ASTRONOMISCHE NACHRICHTEN.

Nº 2907.

Berechnung des Planeten (69) Hesperia.

Von Dr. Kowalczyk.

Jupiter- und Saturn-Störungen.

Elemente.

Epoche und Osc. 1880 März 29.0 M. Z. Berlin.

M. Aequ. 1880.0

M. Aequ. 1890.0

$L = 41^{\circ} 53' 28''.74$

$42^{\circ} 1' 51''.08$

$\pi = 110 10 10.33$

$110 18 32.67$

$\Omega = 186 35 53.28$

$186 44 22.73$

$i = 8 30 41.52$

$8 30 36.93$

$q = 9^{\circ} 28' 16''.46$

$\mu = 688''.55594$

Datum	$\Delta\mu$	ΔL	$\Delta\pi$	$\Delta\Omega$	Δi	Δq
1880 Jan. 29	-0.39650	+ 51.75	- 434.36	- 5.93	- 4.94	+ 25.66
Febr. 18	-0.25789	+ 28.60	- 279.40	- 4.29	- 2.89	+ 17.10
März 9	-0.12546	+ 11.52	- 134.46	- 2.24	- 1.26	+ 8.53
» 29	0.00000	0.00	0.00	0.00	0.00	0.00
April 18	+0.11784	- 6.44	+ 123.71	+ 2.20	+ 0.97	- 8.46
Mai 8	+0.22761	- 8.30	+ 236.61	+ 4.24	+ 1.68	- 16.79
» 28	+0.32903	- 6.04	+ 338.82	+ 6.04	+ 2.21	- 24.91
Juni 17	+0.42196	- 0.11	+ 430.61	+ 7.55	+ 2.58	- 32.76
Juli 7	+0.50634	+ 9.04	+ 512.38	+ 8.77	+ 2.83	- 40.26
» 27	+0.58224	+ 21.02	+ 584.62	+ 9.69	+ 2.99	- 47.33
Aug. 16	+0.64978	+ 35.43	+ 647.92	+ 10.34	+ 3.08	- 53.89
Sept. 5	+0.70910	+ 51.92	+ 702.95	+ 10.76	+ 3.14	- 59.89
» 25	+0.76042	+ 70.17	+ 750.40	+ 10.97	+ 3.16	- 65.26
Oct. 15	+0.80401	+ 89.85	+ 791.03	+ 11.03	+ 3.16	- 69.95
Nov. 4	+0.84020	+ 110.67	+ 825.68	+ 10.98	+ 3.16	- 73.94
» 24	+0.86932	+ 132.36	+ 855.10	+ 10.86	+ 3.16	- 77.20
Dec. 14	+0.89173	+ 154.70	+ 880.10	+ 10.71	+ 3.15	- 79.72
1881 Jan. 3	+0.90782	+ 177.44	+ 901.48	+ 10.56	+ 3.15	- 81.49
» 23	+0.91800	+ 200.39	+ 919.99	+ 10.44	+ 3.14	- 82.54
Febr. 12	+0.92270	+ 223.36	+ 936.36	+ 10.37	+ 3.14	- 82.90
März 4	+0.92235	+ 246.20	+ 951.27	+ 10.37	+ 3.14	- 82.61
» 24	+0.91741	+ 268.74	+ 965.30	+ 10.45	+ 3.14	- 81.71
April 13	+0.90834	+ 290.86	+ 979.00	+ 10.63	+ 3.13	- 80.27
Mai 3	+0.89559	+ 312.45	+ 992.82	+ 10.89	+ 3.12	- 78.35
» 23	+0.87962	+ 333.42	+ 1007.14	+ 11.23	+ 3.09	- 76.02
Juni 12	+0.86083	+ 353.67	+ 1022.23	+ 11.66	+ 3.05	- 73.35
Juli 2	+0.83963	+ 373.13	+ 1038.33	+ 12.15	+ 2.99	- 70.41
» 22	+0.81640	+ 391.76	+ 1055.59	+ 12.69	+ 2.91	- 67.27
Aug. 11	+0.79154	+ 409.51	+ 1074.07	+ 13.26	+ 2.82	- 63.99
» 31	+0.76540	+ 426.34	+ 1093.79	+ 13.85	+ 2.70	- 60.64
Sept. 20	+0.73828	+ 442.23	+ 1114.73	+ 14.42	+ 2.55	- 57.27

