-5 / 3

±3

+16 16 / 3

∠10.7

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1-3

32 R

+25 +1.2 -29 +54 -10
35 +1.3 -34 +69 +5
48 +0.7 +4 +44 -20
63 +0.9 -11 +74 +10
75 +0.8 -4 +79 +15

+64.0 $\frac{+30-30}{5}$

±12.0

1-3

33 R

+20 +2.3 -74 +94 +2
34 1.8 -57 91 -1
48 1.5 -44 92 0
58 1.2 -34 92 0
68 1.1 -23 91 -1

+92.0 $\frac{+2-2}{5}$

±.08

41 2.

0 2.4 -78 -78 -3
+2 2.6 -83 -75 0
+17 3.2 -92 -81 -6
+26 3.1 -96 -70 +5
+42 4.6 -120 -72 +3

-75.2

3K R

+38 +2.2 -71 +109 +1
+53 +2.0 -64 +117 +9
+70 +1.2 -29 +99 -9
+25 +1.1 -23 +108 0
+102 +0.4 -.4 +106 -2

+107.4 $\frac{+10-11}{\sqrt{5}} = \pm .42$

$\frac{+8-9}{\sqrt{5}}$ ±34

Disap.

1+3

39

-30 +1.1
+1.6
-4 +1.9
+7
10

-44 +0.7 +4 -40 +12
30 1.1 -23 -53 -1
15 1.6 -48 -63 -11
-4 1.9 -60 -64 -12
+7 +1.6 -48 -41 +11

-52.2 $\frac{+23-24}{5}$

±9.4

1+3

39 2

-40 +12
-53 -1
-63 -11
-64 -12
-41 +11

$\frac{+23-24}{5}$

1+3

41

-23 +2.1 -68 -91 -18
10 1.9 -60 -70 +3
0 2.2 -71 -71 +2
+8 2.4 -78 -70 +3
26 2.9 -91 -65 +8

-72.4 $\frac{+16-18}{5}$

±6.8

See above.

1+3

41 2

-68 -91 -18
-60 -70 +3
-71 -71 +2
-78 -70 +3
-91 -65 +8

1+3

46

-35 +1.7 -52 -87 +1 +1
24 1.9 -60 -84 +4 -2
13 2.4 -78 -91 -3 +5
0 2.7 -86 -93 -5 0
+11 +3.0 -94 -83 +5 -3

-86.2
-876

$\frac{+10-8}{5}$ ±3.6

$\frac{+6-5}{\sqrt{5}} = \pm .22$

1+3

47 2

-102 +1.3 -32 -134 -12
83 1.5 -42 125 -3
63 2.1 -67 130 -8
-8 3.7 -107 115 +7
+13 4.7 -121 -108 +14

-122.4 ± 8.8

-63 +2.1 -64 -131 -9
-46 +2.7 -46 -132 -10
-30 +3.0 -95 -124 -2
-4 +3.7 -104 -116 +6
+13 +4.7 -121 -104 +14

$\frac{+20-21}{\sqrt{5}}$ ±4.2

-122.2

1+3

54 2

-47 8.4 0.8 0.0 -47.4
24 8.7 1.1 -21 -45 -2
-7 9.1 1.5 .42 -49 -6
+7 9.1 1.5 .42 -35 +8
23 9.6 2.0 .63 -41 +2

-43 $\frac{+10-12}{5}$

±4.4

1+3

55 2

-54 +1.5 -44 -98 -3 -2
42 1.6 -48 -90 +5 +6
29 2.1 -68 -97 -2 -1
-15 +2.5 -81 -96 +1 0
+3 +4 +3.5 -104 -95 0

101

-95.2

-96.4

$\frac{+5-6}{5}$

±2.2

$\frac{+6-4}{\sqrt{5}}$

±2.8

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Sat I

1+3

56 λ

-39 +1.0 -18 -57 +8 +7
27 1.1 -23 -50 +15 +14
16 1.6 -48 -64 +1 0
8 2.2 -71 -79 +4 -11
+11 +2.7 -86 -75 -10 -11
-65 +24 24
5
±9.6 +21-22
±4.6

1+3

57 λ

-40
41 +1.3 -34 -75 0
-30 1.3 -34 -64 +11
-20 1.4 -39 -59 +16
-8 2.0 -64 -72 +3
+4
-3 3.3 -100 -103 -28 rej?
+30-28
-74.6 5
±11.6

See foot of p. 57.

1+3

60 λ

-39 +1.7 -52 -91 -11
30 1.9 -60 -90 -10
22 1.9 -60 -82 -2
14 1.9 -60 -74 +6
7 +1.8 -57 -64 +16
-80.2 +22-23
5
±9.0

Pic.

1-3

61 R

-38 -6.4
31 -6.6
22 -7.7
12 +1.5 -44 +32
-4 +0.8 -4 0
+6 +0.7 +4 +2
16 +0.3 +45 -29
26 0.0 +135 -109

See bottom next page.

62 (Sat II)

+436 -0.1 +135 +301 -34
452 -0.1 135 317 -18
472 0.0 135 337 +2
489 0.0 135 354 +19
500 -0.1 135 365 +30
+334.8 +51 -52
5
±20.6

1-3

63 λ

-104 +1.8 -57 -47
92 +2.7 -86 -6
78 +2.6 -83 +5
68 +2.5 -81 +13
54 +2.1 -68 +14
-92 +2.7 -86 -6 -13
-74 +2.6 -83 +5 -2
-66 +2.5 -81 +13 +6
-54 +2.1 -68 +14 +7
-42 +1.7 -52 +10 +3
+7.2 +1.6-1.7
5
±6.2

1-3

66 R

+39 +1.7 -52 +91 +26
+1.9 -60 +89 +10
55 +1.1 -23 +78 +13
+1.3 -34 +89 +10
68 +0.6 +1.3 +55 -10
0.8 -4 +72 -7
82 +0.4 +3.3 +49 -16
0.6 +13 +69 -10
97 +0.3 +1.4 +52 -13
+0.5 +22 +75 -4
+78.8 +20-21
5
+6.0
+39-39
±1.6

1-3

67 R

+33 +2.0 -64 +97 0
47 +1.5 -44 91 -6
59 +1.3 -34 93 -4
71 +1.2 -29 100 +2
83 +1.1 -23 106 +9
+97.4 +12-10
5
4.4

1-3

72 R

+13 +4.2 -115 +128 +1
17 3.6 106 123 -4
31 3.1 96 127 0
59 2.1 68 127 0
71 1.8 -57 128 +1
+126.6
+2-4
5
±1.2

See bottom of next page.

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75

1 - 3 R

~~+6A~~				
~~+367~~	+1.6	-48	~~+116~~ ~~+415~~ +11	+22 ✓
~~A6~~ ~~385~~	1.2	-29	~~414~~	+21 ✓
~~101~~ ~~400~~	0.6	+13	~~+AA~~ ~~287~~	-6 ✓
~~114~~ ~~413~~	0.3	+45	~~+69~~ ~~368~~	-25 ✓
~~+126~~ ~~426~~	0.3	+45	~~+A1~~ ~~+381~~	~~-13~~ ~~+12~~

~~+93.A~~ ~~+43 43~~
~~+413~~
~~+393~~ +43 - 44 ✓

± 17.4

77

1 - 3 R

+24	+2.0	-64	+88	0
36	1.7	-52	88	0
46	1.4	-39	85	-3
54	1.2	-29	83	-5
64	1.3	-34	+98	+10

+88.4 $\frac{+10-8}{5}$

± 3.6

78

1 - 3 R

+49	+1.2	-29	+78	-1
60	+1.1	-23	83	-12
72	+1.1	-23	95	0
84	+1.1	-23	107	+12
96	+1.0	-18	+114	+19

+95.4 $\frac{+131-29}{5}$

± 12.0

80

1 - 3 R

+16	2.8	-89	+105	+8
30	2.3	-74	104	+7
43	1.8	-57	100	+3
54	1.3	-34	88	-9
66	1.1	-23	+89	-8

+97.2 $\frac{+18-17}{5}$

± 7.0

83

1 - 3 R

+26	+4.0	-112	+138	+6
~~+39~~	~~+3.3~~	~~-100~~	~~+139~~	~~+13~~
+39	+3.3	-100	+139	+7
~~49~~	~~2.5~~	~~-81~~	~~+130~~	~~+4~~
+49	2.5	-81	+130	+2
~~59~~	~~2.3~~	~~-74~~	~~+133~~	~~+7~~
+59	2.3	-74	+133	+1
~~69~~	~~1.7~~	~~-52~~	~~+121~~	~~-5~~
+69	1.7	-52	+121	-11
~~79~~	~~+12~~	~~-29~~	~~+108~~	~~-18~~

~~+126.2~~ ~~$\frac{+14-13}{5}$~~
+132.2

~~±9.4~~ ± 5.4

84

1 - 3 R

+26	+4.6	-120	+146	~~-5~~ -3
40	+3.5	-104	144	~~-7~~ -✓
54	+3.0	-94	148	~~-3~~ -1
67	+2.8	-89	156	~~+5~~ +7
78	+2.2	-71	~~+149~~ ~~+159~~	~~+8~~ 0

~~160.6~~
+146 $\frac{+13-15}{5}$
~~±5.6~~

+7 - 9 ✓ ± 3.2

86

1 - 3 R

+34	+2.6	-83	+117	+2
43	2.2	-71	114	-1
51	2.0	-64	115	0
59	1.8	-57	116	+1
67	1.6	-48	+115	0

+115.4 $\frac{+3-1}{5}$ ±0.8

88

1 - 3 R

+40	+2.2	-71	+111	+6
51	1.6	-48	99	-6
62	1.5	-44	106	+1
73	1.3	-34	107	+2
83	1.0	-18	101	-4

+104.8 $\frac{+9-10}{5}$

± 3.8

61 R.

-3A	+3.6	-106	+6A	
-31	+3.4	-102	+71	
-22	+2.3	-74	+52	
-12	+1.5	-44	+32	
-4	+0.A	-4	0	

No-72 Re:

+2	+1.3	-126	+12A	0
+13	4.4	-11A	+131	+3
+17	3.6	-106	+123	-1
+31	3.1	-96	+127	-1
+101	2.9	-91	+132	+4

+12A.2 $\frac{+2-6}{1}$ ± 1.26

~~72.~~

-40	1.3	-34	-74	-1
-30	1.2	-34	-64	+9
-20	1.4	-39	-59	+14
-A	2.0	-64	-72	+1
+4	3.3	-100	-96	-23

-73.0 $\frac{+24-24}{1}$

~~±96~~

~~-7 A~~

-51	+1.2	-29	-80	-10
-40	+1.3	-34	-74	-4
-30	+1.3	-34	-64	+6
-20	+1.4	-39	-59	+11
-A	+2.0	-64	-72	-2

-69.A $\frac{+17-16}{1}$

± 1.66

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1880-1. Sat I.

1+3

92 2

-583	-7	+20	-64	-71	-3
291	1	21	-68	-69	-1
247	+6	24	-78	-72	-4
210	14	26	-83	-69	-1
	22	26	-83	-61	+7

-68.4 +7 -9 / 5

± 3.2

1+3

96 2

-37	+1.8	-57	-94	-14	
-25	2.0	-64	-89	-9	
-11	1.8	-57	-68	+12	
+5	2.2	-71	-66	+14	
+20	3.4	-102	-82	-2	

-79.8 +26 -25 / 5

-77.8 ± 10.2

1+3

98 2

+1	+1.7	-52	-71	-9	+8
+9	1.9	-60	-51	-7	-8
17	1.8	-57	-40	+4	+3
29	2.3	-74	-45	-1	-2
+52	2.5	-81	-29	+15	+14

+13.6 +18 -17 / 5

-43.2 ± 7.2

+17 -18

± 7.0

1+3

99 2

-200	+0.7	+40	-45	
-190	-0.2	+135	-55	+27
-114	+0.6	+13	-101	40
-35	+1.1	-23	-58	-3 47
-25	+1.2	-29	-54	+1 59
-15	+1.4	-39	-54	+1 +73

-√-3 +2 -3 / 3 = ± 17

1+3

100 2

38	-109	-82	-10	
45	-119	-79	-7	
51	-125	-78	-6	
51	-125	-66	+6	
57	-129	-56	+16	

-72.2 +22 -23 / 5

± 9.0

1+3

101 2

-16	+1.7	-52	-68	+2
8	1.8	-57	-65	+5
0	2.1	-68	-68	+2
+9	2.5	-81	-72	-2
18	3.0	-94	-76	-6

-69.8 +9 -8 / 5

± 3.4

1+3

103 2

-126	+0.4	+33	-92	+11	
111	0.5	22	-89	+6	
97	0.3	45	-52	+3	
70	0.7	+4	-66	+12	
-42	+1.5	-44	-86	+10	
				-5	-44

-77.2 +26 -37 / 5

-44.6 +34 -34 / 5

-76.0 ± 13.6

1+3

106 2

19	-60	-104	-14	
16	-48	81	+9	
18	-57	79	+11	
24	-78	89	+1	
31	-96	-98	-8	-2

-90.2 +21 -22 / 5

± 8.6

1+3

110 2

-20	+2.0	-64	-84	-1
-13	+2.0	-64	-77	+6
-6	+2.4	-78	-84	-1
+2	+3.0	-94	-92	-9
+12	+2.9	-91	-79	+4

-83.2 +10 -11 / 5

± 4.2

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Peak

1+3

111 R

-32 +1.2 -29 -61 +4
22 1.4 -39 61 +4
14 1.5 -44 58 +7
-6 2.0 -64 70 -5
+4 2.4 -78 74 -9

-64.8 $\frac{+15-14}{5}$ ±5.8

1-3

112 R

+14 +3.1 -96 +110 -16
26 3.1 -96 122 -14
40 2.7 -86 126 0
54 2.5 -81 135 +9
65 2.2 -71 +136 +10

+125.8 $\frac{+19-20}{5}$

~~±7.4~~ ±7.4

1-3

114 R

+18 1.9 -60 +78 -2
30 1.6 -48 78 -2
40 1.4 -39 79 -1
48 1.2 -29 77 -3
58 1.2 -25 +87 +7

+79.8 $\frac{+7-8}{5}$

±3.0

1-3

115 R

+10 +2.3 -74 +84 -1
19 1.9 -60 79 -6
27 2.0 -64 91 +6
36 1.7 -52 88 +3
44 1.4 -39 +83 -2

+85.0 $\frac{+9-9}{5}$ ±3.6

1-3

118 R

-8 3.4 -102 +94 +9
+2 +2.7 -86 +88 +4 +3
13 2.2 -71 84 0 -1
23 1.8 -57 80 -4 -5
32 1.5 -44 77 -7 -8
42 +1.6 -48 +90 +6

+84.6 $\frac{+12-14}{5}$ ±5.2

~~+83.8~~ +84.6 $\frac{+10-11}{5}$

~~±4.2~~

1-3

119 R

-16 +3.7 -108 +92 +11
+2 2.5 -81 +83 +2
20 1.9 -60 80 -1
40 1.2 -34 74 -7
58 +1.0 -18 76 -5

+81.0 $\frac{+13-13}{5}$

±5.2

1-3

120 R

+2 4.7 -121 +123 -8 -1
17 4.6 -120 +137 +5 +13
30 4.0 -102 +142 +10 +18
41 2.4 -78 +119 -13 -5
52 1.6 -48 +100 -32 -24

+124.2 $\frac{+31-30}{5}$ ±12.2

120

+41 +2.4 -78 +119 +16
+52 +1.6 -48 +100 -3
+62 +1.3 -34 +96 -7
+72 +1.3 -34 +106 +3
+82 +0.9 -11 +93 -10

+102.6 $\frac{+19-20}{5}$

±3.6

This is a rd. leaving out 1st 3 obs.

1-3

121 R

98 1.4 -39 +137 -4
134 0.8 -4 138 -3
166 0.2 +62 104 -37
188 0.2 +62 126 -15
232 0.4 +33 199 +58

+140.8 $\frac{+58-59}{5}$

±23.4

1-3

122 R

+10 2.6 -83 +93 ~~-7~~ -3
18 2.5 -81 99 ~~+6~~ +3
26 1.9 -60 86 ~~-8~~ -10
34 1.8 -57 91 ~~-3~~ -5
42 2.1 -68 +110 ~~+16~~ +14

~~+97.4~~
~~+93.8~~

~~+21-12~~
5

~~±6.6~~

+17-16
√

±7.0

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Pat I

1-3

123 R

-9	3.2	-98	+89	+1
0	3.3	-100	+100	+12
+10	2.5	-81	91	+3
20	1.9	-60	80	-8
28	1.7	-52	80	-8

+88.0 $\frac{+16-16}{5}$

±6.4

1-3

126 R

-1	3.0	-94	+93	+1
+7	2.5	-81	88	-4
16	2.3	-74	90	-2
25	2.1	-68	93	+1
34	2.0	-64	+98	+6

+92.4 $\frac{+8-6}{5}$ ±2.8

1-3

127 R

-4	3.3	-100	+96	+1
+6	2.8	-89	95	0
16	2.4	-78	94	-1
26	2.1	-68	94	-1
38	1.9	-60	+98	+3

+95.4 $\frac{+4-2}{5}$

±1.2

1-3

128 R

+17	+2.1	-68	+85	-1
27	2.2	-71	93	+1
28	2.1	-68	96	+4
31	1.9	-60	91	-1
36	1.8	-57	+93	+1

91.6 $\frac{+6-8}{5}$

±2.8

1-3

130 R

+25	+2.5	-81	+106	+1
34	2.4	-78	112	+7
42	2.1	-68	110	+5
48	1.7	-52	100	-5
52	1.5	-44	+96	-9

+104.8 $\frac{+13-14}{5}$

±5.4

1-3

132 R

+8	2.3	-74	+82	+5
15	2.1	-68	83	+6
20	1.7	-52	72	-5
27	1.6	-48	+75	-2
34	1.4	-39	73	-4

+77.0 $\frac{+11-11}{5}$

±4.4

1-3

135 R

+34	+2.4	-78	+112	-4
38	2.4	-78	116	0
44	2.3	-74	118	+2
50	2.2	-71	121	+5
56	1.8	-57	+113	-3

+116 $\frac{+7-7}{5}$

±2.8

1+3

19 d.

