

Linkerfues'sche Constanten

zur Reduction auf den scheinbaren Ort

für die mittleren Tage 1883, 12<sup>h</sup> Mittl. Zeit Berlin

berechnet von

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August 1882.

Veröffentlicht von der Sternwarte

O.-Gyalla.

M. ACADEMIA'  
KÖNYVTÁRA

Die numerischen Werthe der Constanten be-  
 ruhen auf dem im „Nautical Almanac for the year  
 1883“ enthaltenen Aufgabern. Berechnet man mit  $p$   
 die Nordpolardistanz des Sterns  $\alpha$ , d. h. so erhalten die  
 Reductionen auf den scheinbaren Ort die einfache Form:

$$\Delta \alpha = f + k \cdot \cot \frac{p}{2} \sin (H' + \omega) + l \cdot \operatorname{tg} \frac{p}{2} \cos (L + \omega)$$

$$\Delta \delta \operatorname{sec} \delta = i + k \cot \frac{p}{2} \cos (H' + \omega) + l \operatorname{tg} \frac{p}{2} \sin (L + \omega)$$

Die bequemste Anordnung der Rechnung zeigt  
 das folgende Beispiel, in welchem die Reihenfolge  
 der Operationen durch Zahlen bezeichnet ist.

Berechnung des scheinbaren Ortes von  $\alpha$  Cygni für Nov. 15 1883.

Mittlerer Ort, 1883 =  $90^{\circ} 37' 26'' 63 = 90^{\circ} 37' 26''$ ,  $\delta = +44^{\circ} 51' 45'' 7$

$\log \operatorname{tg} \frac{p}{2} = 9.6187$

1)  $k \cot \frac{p}{2} = 1.6794$ , 2)  $\operatorname{tg} \frac{p}{2} = 0.3073$  |  $\Delta = +45'' 77 - 13'' 56 + 2'' 02 = +34'' 23$

3)  $\sin (H' + \omega) = 9.4529$ , 4)  $\cos (L + \omega) = 9.9987$  |  $\Delta \alpha = +2'' 28$

5)  $\cos (H' + \omega) = 9.9818$ , 6)  $\sin (L + \omega) = 8.8914$  |  $\operatorname{sec} \delta \cdot \Delta \delta = +6'' 34 + 25'' 83 - 0'' 16 = +51'' 98$   
 $\Delta \delta = +36'' 8$

approx =  $90^{\circ} 37' 28'' 91$ , app.  $\delta = +44^{\circ} 52' 22'' 5$

Sternwarte V. Gyalla. August. 1882. F. H. Kobold.

# January

3.

12h Azimuth	H	d	L	d	logk	d	logl	d	f	i		
1	6 <sup>3</sup>	46	44	234	42	66	1.1084	-7	0.9520	+18	+12.55	-1.59
2	6	2	44	233	36	66	1.1077	7	0.9538	18	12.71	1.74
3	5	18	44	232	30	66	1.1070	8	0.9556	18	12.87	1.88
4	4	34	43	231	24	66	1.1062	9	0.9574	19	13.02	2.02
5	3	51	44	230	18	66	1.1053	10	0.9593	19	+13.18	-2.16
6	3	7	43	229	12	66	1.1043	10	0.9612	19	13.33	2.30
7	3	24	44	228	6	66	1.1033	10	0.9631	19	13.48	2.44
8	1	40	43	227	0	65	1.1023	11	0.9650	19	13.63	2.58
9	0	57	44	225	55	65	1.1013	11	0.9669	19	13.78	2.71
10	0	13	43	224	50	65	1.1001	11	0.9688	19	+13.93	-2.85
11	359	30	44	223	45	65	1.0990	11	0.9707	19	14.08	2.98
12	358	46	43	222	40	64	1.0979	12	0.9726	20	14.23	3.11
13	358	3	43	221	36	64	1.0967	12	0.9746	19	14.38	3.24
14	357	30	44	220	32	64	1.0955	13	0.9765	20	14.53	3.37
15	356	36	44	219	28	64	1.0942	14	0.9785	20	+14.67	-3.50
16	355	52	43	218	24	63	1.0928	14	0.9805	20	14.82	3.63
17	355	9	44	217	21	64	1.0914	15	0.9825	20	14.96	3.76
18	354	35	43	217	17	63	1.0899	15	0.9845	20	15.10	3.89
19	353	42	44	215	14	63	1.0884	15	0.9865	20	15.24	4.02
20	352	58	44	215	11	63	1.0869	16	0.9885	21	+15.38	-4.14
21	352	14	43	213	8	63	1.0853	16	0.9906	20	15.52	4.27
22	351	31	44	212	5	62	1.0837	17	0.9926	21	15.65	4.39
23	350	47	44	211	3	62	1.0820	17	0.9947	21	15.79	4.51
24	350	2	44	210	1	62	1.0803	18	0.9968	21	15.93	4.63
25	349	19	44	208	59	62	1.0785	19	0.9989	21	+16.06	-4.75
26	348	35	44	207	57	62	1.0766	19	1.0010	21	16.19	4.87
27	347	51	44	206	55	61	1.0747	20	1.0031	21	16.31	4.98
28	347	7	44	205	54	61	1.0727	20	1.0052	21	16.44	5.10
29	346	23	44	204	53	61	1.0707	21	1.0073	22	16.57	5.21
30	345	39	45	203	52	61	1.0686	21	1.0095	21	+16.69	-5.32
31	344	54	44	202	51	60	1.0665	21	1.0116	22	16.81	5.43

$$\Delta i = f + R \cos g \cos \frac{1}{2} \sin (H+d) + L \sin \frac{1}{2} \cos (L+d)$$

$$\Delta f \cos \delta = L R \cos g \cos (L+d) + L \sin \frac{1}{2} \sin (L+d)$$

## Februar

nr	h	d	S	d	log k	d	log l	d	l	i		
1	344°	10	-45	201°	51	-60	1.0644	-22	1.0138	291	+18.98	-5.53
2	343	25	44	200	51	60	1.0022	23	1.0159	22	17.05	5.64
3	342	41	45	199	51	60	1.0599	23	1.0181	22	17.17	5.74
4	341	56	45	198	51	60	1.0576	24	1.0203	22	17.29	5.84
5	341	11	45	197	51	69	1.0552	24	1.0225	23	+17.41	-5.94
6	340	26	45	196	52	59	1.0528	25	1.0248	22	17.52	6.04
7	339	41	45	195	53	59	1.0503	25	1.0270	23	17.63	6.13
8	338	56	46	194	54	58	1.0478	26	1.0293	22	17.74	6.23
9	338	10	45	193	56	58	1.0452	27	1.0315	23	17.85	6.32
10	337	25	45	192	58	58	1.0426	27	1.0338	22	+17.96	-6.40
11	336	40	46	192	0	58	1.0398	28	1.0360	23	18.07	6.49
12	335	54	46	191	2	63	1.0370	28	1.0383	23	18.18	6.58
13	335	8	46	190	4	57	1.0342	29	1.0406	23	18.28	6.66
14	334	22	46	189	7	67	1.0313	29	1.0429	23	18.38	6.74
15	333	36	46	188	10	56	1.0284	30	1.0452	23	+18.48	-6.82
16	332	50	46	187	14	56	1.0254	31	1.0475	23	18.58	6.90
17	332	4	47	186	18	56	1.0223	31	1.0498	23	18.68	6.98
18	331	17	46	185	22	56	1.0192	32	1.0521	23	18.78	7.05
19	330	31	47	184	26	55	1.0160	32	1.0544	24	18.88	7.12
20	329	44	47	183	31	55	1.0128	33	1.0568	23	+18.98	-7.19
21	328	57	48	182	36	55	1.0095	34	1.0591	24	19.07	7.25
22	328	9	47	181	41	54	1.0061	35	1.0615	23	19.10	7.32
23	327	22	48	180	47	54	1.0026	36	1.0638	24	19.25	7.38
24	326	34	48	179	53	54	0.9990	36	1.0662	23	19.34	7.44
25	325	46	48	178	59	53	0.9954	37	1.0685	23	+19.43	-7.50
26	324	58	48	178	6	53	0.9917	37	1.0708	23	19.52	7.55
27	324	10	49	177	13	53	0.9880	38	1.0731	24	19.61	7.60
28	323	21	49	176	20	53	0.9842	39	1.0755	23	19.70	7.65

$$\Delta z = f + k \cos \frac{1}{2} \text{dim} (\text{H} + \text{L}) + \text{log} \frac{1}{2} \cos (\text{L} + \text{L})$$

# März

5.