Datum	$\Delta\mu$	ΔL	$\Delta\pi$	$\Delta\varrho$	Δi	$\Delta\varphi$
1881 Oct. 10	+0.71048	+457.16	+1136.82	+14.97	+2.39	— 53.92
» 30	+0.68224	+471.13	+1159.96	+15.47	+2.20	— 50.65
Nov. 19	+0.65382	+484.14	+1184.03	+15.90	+1.98	— 47.47
Dec. 9	+0.62540	+496.19	+1208.90	+16.23	+1.75	— 44.42
» 29	+0.59717	+507.30	+1234.42	+16.46	+1.49	— 41.52
1882 Jan. 18	+0.56928	+517.48	+1260.44	+16.55	+1.21	— 38.79
Febr. 7	+0.54187	+526.75	+1286.83	+16.50	+0.91	— 36.23
» 27	+0.51505	+535.13	+1313.45	+16.29	+0.59	— 33.85
März 19	+0.48890	+542.66	+1340.18	+15.90	+0.25	— 31.65
April 8	+0.46351	+549.35	+1366.89	+15.32	— 0.09	— 29.64
» 28	+0.43894	+555.24	+1393.49	+14.55	— 0.45	— 27.80
Mai 18	+0.41524	+560.37	+1419.88	+13.57	— 0.82	— 26.14
Juni 7	+0.39245	+564.76	+1445.98	+12.38	— 1.19	— 24.63
» 27	+0.37060	+568.44	+1471.73	+10.98	— 1.56	— 23.28
Juli 17	+0.34972	+571.45	+1497.07	+9.36	— 1.93	— 22.08
Aug. 6	+0.32981	+573.83	+1521.95	+7.52	— 2.30	— 21.01
» 26	+0.31090	+575.60	+1546.35	+5.46	— 2.67	— 20.06
Sept. 15	+0.29298	+576.80	+1570.24	+3.20	— 3.03	— 19.23
Oct. 5	+0.27605	+577.47	+1593.60	+0.73	— 3.38	— 18.50
» 25	+0.26012	+577.64	+1616.42	— 1.95	— 3.71	— 17.86
Nov. 14	+0.24517	+577.34	+1638.71	— 4.81	— 4.03	— 17.30
Dec. 4	+0.23121	+576.61	+1660.46	— 7.85	— 4.33	— 16.82
» 24	+0.21822	+575.47	+1681.69	— 11.07	— 4.61	— 16.40
1883 Jan. 13	+0.20618	+573.96	+1702.42	— 14.44	— 4.87	— 16.03
Febr. 2	+0.19510	+572.11	+1722.66	— 17.96	— 5.11	— 15.71
» 22	+0.18496	+569.95	+1742.43	— 21.62	— 5.33	— 15.43
März 14	+0.17575	+567.52	+1761.76	— 25.39	— 5.52	— 15.19
April 3	+0.16746	+564.83	+1780.68	— 29.27	— 5.68	— 14.97
» 23	+0.16007	+561.92	+1799.21	— 33.23	— 5.81	— 14.77
Mai 13	+0.15357	+558.82	+1817.39	— 37.26	— 5.91	— 14.59
Juni 2	+0.14795	+555.57	+1835.25	— 41.35	— 5.98	— 14.42
» 22	+0.14320	+552.18	+1852.82	— 45.49	— 6.03	— 14.26
Juli 12	+0.13932	+548.67	+1870.13	— 49.64	— 6.04	— 14.10
Aug. 1	+0.13628	+545.09	+1887.23	— 53.79	— 6.03	— 13.95
» 21	+0.13408	+541.46	+1904.14	— 57.93	— 5.98	— 13.80
Sept. 10	+0.13271	+537.80	+1920.90	— 62.05	— 5.90	— 13.64
» 30	+0.13216	+534.14	+1937.55	— 66.13	— 5.80	— 13.49
Oct. 20	+0.13243	+530.51	+1954.12	— 70.14	— 5.66	— 13.33
Nov. 9	+0.13350	+526.93	+1970.64	— 74.08	— 5.50	— 13.17
» 29	+0.13536	+523.43	+1987.16	— 77.94	— 5.31	— 13.01
Dec. 19	+0.13801	+520.03	+2003.69	— 81.70	— 5.10	— 12.85
1884 Jan. 8	+0.14145	+516.75	+2020.27	— 85.33	— 4.86	— 12.69
» 28	+0.14566	+513.62	+2036.94	— 88.84	— 4.60	— 12.53
Febr. 17	+0.15064	+510.67	+2053.72	— 92.22	— 4.32	— 12.37
März 8	+0.15635	+507.91	+2070.65	— 95.45	— 4.02	— 12.22
» 28	+0.16288	+505.38	+2087.74	— 98.51	— 3.70	— 12.08
April 17	+0.17014	+503.10	+2105.03	— 101.41	— 3.36	— 11.95
Mai 7	+0.17814	+501.08	+2122.54	— 104.14	— 3.01	— 11.84
» 27	+0.18687	+499.36	+2140.28	— 106.68	— 2.65	— 11.76
Juni 16	+0.19634	+497.95	+2158.28	— 109.03	— 2.28	— 11.70
Juli 6	+0.20653	+496.88	+2176.54	— 111.20	— 1.90	— 11.68
» 26	+0.21743	+496.18	+2195.09	— 113.18	— 1.51	— 11.70
Aug. 15	+0.22903	+495.86	+2213.92	— 114.95	— 1.13	— 11.76
Sept. 4	+0.24133	+495.95	+2233.04	— 116.54	— 0.74	— 11.87
» 24	+0.25431	+496.46	+2252.44	— 117.93	— 0.35	— 12.04
Oct. 14	+0.26796	+497.42	+2272.13	— 119.12	+0.04	— 12.27