-39	-0.1	+135	+96
-24	+0.3	+117	+17
-18	+0.2	-4	-22
-9	+0.2	-4	-13
+1	+1.1	-23	-22

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Dis

1+3
140 II

+4	+2.0	-64	-60	-3
10	1.8	-57	-47	+10
16	2.0	-64	-48	+9
23	2.6	-83	-60	-3
32	3.3	-100	-68	-11

-56.6 $\frac{+19-19}{5}$ ±7.2

1+3
141 2

+6	+1.9	-60	-54	+5
12	2.1	-68	-56	+3
20	2.4	-78	-58	+1
28	2.9	-91	-63	+4
36	+3.4	-102	-66	-7

-69.4 $\frac{+9-11}{5}$ ±4.0

1+3
142 2

-4	2.2	-71	-75	-9
+2	2.1	-68	66	0
9	2.3	-74	65	+1
19	2.7	-86	65	+1
30	2.8	-89	-69	+7

-66.0 $\frac{+9-9}{5}$ ±3.6

1+3
146 2

-58	1.7	-52	-110	-1
52	1.8	-57	109	0
46	2.0	-64	110	-1
37	2.1	-68	105	+4
-28	2.5	-81	-109	0

-108.6 $\frac{+4-2}{5}$ ~~±8.0~~ ±1.2

1+3
149 2

-4	1.6	-48	-52	+5
+1	1.8	-57	-56	+1
8	1.9	-60	-52	+5
14	2.4	-78	64	-7
20	2.6	-83	-63	-6

-57.4 $\frac{+11-13}{5}$ ±4.8

1+3
150 2

-27	1.3	-34	-61	+6
16	1.5	-44	60	+7
-8	1.9	-60	68	-1
+1	2.3	-74	73	-6
10	2.5	-81	-71	-4

-66.6 $\frac{+13-11}{5}$ ±4.8

1+3
151 2

+3	2.6	-83	-80	-3
7	2.7	-86	-79	-2
12	2.6	-83	71	+6
16	2.8	-89	-73	+4
20	3.4	-102	-82	-5

-77.0 $\frac{+10+10}{5}$ ±4.0

1+3
152 2

-30	1.3	-34	-64	+7
22	1.8	-57	79	-8
14	2.0	-64	78	-7
-6	1.9	-60	66	+5
+2	2.2	-71	-69	+2

-71.2 $\frac{+14-15}{5}$ ±5.8

1+3
153 2

-10	+1.8	-57	-67	-1
-2	2.0	-64	-66	0
+6	2.1	-68	-62	+4
12	2.4	-78	-66	0
15	2.7	-86	-71	-5

-66.4 $\frac{+4-6}{5}$ ±2.0

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Sat. I

1+3

154 D

-101	1.5	-44	-145	*25
88	1.6	-48	136	-16
68	1.5	-44	112	+8
49	1.9	-60	109	+11
-32	2.1	-68	-100	+20

-120.4 $\frac{+39-41}{5}$

±16.0

1-3

156 R

+25	+2.0	-64	+89	-13
34	2.0	-64	98	-4
40	2.3	-74	114	+12
48	1.9	-60	108	+6
57	1.5	-44	+101	-1

+102.0 $\frac{+18-18}{5}$

±7.2

1-3

158 R

+29	1.4	-39	+68	-7
37	1.3	-34	71	-4
48	1.3	-34	82	+7
58	1.0	-18	76	+1
66	0.9	-11	+72	+2

+74.8 $\frac{+10-11}{5}$

±4.2

1-3

159 R

-16	2.9	-91	+75	+15
8	2.4	-78	70	+10
2	1.7	-52	50	-10
+5	1.4	-39	44	-16
11	1.7	-52	+63	+3

+60.4 $\frac{+28-26}{5}$

±10.8

1-3

161 R

+14	+1.3	-34	+48	-12
23	+1.1	-23	46	-14
30	1.5	-44	74	+14
38	1.2	-29	67	+7
44	1.1	-23	67	+7

+60.4 $\frac{+28-26}{5}$

±10.8

1-3

162 R

-14	3.7	-108	+94	-2
8	3.5	-104	96	0
1	3.3	-100	99	+3
+6	2.8	-89	95	-1
14	2.5	-81	96	-1

+95.8 $\frac{+3-4}{5}$

±1.4

1-3

163 R

-6	3.7	-108	+102	-4
0	3.7	-108	+108	+2
+4	3.4	-102	+106	0
10	3.0	-94	+104	-2
14	3.1	-96	+110	+4

+106.0 $\frac{+6-6}{5}$

±2.4

1-3

164 R

+5	+2.9	-91	+96	+14
18	2.3	-74	92	+10
30	1.7	-52	82	0
40	1.3	-34	74	-8
53	0.9	-11	64	-18

+81.6 $\frac{+24-26}{5}$

±10.6

1-3

167 R

~~+118 .0 +135 -17~~ Rej.

	+4	+33	+96	+1
129	~~+3~~	~~+45~~	~~+84~~	~~+7~~
	+4	+33	+105	+10
138	~~+3~~	~~+45~~	~~+93~~	~~+16~~
	+2	+62	+84	-11
146	~~+1~~	~~+85~~	~~+61~~	~~+6~~
	+2	+62	+92	-3
154	~~+1~~	~~+85~~	~~+69~~	~~-8~~
	+2	+62	~~+100~~	+5
162	~~+1~~	~~+85~~	~~+77~~	~~0~~

~~+95.6~~

~~+76.8~~ ~~+23-24~~

√

~~+96~~

+16-14

√

±.60

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Sat I

1-3
169 R

+12	1.9	-60	+72	-7
21	2.1	-68	89	+10
28	2.0	-64	92	+13
32	1.4	-39	71	-8
40	1.2	-29	+69	-10

+78.6 $\frac{+23-25}{5}$

±9.6

1-3
173 R

+18	+2.5	-81	+99	+9
30	+2.1	-68	98	+8
38	+1.7	-52	90	0
48	+1.4	-39	87	-3
56	+1.0	-18	74	-16

+89.6 $\frac{+17-19}{5}$

±7.2

Sat I
176 II

-32	0.9	-11	
24	1.0	-18	
14	1.1	-23	
-5	1.7	-52	
+4	2.2	-71	

1882-3

Desafs.
1+3
176 2

+32	+0.9	-11	-43	+6
+24	+1.0	-18	42	+7
+14	+1.1	-23	37	+12
-5	+1.7	-52	57	-8
+4	+2.2	-71	-67	-18

-49.2 $\frac{+25-26}{5}$

±10.2

1+3
177 2

+5	+1.7	-52	-47	-13
11	2.2	-71	-60	0
16	2.3	-74	-58	-2
22	2.7	-86	-64	+4
29	3.3	-100	-71	+11

-60.0 $\frac{+15-15}{5}$

±6.0

1+3
180 2

-41	1.2	-29	-70	-5
28	1.3	-34	62	+3
16	1.6	-48	64	+1
-6	1.8	-57	-63	+2
+3	2.1	-68	-65	0

-64.8 $\frac{+6-5}{5}$

±2.2

1+3
184 2

-16	1.6	-48	-64	+10
7	2.1	-68	-75	-1
+2	2.4	-78	76	-2
9	2.7	-86	77	-3
16	3.1	-86	80	-6

-74.4 $\frac{+10-12}{5}$

±4.4

1+3
186 2

-18	1.5	-44	-62	-1
13	1.3	-34	47	+14
-7	1.5	-44	51	+10
0	2.1	-68	68	-7
+6	2.5	-81	-75	-14

-60.6 $\frac{+24-22}{5}$

±9.2

1+3
187 2

	+1.4	-39	-63	+6
-24	+1.5	-44	-68	+5
	+1.6	-48	-66	+3
18	1.7	-52	70	+13
	+1.8	-57	-70	-1
13	1.9	-66	73	0
	+1.9	-60	-64	+1
8	2.0	-64	72	+11
	+2.4	-72	-80	-11
-2	2.5	-81	-83	-10

-69.4
-72.2 $\frac{+9-10}{5}$

±3.8

$\frac{+10-12}{5}$

±8.0

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Sat I

(Sat II)

1+3
188 2
-20 1.8 -57 -77 +1
11 ~~2.0~~ -64 -75 +3
-4 2.2 -71 -75 +3
+4 2.5 -81 -77 +1
12 2.1 -96 -84 -6
-77.6 $\frac{+8-6}{5}$
±2.8

1+3
190 2
-26 +0.9 -11 -37 +14
16 +1.1 -23 39 +12
6 +1.6 -48 54 -3
+6 +2.1 -68 62 -11
18 +2.6 -83 -65 -14
-51.4 $\frac{+26-28}{5}$
±10.8

1+3
191 2
-58 1.6 ~~48~~ -106 -3
50 1.6 ~~48~~ 98 +5
42 2.0 ~~64~~ 106 -3
22 2.1 ~~68~~ 100 +3
22 2.5 ~~81~~ 103 0
-102.6 $\frac{+8-6}{5}$
Lasp. 74. ±2.8

1+3
195 I
-72 0.4 +33 -39 +15
61 0.6 +13 -48 +6
52 0.9 -11 -63 -9
42 0.9 -11 -54 0
33 1.3 -34 -67 -13
-54.2 $\frac{+21-22}{5}$
±8.6

Reafr.
1-3
196 R
+33 2.5 -81 +114 +14
46 2.5 -81 127 +27
60 1.4 -39 99 -1
74 0.8 -4 78 -22
88 0.7 +4 +84 -16
+100.4 $\frac{+41-39}{5}$
±16.0

1-3
198 R
+22 1.4 -39 +61 +10
34 0.9 -11 45 -6
42 1.0 -18 60 +9
50 0.8 -4 54 +3
59 0.5 +22 +37 -14
+51.4 $\frac{+22-20}{5}$
±8.4

1-3
199 R
+28 2.1 -68 +96 +27
38 1.5 -44 82 +13
46 1.0 -18 64 -5
55 0.7 +4 51 -18
67 0.6 +13 +54 -15
+69.4 $\frac{+40-38}{5}$
±15.6

1-3
203 R
~~+8 1.8 -57 [+65]~~
20 0.9 -11 +31 +23
32 0.4 +33 -1 -9
44 0.4 +33 +11 +3
56 0.2 +62 -6 -14
68 0.2 +62 +6 -2
+8.2 $\frac{+26-25}{}$ ±10.2

1-3
204 R
+12 +2.5 -81 +93 -1
24 2.3 -74 98 +4
36 2.0 -64 100 +6
48 1.5 -44 92 -2
59 1.2 -29 88 -6
+94.2 $\frac{+10-9}{5}$
±3.8

194. Sat. I. dis.

~~-39 +07 +4 -30~~
-28 +1.1 -23 -51 +7
-18 +1.6 ~~-42~~ -66 -2
-9 +1.6 -42 -57 +1
+1 +1.9 -60 -59 -1
$\frac{+2-9}{4}$ = ±.42

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1 – 3

208 R

+32	1.8	-57	+89	-10
40	1.7	-52	92	-7
53	1.9	-60	113	+14
71	1.5	-44	115	+16
84	0.8	-4	+88	-11

+30 -28 / 5

+99.4

±11.6

1 – 3

209 R

+31	3.8	-119	+140	+8 +2
41	3.3	-100	141	+9 +2
48	3.0	-94	142	+10 +4
56	2.7	-86	142	+10 +4
66	1.9	-60	+126	-12

+13 -12 / 5

+1382

±5.0

1 – 3

211 R

+12	+2.5	-81	+93	+7
22	1.9	-60	82	-4
30	1.7	-52	82	-4
36	1.7	-52	88	+2
43 40	1.5	-44	+84	+7 +1 -2

+26.4 +8.8

+10 -2 / √

±3.6

+9 -10 / 5

±3.8

1 – 3

214 R

+6	+2.6	-83	+89	+2
12	2.6	-83	95	+8
20	2.3	-74	94	+7
26	1.7	-52	78	-9
32	1.6	-48	+80	-7

+17 -16 / 5

+87.2

±6.6

1 – 3

215 R

+10	2.2	-71	+81	0
16	2.0	-64	80	-1
27	1.8	-57	84	+3
36	1.5	-44	80	-1
44	1.3	-34	+78	-3

+3 -5 / 5

+80.6

±1.6

1 – 3

218 R

-√√ 68	3.6	-106	+√1 +38	0 0
-40 55	2.8	-89	+49 34	-4 -2
-30 40	2.4	78	+42 38	0 -3
-16 30	2.1	68	+√2 38	0 +1
-√ 16	1.9	-60	+√6 44	+6 +√

+√12 +38.4

+6 -4 / 5

±2.0

+6 -√ / √ ±2.2

1 – 3

219 R

+10	2.5	-81	+91	+17 +16
17	2.0	-64	81	+7 +6
24	1.9	-60	84 82	+8 +9
30	1.3	-34	64	-10 -11
35	1.0	-18	+53	-21 -22

6 +32 -31 / 5

+74.2

±12.6

+31 -33 / √

±12.2

1 – 3

220 R

+33	1.7 1.8	-√2 -57	+√5 +90	+11 +2
40	1.9 26	-60 -64	+100 +104	+115 +17
46	1.7 1.8	-√2 -57	+√4 +103	+114 +√
52	1.0 11	-√2 -23	+70 75	-14 -13
60	0.2 0.5	-04 -11	+64 71	-18 -19

+30 -32 / 5

+88.6

+23.4

±12.4

+34 -32 / √

±13.2

1 – 3

222 R

+62	+1.2	-29	+91	-26
+74	+1.2	-29	+103	-14
+91	+1.1	-23	+114	-3
+109	+1.0	-18	+127	+10
+122	+1.2	-29	+151	+34

+136 +0.4 √ +44.0 —

+117.2

+44 -43 / √

±17.√

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Sat. I.

223

+34	1.9	-59	+93	-5
42	1.8	-55	97	-1
50	1.8	-65	105	+7
57	1.5	-42	99	+1
64	1.3	-32	+96	-2

+98 $\frac{+8-8}{5}$

±3.2

1 − 3

223 R

+34	1.9	-60	+94	-6
42	1.8	57	99	-1
50	1.8	57	101	+7
57	1.5	44	101	+1
64	1.3	-34	+98	-2

+99.8 $\frac{+8-9}{5}$

±3.4

Sat I

226 II

-14	-38	+1.1	-23
0	26	1.4	-39
+14	-14	1.0	-18
0		1.1	-23
+14		2.0	-64

1 + 3

226 D

-38	1.1	-23	-61	-15
26	1.4	-39	-65	-19
14	1.0	-18	-32	+14
0	1.1	-23	-23	+23
+14	2.0	-64	-50	-4

-46.2 $\frac{+3)-38}{6}$

±15.0

1883-4

1 + 3

227 D

-32	+0.7	+4	-28	+18
26	1.0	-18	-44	+2
18	1.5	-44	-62	-16
10	1.5	-44	-54	-8
-2	+1.4	-39	-41	+5

-45.8 $\frac{+25-24}{5}$

±9.8

1 + 3

229 D

-112	-3	+135	+23	
94	0	135	+41	
78	+3	45	-33	+6 +10
62	+6	+13	-49	-11 -6
-44	+9	-11	-33	+6 -5

-42.3 $\frac{+10-11}{3}$

±7.0

1 + 3

231 D

-8	+1.7	-52	-60	+7
0	2.4	-78	-78	-11
+8	2.6	-83	-75	-8
16	2.4	-78	-62	+5
24	2.7	-86	-62	+5

-67.4 $\frac{+17-19}{5}$

±7.2

1 + 3

233 D

-51	0.1	+85	+34	+10
-41	0.0	+135	[+94]	
29	+0.2	+62	+33	-9 +11
16	0.4	+33	17	-7 -5
-5	0.5	+22	17	-7 -5
+6	0.6	+13 +4	19	-5 -3

+24.0 $\frac{+19-19}{5}$

±7.6 $\frac{+11-13}{4}$

±6.0

1 + 3

237 D

+8	1.9	-60	+17	-52 +5
14	2.0	-64	+13	60 +7
20	2.5	-81	-4	61 -4
26	2.5	-81	-4	55 +2
32	3.2	-98	24	-66 -9

-76.8 -56.8 $\frac{+14-13}{5}$

±5.4

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1+3
238 ☌

+22 1.9 -60 -38 +5
30 2.2 -71 -41 +2
36 2.4 -78 -42 +1
42 2.7 -86 -44 -1
50 3.2 -98 -48 -5