12h Berlin	H	d	L	d	log k	d	log h	d	f	i		
1	3220	32	49	175	27	53	0.9203	-39	1.0778	24	+19.78	-7.70
2	321	43	49	174	34	52	0.9164	40	1.0802	24	19.87	7.75
3	320	54	50	173	42	52	0.9124	41	1.0826	24	19.95	7.79
4	320	4	50	172	50	51	0.9683	41	1.0850	23	20.04	7.83
5	319	14	50	173	59	51	0.9642	42	1.0873	24	+20.12	-7.87
6	318	24	50	171	8	51	0.9600	43	1.0897	24	20.20	7.90
7	317	34	51	170	17	51	0.9557	44	1.0921	24	20.28	7.93
8	316	43	52	169	26	50	0.9515	45	1.0945	23	20.36	7.96
9	316	51	52	168	36	50	0.9468	45	1.0968	24	20.44	7.99
10	314	59	52	167	46	50	0.9423	46	1.0992	24	+20.52	-8.01
11	314	7	53	166	56	49	0.9377	47	1.1016	23	20.60	8.04
12	313	14	53	166	7	49	0.9330	47	1.1039	24	20.68	8.05
13	312	21	53	165	18	49	0.9283	48	1.1063	23	20.76	8.07
14	311	28	54	164	29	48	0.9235	49	1.1086	23	20.84	8.09
15	310	34	54	163	41	48	0.9186	50	1.1109	23	+20.91	-8.10
16	309	40	55	162	53	48	0.9136	50	1.1132	24	20.99	8.11
17	308	45	55	162	5	48	0.9085	52	1.1156	23	21.07	8.12
18	307	50	56	161	17	47	0.9033	53	1.1179	23	21.14	8.13
19	306	54	56	160	30	47	0.8980	53	1.1202	23	21.21	8.15
20	305	58	56	159	43	47	0.8927	54	1.1224	23	+21.28	-8.15
21	305	2	57	158	56	46	0.8873	55	1.1247	23	21.36	8.15
22	304	5	58	158	10	46	0.8818	56	1.1270	23	21.43	8.15
23	303	7	58	157	24	46	0.8762	57	1.1293	22	21.50	8.13
24	302	9	59	156	38	45	0.8705	58	1.1315	23	21.57	8.12
25	301	10	60	155	53	45	0.8647	59	1.1338	22	+21.65	-8.11
26	300	10	61	155	8	45	0.8588	60	1.1360	22	21.73	8.09
27	299	9	61	154	23	44	0.8528	60	1.1382	22	21.80	8.07
28	298	8	62	153	39	45	0.8468	62	1.1404	22	21.88	8.05
29	297	6	63	152	54	44	0.8406	63	1.1426	22	21.96	8.04
30	296	3	64	152	10	44	0.8343	64	1.1448	22	+22.04	-8.02
31	294	59	64	151	26	43	0.8279	-65	1.1470	21	22.12	8.00

$$\Delta \delta \text{ sec } \delta = \cos \delta \cos \delta \frac{1}{2} \cos (\delta + \alpha) + \sin \delta \frac{1}{2} \sin (\delta + \alpha)$$

12h hour	$L$	$d$	$L$	$d$	$\log k$	$d$	$\log l$	$d$	$f$	$i$		
1	298°	55	-65	150°	45	-43	0.8214	-66	1.1491	22	22.20	-7.96
2	292	50	67	150	0	43	0.8148	67	1.1513	21	22.28	7.94
3	291	43	67	149	17	43	0.8081	67	1.1534	21	22.36	7.91
4	290	36	69	148	34	43	0.8014	68	1.1555	20	22.44	7.87
5	289	27	70	147	51	42	0.7946	69	1.1575	21	+22.52	-7.83
6	288	17	71	147	9	42	0.7877	70	1.1596	21	22.60	7.80
7	287	6	72	146	27	42	0.7807	71	1.1617	20	22.68	7.75
8	285	54	73	145	45	41	0.7736	73	1.1637	20	22.76	7.71
9	284	41	75	145	4	42	0.7665	74	1.1657	21	22.85	7.66
10	283	26	76	144	22	41	0.7593	75	1.1678	20	+22.93	-7.60
11	282	10	77	143	41	41	0.7521	76	1.1698	19	23.01	7.55
12	280	53	79	143	0	40	0.7448	77	1.1717	19	23.10	7.50
13	279	34	80	142	20	40	0.7376	78	1.1736	20	23.19	7.45
14	278	14	83	141	40	40	0.7283	79	1.1756	19	23.28	7.40
15	276	57	84	141	0	40	0.7204	79	1.1775	19	+23.36	-7.33
16	275	27	86	140	20	39	0.7125	80	1.1794	18	23.45	7.26
17	274	1	87	139	41	39	0.7045	80	1.1812	19	23.54	7.21
18	272	34	89	139	2	39	0.6965	81	1.1831	18	23.63	7.15
19	271	4	92	138	23	39	0.6884	82	1.1849	18	23.72	7.09
20	269	32	94	137	44	39	0.6802	83	1.1867	17	+23.83	-7.02
21	267	58	97	137	5	39	0.6719	83	1.1884	18	23.93	6.93
22	266	21	99	136	26	38	0.6636	84	1.1902	17	24.02	6.87
23	264	42	102	135	48	38	0.6552	85	1.1919	17	24.11	6.79
24	263	0	104	135	10	38	0.6467	85	1.1936	16	24.21	6.71
25	261	16	107	134	32	38	0.6382	85	1.1952	17	+24.31	-6.64
26	259	29	110	133	54	37	0.6297	84	1.1969	16	24.41	6.56
27	257	39	113	133	17	37	0.6213	84	1.1985	16	24.52	6.47
28	255	46	116	132	40	37	0.6129	84	1.2001	16	24.62	6.40
29	253	50	119	132	9	37	0.6045	83	1.2017	16	24.73	6.31
30	251	51	-123	131	26	-37	0.5962	-82	1.2033	16	+24.83	-6.22

$$\Delta s = f + k \cos \theta \frac{1}{2} \sin(L + d) + l \sin \frac{1}{2} \cos(L + d)$$

# Mai.

4.

12 h Declination	$\alpha$	$d$	$S$	$d$	log $k$	$d$	log $l$	$d$	$f$	$i$		
1	249°	38	126	100	49	37	0.5880	-81	1.2049	15	+24.94	-6.12
2	247	42	129	130	52	36	0.5799	70	1.2064	15	25.05	6.03
3	245	33	132	129	36	36	0.5720	77	1.2079	14	25.16	5.92
4	243	21	137	129	0	36	0.5643	75	1.2093	14	25.27	5.83
5	241	4	140	128	24	36	0.5568	73	1.2107	14	+25.39	-5.74
6	238	44	144	107	48	36	0.5495	71	1.2121	14	25.50	5.65
7	236	20	148	107	52	36	0.5424	68	1.2135	14	25.62	5.55
8	233	52	151	126	36	35	0.5356	65	1.2149	13	25.73	5.45
9	231	21	154	126	1	35	0.5291	60	1.2162	13	25.85	5.35
10	228	47	157	125	26	35	0.5225	55	1.2175	13	+25.97	-5.25
11	226	10	160	124	51	35	0.5176	51	1.2188	13	26.09	5.14
12	223	30	163	124	16	34	0.5125	45	1.2201	12	26.22	5.05
13	220	57	166	123	42	35	0.5080	40	1.2213	12	26.34	4.92
14	218	1	168	123	7	34	0.5040	34	1.2225	12	26.47	4.81
15	215	18	171	122	33	34	0.5006	28	1.2237	11	+26.59	-4.70
16	212	22	172	121	59	34	0.4978	21	1.2248	11	26.72	4.59
17	209	30	173	121	25	34	0.4957	-16	1.2259	10	26.85	4.48
18	206	37	173	120	41	34	0.4941	-7	1.2269	10	26.98	4.37
19	203	44	173	120	17	34	0.4934	+1	1.2279	10	27.11	4.25
20	200	57	174	119	43	33	0.4935	+4	1.2289	10	+27.24	-4.13
21	197	57	173	119	10	34	0.4939	14	1.2299	10	27.37	4.01
22	195	4	172	118	36	33	0.4953	21	1.2309	9	27.50	3.89
23	192	12	171	118	3	33	0.4974	26	1.2318	9	27.63	3.77
24	189	21	169	117	30	33	0.5000	34	1.2327	9	27.77	3.65
25	186	32	167	116	57	33	0.5034	38	1.2336	9	+27.91	-3.52
26	183	45	165	115	24	33	0.5072	44	1.2345	8	28.05	3.40
27	181	0	162	115	51	33	0.5116	49	1.2353	8	28.19	3.28
28	178	18	159	108	58	33	0.5165	53	1.2361	7	28.33	3.16
29	175	29	155	114	45	32	0.5218	58	1.2368	7	28.47	3.03
30	173	4	152	114	13	33	0.5276	64	1.2375	6	+28.61	-2.90
31	170	22	147	113	40	32	0.5340	69	1.2381	7	28.75	2.77