Datum	$\Delta\mu$	ΔL	$\Delta\pi$	$\Delta\Omega$	Δi	$\Delta\varphi$
1884 Nov. 3	+0.28225	+498.86	+2292.08	-120.13	+0.41	-12.58
» 23	+0.29717	+500.78	+2312.27	-120.95	+0.78	-12.97
Dec. 13	+0.31270	+503.22	+2332.68	-121.60	+1.14	-13.44
1885 Jan. 2	+0.32880	+506.19	+2353.28	-122.08	+1.49	-14.01
» 22	+0.34545	+509.70	+2374.03	-122.40	+1.82	-14.68
Febr. 11	+0.36262	+513.77	+2394.87	-122.57	+2.14	-15.45
März 3	+0.38026	+518.43	+2415.76	-122.60	+2.44	-16.33
» 23	+0.39833	+523.68	+2436.62	-122.51	+2.73	-17.33
April 12	+0.41678	+529.54	+2457.38	-122.31	+2.99	-18.45
Mai 2	+0.43555	+536.01	+2477.98	-122.01	+3.22	-19.69
» 22	+0.45458	+543.11	+2498.32	-121.63	+3.44	-21.04
Juni 11	+0.47379	+550.84	+2518.32	-121.20	+3.63	-22.51
Juli 1	+0.49312	+559.21	+2537.87	-120.72	+3.80	-24.10
» 21	+0.51247	+568.22	+2556.90	-120.22	+3.95	-25.79
Aug. 10	+0.53175	+577.87	+2575.32	-119.72	+4.07	-27.57
» 30	+0.55086	+588.15	+2593.02	-119.23	+4.17	-29.44
Sept. 19	+0.56969	+599.07	+2609.92	-118.77	+4.26	-31.38
Oct. 9	+0.58813	+610.60	+2625.97	-118.36	+4.32	-33.37
» 29	+0.60605	+622.75	+2641.10	-118.03	+4.36	-35.39
Nov. 18	+0.62330	+635.49	+2655.27	-117.77	+4.39	-37.41
Dec. 8	+0.63974	+648.81	+2668.47	-117.61	+4.40	-39.40
» 28	+0.65519	+662.70	+2680.60	-117.55	+4.41	-41.32
1886 Jan. 17	+0.66946	+677.13	+2691.99	-117.59	+4.40	-43.14
Febr. 6	+0.68232	+692.07	+2702.42	-117.73	+4.40	-44.83
» 26	+0.69352	+707.48	+2712.10	-117.97	+4.39	-46.32
März 18	+0.70277	+723.34	+2721.17	-118.31	+4.39	-47.56
April 7	+0.70973	+739.58	+2729.82	-118.72	+4.39	-48.50
» 27	+0.71402	+756.15	+2738.33	-119.19	+4.40	-49.08
Mai 17	+0.71524	+772.96	+2747.03	-119.70	+4.41	-49.23
Juni 6	+0.71295	+789.92	+2756.30	-120.24	+4.43	-48.88
» 26	+0.70668	+806.91	+2766.57	-120.78	+4.47	-47.98
Juli 16	+0.69595	+823.78	+2778.36	-121.29	+4.51	-46.47
Aug. 5	+0.68034	+840.38	+2792.24	-121.76	+4.55	-44.28
» 25	+0.65942	+856.50	+2808.78	-122.16	+4.60	-41.39
Sept. 14	+0.63280	+871.92	+2828.61	-122.48	+4.64	-37.77
Oct. 4	+0.60014	+886.40	+2852.33	-122.71	+4.68	-33.41
» 24	+0.56119	+899.66	+2880.52	-122.82	+4.70	-28.29
Nov. 13	+0.51578	+911.41	+2913.70	-122.80	+4.70	-22.43
Dec. 3	+0.46387	+921.31	+2952.30	-122.67	+4.66	-15.86
» 23	+0.40557	+929.03	+2996.62	-122.43	+4.57	-8.60
1887 Jan. 12	+0.34111	+934.18	+3046.80	-122.12	+4.41	-0.69
Febr. 1	+0.27091	+936.43	+3102.80	-121.76	+4.17	+7.82
» 21	+0.19562	+935.36	+3164.34	-121.46	+3.83	+16.88
März 13	+0.11613	+930.63	+3230.84	-121.29	+3.35	+26.46
April 2	+0.03359	+921.88	+3301.52	-121.37	+2.72	+36.53
» 22	-0.05058	+908.83	+3375.22	-121.87	+1.90	+47.05
Mai 12	-0.13465	+891.23	+3450.49	-123.04	+0.90	+58.04
Juni 1	-0.21669	+868.96	+3525.65	-125.06	-0.34	+69.50
» 21	-0.29451	+842.02	+3598.76	-128.23	-1.82	+81.49
Juli 11	-0.36586	+810.46	+3667.80	-132.81	-3.56	+94.06
» 31	-0.42845	+774.65	+3730.74	-139.10	-5.53	+107.32
Aug. 20	-0.48014	+735.00	+3785.70	-147.37	-7.75	+121.35
Sept. 9	-0.51909	+692.13	+3831.10	-157.83	-10.17	+136.25
» 29	-0.54378	+646.78	+3865.77	-170.66	-12.77	+152.12
Oct. 19	-0.55337	+599.82	+3889.07	-185.93	-15.50	+169.05
Nov. 8	-0.54737	+552.15	+3900.83	-203.64	-18.32	+187.07