-42.6 $\frac{+8-6}{5}$

±2.8

1+3
239 ☌

-21 +1.2 -29 -50 ~~+3~~ +2
7 1.5 -44 -51 ~~+2~~ +1
+8 2.1 -68 ~~-66~~ -60 ~~+3~~ -2
22 2.2 -71 -49 ~~+4~~ +3
36 2.7 -86 -50 ~~+3~~ +2

~~-52.0~~ ~~+12-13~~
~~-53.2~~ 5
~~±5.0~~ $\frac{+2-2}{5}$
±3.2

1+3
240 ☌

-160 +0.6 +13 -147 +28
148 1.1 -23 176 +4
124 1.8 -57 181 -6
101 2.7 -86 187 -12
91 3.3 -100 -191 -16

-175.4 $\frac{+32-34}{5}$

±12.2

1+3
242 ☌

-56 +0.7 +4 -52 +7
36 1.0 -18 54 +5
16 1.5 -44 -60 -1
+2 2.1 -68 -66 -7
20 2.6 -83 -63 -4

-59.0 $\frac{+12-12}{5}$

±4.8

244 ☌

-108 3.7 +0.5
102 3.4 0.7
-98 3.2 0.7
+22 2.6
28 3.2

1+3
244 ☌

+5 +2.5 -81 -76 -7
10 +2.6 -83 -73 -4
16 +2.6 -83 -67 +2
22 +2.6 -83 -61 +8
28 +3.2 -98 -70 -1

-69.4 $\frac{+10-12}{5}$

±4.4

1+3
246 ☌

-36 2.2 -71 -107 -9
30 2.2 -71 -101 -3
23 2.3 -74 -97 +1
18 2.4 -78 96 +2
10 2.4 -78 -88 +10

-97.8 $\frac{+13-12}{5}$

±5.0

1+3
247 ☌

-30 1.2 -29 -59 -1
20 1.4 -39 -59 -1
-8 1.7 -52 -60 -2
+4 2.1 -68 -64 -6
14 1.9 -60 -46 +12

-57.6 $\frac{+12-10}{5}$

±4.4

1+3
252 ☌

-34 +1.1 -23 -57 +5
24 1.3 -34 -58 +4
15 1.7 -52 -67 -5
8 1.7 -52 -60 +2
+2 +2.1 -68 -66 -4

-61.6

±4.0 $\frac{+11-9}{5}$

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Sat. I

1+3

253

-34	+1.4	-39	-73	-1
28	1.5	-44	-72	0
22	1.5	-44	-66	+6
16	1.8	-57	-73	-1
10	2.1	-68	-78	-6

-12.4 $\frac{+6-8}{5}$

±2.8

1+3

254

-22	2.3	-74	-96	-13
16	2.3	-74	90	-7
9	1.9	-60	69	+14
-2	2.1	-68	70	+13
+6	3.1	-96	90	-7

-830 $\frac{+12-27}{5}$

±10.8

1−3

256 R

+88	1.4	-39	+127	+18
101	1.4	-39	140	+5
116	1.3	-34	+150	+5
130	1.0	-18	148	+3
141	1.0	-18	+159	+14

+144.8- $\frac{+23+22}{5}$

±9.0

1−3

257 R

+66	0.6	+13	~~+79~~ +53	~~-14~~	-21
76	0.7	+4	~~80~~ +72	~~-12~~	-2
84	0.6	+13	~~97~~ +71	~~+14~~	-3
92	0.7	+4	~~96~~ +84	~~12~~	+14
99	0.6	+13	~~+112~~ +106	~~+19~~	+12

~~+740~~ ~~+26-27~~

~~±2.8~~ 5

~~±10.6~~ $\frac{+26-26}{\sqrt{}} = \pm 10.4$

1−3

262 R

+4	+3.6	-106	+110	~~+~~ +1	
14	2.6	-83	~~107~~ 97	~~-4~~	-12
20	2.5	-81	101	~~+0~~	-8
27	2.9	-91	118	~~+7~~	+9
34	2.6	-83	111	~~+6~~	+8

~~+1046~~ ~~+13-15~~

~~+110.6~~ 5

~~+5.6~~ $\frac{+14-20}{\sqrt{}}$

± 7.6

1−3

264 R

+4	2.9	-91	+95	-3
12	2.6	-83	95	-3
19	2.5	-81	100	+2
27	2.2	-71	98	0
34	2.1	-68	102	+4

490 $\frac{+6-6}{5}$

±98.0 ±2.4

1−3

267 R

-10	+3.9	-111	+101	~~+6~~	~~+8~~
4	3.1	-108	~~+104~~ 94	~~+~~	+7
+3	3.0	-94	+97	~~+2~~	0
10	2.6	-83	+93	~~-2~~	-8
18	2.2	-71	+89	~~-6~~	-8

~~+960~~ ~~+8-9~~

~~1848~~ 5

$\frac{+11-12}{5}$

≠4.6

1−3

269 R

-8	+4.5 0.8	-119	+111	+10
4	4.2	-115	111	+10
+2	3.3	-100	102	+1
6	2.6	-83	89	-12
12	2.4	-78	+90	-11

+100.6 $\frac{+21-23}{5}$

±8.8

1−3

274 R

+31	2.0	-64	+95	+9
42	1.5	-44	86	0
50	1.4	-39	89	+3
57	1.2	-29	86	0
64	0.9	-11	+75	-11

+86.2 $\frac{+12-11}{5}$

≠4.6

278

+24	2.2	-71	+85	-4
30	2.2	-71	101	+2
38	2.0	-64	102	+3
44	1.7	-52	96	-3
50	1.7	-52	102	+3.4

+992 $\frac{+8-7}{5}$

±2.0

280

+39	1.8	-57	+96	+3
49	1.5	-44	93	0
58	0.9	-11	69	-24
68	1.2	-29	97	+4
76	1.3	-34	110	+17

+930 $\frac{+24-24}{5}$

±9.6

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Satellite II

30 R.

+26	0.6	+14	+12	+8
+36	0.4	+36	0	-4
+47	0.4	+36	+11	+7
+59	0.2	+62	-9	-13
+72	0.2	+62	+4	0

+3.6 +45-17 = ±.64

1+3

3 D

-16	1.9	-67	-83	-1
6	2.2	-79	-85	-3
-1	2.4	-86	-87	-5
+8	2.5	-89	-81	+1
20	2.6	-92	-72	+10

-81.6 +11-9/5 = ±4.0

1+3

4 D

-62	1.0	-19	-81	+6
50	1.3	-38	88	-1
39	1.6	-53	92	-5
27	1.8	-62	89	-2
15	2.0	71	-86	+1

-87.2 +7-8/5 = ±3.0

32 R.

+1	+1.7	-58	+59	+8
+14	+1.4	-43	+57	+6
+27	+1.3	-38	+65	+14
+40	+0.8	-4	+44	-7
+54	+0.5	+25	+29	-22

+20-29 = ±11.4

1-3

10 R

-38	3.1	-106	+70	-12
-20	2.6	-92	72	-10
+3	1.9	-67	74	-8
+22	1.9	-67	89	+7
+50	1.6	-53	103	+21

+846 +28-30/5 = +76.6 ±8.4

+116 +32-30 = +10.4

+28-30 = ±11.6

1-3

15 R

-60	4.1	-126	+66	-4
46	3.6	-117	+71	+1
32	3.1	-106	+74	+4
21	2.5	-89	+68	-2
-9	2.2	-79	+70	0

+698 +5-6/5 = ±2.2

1-3

20 R

+125	1.1	-26	+151	-5
175	.6	+14	+161	+5
225	.2	+68	+157	+1

+156.3 +6-5/3 = ±3.7

1-3

25 R

-66	3.7	-119	+53	-9
54	3.1	-106	52	+10
41	3.4	-113	72	+10
-21	2.9	-101	80	+18
+39	0.9	-12	51	-11

+622 +25-27/5 = ±11.0

+28-30 = ±11.6

1-3

26 R

+26	+1.2	-32	+58	0
+16	1.6	-53	+69	+12
+42	0.7	+5	+43	-15
37	0.9	-12	48	-8
69	0.6	+14	+55	-3
60	0.4	+36	24	-33
+8	0.6	+14	+74	+16
78	0.8	-4	82	+25
+111	0.3	+50	+61	+3
97	0.4	+36	+61	+4

+57 +41-44/5 = +5.2 ±16.4

+18-25 = ±7.4

1-3

30 R

+43	0.9	-12	+54	+17
+26	0.6	+14	41	+4
55	0.4	+36	29	-8
+36	0.4	+36	39	+2
+47	0.2	+68	+20	-17
88				

+36.6 +23-25/5 = -9.6

See above.

1-3

37 R

+1	1.7	-58	+59	+8
14	1.4	-43	+57	+6
27	1.3	-38	+65	+14
33	1.3	-38	+71	
64	0.5	+25	89	22
54	0.5	+25	+79	
82	0.4	+36	+16	-5
			+60	+13

+51.2 +28-27/5 = ±11.0

See top of page

+14-17 = ±7.0

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Fat II.

1+3

40 2

-15 +1.1 -26 -41 -3
-11 +1.0 -16 -30 +7 +5
+4 +6 +1.7 -58 52 -15 +7 +16
+15 +1.4 -43 28 +9 +11 +10
+25 +1.5 -48 23 +14 +12 +15
+38 +2.2 -79 -44 -7 -9 -6
-37.4 +24-26/5
-37.6 ±10.0 +25-23/5
±9.6

See below.

1+3

42 2

+34 -8.0 +1.0 -19 +15 +1 +42
45 -8.4 1.6 -53 -8 -2 54
57 -8.8 1.1 -26 +31 +17 70
73 -8.1 1.9 -67 +6 -2 81
83 -8.3 1.7 -58 +25 +11 93
+13.6 +29-30/5
±11.8

1+3

43 2

28 -98 -56 -16
27 -95 -41 -1
33 -110 -40 0
35 -115 -34 +6
39 -122 -29+11
-40.0 +17+17/5
±6.8

1+3

52 2

-94 -0.1 +149 +55
74 +0.2 68 -6
32 +0.6 14 -18

1+3

59 2

+7 20 -71 -64 -6
15 21 -75 -60 -2
23 22 -79 56 +2
32 25 -89 57 +1
41 26 -92 -51 +7
-57.6 +10-8/5
±3.6

62

-104 1.8 -62 -166 -4
92 2.7 -95 187 -25
78 2.6 -92 170 -8
68 2.5 -89 157 +5
-64 2.1 -75 -129 +33
-161.8 +38-37/5
±15.0

Reafs.

1-3

62 R

330 -0.4 +149 +181 -37
351 -0.4 149 202 -16
367 0.0 149 218 0
384 -0.1 149 235 +17
401 -0.1 149 253 +35
+217.6 +52-53/5
±21.0

1-3

74 R

-36 +2.3 -82 +46 0
25 2.3 -82 +57 +11
15 1.9 -67 +52 +6
-6 1.4 -43 +37 -9
+6 +1.2 -32 38 -8
+46.2 +17+17/5
±6.6

62

+436 -0.1 +149 +287 -34
452 -0.1 149 303 -18
472 0.0 149 323 +2
489 0.0 149 340 +19
500 -0.1 149 +351 +30
+320.8 +51-52/5
±20.6

40 2

-19 +0.5 +2.5 +6
+4 +1.7 -54 -54 -17
+15 +1.4 -43 -28 +9
+25 +1.5 -48 -23 +14
+35 +2.2 -79 -44 -7
-37.2 +23-24/5
±11.0

62 R. II

+204 +0.6 +14 +190
224 +0.1 93 +131
+244 0.0 +149 +95

62 R.

+204 +1.1 -26 +230 +14
224 +0.6 +14 +210 -6
244 +0.5 +25 +219 +3
274 +0.2 +64 +206 -10
+310 +0.5 +36 +274
+216.2 +47-16/4
±4.2

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1-3

82 A

-45 3.2 -108 +63 -2
20 2.5 -89 +69 +4
6 1.9 -67 +61 -4
+10 1.5 -48 +58 -7
29 1.4 -43 +72 +7
+646 $\frac{+11-13}{5}$
±4.8

1-3

85 A

-25 ~~1.0~~ 2.1 -75 +90 0
-15 ~~0.9~~ 1.9 -67 42 -8
-6 ~~0.8~~ 1.8 -62 56 +6
+5 ~~0.7~~ 1.5 -48 53 +3
+11 ~~0.6~~ 1.3 -38 +49 -1
~~-58~~ +50.0 $\frac{+9-9}{5}$
±12 ±3.6

1-3

89 A

-12 +43
+31 0.9 ~~-4~~ ~~+36~~ ~~+8~~ -17
-12 +54
42 0.9 ~~-4~~ ~~+46~~ ~~-7~~ -6
-12 +64
52 0.9 ~~-4~~ ~~+56~~ ~~+3~~ +4
-12 +76
64 0.9 ~~-4~~ ~~+68~~ ~~+15~~ +16
76 0.6 +14 +62 ~~+9~~ +2
+52.4 ~~+27 -25~~
~~5~~
+59.8 ~~±10.4~~
$\frac{+22-23}{\sqrt{}} = \pm 9.0$

1+3

90 A

-86 0.6 +14 -72 +17
70 1.2 -32 102 +13
56 1.3 -38 94 -5
44 1.4 -43 87 +2
28 1.8 -62 -90 -1
-89.0 $\frac{+19-19}{5}$
±7.6

1+3

1880.

91 A

-38 +1.4 -43 -81
22 1.1 -26 48
-6 1.3 -38 44
+11 1.5 -48 37
30 1.5 -48 -18

1+3

93 A

+10 1.1 -26 -16 -6
26 1.3 -38 12 -2
42 1.7 -58 16 -6
57 1.7 -58 -1 +9
72 2.2 -79 -7 +3
-10.4 $\frac{+12-14}{5}$
±5.2

1+3

94 A

+12 1.0 -19 -7 +6
23 1.2 -32 -9 +4
34 1.7 -58 24 -11
45 1.7 -58 -13 0
58 2.0 -71 -13 0
-13.2 $\frac{+10-11}{5}$
±4.2

Lat. II

102 A

+4 ~~-7~~ +7 +5 +9 +4
+22 ~~-9~~ +9 -12 +10 +9
+42 ~~-13~~ +13 -34 +4 +3
+59 ~~-19~~ +19 -67 -4 -9
+74 ~~-24~~ +23 -42 -8 -12
$\frac{+23-16}{\sqrt{}}$ $\frac{+20-16}{\sqrt{}}$
+14 ±7.6

-42 +25 -49 +47 -3
-34 +22 -79 +45 -5
-25 +21 -27 +50 0
-15 +19 -67 +52 +2
-6 +18 -62 +56 +6
+50.0 $\frac{+8-8}{\sqrt{}} = \pm 3.2$

1+3

104 A

-35 1.1 -26 -61 +9
24 1.5 -48 -72 -2
16 1.8 -62 -78 -8
9 1.9 -67 -76 -6
12 1.9 -67 -65 +5
-70.4 $\frac{+14-16}{5}$
±6.0

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Sat II

Reap.