$\Delta \delta \text{ sec} = \sin \text{lat} \frac{1}{\cos} \cos(\alpha - \delta) + \text{ctg} \text{lat} \sin(\alpha - \delta)$



## Yumi

12h Solar	H	d	L	d	logk d	logl d	l	i
1	168°	4 145	113°	8 33	0.5409 73	12388	6	+28.90 - 2.64
2	165	39 141	112	36 32	0.5432 75	12394	6	29.04 2.52
3	163	18 138	112	4 32	0.5557 77	12400	5	29.19 2.39
4	161	0 134	111	32 32	0.5634 79	12405	6	29.33 2.25
5	158	40 131	111	0 32	0.5713 81	12411	5	+30.47 - 2.12
6	158	36 127	110	28 32	0.5794 82	12418	4	29.62 1.99
7	154	28 123	109	56 32	0.5876 84	12420	4	29.77 1.85
8	152	25 120	109	24 32	0.5960 85	12424	4	29.92 1.72
9	150	25 117	109	52 32	0.6045 86	12428	4	30.06 1.59
10	148	23 113	108	30 31	0.6131 87	12432	3	+30.21 - 1.46
11	146	25 110	107	49 31	0.6218 88	12435	3	30.36 1.32
12	144	44 108	107	18 31	0.6306 88	12438	2	30.51 1.19
13	142	56 104	106	47 31	0.6394 88	12441	2	30.66 1.05
14	141	12 102	106	16 31	0.6482 87	12442	2	30.81 0.92
15	139	30 99	105	45 31	0.6569 87	12445	1	+30.96 - 0.79
16	137	57 97	105	14 31	0.6656 87	12446	1	31.11 0.65
17	136	14 94	104	43 31	0.6743 86	12447	1	31.26 0.52
18	134	40 92	104	12 31	0.6829 86	12448	0	31.41 0.38
19	133	8 90	103	41 31	0.6915 85	12448	0	31.57 0.24
20	131	38 87	103	10 31	0.7000 85	12448	0	+31.72 - 0.11
21	130	11 85	102	39 31	0.7085 84	12448	0	31.87 + 0.03
22	128	46 83	102	8 31	0.7169 83	12448	-1	32.02 0.16
23	127	23 81	101	37 30	0.7252 83	12447	-1	32.17 0.30
24	126	2 80	101	7 30	0.7335 82	12446	-1	32.33 0.43
25	124	42 78	100	37 30	0.7417 82	12445	2	+32.48 + 0.56
26	123	24 76	100	7 31	0.7499 81	12443	2	32.63 0.70
27	122	8 75	99	36 30	0.7580 80	12441	3	32.78 0.83
28	120	53 73	99	6 30	0.7660 78	12438	3	32.93 0.97
29	119	40 72	98	36 30	0.7739 77	12435	3	33.08 1.10
30	118	28 71	98	6 31	0.7815 77	12432	4	+33.23 + 1.24

$$\Delta d = f + k \cot^2 \frac{1}{2} \cos^2 (\frac{1}{2} H + d) + l \cot^2 \frac{1}{2} \cos^2 (\frac{1}{2} L + d)$$

# Yuli

9.

12 <sup>to</sup> Rochia	H	d	L	d	log k	d	log l	d	f	i
1	1140	17 69	970	35 30	0.7892	76	1.2428	74	+33.38	+ 1.37
2	116	8 68	97	5 30	0.7968	75	1.2424	5	33.53	1.51
3	115	0 67	96	35 30	0.8043	74	1.2419	5	33.68	1.64
4	113	53 66	96	5 30	0.8117	73	1.2414	6	33.83	1.77
5	112	47 64	95	35 30	0.8190	72	1.2408	6	+33.98	+ 1.91
6	111	43 63	95	5 30	0.8262	72	1.2402	6	34.12	2.04
7	110	40 63	94	35 30	0.8334	71	1.2396	7	34.27	2.16
8	109	37 62	94	5 30	0.8405	70	1.2389	7	34.41	2.30
9	108	35 61	93	35 29	0.8475	69	1.2382	7	34.55	2.42
10	107	34 60	93	6 30	0.8544	68	1.2375	8	+34.70	+ 2.55
11	106	34 59	92	36 30	0.8612	68	1.2367	8	34.84	2.67
12	105	35 58	92	6 30	0.8680	66	1.2359	8	34.98	2.80
13	104	37 57	91	36 29	0.8748	66	1.2351	9	35.12	2.92
14	103	40 56	91	7 30	0.8812	65	1.2342	9	35.26	3.05
15	102	44 55	90	37 29	0.8878	64	1.2333	10	+35.40	+ 3.18
16	101	49 55	90	8 30	0.8941	63	1.2325	10	35.54	3.30
17	100	54 54	89	38 29	0.9004	63	1.2313	11	35.68	3.42
18	100	0 53	89	9 30	0.9067	62	1.2302	11	35.81	3.55
19	99	4 53	88	39 29	0.9129	61	1.2291	11	35.95	3.67
20	98	14 52	88	10 30	0.9190	61	1.2280	12	+36.08	+ 3.79
21	97	22 52	87	40 29	0.9251	60	1.2268	12	36.21	3.91
22	96	30 51	87	11 30	0.9311	59	1.2256	13	36.34	4.03
23	95	39 51	86	41 29	0.9370	58	1.2243	13	36.47	4.14
24	94	48 50	86	12 29	0.9428	58	1.2230	13	36.60	4.26
25	93	58 50	85	43 29	0.9486	57	1.2217	14	+36.73	+ 4.38
26	93	8 49	85	14 29	0.9543	57	1.2203	15	36.86	4.49
27	92	19 48	84	45 29	0.9600	56	1.2188	15	36.99	4.59
28	91	31 48	84	16 30	0.9656	55	1.2173	15	37.12	4.72
29	90	43 48	83	46 29	0.9711	55	1.2158	16	37.24	4.83
30	89	55 47	83	17 29	0.9766	54	1.2142	17	+37.37	+ 4.94
31	89	8 47	82	48 29	0.9820	53	1.2125	17	37.49	5.05

$$\Delta d. \text{secd} = i + k \cot^2 \frac{1}{2} \cos^2 (\frac{1}{2} \alpha - \epsilon) + \frac{1}{2} i \cos^2 (\frac{1}{2} \alpha - \epsilon)$$