Datum	$\Delta\mu$	ΔL	$\Delta\pi$	$\Delta\Omega$	Δi	$\Delta\varphi$
1887 Nov. 28	-0.52605	+504.71	+3901.59	-223.70	-21.15	+206.19
Dec. 18	-0.49013	+458.41	+3892.25	-245.93	-23.94	+226.39
1888 Jan. 7	-0.44079	+414.05	+3874.10	-270.08	-26.64	+247.59
» 27	-0.37956	+372.35	+3848.73	-295.85	-29.20	+269.69
Febr. 16	-0.30810	+333.92	+3817.81	-322.88	-31.59	+292.55
März 7	-0.22825	+299.19	+3783.08	-350.85	-33.75	+316.00
» 27	-0.14174	+268.52	+3746.10	-379.41	-35.69	+339.88
April 16	-0.05017	+242.10	+3708.32	-408.23	-37.38	+364.03
Mai 6	+0.04461	+220.05	+3670.98	-437.02	-38.81	+388.29
» 26	+0.14150	+202.39	+3635.13	-465.51	-40.00	+412.48
Juni 15	+0.23935	+189.08	+3601.59	-493.47	-40.93	+436.49
Juli 5	+0.33700	+180.01	+3570.99	-520.71	-41.63	+460.17
» 25	+0.43371	+175.04	+3543.79	-547.07	-42.11	+483.42
Aug. 14	+0.52879	+174.02	+3520.27	-572.43	-42.38	+506.15
Sept. 3	+0.62171	+176.74	+3500.60	-596.68	-42.47	+528.27
» 23	+0.71207	+183.04	+3484.84	-619.76	-42.38	+549.72
Oct. 13	+0.79955	+192.68	+3472.93	-641.61	-42.14	+570.45
Nov. 2	+0.88393	+205.49	+3464.77	-662.20	-41.76	+590.43
» 22	+0.96505	+221.26	+3460.19	-681.52	-41.26	+609.61
Dec. 12	+1.04281	+239.81	+3459.02	-699.57	-40.67	+627.99
1889 Jan. 1	+1.11716	+260.94	+3461.01	-716.35	-39.98	+645.54
» 21	+1.18806	+284.48	+3465.91	-731.88	-39.23	+662.26