1+3

108 2

+4	1.4	-43	-39	-13
12	1.4	-43	31	-5
18	1.4	-43	25	+1
40	1.8	-62	22	+4
+62	2.1	-75	-13	+13

-260 +18-18/5

± 7.2

1+3

109 2

+37	+1.7	-58	-21	-9
49	1.7	-58	-9	+3
61	1.9	-67	-6	+6
73	2.5	-89	-16	-4
86	2.7	-95	-9	+3

-122 +12-13/5

± 5.0

1-3

113 R

+12	1.4	-43	+55	+6
23	1.3	-38	+61	12
32	1.0	-19	+51	+2
40	0.7	+5	+35	-14
50	0.7	+5	+45	-4

+48.4 +20-18/5

± 7.6

1-3

117 R

-68	3.7	-119	+51	~~-3~~	~~-4~~
58	3.3	-110	52	~~-2~~	~~-3~~
42	2.8	-101	59	~~+5~~	~~+4~~
~~29~~	~~2.2~~	~~-79~~	~~52~~	~~-2~~	0
-19	2.1	-75	+56	~~+7~~	+1

~~+54.6 +7-7/5~~

~~±2.8~~

~~+5-7/5 = ±.24~~

1-3

124 R

-53	+3.7	-119	+66	0
44	3.2	108	+64	-2
33	2.7	95	62	-4
24	2.6	92	68	+2
16	24	-86	+70	+4

+66.0 +6-6/5

± 2.4

1-3

129 R

-90	~~4.7~~ ~~4.8~~	~~-134~~ ~~-135~~	~~+40~~ ~~+45~~	~~-2~~ ~~-3~~
84	~~4.3~~ ~~4.4~~	~~-129~~ ~~-130~~	~~+45~~ ~~46~~	~~-1~~ ~~-2~~
78	~~4.0~~ ~~4.1~~	~~-125~~ ~~-126~~	~~+46~~ ~~48~~	0 0
72	~~3.7~~ ~~3.8~~	~~-119~~ ~~-121~~	~~+47~~ ~~49~~	+1
66	~~3.5~~ ~~3.6~~	~~-115~~ ~~-117~~	~~+49~~ ~~+51~~	+3

~~+47.8~~ ~~+4-5/5~~

~~+46.2~~

~~+4-3/√ = .14~~ ~~±1.8~~

1-3

134 R

-26	2.1	-75	+49	+7
20	1.8	-62	42	0
16	1.8	-62	46	+4
11	1.6	-53	42	0
-7	1.3	-38	+31	-11

42 +11-11/5

± 4.4

1-3

136 R

-56	3.2	-108	+52	~~-49~~
50	3.3	-110	60	-1
45	3.3	-110	65	+4
41	3.1	106	65	+4
36	2.8	-98	+62	+1

+60.8 +9-12/5

± 3.8

143 wet page

+56	2.8	-98
64	3.0	-103
70	3.3	110
78	2.8	-98
86	3.0	-103

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1+3

143 D

+56	2.8	-98	-42	-10
64	3.0	-103	-39	-7
70	3.3	110	-40	-8
78	2.8	-98	-20	+12
86	3.0	-103	-17	+15

-31.6 +27-25/5

±10.4

1881-2

1+3

155 D

-147	0.5	+25	-122	-36
138	0.2	+68	-70	+16
125	0.3	+50	-75	+11
112	0.5	+25	-87	-1
99	0.5	+25	-74	+12

-85.6 +39-37/5

±15.2

1-3

157 R

-12	2.1	-75	+63	-15
+1	2.2	-79	78	+2
11	1.9	-67	98	0
20	1.7	-58	78	0
29	1.8	-62	+91	+13

+78.0 +15-15/5

±6.0

1-3

160 R

-22	~~2.7~~ 3.2	~~-95~~ -106	~~+73~~ +86	-5 ✓
12	~~2.7~~ 3.1	~~-95~~ -106	~~+83~~ +96	+5 +3
-4	~~2.3~~ 2.7	~~-82~~ -95 ✓	~~+78~~ +91	0 0
+6	~~1.9~~ 2.3	~~-67~~ -82	~~+73~~ +86	-5 -3
16	~~1.9~~ 2.3	~~-67~~ -82	~~+83~~ +96	+5 +7

~~+78~~ +110-10/5

~~+91.4~~ ~~±4.0~~ +10-8/✓

±3.6

1-3

165 R

-4	2.8	-98	+94	-2
+4	2.7	-95	99	+3
12	2.6	-92	104	+8
18	2.1	-75	93	-3
22	1.9	-67	+89	-7

+95.8 +11-13/5

±4.6

1-3

166 R

-7	3.0	-103	+96	+7
+5	2.4	-86	91	+2
8	2.2	-79	87	-2
15	2.0	-71	86	-3
22	1.8	-62	+84	-5

±88.8 +9-10/5

±3.8

1-3

168 R

+24 ✓	~~2.2~~ +2.4	~~-79~~ -86	+103	+8 +✓
32 ✓	~~1.8~~ +2.0	~~-62~~ -71	~~-94~~ +103	-1 -2
39 ✓	~~1.5~~ +1.7	~~-48~~ -52	~~-87~~ +97	-8 -4
45 ✓	~~1.5~~ +1.7	~~-48~~ -52	~~-93~~ +103	-2 -2
+52 ✓	~~1.5~~ +1.7	~~-48~~ -52	~~+100~~ +110	+5 +✓

~~+104.6~~ +13-11/5

~~±95.4~~ ~~±4.8~~

+10-12/✓

±.44

1-3

172 R

-18	+3.1	-106	+88	-10
10	3.0	-103	93	-5
4	3.0	-103	99	+1
+4	2.9	-101	105	+7
12	2.7	-95	+103	+9

+98.4 +17-15/5

±6.4

Lee p. 7✓.

1-3

174 R

-12	+3.7	-119	+107	-6
2	3.4	-113	111	-2
+7	3.1	-106	113	0
18	2.8	-98	116	+3
35	2.3	-82	+117	+4

112.8 17-8/5

±30

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Sat II

1 – 3
175 R

+93	1.0	-19	+112	-8
102	1.2	-32	134	+17
114	0.8	-4	118	+1
126	0.6	+14	112	-5
134	0.5	+25	+109	-8

+117.0 +18-18 / 5

±7.2

1+3
128 D

-22	2.5	-89	-111	-5
16	2.4	-86	102	+4
9	2.5	-89	98	+8
4	3.2	-108	112	-6
+4	3.4	-113	-109	-3

532 +12-14 / 5

±106.4

±5.2

1+3
1882÷3
183 D

-119	+.7	+5	-114	-3
91	.9	-12	103	+8
64	1.4	-43	107	+4
34	2.4	-86	-120	-9

-111.0 +12-12 / 4

±6.0

1+3
189 D

-13	2.2	-79	-92	+3
8	2.2	-79	87	+8
4	2.7	-95	99	-4
+1	2.9	-101	100	-5
6	3.0	-103	-97	-2

-95.0 +11-11 / 5

±4.4

1+3
191 D

-58	1.6	-53	-111	-2
50	1.6	-53	-103	+6
42	2.0	-71	-113	-4
32	2.1	-75	-107	+2
22	2.5	-89	-111	-2

-109.0 +8-8 / 5

±3.2

1+3
193 D

-114	+0.8	-4	-118	-14
108	+0.6	+14	94	+10
100	+0.8	-4	104	0
92	+1.0	-19	111	-7
82	+0.9	-12	-94	+10

-104.2 +20-21 / 5

±8.2

1 – 3
197 R

+38 ✓	~~+1.4~~	~~-62~~	~~+100~~	
	~~+2.4~~	~~-86~~	~~+124~~	-12 -10
48 ✓	~~+2.0~~	~~-71~~	~~+119~~	
	~~+26~~	~~-94~~	~~+140~~	+4 +9
58 ✓	~~+1.7~~	~~-62~~	~~+116~~	
	~~+23~~	~~-82~~	~~+140~~	+4 +6
64 ✓	~~+1.3~~	~~-38~~	~~+102~~	
	~~+19~~	~~-67~~	~~+131~~	-5 -8
+72 ✓	~~+1.4~~	~~-43~~	~~+111~~ ✓	
	~~+26~~	~~-71~~	~~+143~~	+7 +5

~~5678~~ ~~+115-17~~ / 5

~~+135.6~~ ~~±6.4~~

~~+110.4~~

+20-18 / ✓

±.76

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1 – 3

202 R

+46	1.7	-58	+104	-3
55	1.4	-43	98	-9
66	1.3	-38	104	-3
77	1.3	-38	115	+8
86	1.1	-26	+112	+5

+106.6 $\frac{+13-15}{5}$ ±5.6

1 – 3

207 R

+52	2.0	-71	+123	-2
64	1.8	-62	126	+1
74	1.4	-43	117	-8
84	1.6	-53	137	+12
92	1.2	-32	+124	-1

+125.4 $\frac{+13-11}{5}$

±4.8

1 – 3

210 R

+37	2.9	-101	+138	-11
42	2.9	-101	143	-6
47	3.0	-103	150	+1
52	2.9	-101	153	+4
58	2.9	-101	159	+10

+148.6 $\frac{+15-17}{5}$

±6.4

1 – 3

216 R

+32	3.8	-120	+152	+18 ✓
40	2.7	-95	135	~~0~~ +1
47	2.3	-82	129	~~-5~~ -6 ✓
52	2.2	-79	131	~~-4~~ -3
58	1.9	-67	+125	~~+6~~ -9

~~134.8~~ $\frac{\text{~~+18-20~~}}{5}$

~~±7.6~~ $\frac{+19-17}{\surd}$

~~±7.2~~

1 – 3

221 R

+36	2.7	-95	+131	-5
42	2.7	-95	137	+1
46	2.6	-92	138	+2
51	2.3	-82	133	-3
56	2.4	-86	+142	+6

+136.2 $\frac{+9-8}{5}$

±3.4

1 – 3

224 R

1.7 ~~-58~~ +141 ~~-(~~

+83	~~1.6~~	~~-53~~	+136	~~0~~
94	~~1.4~~	~~-43~~	~~+137~~	~~+1~~
104	~~1.6~~	~~-53~~	~~+159~~	~~+21~~
112	~~1.2~~	~~-32~~	~~+144~~	~~+8~~
121	~~0.6~~	~~+14~~	~~+107~~	~~-29~~

~~+142.2~~ $\frac{\text{~~+30-29~~}}{5}$

+136.2

~~±11.8~~

$\frac{+24-27}{\surd}$

±11.0

Lat. II.

1 + 3

230 D

-249	-0.1
226	-0.3
197	-0.1
176	0.6
160	-0.1

172 R.

-24 ✓	+3.7	-119	+94	-2
-18	+3.1	-106	+88	-8
-10	+3.8	-103	+93	-3
-4	+3.0	-103	+99	+3
+4	+2.9	-101	+10 ✓	+9

+9 ✓.8 $\frac{+12-13}{\surd}$

≠5.0

1 + 3

1883-4

243 D

-32	2.0	-71	-103	+4
24	2.3	-82	106	+1
14	2.6	-92	106	+1
8	3.0	-103	111	-4
0	3.3	-110	-110	-3

-107.2 $\frac{+6-7}{5}$

±2.6

1 + 3

245 D

-2	1.8	-62	60	-64 -6
+4	1.7	-58	62	-54 +4
11	2.0	-71	82	-60 -2
17	2.2	-79		-62 -4
23	2.1	-75		-52 +6

-58.4 $\frac{+10-12}{5}$

±4.4

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Pat II

1+3
250 D

-18	1.5	-48	-66	+10
12	1.7	-58	70	+6
2	2.1	-75	77	-1
+9	2.6	-92	83	-7
20	3.0	-103	-83	-7

-75.8 $\frac{+16-15}{5}$

±6.2

1+3
255 D

-127	~~+1.4~~ ~~+1.7~~	~~-43~~ ~~-58~~	~~-170~~ ~~-185~~	-16 ✓
120	~~+1.2~~ ~~+1.5~~	~~-32~~ ~~-46~~	~~-152~~ ~~-168~~	~~+2~~ ~~+1~~
113	~~+1.3~~ ~~+1.6~~	~~-35~~ ~~-53~~	~~-151~~ ~~-166~~	+3 ✓
107	~~+1.5~~ ~~+1.8~~	~~-42~~ ~~-62~~	~~-155~~ ~~-169~~	~~-1~~ ~~0~~
100	~~+1.4~~ ~~+1.7~~	~~-43~~ ~~-58~~	~~-143~~ ~~+158~~	+11 ✓

~~-169.2~~ $\frac{~~+15-16~~}{~~5~~}$

~~±6.2~~

$\frac{+16-17}{\sqrt{}} = \pm 6.6$

Beafa
1-3
258 R

+38	1.7	-58	+96	-9
53	1.8	-62	+115	+10
65	1.4	-43	108	+3
74	1.1	-26	100	-5
80	1.1	-26	+106	+1

+105.0 $\frac{+14+14}{5}$

±5.6

Sat. II.

1-3
260 R

+22	2.0	-71	+93	+12
32	1.5	-48	80	-1
40	1.4	-43	83	+2
50	1.2	-32	82	+1
61	0.8	-4	65	-16

+80.6 $\frac{+15-17}{5}$

±6.4

270 R

+74	-0.1	+149	
88	-0.3	149	
98	-0.3	149	
118	+0.3	56	
138	+0.7	+5	

1-3
276 R

+21	2.7	-95	+116	+9
28	2.4	-86	114	+7
35	2.0	-71	106	-1
40	1.8	-62	102	-5
44	1.6	-53	+97	-10

+107.0 $\frac{+16-16}{5}$

±6.4

1-3
278 R

+25	2.9	-101	+126	+7
34	2.7	-95	129	+10
40	2.1	-75	115	-4
46	1.8	-62	108	-11
52	1.9	-67	119	0

+119.4 $\frac{+17-15}{5}$

±6.4

285 next page

-11	1.4	-43	-54	+11
2	1.7	-58	60	+5
+8	2.4	-86	78	-13
22	2.5	-89	67	-2
37	3.0	-103	-66	-1

-65 $\frac{+16-16}{5}$

±6.4

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1884-5

1+3

283 ☉

+35	1.8	-62	-27	-5
43	1.9	-67	-24	-2
51	2.0	-71	-20	+2
58	2.2	-79	-21	+1
66	2.4	-86	-20	+2

-22.4 $\frac{+5-7}{5}$

±2.4

1+3

285 ☉

+19 ~~+11~~	1.4 ✓	-43	~~-54~~ ✓-24	~~+9~~ +11 ✓
+20 ~~2~~	1.7 ✓	-58	~~-66~~ ✓-30	~~+3~~ +5 ✓
+30 ~~+8~~	2.4 ✓	-86	~~-78~~ ✓-40	~~-15~~ -13 ✓
+✓2 ~~-22~~	2.5 ✓	-89	~~-57~~ ✓-37	~~+7~~ -2 ✓
+67 ~~37~~	3.0	-103	~~-66~~ ✓-36	~~-3~~ -1

~~685~~ $\frac{+19-18}{5}$

-3✓.0

~~±7.4~~ $\frac{+16-16}{\checkmark}$

±6.4

1+3

287 ☉

+35	2.2	-79	-44	+2
42	2.5	-89	47	-1
48	2.8	-98	50	-4
56	2.9	-101	45	+1
65	3.2	-108	-43	+3

-45.8 $\frac{+6-5}{5}$

±2.2

1+3

290 ☉

+27	2.0	-71	-44	-15
34	2.0	-71	37	-8
42	1.8	-62	20	+9
51	2.0	-71	20	+9
66	2.4	-86	-26	+3

-29.4 $\frac{+21-23}{5}$

~~±2.6~~ ±2.2

1+3

298 ☉

-5	1.6	-53	-58	+9
+2	1.5	-48	46	+21
8	2.2	-79	71	-4
16	2.8	-98	82	-15
23	3.0	-103	-80	-13

-67.4 $\frac{+30-32}{5}$

±12.4

1+3

299 ☉

-47	+0.9	-12	-59	-3
32	1.3	-38	70	-14
22	1.5	-48	70	-14
-8	1.2	-32	40	+16
+6	1.5	-48	-42	+14

-56.2 $\frac{+30-31}{5}$

±12.5

Reafr.

301 ☾ 1-3

~~+42~~ +43	1.8	-62	~~+104~~ +105	~~+~~ +1
~~55~~ ✓4	1.4	-43	~~98~~ +97	~~47~~ -7
~~64~~ 63	1.3	-38	~~102~~ +101	~~-83~~ -3
~~71~~ 70	1.6	-53	~~124~~ +123	~~+20~~ +19
~~77~~ 76	1.0	-19	~~+96~~ +95 ✓	-9 -9

+104.8 $\frac{+19-20}{5}$

~~±7.8~~ $\frac{+20-19}{\checkmark}$

±7.4

1-3

306 ☾

-21	3.4	-113	+92	+1
14	3.0	-103	89	-2
6	2.8	-98	92	+1
+1	2.7	-95	96	+5
9	2.1	-75	84	-7

+90.6 $\frac{+7-9}{5}$

±3.2

307 ☾

+23	0.7	+5
35	0.6	+14
46	0.8	-4
54	0.8	-4
64	1.4	-43

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1-3

313 R

-17	3.2	-108	+91	-4
10	3.1	-106	96	+1
-4	3.1	-106	102	+7
+2	2.7	-95	97	+2
9	2.3	-82	91	-4

+95.4 $\frac{+10-8}{5}$

±3.6

1-3

314 R

+84	+0.5	+25	+59	+2
94	+0.2	+68	26	-21
104	+0.2	+68	36	-21
114	+0.5	+25	89	+32
126	+0.3	+50	+76	+19

+57.2 $\frac{+53-52}{5}$

±21.0

1-3

316 R

+18	2.0	-71	+89	~~+4~~ -16
27	2.0	-71	98	~~-5~~ -7
36	2.1	-75	~~101~~ 116 ~~-2~~	+6
42	2.1	-75	117	~~+4~~ +12
46	1.8	-62	+108	~~+5~~ +3

~~+102.6~~ $\frac{~~+19-21~~}{5}$

~~+104.6~~

~~±8.0~~

+21-23

√

±4.6

1+3

322 D

+13	0.8	-4	+9	-4
24	1.1	-26	-2	-15
35	1.2	-32	+3	-10
50	1.0	-19	31	+18
68	1.4	-43	+25	+12

+13.2 $\frac{+30-29}{5}$

±11.8

1885-6

1+3

325 D

+61	2.0	-71	-10	+5
69	2.2	-79	-10	+5
76	2.7	-95	-19	-4
84	2.9	-101	-17	-2
92	3.4	-113	-21	-6

-15.4 $\frac{+10-12}{5}$

±4.4

1+3

329 D

+56	2.3	-82	-26	~~+7~~	+1
~~62~~ 56	2.5	-89	~~-27~~ -33	~~0~~	0
~~70~~ 62	2.7	-95	~~-25~~ -33	0	+2
~~79~~ 76	3.0	-103	~~-24~~ -33	0	+3
+ ~~82~~ 79	3.7	-119	~~-31~~ ~~-40~~ -7		-4

~~-33.0~~ $\frac{~~+7-7~~}{5}$

~~-26.6~~

~~±2.8~~

+6-4

√

±2.0

Reap.