13 <sup>h</sup> Berlin	K	d	L	d	logk	d	logl	d	f	n		
1	88°	21	46	82°	19	29	0.9873	53	1.2108	18	+37.61	+5.15
2	87	35	46	81	50	29	0.9926	52	1.2090	18	37.73	5.26
3	86	49	46	81	21	29	0.9978	51	1.2072	18	37.85	5.36
4	86	3	45	80	52	29	0.0029	51	1.2054	19	37.97	5.46
5	85	18	45	80	23	29	1.0180	50	1.2035	19	+38.08	+5.56
6	84	33	44	79	54	29	1.0130	50	1.2016	19	38.19	5.66
7	83	49	44	79	25	29	1.0180	50	1.1997	20	38.30	5.75
8	83	5	44	78	56	29	1.0230	49	1.1977	21	38.41	5.85
9	82	21	43	78	27	29	1.0279	48	1.1956	21	38.52	5.94
10	81	38	43	77	58	28	1.0327	48	1.1935	22	+38.60	+6.04
11	80	55	43	77	30	29	1.0375	47	1.1913	22	38.71	6.12
12	80	12	42	77	1	29	1.0422	47	1.1891	23	38.85	6.21
13	79	30	42	76	32	29	1.0469	46	1.1868	23	38.95	6.31
14	78	48	42	76	3	28	1.0515	46	1.1846	24	39.06	6.38
15	78	6	41	75	35	29	1.0561	46	1.1821	25	+39.16	+6.44
16	77	25	41	75	6	28	1.0607	45	1.1796	25	39.27	6.55
17	76	44	41	74	38	29	1.0552	45	1.1771	26	39.37	6.64
18	76	3	40	74	9	28	1.0607	45	1.1745	26	39.47	6.71
19	75	23	40	73	41	29	1.0742	44	1.1719	27	39.57	6.79
20	74	43	40	73	12	28	1.0786	43	1.1692	28	+39.67	+6.86
21	74	5	40	72	44	29	1.0829	43	1.1664	28	39.77	6.93
22	73	33	39	72	15	28	1.0872	42	1.1636	28	39.86	7.00
23	72	44	39	71	47	29	1.0914	42	1.1608	29	39.96	7.06
24	72	5	39	71	18	28	1.0956	42	1.1579	30	40.05	7.13
25	71	26	39	70	50	28	1.0998	41	1.1549	30	+40.14	+7.19
26	70	47	39	70	22	28	1.1039	40	1.1519	31	40.23	7.26
27	70	8	38	69	54	29	1.1079	40	1.1488	32	40.32	7.33
28	69	30	38	69	25	28	1.1119	40	1.1456	33	40.40	7.38
29	68	52	38	68	57	28	1.1159	39	1.1423	33	40.49	7.46
30	68	14	37	68	29	28	1.1198	39	1.1490	34	+40.58	+7.50
31	67	37	37	68	1	28	1.1237	38	1.1356	35	40.67	7.55

$$\Delta d = f + K \cos \gamma \frac{1}{2} \sin(\delta + d) + H \sin \frac{1}{2} \cos(\delta + d)$$

# September.

11.

12. h	Pd	d	L	d	logk d	logl d	f	v
1	620	0 37	620	35 28	1.1275 38	1.1321 36	+40.75	+7.60
2	66	33 37	64	5 28	1.1313 38	1.1285 36	40.33	7.66
3	65	46 37	66	37 28	1.1351 37	1.1249 37	40.91	7.69
4	65	9 36	66	9 28	1.1388 37	1.1212 37	40.99	7.75
5	64	33 36	65	41 37	1.1425 37	1.1175 38	+41.07	+7.78
6	68	57 36	65	14 28	1.1462 37	1.1137 39	41.15	7.82
7	63	21 36	64	46 27	1.1499 37	1.1098 40	41.23	7.85
8	62	45 36	64	19 28	1.1536 36	1.1058 41	41.31	7.89
9	62	9 36	63	51 27	1.1572 26	1.1017 42	41.39	7.93
10	61	33 35	63	24 28	1.1608 35	1.0975 42	+41.47	+7.96
11	60	68 35	62	56 27	1.1643 35	1.0933 43	41.54	7.98
12	60	23 35	62	29 27	1.1678 34	1.0890 44	41.62	8.02
13	59	48 35	62	2 27	1.1712 24	1.0846 45	41.70	8.04
14	59	18 34	61	35 27	1.1746 33	1.0801 46	41.77	8.05
15	58	39 34	61	8 27	1.1779 23	1.0755 47	+41.84	+8.07
16	58	5 34	60	41 27	1.1812 33	1.0708 48	41.91	8.09
17	57	31 34	60	14 26	1.1845 32	1.0660 49	41.99	8.11
18	56	57 34	59	48 27	1.1877 32	1.0611 50	42.06	8.11
19	56	23 34	59	21 26	1.1909 32	1.0561 51	42.14	8.13
20	55	49 34	58	55 26	1.1941 32	1.0510 52	+42.21	+8.13
21	55	15 33	58	29 26	1.1973 31	1.0458 53	42.28	8.15
22	54	42 33	58	3 25	1.2004 31	1.0405 54	42.36	8.15
23	54	9 33	57	33 25	1.2036 30	1.0357 56	42.43	8.15
24	53	26 33	57	13 26	1.2065 30	1.0305 56	42.50	8.15
25	53	3 33	56	47 26	1.2095 30	1.0259 57	+42.58	+8.13
26	52	30 33	56	21 25	1.2125 29	1.0212 59	42.66	8.13
27	51	57 32	55	56 25	1.2154 29	1.0163 60	42.73	8.11
28	51	25 32	55	31 25	1.2183 29	1.0113 60	42.80	8.14
29	50	53 32	55	6 25	1.2212 29	1.0062 62	42.87	8.09
30	50	21 32	54	41 24	1.2241 28	0.9990 64	+42.95	+8.07

$\Delta d. \text{ seeds} = v + \text{Keoty } 1/2. \text{ eos} (\text{St. d.}) + \text{log } 1/2 \text{ voo} (\text{St. d.})$

h	h	d	L	d	log k	d	log l	d	q	i
1	49 <sup>0</sup>	49 32	54 <sup>0</sup>	17 24	1.2269	28	0.9078	-65	+43.02	+ 8.06
2	49	17 32	53	57 24	1.2297	28	0.9084	67	43.10	8.02
3	48	48 32	53	29 24	1.2325	27	0.9094	68	43.17	8.00
4	48	13 32	53	5 23	1.2352	27	0.9106	70	43.25	7.98
5	47	41 32	52	42 23	1.2379	27	0.9120	71	+43.33	+7.94
6	47	9 31	52	19 23	1.2406	26	0.9135	73	43.41	7.91
7	46	38 31	51	58 22	1.2432	26	0.9152	75	43.49	7.89
8	46	7 31	51	34 22	1.2458	25	0.9167	76	43.57	7.85
9	45	36 31	51	12 21	1.2483	25	0.9181	78	43.65	7.80
10	45	5 31	50	51 21	1.2508	25	0.9193	80	+43.73	+7.76
11	44	34 31	50	30 21	1.2533	25	0.9205	81	43.81	7.73
12	44	8 31	50	9 20	1.2558	24	0.9217	83	43.89	7.67
13	43	32 31	49	49 20	1.2582	24	0.9229	86	43.97	7.64
14	43	1 30	49	29 19	1.2606	23	0.9240	88	44.05	7.59
15	42	31 30	49	10 18	1.2629	23	0.9250	91	+44.13	+7.53
16	42	1 30	48	52 18	1.2652	23	0.9259	93	44.21	7.48
17	41	31 30	48	34 17	1.2675	23	0.9268	95	44.29	7.43
18	41	1 30	48	17 16	1.2698	22	0.9276	97	44.37	7.36
19	40	31 30	48	1 16	1.2720	22	0.9283	100	44.50	7.31
20	40	1 30	47	45 15	1.2742	22	0.9289	103	+44.59	+7.24
21	39	31 30	47	30 14	1.2764	22	0.9295	105	44.68	7.18
22	39	1 29	47	16 13	1.2786	21	0.9301	108	44.78	7.10
23	38	32 30	47	3 12	1.2807	21	0.9307	112	44.87	7.03
24	38	2 29	46	57 11	1.2828	20	0.9311	116	44.97	7.00
25	37	33 30	46	40 10	1.2848	20	0.9315	119	+45.06	+6.89
26	37	3 29	46	30 8	1.2868	20	0.9318	122	45.16	6.81
27	36	34 29	46	22 7	1.2888	19	0.9321	126	45.26	6.73
28	36	5 30	46	15 4	1.2907	19	0.9323	130	45.36	6.65
29	35	35 29	46	11 2	1.2925	19	0.9325	133	45.46	6.56
30	35	6 29	46	9 0	1.2943	18	0.9326	137	+45.56	+6.49
31	34	37 28	46	9 71	1.2961	18	0.9328	142	45.67	6.40

$$\Delta = \gamma + k \log \frac{1}{2} \sin(L + l) + l \log \frac{1}{2} \cos(L + l)$$

# November

13.

12 h	$\mathcal{L}$	$d$	$\mathcal{L}$	$d$	$\log k$	$d$	$\log l$	$d$	$f$	$i$
1	34°	9' 29	46°	10 +5	1.2981	48	0.6886	148	+45.77	+6.31
2	33	40 29	46	13 5	1.2999	18	0.6738	155	45.88	6.21
3	33	51 29	46	18 8	1.3017	17	0.6583	159	45.99	6.12
4	32	42 28	46	26 12	1.3034	17	0.6424	164	46.10	6.03
5	32	14 29	46	38 16	1.3051	16	0.6260	171	+46.21	+5.93
6	31	45 28	46	54 20	1.3067	16	0.6089	176	46.33	5.83
7	31	17 29	47	14 26	1.3083	16	0.5913	184	46.44	5.73
8	30	48 28	47	40 31	1.3099	16	0.5729	190	46.56	5.64
9	30	20 28	48	11 36	1.3115	15	1.5539	199	46.67	5.53
10	29	52 28	48	47 42	1.3130	15	0.5340	208	+46.79	+5.42
11	29	24 28	49	29 50	1.3145	14	0.5132	214	46.91	5.31
12	25	56 28	50	19 62	1.3159	14	0.4918	224	47.03	5.20
13	23	23 28	51	21 71	1.3173	14	0.4674	232	47.16	5.09
14	23	0 28	52	32 81	1.3187	13	0.4462	241	47.28	4.98
15	27	32 28	53	53 94	1.3200	13	0.4221	249	+47.41	+4.86
16	27	4 28	53	37 120	1.3213	13	0.3972	257	47.53	4.75
17	30	36 28	57	27 137	1.3226	12	0.3715	265	47.66	4.63
18	26	8 27	59	44 155	1.3238	12	0.3450	274	47.79	4.51
19	25	41 28	62	19 176	1.3250	12	0.3176	276	47.92	4.39
20	25	13 28	65	15 215	1.3262	11	0.2900	277	+48.05	+4.27
21	24	45 27	68	50 244	1.3273	11	0.2623	279	48.19	4.14
22	24	18 27	72	54 276	1.3284	11	0.2352	281	48.32	4.02
23	23	57 28	77	30 312	1.3295	10	0.2101	280	48.46	3.89
24	23	23 27	82	42 342	1.3305	10	0.1881	181	48.60	3.77
25	22	56 27	88	24 379	1.3315	9	0.1700	-137	+48.74	+3.64
26	22	29 27	94	43 398	1.3324	9	0.1568	-48	48.88	3.52
27	22	2 27	107	21 406	1.3333	9	0.1485	+2	49.02	3.38
28	21	35 27	103	7 401	1.3342	9	0.1487	+70	49.17	3.26
29	21	8 27	114	48 380	1.3351	8	0.1537	126	49.31	3.12
30	20	41 27	121	8 355	1.3359	8	0.1683	187	+49.46	+2.99

$$d \text{ s. sec.} = i + k \cos \frac{1}{2} \cos (\mathcal{L} + d) + l \sin \frac{1}{2} \sin (\mathcal{L} + d)$$

## December

12 h Merid	K	d	L	d	log k	d	log l	d	f	i		
1	20°	14	24	134°	5	34	1.3364	8	0.1870	223	+49.60	+2.85
2	19	47	24	132	20	281	1.3375	4	0.2093	254	49.75	2.72
3	19	20	24	134	1	246	1.3382	4	0.2347	274	49.90	2.58
4	18	53	24	141	7	214	1.3389	6	0.2621	282	50.05	2.44
5	18	26	24	144	41	184	1.3395	6	0.2903	275	+50.20	+2.81
6	17	59	24	147	45	158	1.3401	6	0.3178	272	50.35	2.17
7	17	32	24	150	23	136	1.3407	5	0.3450	268	50.50	2.03
8	17	5	24	152	39	114	1.3412	5	0.3718	264	50.65	1.89
9	16	38	24	154	36	99	1.3417	5	0.3982	257	50.80	1.75
10	16	11	26	156	18	83	1.3422	4	0.4239	248	+50.95	+1.61
11	15	45	24	157	38	72	1.3426	4	0.4487	237	51.11	1.46
12	15	18	26	158	50	64	1.3430	3	0.4724	228	51.26	1.32
13	14	52	26	159	64	54	1.3433	3	0.4952	221	51.42	1.18
14	14	26	26	160	48	44	1.3436	3	0.5173	212	51.57	1.03
15	14	0	24	161	32	36	1.3439	2	0.5385	204	+51.73	+0.89
16	13	33	26	162	3	31	1.3441	2	0.5589	195	51.89	0.74
17	13	7	24	162	39	26	1.3443	2	0.5784	189	52.04	0.60
18	12	40	26	163	5	20	1.3445	1	0.5973	184	52.20	0.46
19	12	14	26	163	25	17	1.3446	1	0.6157	177	52.35	0.31
20	11	48	26	163	42	13	1.3447	0	0.6334	171	+52.51	+0.17
21	11	22	26	163	53	10	1.3447	0	0.6505	164	52.67	-0.03
22	10	56	26	164	5	6	1.3447	0	0.6669	157	52.82	0.12
23	10	30	26	164	11	4	1.3447	-1	0.6826	153	52.98	0.26
24	10	4	26	164	15	2	1.3446	-1	0.6979	148	53.13	0.41
25	9	38	26	164	17	0	1.3445	-1	0.7127	144	+53.29	-0.55
26	9	12	26	164	18	-1	1.3444	2	0.7271	139	53.45	0.69
27	8	46	26	164	16	-4	1.3442	2	0.7410	135	53.60	0.84
28	8	20	25	164	12	-6	1.3440	3	0.7545	130	53.76	0.98
29	7	54	26	164	6	-4	1.3437	3	0.7675	124	53.91	1.13
30	7	29	26	163	59	-9	1.3434	4	0.7802	115	+54.07	-1.27
31	7	3	26	163	50		1.3430		0.7927		54.23	1.41

$$\Delta d = f + k \cos \frac{1}{2} \sin(L + d) + l \sin \frac{1}{2} \cos(L + d)$$

$$\Delta d \cdot \sec \delta = i + k \cos \frac{1}{2} \cos(L + d) + l \sin \frac{1}{2} \sin(L + d)$$

Decl	log <sub>10</sub> 1/2	d	cosd	Decl	log <sub>10</sub> 1/2	d	cosd	Decl	log <sub>10</sub> 1/2	d	cosd
0	0.0000	13	1.0000	0	9.9544	12	0.9945	0	9.9084	13	0.9781
10	9.9987	12	1.0000	10	9.9582	13	0.9952	10	9.9071	13	0.9775
30	9.9976	13	1.0000	30	9.9519	13	0.9939	30	9.9057	13	0.9769
30	9.9962	13	1.0000	30	9.9506	12	0.9936	30	9.9045	13	0.9763
40	9.9949	13	0.9999	40	9.9494	13	0.9932	40	9.9032	13	0.9757
50	9.9932	13	0.9999	50	9.9481	13	0.9929	50	9.9019	13	0.9752
1	9.9924	12	0.9999	0	9.9468	12	0.9925	13	9.9005	12	0.9744
10	9.9912	13	0.9998	10	9.9455	12	0.9922	10	9.8993	13	0.9737
20	9.9899	13	0.9997	20	9.9443	13	0.9918	20	9.8980	13	0.9730
30	9.9886	12	0.9997	30	9.9430	13	0.9914	30	9.8967	13	0.9724
40	9.9874	13	0.9996	40	9.9417	13	0.9911	40	9.8954	13	0.9717
50	9.9861	13	0.9995	50	9.9404	12	0.9907	50	9.8941	13	0.9710
2	9.9848	12	0.9994	0	9.9392	13	0.9903	14	9.8928	13	0.9703
10	9.9836	13	0.9993	10	9.9379	13	0.9899	10	9.8915	13	0.9696
20	9.9825	13	0.9992	20	9.9366	13	0.9894	20	9.8902	13	0.9689
30	9.9810	12	0.9990	30	9.9353	12	0.9890	30	9.8889	13	0.9681
40	9.9798	13	0.9989	40	9.9341	13	0.9886	40	9.8876	12	0.9674
50	9.9785	13	0.9988	50	9.9328	13	0.9881	50	9.8863	12	0.9667
3	9.9772	12	0.9986	0	9.9315	13	0.9877	15	9.8850	13	0.9659
10	9.9760	13	0.9985	10	9.9302	13	0.9872	10	9.8837	13	0.9652
20	9.9747	12	0.9983	20	9.9289	12	0.9868	20	9.8824	13	0.9644
30	9.9735	13	0.9981	30	9.9277	13	0.9863	30	9.8811	14	0.9636
40	9.9722	13	0.9980	40	9.9264	13	0.9858	40	9.8798	13	0.9629
50	9.9709	12	0.9978	50	9.9251	12	0.9853	50	9.8784	13	0.9621
4	9.9697	13	0.9976	10	9.9238	13	0.9848	16	9.8771	13	0.9613
10	9.9684	13	0.9974	10	9.9225	13	0.9843	10	9.8758	13	0.9606
20	9.9671	12	0.9971	20	9.9212	12	0.9838	20	9.8745	13	0.9596
30	9.9659	12	0.9969	30	9.9200	13	0.9833	30	9.8732	14	0.9588
40	9.9646	13	0.9967	40	9.9187	13	0.9827	40	9.8719	13	0.9580
50	9.9633	13	0.9964	50	9.9174	12	0.9822	50	9.8705	13	0.9572
5	9.9621	13	0.9962	11	9.9161	13	0.9816	17	9.8692	13	0.9563
10	9.9608	13	0.9959	10	9.9148	13	0.9811	10	9.8679	13	0.9555
20	9.9595	13	0.9957	20	9.9136	13	0.9805	20	9.8666	13	0.9546
30	9.9582	13	0.9954	30	9.9122	12	0.9799	30	9.8652	13	0.9537
40	9.9570	12	0.9951	40	9.9110	13	0.9793	40	9.8639	13	0.9528
50	9.9557	13	0.9948	50	9.9097	13	0.9788	50	9.8626	12	0.9520