1-3

338 A

+25	~~2.5~~ 2.6	~~-89~~ -92	~~+114~~ +117	+3 ✓
32	~~2.1~~ 2.2	~~-75~~ -79	~~107~~ +111	~~-4~~ -3
38	~~2.1~~ 2.2	~~-75~~ -79	~~113~~ +117	~~+2~~ +3
44	~~1.9~~ 2.0	~~-67~~ -71	~~111~~ √	~~0~~ +1
50	~~1.7~~ 1.8	~~-58~~ -62	~~+108~~ +112	~~-3~~ -2

~~+110.6~~ $\frac{~~+5-7~~}{5}$

~~+114.4~~

~~±2.4~~ $\frac{+7-5}{5}$

±.24

1-3

340 A

+2	3.3	-110	+112	+3
8	2.9	-101	109	0
14	2.6	-92	106	-3
20	2.6	-92	112	+3
26	2.2	-79	+105	-4

+108.8 $\frac{+6-7}{5}$

±2.6

1-3

348 R

+154	+.9	-12	+166	-9
180	+.7	+5	175	0
192	+.7	+5	187	+12
214	+.6	+14	200	+25
239	+.1	+93	+146	-29

+174.8 $\frac{+37-38}{5}$

±15.0

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R 355 1-3

+77 1.0 -19 +96 +57 +5 ✓
92 0.3 +50 42 +3 -9
106 0.2 +68 38 +1 -13
122 0.1 +93 29 +10 -22
140 0.0 +149 -9 -48 +4 ✓ -5 ✓
+39.2 +60-59 4
5
+5.1 ✓ ±23.8 ± 2.2 ✓

D 360 1+3

-8 1.0 -19 -27 +13
+2 1.3 -38 36 +4
13 1.1 -58 45 -5
23 1.8 -62 39 +1
36 2.5 -89 -53 -13
-40.0 +18-18
5
7.2

1887

D 362 1+3

-2 ✓ -26 N 1.1 ✓ -58 ✓ -84 +3 -4
-16 ✓ 0.9 1.8 ✓ -62 ✓ -78 ✓ +1
-6 -7 0.8 2.0 ✓ -71 ✓ -77 +2 ✓
+4 +3 2.3 ✓ -82 ✓ -78 +1 ✓
+1 +6 2.1 ✓ -95 -79 +1 ✓
-79.6 +4-4
5
-7.9.6 ± 1.6 +5 - 4 ✓ = ±1.8

364 D 1+3

-4 ✓ -44 1.2 -32 -76 +2 ✓
37 86 1.4 -43 -79 -1 ✓
37 26 1.4 -43 -79 +9 ✓
18 +7 1.9 -6) -84 -6 ✓
-9 -8 2.1 -75 -83 -5 ✓
-79.2
78.2
+4.6 +11+12
5

Recap.

366 D 1+3

-109 0.7 +5 -104 -4
98 1.0 -19 117 -17
87 1.0 -19 106 -6
76 1.0 -19 95 +5
67 0.9 -12 -79 +21
-100.2 +26-17
5
±10.6

320 R 1-3

+75 1.8 -62 +137 +12 -13
86 1.9 -6) 153 +4 +3
97 1.7 -58 155 +6 +5
107 1.4 -43 150 +1 0
117 +1.2 -3.2 +14.9 +5
+1.3 -3.2 +1.5 ✓
+14.8.8 +11+12
5
+1.5 0.0
± 4.6 +1.3 - 1.3
✓
± 5.2

R 374 1-3

+56 2.6 -92 +148 +6
65 2.3 -82 147 +4
74 1.8 -62 136 -7
82 1.7 -58 140 -3
89 1.6 -53 +142 -1
142.6
+9 -11
5
±4.0

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1-3

375				see below 378		
+124	1.0	-19	+143	-115	0.2	+68
132	0.7	+5	127	105	0.3	+50
139	0.6	+14	125	95	0.2	+68
147	0.6	+14	133	83	0.6	+14
157	1.0	-19	+176	70	0.9	-12

1888

☌ 378			1+3
~~-160~~ ~~-115~~	0.2	+68	~~-92~~ ~~-47~~ ~~+9~~
~~150~~ ~~105~~	0.3	+50	~~-100~~ ~~-55~~ +1 ✓
~~140~~ ~~95~~	0.2	+68	~~-72~~ ~~-27~~ +29 ✓
~~120~~ ~~83~~	0.6	+14	~~-114~~ ~~-69~~ -13 ✓
~~-115~~ ~~70~~	0.9	-12	~~-127~~ ~~-82~~ -26 ✓

~~-56~~ ~~139-39~~ / 5

~~-101.0~~ ~~±15.6~~

☌ 380					1+3
-114	1.1	-26	-140	0	
101	1.2	-32	133	+7	
90	1.8	-62	152	-12	
79	1.9	-67	146	-6	
62	1.9	-67	129	+11	

-140.0 +18-18 / 5

±7.2

☌ 381					1+3
-155	0.5	+25	-130	+16	
146	0.8	-4	150	-4	
139	1.1	-26	165	-19	
120	1.0	-19	139	+7	
96	1.5	-48	-144	+2	

-145.6 +25-23 / 5

±9.6

☌ 387					1+3
-56	1.8	-62	-118	+10	
50	1.9	-67	117	+11	
43	2.5	-89	132	-4	
35	3.2	-108	143	-15	
-18	3.3	-110	-128	0	

-127.6 +21-19 / 5

±8.0

☌ 389					1+3
~~-137~~ ~~-149~~	~~0.4~~ 0.7	~~+36~~ ~~+5~~	~~-101~~ ~~-144~~	~~+17~~ ~~-21~~	
~~-126~~ ~~127~~	~~0.2~~ 0.4	~~-4~~ ~~+36~~	~~-130~~ ~~+101~~	~~-12~~ ~~+22~~	
~~-111~~ ~~126~~	~~1.0~~ 0.8	~~-19~~ ~~-4~~	~~-130~~ ~~130~~	~~-12~~ ~~7~~	
~~-96~~ ~~113~~	~~1.6~~ 0.9	~~-26~~ ~~+12~~	~~-122~~ ~~125~~	~~-4~~ ~~-2~~	
~~-82~~ ~~90~~	~~1.1~~ 1.1	~~-26~~ ~~-26~~	~~-102~~ ~~-116~~	~~+10~~ ~~+7~~	

~~-122.2~~ ~~+29-30~~ / 5

~~-116.2~~

~~+27-26~~ ✓

≠11.0

☌ 391					1+3
-188	0.5	+25	-163	-35	
175	0.1	93	82	+46	
163	0.3	50	113	+15	
149	0.7	+5	144	-16	
128	0.9	-12	-140	-12	

-128.4 +61-63 / 5

±24.8

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Reap.

1-3

R 396

+88	1.9	-67	+155	+6
97	1.6	-53	150	+1
102	1.4	-43	145	-4
106	1.3	-38	144	-5
111	1.3	-38	+149	0

+148.6 +7-9/5 ±3.2

1-3

R 399

+91	1.8	-62	+153	-18
104	1.8	-62	166	-5
115	1.5	-48	163	-8
125	1.7	-58	183	+12
135	1.6	-53	+188	+17

+170.6 +29-31/5 ±12.0

see below.

403

+6	1.1	-26	+32
14	1.2	-32	
23	1.4	-43	
33	1.8	-62	
43	1.9	-67	

1889

Reap.

1-3

R 403 1+3

~~-94~~				
~~+6~~	1.1	-26	~~-120~~ ~~-20~~	+2
~~-86~~				
~~+14~~	1.2	-32	~~-114~~ ~~-18~~	+4
~~-77~~				
~~23~~	1.4	-43	~~-120~~ ~~20~~	+2
~~-67~~				
~~33~~	1.8	-62	~~-129~~ ~~29~~	-7
~~-57~~				
~~43~~	1.9	-67	~~-124~~ ~~-24~~	-2

~~-222~~ ~~+8-9/6~~ -122.2 ~~+3.4~~

R 407 1+3

-94	1.3	-38	-132	-3
85	1.5	-48	133	-4
76	1.5	-48	124	+5
67	1.8	-62	129	0
57	2.0	-71	-128	+1

-129.2 +6-7/5 ±2.6

Reap.

1-3

R 411

+16	2.7	-95	+111	-3
24	2.4	-86	110	-4
32	2.4	-86	118	+4
37	2.2	-79	116.	+2
43	2.0	-71	+114	0

+113.8 +6-7/5 ±2.6

(over).

R 415 1-3

+25	3.1	-106	+131	~~+9~~ 11
36	2.3	-82	118	~~-4~~ -2
45	1.9	-67	112	-8
54	1.9	-67	121	+1
62	1.7	-58	+120	0

+120.4 +12-10/5 ±4.4

425

~~-88~~	0.6	+19	-102
62	1.4	*41	
44	1.7	-56	
23	2.1	-74	
+16	2.5	-88	

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1890

425

~~-83~~	0.6	+19	~~-101~~	-6
62	1.4	-41	103	-8
44	1.7	-56	100	-5
23	2.1	-74	97	-2
+16	2.5	-88	~~-72~~ +22	

-94.6 $\frac{+22-21}{5}$

±86

δ 425 1+3

-83	0.6	+14	-69	+20
62	1.4	-43	105	-16
44	1.7	-58	102	-13
23	2.1	-75	98	-9
+16	2.5	-89	-73	+26

-89.4 $\frac{+26-28}{5}$

±14.8

wrong table

429

-14	2.0	-69	-83	-1
4	2.2	-77	-81	+1
+6	2.5	-88	-82	0
19	3.0	-102	-83	-1
31	3.5	-114	-83	-1

-824 $\frac{+1-3}{5}$

.08

wrong table

431

~~-12~~	1.7	-56	-68	+1
2	1.9	-65	67	+2
+6	2.1	-74	68	+1
15	2.4	-85	70	-1
26	2.9	-100	-74	-5

-69.4 $\frac{+4-6}{5}$

±2.0

δ 429 1+3

-14	2.0	-71	-85	-1
4	2.2	-79	83	+1
+6	2.5	-89	83	+1
19	3.0	-103	84	0
31	3.5	-115	-84	0

-83.8 $\frac{+2-1}{5}$

±0.6

δ 431 1+3

-12	1.7	-58	-70	+1
2	1.9	-67	69	+2
+6	2.1	-75	69	+2
15	2.4	-86	71	0
26	2.9	-101	-75	-4

-70.8 $\frac{+5-4}{5}$

±1.8

R 434 1−3

-1	3.2	-108	+107	+20
+14	2.1	-75	89	+2
29	1.3	-38	67	-20
44	1.2	-32	76	-11
58	1.3	-38	+96	+9

+87.0 $\frac{+31-31}{5}$

±12.4

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Satellite III

Special Cases

327 factor 364.

+264	29	-246 + 18 +8	log 2.56119 = 364.075
272	31	-258 + 14 +4	-675
282	35	-280 + 2 -8	-2451
292	36	-285 + 7 -3	~~,710~~ ~~-675~~ ~~-4792~~
300	37	-290 + 10 0	-.710 .364 -.258.4
		+10.2	

-770 364 -280.3

-784 364 -285.4

-797 .364 -290.1

437

-70	33	-210 - 280 -3	log 2.46101 = 289.07
65	33	215 280 -3	290 -726 210.5
59	35	223 282 -5	290 -741 -214.92
51	36	227 278 -1	
42	35	-223 -265 +12	
		-277	

290 -770 223

290 -784 227

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1

-94	+1.1	-52	-146+21	log. 2.480795 = 302.51
75	+1.4	-88	-163 +4	-.174 / 1525.48
53	+1.8	-127	-180 -13	
37	+2.0	-144	-181 -14	
20	+2.0	-144	-164 +3	
			-166.8	+28.27

303 −.289 = 87.567

303 −.419 = 2727 + .303 1212 = 126.955

303 .476 = 144.228

14

Few obs. of not of much value

+43	+1.5	-95	+138
113	+0.3	+99	+14
288	+0.3	+99	+189
323	-0.2	+294	+29

log 2.46851 = 294.1 − .323 = 882 + 588 + 882 = −94.962

294 +.336 = 1764 + 882 + 882 = 98.784

15

-24	4.3	-264	[+230]
+35	0.6	+28	[+7]
105	0.8	-8	+113
122	0.6	+28	+94
207	0.1	+184	+83
284	0.1	+184	+100
302	0.1	+184	+118
			+~~1016~~

log. 2.46851 = 294.1 − .8653 = −253.7

294 +.096 = +28.2

294 −.028 = −8.2

294 +.626 = .184

20

+128	1.1
175	0.6
225	0.2

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27

missing from package

44

-45	+4.1	-250	-295	+375
32	4.4	-258	-290	+8 -10
17	4.8	-270	-287	+11 -7
-5	5.7	-		
+8	5.8			
-62	3.5	-228	-290	-10
53	3.8	-276	-239 ~~-329~~	+41
			~~-298.2~~ -280.2	

log. 2.47160 = 296.2 −843 −248.5

296 872 258.1

296 −912 592 296 2664 269.952

296 −770 −227.9

~~296 −797~~

296 −809

Recap.

45

-124	3.5	-208	+84	-12
112	3.2	-196	+84	-12
99	3.3	-200	+101	+5
87	3.1	-192	+105	+9
76	2.9	-182	+106	+10
			+96	+24 −24 / 5 ±9.6

log 2.47160 = 270.1 −770 −207.8

270 −726 −196.0

270 −741 200.0

270 −710 −191.7

270 −675 182.2

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Disap

-240 +0.3 $\frac{58}{+101}$ [-139]

-227 +12 -65 -292 +5 2.478?2 = 301.1 301 301 301 301

214 +1.4 -87 -301 -4 -.215 -.289 -.323 -.618 +.336

198 +1.5 -97 -295 +2 64.7 -87.0 -97.2 -186.0 +101

180 -1.0

115 +2.6 -186 -301 -3

-297.2 $\frac{+7-7}{4}$ ±3.5

Reap. 64

-156 +3.8 -247 +91 -2

140 3.7 -243 103 +10

129 3.3 -226 97 +4

120 2.9 -206 86 -7

108 2.7 -195 +87 -6

+92.8 $\frac{+14-15}{5}$

±5.8

2.48484 = 305.4 305 305 305

-.809 -797 -741 -675

-246.7 -243.1 ~~305~~ 226.0 205.9

305

-638

194.6

Reap Neg. 65

-119 3.0 -211 +92 +9

108 2.7 -195 87 +4

97 +2.3 -168 71 -12

86 2.3 -168 82 -1

76 2.2 -161 $\frac{+85 \quad +2}{+83.4 \quad \frac{+15-13}{5}}$

±5.6

same 305 305 305 305

-693 -638 -552 -528

-211.4 -194.6 -168.4 -161.0

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Reap. 68

-176	+4.6	-233	+57
-168	4.2	-262	94
156	4.1	-259	93
144	3.8	-248	104
135	3.5	-236	+101
125	3.4	-232	+107
			+99.8

2.48689 = 306.8 3

307 307 307 307
-889 -853 -843 -809
232.9 261.9 258.8 248.4

307 307
-770 -756
-236.4 232.09

Disap. 71

-218	+1.0	-41.2	-259 -12
208	+1.0	-41.2	-249 -2
201	+1.0	-41.2	242 +5
190	+1.2	-68	258 -11
173	+1.1	-55.1	-228 +19
		-49.2	-247.2 $\frac{+24-25}{5}$ ±9.8

2.50090 = 316.9 317 317 317
317 -130 -215 -174
-41.2.1 -68.2

Disap. 79/8

-135	3.0	-217.6	-353 -9
126	3.2	-228	354 -10
116	3.3	-233	349 -5
107	3.1	-223	330 +14
99	3.3	-233	-332 +12
			-343.6 $\frac{+26-24}{5}$ ±10

2.49921 = 314.2 314 314 314
-693 -726 -741 -710
217.6 -227.9 -232.7 -222.9

Disap. 81

-126	+2.0	-150	-276 -22
114	2.1	-158	272 -18
103	2.2	-166	269 -15
93	1.9	-141	234 +20
85	1.8	-132	-217 +37
			-253.6 $\frac{+57-55}{5}$ ±22.4

same 314 314 314 314 314
-476 -503 528 -448 -419
-149.5 -158 165.8 -140.7 -131.6

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87

−365	+0.4
338	0.6
317	0.7
293	0.9
264	1.0

not of much value

Recap. 95

−93	+25	−243	+150	+14
78	2.2	−215	+137	+1
68	1.9	−182	114	−22
56	1.6	−145	[89]	
43	1.9	−182	139	+3
30	1.8	−170	+140	+4

+136 +22−22 / 5 = ±8.8

2.60940 = 406.8

40) 40) 40) 40)
40) −528 −448 −356
−597 −214.9 −182.3 −144.9
−243.0

40)
419
170.5

Desap. 97

−14	+4.3	−354	−368	−23
5	+4.0	−341	346	−1
+5	+4.0	−341	336	+9
15	+4.3	−354	339	+6
26	+4.6	−364	−338	+7

−345.4 +24+22 / ±9.2

2.6133) = 410.5

410 410 410
−863 −832 863 −889
−353.8 −341.1 −353.8 364.5

Recap. 105

−148	2.7)	−275	+127
124	2.5	−257)	
104	2.4	−248	
83	2.1	−217)	
63	1.7)	−167)	

2.63440 = 430.9

431 431 431 431
−638 −597) −575 503
275.0 257.3 247.8 217)

431
388
−167)

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1892
May 12.

Memoranda.

All the eclipses have been arranged in order and have consecutive numbers. ~~All the~~ No eclipses missing.

~~Eclipse 236 has no constant. To be reduced graphically.~~

" 475 " " " " " " "

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List of Eclipses of Sets. I and II. in which the constant of seconds, as reduced in general on pages 44 – 82 of this book, does not there appear, but may have been reduced elsewhere.

Set. I.

73R Too little data.

279R Apparently correctly reduced.