für negative Declinationen hat man den angegebenen  
 Worth von log<sub>10</sub> 1/2 von 1 ein subtrahieren.  
 $\log_{10} \frac{1}{2} = 1 - \log_{10} 2$

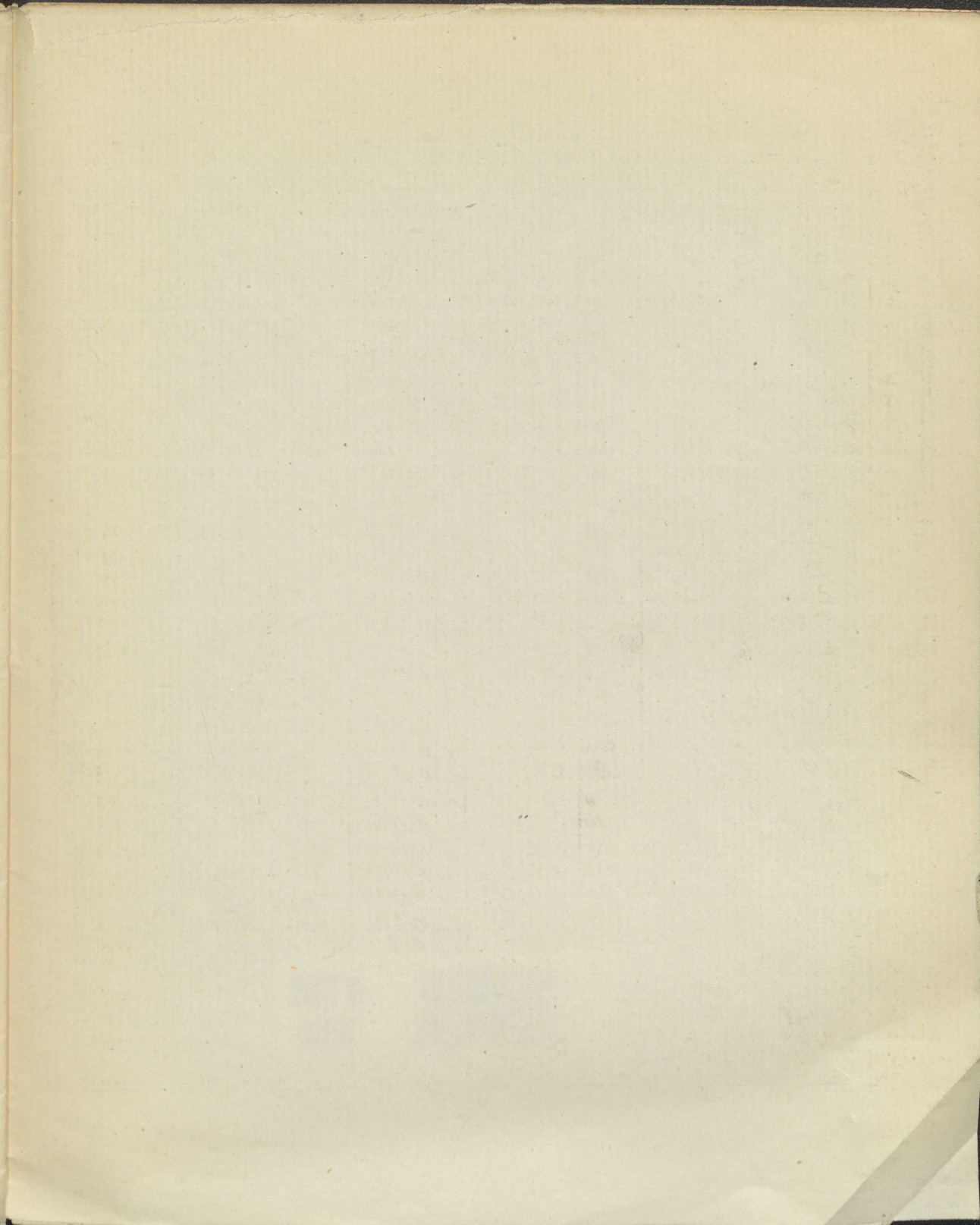


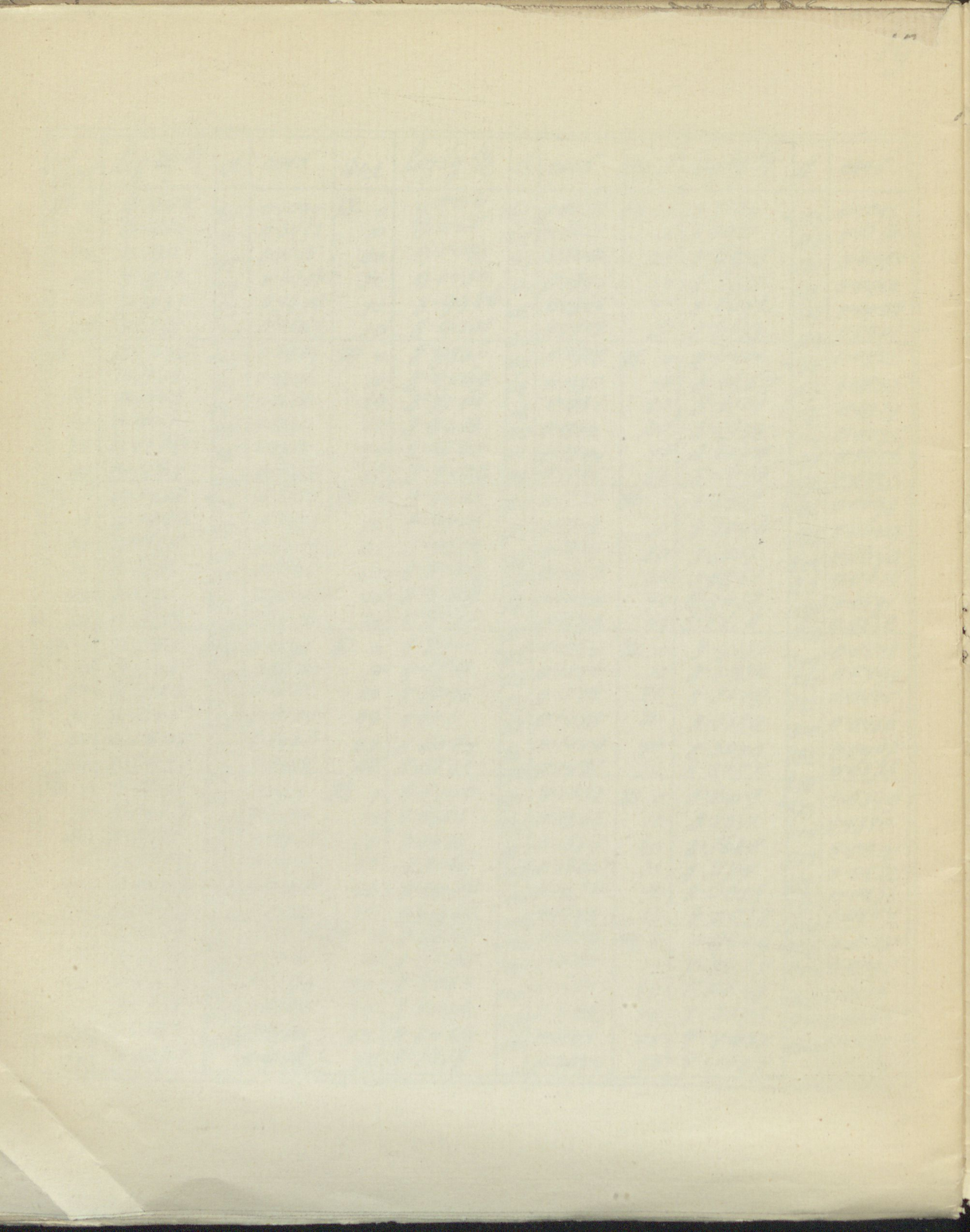
Decl	Logtg $\frac{1}{2}$	d	corr	Decl	Logtg $\frac{1}{2}$	d	corr	Decl	Logtg $\frac{1}{2}$	d	corr			
18	0	9.8613	14	0.9511	24	0	9.8125	14	0.9135	30	0	9.7614	14	0.8600
	10	9.8599	13	0.9502		10	9.8111	14	0.9124		10	9.7600	15	0.8646
	20	9.8586	13	0.9492		20	9.8097	13	0.9112		20	9.7585	14	0.8681
	30	9.8573	14	0.9483		30	9.8084	14	0.9100		30	9.7571	15	0.8716
	40	9.8559	13	0.9474		40	9.8070	14	0.9088		40	9.7556	15	0.8751
	50	9.8546	13	0.9465		50	9.8056	14	0.9075		50	9.7541	15	0.8787
19	0	9.8533	14	0.9455	25	0	9.8042	14	0.9063	31	0	9.7526	14	0.8822
	10	9.8519	13	0.9446		10	9.8028	14	0.9051		10	9.7512	15	0.8857
	20	9.8506	13	0.9436		20	9.8014	14	0.9038		20	9.7497	14	0.8892
	30	9.8493	14	0.9426		30	9.8000	14	0.9026		30	9.7482	15	0.8926
	40	9.8479	13	0.9417		40	9.7986	14	0.9013		40	9.7467	15	0.8961
	50	9.8466	14	0.9407		50	9.7972	14	0.9001		50	9.7452	14	0.8996
20	0	9.8452	13	0.9397	26	0	9.7958	14	0.8988	32	0	9.7438	15	0.9030
	10	9.8439	14	0.9387		10	9.7944	14	0.8975		10	9.7423	15	0.9065
	20	9.8426	13	0.9377		20	9.7930	14	0.8962		20	9.7408	15	0.9100
	30	9.8412	14	0.9367		30	9.7916	14	0.8949		30	9.7393	15	0.9134
	40	9.8398	13	0.9356		40	9.7902	15	0.8936		40	9.7378	15	0.9169
	50	9.8385	14	0.9346		50	9.7887	14	0.8923		50	9.7363	15	0.9203
21	0	9.8371	13	0.9336	27	0	9.7873	14	0.8910	33	0	9.7348	15	0.9237
	10	9.8358	14	0.9325		10	9.7859	14	0.8897		10	9.7333	16	0.9271
	20	9.8344	13	0.9315		20	9.7845	14	0.8884		20	9.7317	15	0.9305
	30	9.8331	14	0.9304		30	9.7831	15	0.8870		30	9.7302	16	0.9339
	40	9.8317	14	0.9293		40	9.7816	14	0.8857		40	9.7287	15	0.9373
	50	9.8303	13	0.9283		50	9.7802	14	0.8843		50	9.7272	15	0.9407
22	0	9.8290	14	0.9272	28	0	9.7788	15	0.8829	34	0	9.7257	16	0.9440
	10	9.8276	13	0.9261		10	9.7773	14	0.8816		10	9.7241	15	0.9474
	20	9.8263	14	0.9250		20	9.7759	14	0.8802		20	9.7226	16	0.9508
	30	9.8249	14	0.9239		30	9.7745	15	0.8788		30	9.7211	15	0.9541
	40	9.8235	13	0.9228		40	9.7730	14	0.8774		40	9.7196	16	0.9575
	50	9.8222	14	0.9216		50	9.7716	15	0.8760		50	9.7180	15	0.9608
23	0	9.8208	14	0.9205	29	0	9.7701	14	0.8746	35	0	9.7165	16	0.9642
	10	9.8194	14	0.9194		10	9.7687	14	0.8732		10	9.7149	15	0.9675
	20	9.8180	13	0.9182		20	9.7673	15	0.8718		20	9.7134	16	0.9708
	30	9.8164	14	0.9171		30	9.7658	14	0.8704		30	9.7118	15	0.9741
	40	9.8153	14	0.9159		40	9.7644	15	0.8689		40	9.7103	16	0.9774
	50	9.8139	13	0.9147		50	9.7629	14	0.8675		50	9.7087	15	0.9807

Decl.	log <sub>10</sub> 1/2	d	cos d	Decl.	log <sub>10</sub> 1/2	d	cos d	Decl.	log <sub>10</sub> 1/2	d	cos d
26 0	9.7072	16	0.8090	48 0	9.6486	17	0.7431	48 0	9.5842	19	0.6691
10	9.7056	16	0.8073	10	9.6469	17	0.7412	10	9.5823	19	0.6670
20	9.7040	15	0.8058	30	9.6452	17	0.7392	30	9.5804	19	0.6648
30	9.7025	16	0.8039	30	9.6435	18	0.7373	30	9.5785	19	0.6626
40	9.7009	16	0.8021	40	9.6417	17	0.7353	40	9.5766	20	0.6604
50	9.6993	16	0.8004	50	9.6400	17	0.7333	50	9.5747	19	0.6583
37 0	9.6977	15	0.7986	43 0	9.6383	17	0.7314	49 0	9.5728	19	0.6561
10	9.6962	16	0.7969	10	9.6366	18	0.7294	10	9.5708	20	0.6539
20	9.6946	16	0.7951	20	9.6348	17	0.7274	20	9.5689	19	0.6517
30	9.6930	16	0.7934	30	9.6331	17	0.7254	30	9.5669	20	0.6495
40	9.6914	16	0.7916	40	9.6314	18	0.7234	40	9.5650	19	0.6472
50	9.6898	16	0.7898	50	9.6296	17	0.7214	50	9.5630	20	0.6450
38 0	9.6882	16	0.7880	44 0	9.6279	17	0.7193	50 0	9.5611	20	0.6428
10	9.6866	16	0.7862	10	9.6261	18	0.7173	10	9.5591	20	0.6406
20	9.6850	16	0.7844	20	9.6243	18	0.7153	20	9.5571	20	0.6383
30	9.6834	17	0.7826	30	9.6225	17	0.7133	30	9.5551	20	0.6361
40	9.6817	16	0.7808	40	9.6207	18	0.7112	40	9.5531	19	0.6338
50	9.6801	16	0.7790	50	9.6189	17	0.7092	50	9.5512	21	0.6316
39 0	9.6785	16	0.7771	45 0	9.6172	18	0.7071	51 0	9.5491	20	0.6293
10	9.6769	17	0.7753	10	9.6154	18	0.7050	10	9.5471	20	0.6271
20	9.6752	16	0.7735	20	9.6136	18	0.7030	20	9.5451	20	0.6249
30	9.6736	16	0.7716	30	9.6118	18	0.7010	30	9.5431	20	0.6225
40	9.6720	17	0.7698	40	9.6100	18	0.6989	40	9.5411	20	0.6202
50	9.6703	16	0.7679	50	9.6082	18	0.6969	50	9.5390	20	0.6180
40 0	9.6687	17	0.7660	46 0	9.6064	18	0.6947	53 0	9.5370	21	0.6157
10	9.6670	16	0.7642	10	9.6046	18	0.6926	10	9.5349	20	0.6134
20	9.6654	17	0.7623	20	9.6028	18	0.6905	20	9.5329	21	0.6111
30	9.6637	17	0.7604	30	9.6009	19	0.6884	30	9.5308	21	0.6088
40	9.6620	16	0.7585	40	9.5991	18	0.6862	40	9.5287	21	0.6065
50	9.6604	17	0.7566	50	9.5972	19	0.6841	50	9.5266	21	0.6041
41 0	9.6587	17	0.7547	47 0	9.5954	18	0.6820	53 0	9.5245	21	0.6018
10	9.6570	17	0.7528	10	9.5935	19	0.6799	10	9.5224	21	0.5996
20	9.6553	16	0.7509	20	9.5917	18	0.6777	20	9.5203	21	0.5972
30	9.6537	17	0.7489	30	9.5898	19	0.6756	30	9.5182	21	0.5948
40	9.6520	17	0.7470	40	9.5879	18	0.6734	40	9.5161	22	0.5925
50	9.6503	17	0.7451	50	9.5861	19	0.6713	50	9.5140	22	0.5901