280R Reduced, except 2 readings. Now correctly reduced,

335D Apparently correctly reduced.

354R Reduced, except 3 readings. Now all reduced.

356R Apparently correctly reduced.

442D
445D
447D
448D
450D
457D
473R
476R
478R
479R
460R
462R
463R
464R
466R
470R
472R
473R

In second cycle.

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Continued from previous page.

Sat. II.

√2D	Data meagre. No constant.	Not to be reduced.
√3D	" " Constant. 2.	Troubled by clouds. Not to be reduced.
144R	No settings made. When seen, sat. was in "contact" with limb of Jup.	
236D	See journal.	See p. 100.
449D	In second cycle.	
454R		
457R		
461R		
467R		
471R		
474R		

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No. Ecl.	Cat.	Page.	
379	I	47	Wrong red. Col. 3 only used. — Corrected.
29r	I	r1	" " " " " " " Corrected, observations taken, only 3 used.
r	I	r3	only 3 obs. used in constant.
29	I	r4	Constant not red. Values rather discordant.
61	I	r6	" " " " " "
94	I	r8	1st " quantity used in constant. Wrong. Corrected, only 1
99	I	"	One " " in constant rejected. 4 used.
167	I	62	Constant not taken, Numbers rather discord. Correctly reduced,
222	I	65	" " " " " "
229	I	66	" " " " " "
233	I	66	
257	I	68	Wrong reduction,
102	II	71	Constant not reduced
163	II	74	Only 4 obs. used in con,
230	II	75	Constant not reduced.
270	II	76	" " "
307	II	77	" " "

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Sat. I.

No.	J. D.	D R	Time.	A. D.
2	2407165	D	~~-93.A~~ -30.7	3.4
5	7181	D	~~+29.3~~	8.3
6	7204	R	+118.6	12.0
7	7216	R	+60.5	11.5
8	7220	R	+101.0	6.8
9	7222	R	~~+94.5~~ +86.7	~~16.5~~ 11.7
11	7229	R	~~+98.8~~ +96.6	~~3.8~~ 4.0
13	7236	R	+100.4	2.8
17	7245	R	+89.6	5.2
18	"	R.	+133.2	29.8
21	7261	R	~~+99.0~~ +94.2	~~7.6~~ 7.8
22	7261	R	+72.4	9.6
23	7268	R	~~+99.8~~ +96.8	4.6
24	"	R.		
28	7275	R.	+151.4	6.4
29	7275	R.	+102.4	8.0
31	7284	R.	+122.6	7.6
32	7284	R.	~~+64.0~~ +57.0	~~12.0~~ 12.4
33	7291	R.	+92.0	.8
34	7291	R.	~~+107.8~~ +112.8	4.2 3.8
39	7480	D	-52.2	9.4
41	7519	D	~~-75.2~~ -73.0	~~3.4~~ 2.8
46	7549	D	-86.2	2.2
47	7558	D	-122.2	8.2
54		D	-48.0	4.8
55	7572	D	-96.4	2.8
56	7574	D	~~-64.2~~ -59.8	~~8.6~~ 9.8
57	7581	D	-73.0	9.6
60	7590	D	-80.2	9.0
61				

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No.	J.D.	D R	Time.	A.D
63	2407613	R.	+7.2	6.2
66	7620	R.	~~+65.6~~ +72.8	~~+5.6~~ 13.8
67	7622	R.	~~+97.4~~ +92.4	4.4
72	7636	R.	~~+128.2~~ +126.6	~~2.6~~ 2.8
73	7638	R.		
75	7643	R.	+93.8	17.4
77	7652	R.	+88.4	3.6
78	7652	R.	~~+95.4~~ +89.8	~~+2.0~~ 11.8
80	7661	R.	+97.2	7.0
83	7684	R.	+132.2	5.4
84	7691	R.	+148.6	3.2
86	7700	R.	+115.4	.8
88	7723	R.	+104.8	3.8
92	7896	D	-68.4	3.2
96	7926	D	-77.8	10.2
98	7935	D	-43.2	7.0
99	7942	D	-55.3	1.7
100				
101	7951	D	-69.8	3.4
103	7958	D	-77.2	14.6
106	7974	D	-90.2	8.6
110	7988	D	-83.2	4.2
111	7990	D	-64.8	5.8
112	7997	R.	+125.8	7.8
114	7999	R.	+79.8	3.0
115	8004	R.	+85.0	3.6
118	8013	R.	+84.6	5.2
119	8020	R.	+81.0	5.2
120	8022	R.	+102.8	7.8
121	8027	R.	~~+140.8~~ +126.2	~~23.4~~ 11.2

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No.	J. D.	D R.	Time	A. D.
122	2408029	R.	+95.8	7.0
123	8036	R.	+88.0	6.4
126	8043	R.	+92.4	2.8
127	8045	R.	+95.4	1.2
128	8068	R.	+91.6	2.8
130	8084	R.	+104.8	5.4
132	8091	R.	+77.0	4.4
135	8114	R.	+116.0	2.8
140	8280	D	-56.6	7.2
141	8296	D	-59.4	4.0
142	8303	D	-66.0	3.6
146	8358	D	~~-108.6~~ -63.0	1.2
149	8365	D	~~-57.4~~ -53.8	~~4.8~~ 5.4
150	8372	D	-66.6	4.8
151	8374	D	-77.0	4.0
152	8379	D	-71.2	5.8
153	8381	D	-66.4	2.0
154	8395	D	-120.4	16.0
156	8404	R.	+102.0	7.2
158	8411	R.	+74.8	4.2
159	8413	R.	+60.4	10.8
161	8415	R.	+60.4	10.8
162	8420	R.	+95.8	1.4
163	8436	R.	+106.0	2.4
164	8445	R.	+81.6	10.0
167	8461	R.	+95.4	6.0
169	8475	R.	+78.6	9.6
173	8491	R.	+89.6	7.2
176	8680	D	-49.2	10.2
177	8703	D	-60.0	6.0

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No.	J. D.	D R.	Time.	A.D.
180	2408726	D.	-64.8	2.2
184	8749	D	-74.4	4.4
186	8751	D	-60.6	9.2
187	8758	D	-69.4	4.4
188	8765	D	-77.6	2.8
190	8772	D	-51.4	10.8
194	8788	D	-58.2	4.2
195	8795	D.	-54.2	8.6
196	8799	R.	+100.4	16.0
198	8813	R.	+51.4	8.4
199	8815	R.	+69.4	15.6
203	8827	R.	+8.2	10.2
204	8829	R.	+94.2	3.8
208	8836	R.	+99.4	11.6
209	8843	R.	+138.2	5.0
211	8861	R.	+86.4	3.6
214	8868	R.	+87.2	6.6
215	8875	R.	+80.6	1.6
218	8891	R.	+51.2	2.2
219	8898	R.	+74.6	12.8
220	8914	R.	+83.4	13.2
222	8921	R.	+117.2	17.4
223	8937	R.	+99.8	3.4
226	9057	D	-46.2	15.0
227	9064	D	-45.8	9.8
229	9073	D	~~-45.7~~ -43.3	~~8.3~~ 7.6
231	9080	D	-67.4	7.2
233	9087	D	~~+21.5~~ -8.5	~~6.0~~
237	9103	D	-56.8	5.4
238	9119	D	-42.6	2.8

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No	J.D.	D R	Time	A.D.
239	2409/26	D	-52.0	3.2
240	9137	D	~~-47.4~~ -62,5	~~8.2~~ 6.5
242	9142	D	-59.0	4.8
244	9151	D	-69.4	4.4
246	9167	D	-97.8	5.0
247	9172	D	-57.6	4.4
252	9181	D	-61.6	4.0
253	9183	D	-72.4	2.8
254	9188	D	-83.0	10.8
256	9197	R	~~+144.8~~ +84.8	9.0
257	9199	R.	+74.0	10.4
262	9222	R.	+108.6	7.6
264	9227	R.	+98.0	2.4
267	9252	R.	+96.8	4.6
269	9268	R.	+100.6	8.8
274	9298	R.	+86.2	4.6
279	9314	R.	+99.2	3.0
280	9321	R.	+93.0	9.6
281	9441	D	-50.2	13.8
282	9464	D	-37.8	4.6
284	9487	D	-57.4	8.8
286	9496	D	-42.0	8.0
288	9510	D	-60.6	2.8
289	9519	D	-46.2	3.0
291	9526	D	-58.4	4.0
292	9533	D	-54.8	4.6
293	9551	D	-62.8	3.8
295	9574	D	-53.6	6.4
296	9579	D	-44.0	3.5
297	9581	D	-57.4	8.8

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No.	J. D.	D/R	Time.	A. D.
303	2409606	R.	+92.2	5.8
304	9611	R.	+95.8	5.8
305	9613	R.	+93.8	7.4
311	9652	R.	+89.0	5.2
312	9659	R.	+71.8	5.8
317	9714	R.	+68.2	3.8
318	9825	D.	-94.4	88
319				
321	9887	D	-47.2	2.8
323	9903	D	-55.2	1.0
324	9919	D	-54.6	4.8
326	9926	D	-60.4	3.2
330	9956	D	-40.2	3.8
331	9958	D	-58.4	3.6
33K	9972	D	~~-135.8~~ 76.0	~~4.2~~ 4.4
33✓	9981	D	-65.6	4.4
336				
339	0006	R.		
3K1	0011	R.	+51.2	13.4
3K2	0020	R.	+93.8	0.6
3K6	0027	R.	+74.8	9.0
3K7	0029	R.	+92.8	5.8
3✓1	0036	R.	+103.6	2.4
3✓2	0043	R.	+90.0	1.6
3✓3	0059	R.	+64.6	17.2
3✓K	0066	R.	+64.8	9.4
3✓6	0098	R.	+101.2	4.2
3✓7	0248	D	-31.6	4.0
361	0333	D	-50.2	3.4
363	0356	D	-47.8	6.2

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No.	J. D.	D R.	Time.	A. D.	
365	2410372	D	-52.4	4.8	
367	0381	D	-61.4	8.0	
369	0390	R.	+52.7	15.6	
371	0404	R.	+127.0	12.0	
372	0413	R.	+62.0	4.7	
373	0436	R.	+92.8	9.4	
376	0648	D	-44.2	11.0	
377	0655	D	-56.4	3.6	
379	0694	D	-47.8	1.8	
382	0726	D	-51.2	2.2	
386	0740	D	-41.2	6.2	
388	0749	D	-123.6	14.8	
390	0765	D	-78.8	3.0	
393	0781	R.	+84.6	5.6	
394					Gr.
395	0797	R.	+82.0	9.6	
400			+58.0	17.6	Gr.
401	0843	R.	+74.8	8.2	
404	1071	D	-70.8	14.2	
406	1149	D	-65.6	2.0	
408					Gr.
409	1188	R.	+69.6	6.0	
410	1197	R.	+87.2	5.4	
413	1204	R.	+90.2	7.4	
414	1220	R.	+87.2	3.4	
418	1236	R.	+80.4	8.0	
420	1243	R.	+65.6	6.4	
422	1298	R.	+82.6	14.0	
423	1471	D	~~-74.2~~ -94.1	7.0	
427	1510	D	-40.4	9.2	

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No.	J. dl.	D R.	Time	A.D.
428	2411526	D	-83.2	6.2
430	1549	D	-19.2	1.8
433	1572	D	-73.4	5.2
436	1613	R.	+89.6	4.4
439	1636	R.	+82.2	6.6
440	1659	R.	+91.2	3.8
441	1714	R.	+97.8	6.2
442	1871	D	[-28.6]	[17.2]
445	1933	D	-62.6	3.6
447	1958	D	-70.0	11.2
448	1963	D	[-54.0]	[18.4]
450	1965	D	~~-66.0~~ -75.4	~~12.0~~ 4.8
451	1979	D	-113.4	12.0
453	2004	R.	+97.2	3.8
456	2011	R.	+77.8	12.2
458	2020	R.	+112.4	1.6
459	2027	R.	+87.0	4.8
460	2029	R.	+105.4	2.4
462	2043	R.	+116.6	2.4
463	2050	R.	+127.4	12.4
464	2052	R.	+106.0	8.8
466	2075	R.	+107.6	0.8
470	2098	R.	+128.8	14.2
472	2105	R.	~~[+111.2]~~ +121.4	~~[16.6]~~ 14.4
473	2114	R.	+121.4	4.0
476	2287	D	~~-53.0~~ -54.0	5.6
478	2303	D.	-74.6	3.6
480	2349	D.	-76.4	4.0
481	2358	D.	-76.2	7.8
485	2363	D	~~-72.0~~ -70	5.2

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No.	J. D.	D. R.	Time	A.D.
486	2412372.	D.	~~-91.6~~ -90.6	2.8
489	2420	R.	~~+97.6~~ +96.6	5.6
490	2427	R.	~~+95.0~~ +97.0	6.8
491	2436	R.	~~+99.6~~ +101.0	9.6
492	2443	R.	~~+78.2~~ +77.2	5.8
496	2466	R.	~~+100.2~~ +99.2	4.6
497	2475	R.	~~+104.2~~ +105.2	3.8

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Remarks.

In Eclipse No. 5, Sat. I, Dis., only 3 quantities, instead of 5 were used, as only 3 besides constant were obtained.

In Eclipse 35K, Sat. I, Rs., the second obs. was omitted in obtaining fric to form the constant of seconds, ~~and the~~ as it was too discordant, and the sixth was used instead.

In some cases, especially among the earliest observations, the rigorous time limit (viz: 3 min. for Sats. 1 and 2, — 10 min. for Sat. 3, and 15 min. for Sat. 4 before taking constant.) was not rigorously applied when it would make no particular difference in the result, as the observations were in many cases few in number.

In eclipse No. 120 (Resp. Jup. I), the observations especially at the first, were made with much difficulty, "the images being at opposite extremities of diameter of field, and Jupiter being almost always entirely out of field."
A provisional reduction has accordingly been made bearing first 3 obs. out of constant of seconds, on half sheet.

In a number of eclipses, the time in Journal for some of the sets of 4 is only given to the minute, the being the same in the record book, In such cases, the second has been assumed

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to be zero. (without putting it in Journal, however) and the O-C. taken accordingly and put in brackets.

Constant of secs. for Ecl. 63. Sat. I, computed from individ. values. 2-6 incl. as I do had.

~~In~~ In Eclipse No. 72, Oct. 13. 1879, ~~the sixth reading was 13.2~~ in the first reading the tenths of a degree was omitted in record.

The sixth reading was recorded as 13.2 but it undoubtedly should be 33.2 and has been so assumed. It was also thought at the time, as indicated by the record, that the reading should be 33.2

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Sat. II.

No.	J. D.	D. R.	Time.	A. D.
3	2407166	D	-81.6	4.0
4	7173	D	-87.2	3.0
10	7223	R.	+76.6	11.6
19	7248	R	+69.8	2.2
20	7248	R.	+156.3	3.7
25	7273	R	+61.6	11.6
26	7273	R.	+58.2	7.4
30	7280	R	+ 3.6	6.4
37	7337	R	~~+50.8~~ +57.4	~~11.4~~ 9.2
40	7500	D	-37.2	11.8
42	7525	D	~~+13.8~~ +19.6	~~11.8~~ 12.4
43	7532	D	-40.0	6.8
52		D		Gr.
53	7564	D		notes.
59	7582	D	-57.6	3.6
62	7607	R	~~+216.2~~ +202.8	~~8.2~~ 12.8
74	7639	R.	+46.2	6.6
82	7664	R	+64.6	4.8
85	7696	R.	+50.0	3.6
89	7728	R.	+59.8	9.0
90	7859	D	-89.0	7.6
91				Gr.
93	7916	D	-10.4	5.2
94	7923	D	-13.2	4.2
102	7955	D	+1.4	7.6
104	7962	D	-70.4	6.0
108	7980	D	-26.0	7.2
109	7987	D	-12.2	5.0
113	7998	R.	+49.4	7.6
117	8012	R.	+54.6	2.4

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No.	J.D.	R.	Time.	A.D.
124	2408037	R.	+66.0	2.4
129	8069	R.	+46.2	1.4
134		R.	+42.0	4.4
136	8126	R.	+60.8	3.8
143	8314	D	-31.6	10.4
144	8332			only notice.
155	8396	D	-70.4 ~~-85.6~~	18.4 ~~15.2~~
157	8410	R.	+78.0	6.0
160	8414	R.	+91.4	3.6
165	8453	R.	+95.8	4.6
166	8460	R.	+88.8	3.8
168	8468	R.	+104.6	4.4
172	8485	R.	+95.8	5.0
174	8492	R.	+112.8	3.0
175	8524	R.	+117.0	7.2
178	8705	D	-106.4	5.2
183	8744	D	-111.0	6.0
189	8769	D	-95.0	4.4
191	8783	D	-109.0	3.2
193	8787	D	-104.2	8.2
197	8812	R.	+110.4	7.6
202	8826	R.	+106.6	5.6
207	8833	R.	+125.4	4.8
210	8851	R.	+148.6	6.4
216	8883	R.	+134.4	7.2
221	8915	R.	+136.2	3.4
224	8947	R.	+142.2	11.0
230				
236				
243	9142	D	-107.2	2.6

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No.	J.D.	D R.	Time	A.D
245	2409160	D	-58.4	4.4
250	9174	D	-75.8	6.2
255	9192	D	-154.2	6.6
258	9199	R.	+105.0	5.6
260	9203	R.	+80.6	6.4
270	9281	R.		Sa.
276	9306	R.	+107.0	6.4
278	9313	R.	+119.4	6.4
283	9469	D	-22.4	2.4
285	9494	D	-35.0	6.4
287	9501	D	-45.8	2.2
290	9526	D	-29.4	8.8
298	9583	D	-67.4	12.4
299	9590	D	-56.2	12.2
301	9601	R	+104.2	7.8
306	9615	R.	+90.6	3.2
307				Sa.
313	9672	R.	+95.4	3.6
314	9679	R	+57.2	21.0
316	9704	R.	+104.6	8.8
322	9892	D	+13.2	11.8
325	9924	D	-15.4	4.4
329	9956	D	-26.6	2.0
338	9999	R.	+114.4	2.4
340	0006	R.	+108.8	2.6
348	0031	R.	~~+174.8~~ +136.8	~~15.0~~ 7.2
355	0070	R.	+51.2	22.2
360	0322	D.	-40.0	7.2
362	0354	D	-78.8	1.8
364	0361	D	-79.2	4.6

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No.	J. D.	D R.	Time.	A.D.
366	2410379	D	-100.2	10.6
370	0404	R.	+150.0	5.2
374	0436	R.	+142.6	4.0
375				
378	0656	D	-101.0	15.6
380	0713	D	-140.0	7.2
381	0720	D	-145.6	9.6
387	0745	D	-127.6	8.0
389	0752	D	-118.2	11.0
391	0777	D	-128.4	24.8
396	0802	R	+148.6	3.2
399	0834	R.	+170.6	12.0
403	1054	D	-122.2	3.4
407	1168	D	-129.2	2.6
411	1200	R.	+113.8	2.6
415	1225	R.	+120.4	4.4
425	1509	D	-89.4	14.8
429	1534	D	-83.8	.6
431	1566	D	-70.8	1.8
434	1584	R.	+87.0	12.4
449	1964	D.	-88.8	0.6
454	2007	R.	+115.4	4.4
457	2014	R.	+109.8	3.8
461	2039	R.	+116.2	4.2
467	2078	R	+151.8	6.2
471	2103	R.	+164.6	2.0
474	2135	R.	+166.0	9.2
477	2291	D.	~~-90.2~~ -88.2	5.0
479	2348	D.	~~-129.2~~ -128.2	3.0
484	2362	D.	~~-123.2~~ -120.2	6.2

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No.	J.D.	D. R.	Time.	A.D.
487	2412373	R.	~~+156~~ −1246	6.0
488	2374	D.	~~-932~~ −92.2	5.8
493	2444	R.	+177.2	4.2
495	2462	R.	~~+144.2~~ +163.2	3.8

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Sat. III

No.	J. D.	D/R	Time	A. D	
1	2407159	D.	-180.2	13.0	
14	7238	D.	-339.7	12.3	
15	7238	R.	+23.6	26.0	
16	7238	R.	[+114.3]	[66.3]	Gr.
27	7274	R.			
44	7546	D.	-287.2	4.6	
45	7546	R.			Gr.
58	7582	D.	-289.4	11.2	
64	7618	R.	+93.6	6.0	
65	7618	R.	+84.2	5.4	
68	7625	R.	+99.8	3.4	
71	7632	D.	-231.8	9.8	
79	7661	D.	-338.4	10.0	
81	7661	R.	+45.0	9.2	
87	7704	D			Gr.
95	7926	R.	+125.8	19.4	
97	7933	D.	-340.2	2.6	
105	7969	R.	+128.4	10.4	
107	7976	D.	-312.0	7.2	
116	8012	R	+123.8	10.6	
125	8041	R.	+122.2	8.8	
131	8091	D.	-299.6	13.2	
133	8091	R.	-12.8	54.6	Gr.
137	8127	R.	-123.4	56.4	Gr.
138	8134	D.	-252.4	17.2	
139	8277	D.	-333.0	6.4	
145	8349	R.	+186.0	21.6	
147	8363	D.	-276.6	14.8	
148	8363	R.	+223.2	14.2	

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Sat. III

No.	J. dl.	D R.	Times	A.D.
170	2408478.	D.	-194.4	12.0
171	8478	R.	+109.8	9.4
179	8707	D.	-212.8	6.2
181	8743	D.	-189.6	18.0
182	8743	R.	+188.4	6.0
185	8750	D.		Gr.
192	8786	D.	-189.8	8.6
200	8815	R.	+172.8	23.4
201	8822	R.	+209.8	11.8
205	8829	D.	-215.0	10.4
206	8829	R.	+197.8	3.4
212	8865	D.	-156.0	10.8
213	8865	R.	+202.2	1.8
225	9051	D.	-143.2	6.2
232	9087	R.	+232.8	21.0
235	9094	D.	-119.4	5.6
249	9173	D.	-106.6	3.6
251	9180	D.	-120.4	6.0
259	9202	R.	+192.2	5.8
261	9209	R.	+241.6	19.6
266	9252	D.	-92.2	12.2
268	9252	R.	+272.4	3.6
272	9295	D.	-75.0	18.8
273	9295	R.	+276.0	9.6
275	9302	D.	-79.4	21.2
294	9560	D.	-41.6	5.6
300	9596	R.	+301.4	10.8
302	9603	R.	+343.2	3.4
309	9606	D.	+2.8	11.4

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Sat III.

No.	J. D.	D. R.	Times.	A.D
310	2409646	R.	+291.8	14.6
315	9689	D.	− 6.8	15.8
320	9875	D.	− 80.2	15.0
327	9954	D.	+ 10.2	4.6
328	9954	R.	[+61.2]	[127.8] Gr.
333	9961	D.	−37.8	3.8
337	9990	R.	+295.0	17.6
343	2410026	R.	+330.6	4.8
349	0033	D.	− 51.2	7.8
350	0038	R.	+331.0	5.6
358	0262	D.	− 70.6	3.6
359	0298	R.	[+316.6]	[43.2] Gr.
368	0384	R.	[+348.0]	[32.0] Gr.
383	0728	R.	+284.6	21.6
384	0735	D.	−201.0	10.8
385	0735	R.	+250.0	14.4
392	0778	D.	[−293.4]	[42.4] Gr.
397	0814	D.	− 306.8	13.4
398	0814	R.	+248.0	12.0
402	0893	R.	+287.6	25.6
405	1122	R.	+154.2	14.2
412	1201	R	~~+96.8~~ +105.8	~~8.1~~ 7.0
419	1237	R.	+91.2	16.6
421	1244	D.	−261.4	9.0
424	1473	D.	−252.0	4.8
426	1509	R.	~~+23.5~~ +86.8	~~10.5~~ 18.6
437	1631	D.	−276.8	4.6
443	1896	D.	−202.4	18.4
446	1939	D.	−231.2	9.4

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Sat. III

No.	J. D.	R.	Times.	A.D.
455	241 2011	R.	-32.2	23.0
465	2061	D.	-289.4	11.6
468	2077	D.	-240.8	3.8
469	2097	R.	+94.2	11.0
482	2362	D.	-311.6	2.4
483	2362	R.	+227.6	10.8
494	2448	D.	-297.4	3.6
498	2484	D.	-342.0	8.0
499	2484	R.	+155.2	19.8

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Sat. IV.

No.	J. D.	R.	Times	A.D.	
12	2407229	R.	-209.0	9.2	
35	7296	D.	-417.8	9.4	
36	7296	D.	-509.4	31.2	
38	7480	D.			Practically all notes.
48	7564	D.			omit observations meagre.
49	7564	D.			omit " "
50	7564	R.	+93.4	10.4	
51	7564	R.			Gr.
69	7631	D.			Gr.
70	7631	D.	-637.6	16.4	
76	7648	R.	+220.8	20.2	
217	8888	D.			nothing but groups of four.
228	9072	D.	+84.4	9.6	
234	9089	R.	-61.0	26.4	
241	9139	D			Gr.
248	9173	R.	+97.8	41.4	
263	9223	D.			Only 2 single readings
265	9240	R.	+158.6	14.8	
271	9290	D.	-68.8	11.4	
277	9301	R.	+185.4	18.0	
308	9642	R.			only 2 single readings.
332	9960	D.	-934.4	20.8	
344	2410027	D.			Gr.
345	0027	R.			
416	1233	D.	-246.0	36.4	
417	1233	R.			no magnitude constant.
432	1568	D.	-537.2	16.2	
435	1585	R.	-323.6	14.8	
438	1635	D.	-583.6	14.0	

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Nos	J. D.	D R.	Times.	A. D.
444	2411920	R.	+32.2	9.0
452	2004	R.	+175.2	13.4
475	2138	D.	−901.2	33.4

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Satellite III

I 1878

1	P.	D.
14	P.	D.
15	P.	R.
16	S.	R.
27	P.	R.

II 1879

44	P.	D.
45	P.	R.
58	P.	D.
64	S.	R.
65	P.	R.
68	P.	R.
71	S.	D.
79	P.	D.
81	P.	R.
87	S.	D.
89	S.	R.

III 1880-1

95	S.	R.
97	P.	D.
105	P.	R.
107	P.	D.
116	P.	R.
125	P.	R.
131	P.	D.
133	P.	R.
137	P.	R.
138	S.	D.

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IV 1881-2

139	S.	D.
145	P.	R.
147	S.	D.
148	S.	R.
170	P.	D.
171	P.	R.
179	P.	D

V 1882-3

179	P.	D.
181	P.	D.
182	P.	R.
185	S.	D.
192	S.	D.
200	P.	R.
201	S.	R.
205	P.	D.
206	P.	R.
212	P.	D.
213	P.	R.

VI 1883-4

225	S.	D.
232	S.	R.
235	P.	D.
249	P.	D.
251	P.	D.
259	S.	P.
261	S.	R.
266	P.	D.
268	P.	R.

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Satellite III

1883-4

272	P.	D.
273	P.	R.
275	S.	D.

VII 1884-5

294	P.	D.
300	P.	R.
302	P.	R.
309	P.	D.
310	P.	R.
315	S.	D.

VIII 1885-6

320	P.	D.
327	P.	D.
328	S.	R.
333	S.	D.
337	P.	R.
343	S.	R.
349	S.	D.
350	P.	R.

IX 1886-)

358	P.	D.
359	P.	R.
368	P.	R.

X 1888

383	P.	R.
384	S.	D.
385	S.	R.

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392	S.	D.
397	P.	D.
398	P.	R.
402	S.	R.

XI 1889

405	S.	R.
412	S.	R.
419	S.	R.
421	P.	D.

XII 1890

424	P.	D.
426	S.	R.
437	P.	D.

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Table of Magnitudes (For use in getting mag. from 120 x vers sin.)

Magn	120x Vers. sin	Magn.	120x Vers sin
0.0	260-237	2.9	32-31
.1	236-212	3.0	30-29
.2	211-193	3.1	28-28
.3	192-177	3.2	27-26
.4	176-164	3.3	25-24
.5	163-152	3.4	23
.6	151-141	3.5	22
.7	140-132	3.6	21-20
.8	131-122	3.7	19
.9	121-113	3.8	18
1.0	112-106	3.9	17
1.1	105-99		
1.2	98-92		
1.3	91-86		
1.4	85-81		
1.5	80-76		
1.6	75-71		
1.7	70-66		
1.8	66-62		
1.9	61-58		
2.0	57-55		
2.1	54-51		
2.2	50-48		
2.3	47-45		
2.4	44-42		
2.5	41-40		
2.6	39-38		
2.7	37-35		
2.8	34-33		

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Tables used in Reductions (factor 130)

.0	+.99	1.0	-15	2.0	63	3.0	.93	4.0	1.12	50	124
.1	+1.01	1.1	21	2.1	67	3.1	.95	4.1	1.14	51	125
.2	.71	1.2	27	2.2	70	3.2	.97	42	1.15	52	126
.3	.53	1.3	32	2.3	73	3.3	1.00	43	1.16	54	127
.4	.39	1.4	37	2.4	77	3.4	1.02	4.4	1.18		
.5	.27	1.5	42	2.5	80	3.5	1.04	4.5	1.19		
.6	.17	1.6	46	2.6	83	3.6	1.05	4.6	1.20		
.7	+.08	1.7	49	2.7	85	3.7	1.07	4.7	1.21		
.8	00	1.8	55	2.8	88	3.8	1.09	4.8	1.22		
.9	-.08	1.9	59	2.9	91	3.9	1.11	4.9	1.23		

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				factor 101	factor 135					
	0.0	2.000	+1.000	1.01	1.35	2.6	.382	.618	-62	-.83
	.1	1.626	.626	.63	.85	2.7	.362	.638	64	.86
	.2	1.459	.459	.46	.62	2.8	.343	.657	66	.89
	.3	1.336	.336	.34	.45	2.9	.325	.675	68	.91
	.4	1.243	.243	.24	.33	3.0	.307	.693	70	.94
	.5	1.165	.161	.16	.22	3.1	.290	.710	72	.96
	.6	1.096	.096	.10	.13	3.2	.274	.726	73	.98
41	.7	1.033	.033	+.03	+.04	3.3	.259	.741	75	1.00
	.8	.972	-.028	-.03	-.04	3.4	.244	.756	76	102
	.9	.918	-.082	.09	.11	3.5	.230	.770	78	1.04
	1.0	.870	.130	.13	.18	3.6	.216	.784	79	1.06
	1.1	.826	.174	.18	.23	3.7	.203	.797	80	1.08
	1.2	.785	.215	.22	.29	3.8	.191	.809	82	1.09
	1.3	.747	.253	.26	.34	3.9	.179	.821	83	1.11
	1.4	.711	.289	.29	.39	4.0	.168	.832	84	1.12
	1.5	.677	.323	.33	.44	4.1	.157	.843	85	1.14
	1.6	.644	.356	.36	.48	4.2	.147	.853	86	1.15
	1.7	.612	.388	.39	.52	4.3	.137	.863	87	1.16
	1.8	.581	.419	.42	.57	4.4	.128	.872	88	1.18
	1.9	.552	.448	.45	.60	4.5	.119	.881	89	1.19
	2.0	.524	.476	.48	.64	4.6	.111	.889	90	1.20
	2.1	.497	.503	.51	.68	4.7	.103	.897	91	1.21
	2.2	.472	.528	.53	.71	4.8	.095	.905	91	1.22
	2.3	.448	.552	.56	.74	4.9	.088	.912	92	1.23
	2.4	.425	.575	.58	.78	5.0	.081	.919	93	1.24
	2.5	.403	.597	.60	.81	5.1	.075	.925	93	1.25

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5.2	.69	.931	.94	1.26
5.3	.63	.937	.95	1.26
5.4	.58	.942	.95	1.27
5.5	.53	.947	.96	1.28

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Sat I

IX 1886-7

No. of Eclipse	Ob.	No. of Obs.	Dor. R.	Corr. for secs	$\frac{\Sigma \pm}{n}$	Whole Series $\frac{\Sigma \pm}{n}$	5 obs. $\frac{\Sigma \pm}{n}$	
357	P	18	D.	-22	±2.4	±.07	±.04	
361	S.	8	D.	-50	3.4	.10	.06	
363	S.	20	D.	-48	6.2	.20	±.08	
365	P.	13	D	-52	4.8	.11	.10	
367	P.	12	D.	-61	8.2	.11	.14	
369	S		R.					
371	S.	21	R.	+127	12.0	.27	±.14	
372	S.		R.					
373	S.	21	R.	93	9.4	.22	.22	

X 1887-8

376	P.	17	D	+27	11.8	.69	1.44	
377	P.	29	D	-56	3.6	.15	.12	
379	S.	23	D	-63	6.8	.24	.46	
382	P.	28	D	-51	2.2	.17	.10	
386	P.	27	D	-41	6.2	.12	.14	
388	S.	12	D	-124	14.8	.13	.12	
390	P.	32	D	-79	3.0	.16	.14	
393	P.	13	R	+85	5.6	.14	.06	
394	P.	13	R	[illegible]				
395	S.	23	R	+82	9.6	.21	.22	
400	S.		R					
401	P.	17	R	+75	8.2	.24	.26	

XI 1888

404	S.	19	D.	+71	14.2	.20	.24	
406	P.	11	D.	-66	2.0	.24	.08	
408	P.		D.	There is no curve to these observations				
409	P.	19	R.	+70	6.0	.10	.10	
410	P.	21	R.	+87	5.4	.18	.18	

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413	S.	17	R.	+90	±7.6	±.31	±.20
414	P.	21	R	+87	3.4	.16	.10
418	S.	19	R.	+79	7.0	.11	.14
420	P.	21	R.	+66	6.4	.20	.10
422	S.	(14	R.	+83	14.0	.24	.29) Obs. not good

XII 1896

423	S.	17	D.	-74	7.6	.19	.16
427	P.	14	D.	-39	8.0	.17	.14
428	S.	17	D.	-83	6.2	.19	.18
430	P.	18	D.	-19	1.8	.14	.06
433	P.	18	D.	-73	5.2	.13	.18
436	S.	21	R.	+89	5.0	.25	.14
439	P.	31	R.	+82	6.6	.11	.22
440	S.	21	R.	+91	3.8	.18	.10
441	P.	19	R.	+98	6.2	.12	.08