Decl	log $\frac{1}{\sin \delta}$	d	cos $\delta$	Decl	log $\frac{1}{\sin \delta}$	d	cos $\delta$	Decl	log $\frac{1}{\sin \delta}$	d	cos $\delta$
54 0	9.5118	28	0.5838	60 0	9.4281	26	0.5000	66 0	9.3625	31	0.4067
10	9.5096	21	0.5854	10	9.4255	26	0.4975	10	9.3644	32	0.4041
20	9.5075	20	0.5871	20	9.4230	26	0.4950	20	9.3662	31	0.4014
30	9.5053	20	0.5887	30	9.4204	26	0.4924	30	9.3681	32	0.3987
40	9.5031	22	0.5903	40	9.4178	26	0.4899	40	9.3700	32	0.3961
50	9.5009	22	0.5920	50	9.4153	26	0.4874	50	9.3717	32	0.3934
55 0	9.4987	22	0.5936	61 0	9.4127	27	0.4848	62 0	9.3666	33	0.3907
10	9.4965	23	0.5952	10	9.4100	26	0.4823	10	9.3685	32	0.3880
20	9.4943	22	0.5968	20	9.4074	26	0.4797	20	9.3702	32	0.3853
30	9.4921	23	0.5984	30	9.4048	27	0.4772	30	9.3720	34	0.3827
40	9.4898	22	0.5999	40	9.4021	26	0.4746	40	9.3737	33	0.3800
50	9.4876	23	0.6016	50	9.3995	27	0.4720	50	9.3755	32	0.3773
55 0	9.4853	23	0.6032	62 0	9.3968	27	0.4695	68 0	9.3687	34	0.3746
10	9.4831	22	0.6048	10	9.3941	27	0.4669	10	9.3705	34	0.3719
20	9.4808	23	0.6064	20	9.3914	28	0.4643	20	9.3722	35	0.3692
30	9.4785	23	0.6079	30	9.3887	28	0.4617	30	9.3739	34	0.3665
40	9.4762	23	0.6095	40	9.3859	28	0.4590	40	9.3756	35	0.3638
50	9.4739	24	0.6111	50	9.3831	28	0.4564	50	9.3773	35	0.3611
55 0	9.4716	24	0.6126	63 0	9.3804	28	0.4538	69 0	9.3694	36	0.3584
10	9.4693	24	0.6142	10	9.3776	28	0.4512	10	9.3711	35	0.3557
20	9.4669	25	0.6158	20	9.3748	29	0.4486	20	9.3728	36	0.3530
30	9.4646	24	0.6173	30	9.3719	28	0.4460	30	9.3745	37	0.3503
40	9.4622	24	0.6188	40	9.3691	29	0.4434	40	9.3762	37	0.3475
50	9.4599	24	0.6204	50	9.3662	29	0.4408	50	9.3779	37	0.3448
55 0	9.4575	24	0.6219	64 0	9.3634	29	0.4382	70 0	9.3796	37	0.3420
10	9.4551	24	0.6235	10	9.3605	29	0.4356	10	9.3813	37	0.3393
20	9.4527	24	0.6250	20	9.3576	30	0.4330	20	9.3830	38	0.3365
30	9.4503	24	0.6265	30	9.3546	30	0.4305	30	9.3847	38	0.3338
40	9.4479	25	0.6280	40	9.3517	30	0.4279	40	9.3864	38	0.3311
50	9.4454	25	0.6296	50	9.3487	30	0.4253	50	9.3881	38	0.3285
55 0	9.4430	25	0.6310	65 0	9.3458	30	0.4227	71 0	9.3898	39	0.3256
10	9.4406	24	0.6326	10	9.3428	31	0.4200	10	9.3915	39	0.3229
20	9.4381	25	0.6340	20	9.3397	31	0.4173	20	9.3932	40	0.3201
30	9.4356	25	0.6355	30	9.3367	31	0.4147	30	9.3949	40	0.3173
40	9.4331	25	0.6370	40	9.3336	31	0.4120	40	9.3966	40	0.3145
50	9.4306	25	0.6385	50	9.3306	31	0.4094	50	9.3983	40	0.3118

Decl	log t <sub>g</sub> %	d	cos d	Decl	log t <sub>g</sub> %	d	cos d	Decl	log t <sub>g</sub> %	d	cos d
20	9.1094	41	0.5090	28	9.0216	61	0.2079	84	8.7194	123	0.1045
10	9.1956	41	0.3063	10	9.0155	62	0.2061	10	8.7071	126	0.1016
20	9.1915	42	0.2035	20	9.0093	63	0.2022	20	8.6945	130	0.0987
30	9.1873	42	0.3007	30	9.0030	64	0.1994	30	8.6815	133	0.0963
40	9.1831	43	0.2979	40	8.9966	65	0.1965	40	8.6682	135	0.0929
50	9.1788	43	0.2952	50	8.9901	66	0.1937	50	8.6543	139	0.0901
73	9.1745	43	0.2924	79	8.9836	67	0.1908	85	8.6401	144	0.0872
10	9.1702	44	0.2896	10	8.9769	68	0.1880	10	8.6254	153	0.0843
20	9.1663	45	0.2868	20	8.9701	68	0.1851	20	8.6101	153	0.0814
30	9.1613	44	0.2840	30	8.9633	70	0.1822	30	8.5943	164	0.0785
40	9.1569	45	0.2812	40	8.9563	71	0.1794	40	8.5779	171	0.0756
50	9.1524	46	0.2784	50	8.9492	72	0.1765	50	8.5608	174	0.0727
14	9.1478	46	0.2756	80	8.9420	74	0.1736	86	8.5431	185	0.0698
10	9.1432	47	0.2728	10	8.9346	74	0.1708	10	8.5246	193	0.0669
20	9.1385	47	0.2700	20	8.9272	76	0.1679	20	8.5053	202	0.0640
30	9.1338	47	0.2672	30	8.9196	78	0.1650	30	8.4861	213	0.0610
40	9.1291	48	0.2644	40	8.9118	78	0.1622	40	8.4668	222	0.0581
50	9.1243	48	0.2616	50	8.9040	78	0.1593	50	8.4476	230	0.0552
75	9.1194	49	0.2588	81	8.8960	80	0.1564	87	8.4181	249	0.0523
10	9.1145	49	0.2560	10	8.8878	82	0.1536	10	8.3982	257	0.0494
20	9.1096	51	0.2532	20	8.8795	83	0.1507	20	8.3769	281	0.0465
30	9.1045	50	0.2504	30	8.8711	84	0.1478	30	8.3539	300	0.0436
40	9.0995	52	0.2476	40	8.8624	85	0.1449	40	8.3289	322	0.0407
50	9.0943	52	0.2447	50	8.8536	86	0.1421	50	8.3027	322	0.0378
76	9.0891	52	0.2419	82	8.8446	91	0.1392	88	8.2419	348	0.0349
10	9.0839	53	0.2391	10	8.8355	91	0.1363	10	8.2041	373	0.0320
20	9.0786	44	0.2363	20	8.8261	95	0.1334	20	8.1627	414	0.0291
30	9.0732	44	0.2335	30	8.8165	99	0.1305	30	8.1170	457	0.0262
40	9.0678	54	0.2306	40	8.8067	100	0.1276	40	8.0658	512	0.0233
50	9.0622	54	0.2278	50	8.7967	102	0.1248	50	8.0078	580	0.0204
77	9.0567	57	0.2250	83	8.7865	105	0.1219	89	7.9409	660	0.0175
10	9.0510	58	0.2221	10	8.7760	108	0.1190	10	7.8617	729	0.0145
20	9.0453	58	0.2193	20	8.7652	110	0.1161	20	7.7648	850	0.0116
30	9.0395	59	0.2164	30	8.7542	113	0.1132	30	7.6598	1011	0.0087
40	9.0336	59	0.2136	40	8.7429	116	0.1103	40	7.5463	1201	0.0058
50	9.0277	59	0.2108	50	8.7313		0.1074	50	7.4167	3010	0.0029





**MTA**  
**KIK**