VII 1884-5

281	P.	17	D.	-50	13.8	.24	.22
282	S.	8	D.	-27	4.2	.09	.02
284	S.	27	D.	-51	8.8	.19	.28
286	P.	17	D.	-42	8.0	.11	.20
288	P.	17	D.	-61	2.8	.13	.14
289	S.	28	D.	-46	3.0	.14	.10
291	S.	23	D.	-58	4.0	.15 4	.12
292	S.	23	D.	-68	5.6	.26	.46
293	S.	20	D.	-63	4.0	.16	.10
295	P.	18	D.	-39	3.2	.15	.06
296	S.	18	D.	-44	3.5	.12	.12
297	P.	19	D.	-57	8.8	.13	.18

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Sat I

1884-5

303	S.	23	R.	+92	+6.0	.15	.14
304	P.	21	R.	96	6.8	.12	.14
305	S.	21	R.	94	7.4	.15	.18
311	S.	23	R.	89	5.2	.13	.10
312	P.	23	R.	72 80	5.8	.14	.12
317	P.	17	R.	68	3.8	.11	.08

I 1878

2	P.	10	D.	-83	3.8	.21	.32
5	S.	3	D.	-32	8.3	.17	.17
6	P.	7	R.	+175	11.0	.24	24 very discordant
7	P.	5	R.	+120	11.5	.30	.30
8	S.	10	R.	+36	3.5	.15	.14
9	S.	6	R.	+85	21.2	.20	.20
11	P.	14	R.	+87	13.2	.30	.58
12	S.	12	R.	+100	2.9	.11	.08
17	S.	11	R.	+90	5.2	.14	.10
18	P.	5	R.	+133	29.8	.38	.38
21	S.	14	R.	+99	7.6	.24	.16
22	P.	9	R.	+72	9.6	.12	.12
23	P.	25	R.	+107	4.4	.54	.20
24	S.	5	R.	-230	41.6	.34	.34
28	S.	9	R.	+151	6.4	.31	.30
29	P.		R.			very discordant	
31	S.	17	R.	+123	7.6	.26	.24
32	P.	12	R.	+64	[illegible]	.28	.18
33	P.	13	R.	+92	0.1	.15	.14

II 1879

39	P.	12	D.	-52	9.4	.22	.20
41	P.	11	D.	-73	6.8	.15 .14	.20

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Sat. I

46	P.	13	D. -88.	3.6	.12	.12	
47	S.	8	D. -122.	8.8	.21	~~.14~~	bring this matter up.
54	P.	7	D. -43	4.4	~~.10~~ .09	~~.12~~ .10	
55	S.	12	D. -96	2.2	.15	.08	
56	P.	8	D. -65	9.6	.28	.22	
57	S.		D. -75	11.6			All const. of sec.
60	P.	20	D. -80	9.0	.22	.36	
61	P.		R.	disc.			
63	S.		R.	disc.			
66	P.	9	R. +79	8.2	.15	.22	
67	S.	14	R. +97	4.4	.39	.12	
72	P.	15	R. +127	1.2	.30	.06	
73			no readings				
75	P.	7	R. +393	17.2	.21	.24	
77	S.	15	R. +88	3.6	.15	.08	
78	P.	15	R. +95	12.0	.23	.22	
80	S.	13	R. +97	7.0	.17	.18	
83	P.	16	R. +126	9.4	.22	.28	
84	S.	13	R. +151	5.6	.20	.18	
86	S.	10	R. +115	0.8	.07	.02	
88	P.	13	R. +105	3.8	.09	.08	

III 1880-1

92	P.	16	D. -68	3.2	.21	.12	
96	S.	14	D. -80	10.2	.34	.28	
98	P.	15	D. -44	7.2	.25	.22	
99	P.		D.	ru p 58.			
100	H.	14	D. -72	9.0	.49		last mag. beyond table
101	P.	14	D. -70	3.4	.21	.10	
103	S.	5	D. -77	14.6	.14	.14	
106	S.	17	D. -90	8.6	.21	.22	

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Sat. I

110	S.	13	D.	-83	±4.2	±.28	±.16
111	P.	17	D.	-65	5.8	.14	.16
112	S.	15	R.	+126	7.4	.29	.14
114	P.	15	R.	+80	3.0	.13	.06 (4) correct
115	S.	15	R.	+85	3.6	.13	.06 correct
118	S.	21	R.	+84 (5)	4.2 (5)	.16	.16
119	P.	9	R.	+81	5.2	.16	.16
120	S.	13	R.	+124	12.2	.48	.56
121	S.	7	R.	+141	23.4	.13	.16
122	P.	19	R.	+94	6.6	.34	.18
123	S.	17	R.	+88	6.4	.11	.20
126	P.	17	R.	+92	2.8	.06	.08
127	P.	23	R.	+95	1.2	.07	.04
128	S.	23	R.	+92	2.8	.18	.06
130	S.	25	R.	+105	5.4	.12	.10
132	S.	27	R.	+77	4.4	.15 (6)	.10 (2)
135	P.	25	R.	+116	2.8	.14 (3)	.10

IV 1881-2

140	S.	24	D.	-57	7.6	.23	.26
141	P.	24	D.	-59	4.0	.15	.14
142	S.	18	D.	-66	3.6	.13 (4)	.12 *
146	P.	21	D.	-109	1.2	.13	.02
149	S.	17	D.	-57	4.8	.14	.12
150	P.	19	D.	-67	4.8	.07	.12
151	S.	32.N	D.	-77	4.0	.25 (4)	.16
152	P.	17	D.	-71	5.8	.14 (7)	.10 (2)
153	P.	22	D.	-66	2.0	.11	.08
154	S.	13	D.	-120	16.0	.40	.40
156	S.	19	R.	+102	7.2	.17	.22

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158	P.	17	R	+75	4.2	.24	.08
159	S.	23	R	+60	10.8	.28	.32 .30
161	S.	17	R	+60	10.8	.35	.22
162	P.	16	R	+96	1.4	.12	.06
163	S.	25	R	+106	2.4	.20	.14
164	P.	16	R	+82	10.0	.16	.26
167	S.		R	see p. 62			Seen to evidence of variation not reduced.
169	S.	17	R	+78.6	9.6	.34	.24
173	S.	19	R	+90	7.2	.18	.18

V 1882-3

176	P.	16	D	-49	+10.2 ±	.19 ±	.22
177	S.	26	D	-60	± 6.0	.22	.20
180	P.	16	D	-65	2.2	.12 .13	.06 .08
184	P.	19	D	-74	4.4	.16	.12
186	S.	23	D	-61	9.2	.25	.24
187	P.	26	D	-73	3.8	.18 .28	.10 .12
188	S.	22	D	-78	2.8	.17	.08
190	S.	12	D	-51	10.8	.14	.26
194	P.	15	D	-103	2.8	.23	.08
195	P.	9	D	-54	8.6	.17	.10
196	S.	13	R	+100	16.0	.29	34
198	S.	19	R	+51	8.4	.15	.12
199	S.	15	R	+69	15.6	.32	.30
203	S.	14	R	+8	10.2	.12	.10 Refer to Prof. rejected 1st mag.
204	S.	16	R	+94	3.8	.13	.10
208	P.	15	R	+99	11.6	.19	.26
209	S.	17	R	+138	5.0	.18 .19	.16
211	S.	23	R	+86	3.8	.16 .17	.08 .10

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Sat. I

214	S.	25	R	+87	±6.6	.15	.20
215	P.	29	R	+81	1.6	.18	.04
218	P.	17	R	+38	2.0	.18	.08
219	S.	27	R	+74	12.6	.28	.32 .2
220	S.	23	R	+89	12.4	.24	.28 .8
222	S.		R	see p 66, last of the five is discordant			
223	P.	21	R	+100	3.4	.11	.04

VI 1883-4

226	S.	11	D	-46	±15.0	.25	.30
227	S.	16	D	-46	9.8	.11	.16
229	S.		D	discordant			
231	S.	20	D	-67	7.2	.62	.24
233	S.	13	D	one discordant may p 66 Refer to Prof.	24	5.6	.06 .08
237	S.	26	D	-57	15.4	.17	.18
238	P.	24	D	-43	2.8	.13	.08
239	S.	11	D	-53	5.0	.10	.14
240	P.	10	D	-175	13.2	.37	.34
242	P.	8	D	-59	4.8	.14	.12
244	S.	32	D	-69	4.4	.23	.16
246	S.	27	D	-98	5.0	.17	.18
247	P.	14	D	-58	4.4	.14	.10 .12
252	S.	17	D	-62	4.0	.13	.08
253	P.	21	D.	-72	2.8	.18 .14	.06 .08
254	S.	25	D	-83	10.8	.18	.34
256	P.	13	R.	+145	9.0	.18	.16
257	S.	15	R.	+93	10.6	.31	.28
262	P.	17	R.	+111	5.6	.34	.32
264	S.	23	R.	+98	2.4	.22 .11	.08 0
267	S.	23	R.	+95	3.4	.35	.24

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269	P.	25	R.	+101	8.8	.32	.46
274	S.	23	R.	+86	4.6	.15 .24	.10 .10
279	S.	29	R.	+99	3.0	.21	.08
280	S.	21	R.	+93	9.6	.20	.18

VIII 1886

318	S.	21	D	-94	7.18	.18	8.8
319	P.	4	D	-44	25	.25	13.8
321	S.	28	D	-40	.18	.32	11.4
323	S	25	D	-55	.12	.02	1.0
324	P.	15	D	-55	.15	.08	4.8
326	S.	23	D	-60	.12	.14	3.2
330	S.	25	D	-40	.14	.12	3.8
331	P.	16	D	-58	.19	.08	3.6
334	S.	20	D	-137	.15	.08	4.2
335	S.	23	D	-66	.15	.10	4.4
336	S.	11	R	+92	30	.20	3.6
339	S.	5	R	+158	.14	.14	25.5
341	S.	18	R	+150	.23	.22	12.0
342	P.	27	R	+92	.07	.00	0.4
346	S.	21	R	+75	.13	.16	9.0
347	P.	24	R	+93	.22	.20	5.8
351	S.	22	R	+104	.14	.10	2.4
352	P.	22	R	+90	.05	.08	1.6
353	S.	23	R	+65	.23	.42	17.0
354	P.	10	R	+36	.19	.20	26.8
356	S.	25	R	+101	.18	.12	4.2

Corr. checked to here

(Examine this table of '86 and see if correct.)

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Satellite II

I 1878

3	S	14	D.	-82	4.0	.11	.12
4	P.	15	D.	-87	3.0	.06	.06
10	S.	13	R.	+82	11.6	.35	.40
19	P.	13	R.	+70	2.2	.14	.10
20	S.	3	R.	+156	3.7	.03	.03
25	S.	10	R.	+62	16.0	.30	.36
26	P.	12	R.	+57	16.4	.13	.18
30	P.	12	R.	+37	8.6	.09	.08
37	P.	11	R.	+51	16.0	.31	.06

II 1878

40	S.	6	D	-35	±10.0	.23	.18
42	S.		D	discordant			
43	S.	18	D	-40	6.8	.27	.30
52	S.	3	D	disc.			
53			D	disc.			
59	P.	22	D	-58	3.6	.11	.10
62	S.	11	R	+321	21.0 20.6	.13 .29	.06 .04
74	S.	19	R	46	6.8	.14	.14
82	S.	11	R	+65	4.8	.16 .17	.10 .12
85	P.	17	R	+50	3.8	.06	.04
89	S.	12	R	+53	10.4	.14	.12

no curve

III 1880

90	P.	11	D	-89	7.6	.11	.10
91			D	disc			
93	S.	15	D	-10	5.2	.21	.34
94	S.	11	D	-13	4.2	.20	.08
102	P.		D	~~70~~	6.0	curve goes wrong way	

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104	S.	18	D	−70	6.0	.08	.10
108	S.	20	D	−26	7.2	.12	.16
109	P.	18	D	−12	5.0	.09	.12
113	P.	15	R	+49	7.6	.13	.10
117	F.	13	R	+54	2.8	.15	.12
124	S.	13	R	+66	2.4	.11	.06
129	P.	23	R	+48	1.8	.20	.12
134	S.	17	R	+42	4.4	.20	.10
136	S.	31	R	+61	3.8	.18	.14

IV 1881-2

143	P.	24	D	−32	10.4	.36	.54
144			R.	?	no observation		
155	P.	15	D.	−86	15.2	.28	.12
157	S.	17	R.	+78	6.0	.15	.14
160	P.	21	R.	+78	4.0	.13	.12
165	S.	25	R.	+96	4.6	.20	.16
166	P.	21	R.	+89	3.8	.16	.14
168	P.	21	R.	+95	4.8	.11	.10
172	P.	18	R.	+98	6.4	.16	.24
174	P.	13	R.	+113	3.0	.18	.14
175	S.	19	R.	+117	7.2	.11	.12

VI. 1882-3

178	S.	28	D.	±106	5.2	.38	.18
183	S.	4	D.	−111	6.0	.12	.12
189	P.	31	D.	−95	4.4	.15	.14
191	P.	15	D.	−109	3.2	.19	.08
193	P.	13	D.	−104	8.2	.19	.10
197	S.	21	R.	+136	6.4	.28	.18
202	P.	17	R.	+107	5.6	.10	.08

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Sat II

207	S.	19	R	+125	4.8	.12	.08
210	P.	25	R.	+149	6.4	.25	.24 very accordant dcpt 3 or 4 magn.
216	S.	23	R.	+135	7.6	.28	.28
221	P.	21	R.	+136	3.4	.11	.12
224	S.	19	R.	+136	11.8	.13	.16

VI 1883-4

230	S.		D.	no curve			
236			D.	not reduced no constant			
243	S.	21	D.	-107	2.6	.22	.08
245	P.	29	D.	-58	4.4	.11	.12
250	S.	21	D.	-76	6.2	.17	.16
255	S.	20	D.	-169	6.2	.21	.14
258	P.	17	R.	+105	5.6	.17	.12
260	P.	15	R.	+81	6.4	.12	.10
270	S.		R.	very discordant. Curve not good.			
276	P.	31	R.	+107	6.4	.21	.16
278	P.	23	R.	+119	6.4	.12	.16

VII 1884-5

283	P.	21	D	-22	2.4	.12	.06
285	P.	19	D	-65	7.4	.14	.18
287	S.	22	D	-46	2.2	.15	.08
290	P.	22	D	-29	9.0	.12	.20
298	S.	22	D	-67	12.4	.29	.36
299	P.	16	D	-56	12.5	.17	.22
301	S.	21	R	+105	7.8	.15	.22
306	P.	20	R	+92	3.2	.14	.10
307	P.		R	1st 5 readings not good enough for coef. Refer to Prof			
313	S.	25	R	+95	3.6	.16	.14
314	P.	15	R	+57	2.0	.13	.12

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316	P.	29	R	+103	8.0	.11 .22

VIII 1885-6

322	P.	18	D	+13	±11.8	.21 .~~20~~ .18
325	P.	22	D	-15	4.4	.10 .12
329	P.	28	D	-33	2.8	.12 .22
338	S.	23	R	+111	2.4	.~~10~~ .09 .08
340	P.	31	R	+109	2.6	.14 .08
348	P.	9	R	+175	15.0	.13 .08
355	S.	13	R	+39	23.8	.13 .14

IX 1887

360	P.	12	D	-40	7.2	.15 .14
362	P.	21	D	-80	1.6	.~~11~~ .12 .00
364	S.	19	D	-78	4.6	.12 .08
366	S.	17	D	-100	10.6	.10 .16
370	S.	24	R	+149	4.6	.30 .10
374	S.	23	R	+143	4.0	.~~12~~ .11 .~~14~~ 12
375	S.		R			no decord reading

X 1888

~~375~~			~~R~~			
378	S.	8	D	-56	15.6	.10 .12
380	P.	11	D	-140	7.2	.17 .16
381	S.	14	D	-146	9.6	.18 .12
387	S.	22	D	-128	8.0	.24 .24
389	S.	11	D	-123	11.8	.20 .12
391	P.	11	D	-128	24.8	.13 .18
396	P.	27	R	+149	3.2	.28 .06
399	S.	17	R	+171	12.0	.24 .24

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Sat II

XI 1889

403	S.	13	D	−22	3.4	.08	.06
407	S.	17	D	−129	2.6	.09	.04
411	P.	21	R	+114	2.6	.13	.06
415	P.	17	R	+120	4.4	.18	.12

XII 1890

				−89	14.8			
425	S.	8	D.	~~−95~~ 4	~~8.6~~ 6	.55	.32	curve very bad.
429	S.	17	D.	−82	0.8	.09 ~~.12~~	.00 ~~.06~~	
431	P.	18	D.	−71 ~~−69~~	1.8 ~~2.0~~	.04	.06	
434	S.	12	R.	+87	12.4	.23	.32	

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The Factors for Multiplying

Time Required for Satellites to traverse their radii

are

for Sat I 135
II 149
III 287
IV 386

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~~Middle times to be put in, late eclipses.~~

~~East Time Ecl. to be put in. " "~~

~~Long " " " " " "~~

Write up late notes.

Time column in Journals. " "

~~Time constants for first two oppositions~~

~~following first cycle and, in general,~~
~~subject~~ reduce these oppositions as in first cycle.

Bring up and Revise Cat. of Ecl.

Compare constants in Journals with those in book.

* Make list of eclipses (and examine same) where only 3 (or less) groups of 4 can be used for ordinary constant.

Make table of Sats. III and IV for all the years from 1879 to date, containing almanac times of disap. and reap.

Plot time constants.

Cosine rd. for Sats. 3 and 4.

Plot "constant of time seconds" on a scale 100 days to inch for abscissas and 100 secs. to inch for ordinates.

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