Elemente.

Epoche und Osc. 1889 Jan. 1.0 M. Z. Berlin.

$$\begin{aligned}
 L &= 294^\circ 9' 11''.62 \\
 \pi &= 111 16 13.68 \\
 \Omega &= 186 32 26.38 \\
 i &= 8 29 56.95 \\
 \varphi &= 9 39 2.00 \\
 \mu &= 689'' 67310
 \end{aligned}
 \left. \begin{array}{l} \\ \\ \\ \\ \\ \end{array} \right\} \text{M. Aequ. 1890.0}$$

Datum	$\Delta\mu$	ΔL	$\Delta\pi$	$\Delta\Omega$	Δi	$\Delta\varphi$
1888 Nov. 2	-0.23321	+11.58	+3.76	+54.14	-1.78	-55.10
» 22	-0.15211	+5.01	-0.81	+34.82	-1.28	-35.93
Dec. 12	-0.07435	+1.21	-1.99	+16.78	-0.68	-17.55
1889 Jan. 1	0.00000	0.00	0.00	0.00	0.00	0.00
» 21	+0.07091	+1.20	+4.90	-15.53	+0.75	+16.72
Febr. 10	+0.13837	+4.64	+12.45	-29.83	+1.56	+32.61
März 2	+0.20242	+10.15	+22.38	-42.95	+2.42	+47.67
» 22	+0.26309	+17.60	+34.41	-54.91	+3.30	+61.91
April 11	+0.32042	+26.82	+48.26	-65.76	+4.20	+75.34
Mai 1	+0.37447	+37.68	+63.66	-75.55	+5.11	+87.97
» 21	+0.42531	+50.05	+80.34	-84.33	+6.02	+99.82
Juni 10	+0.47299	+63.80	+98.03	-92.14	+6.92	+110.91
» 30	+0.51758	+78.81	+116.47	-99.05	+7.79	+121.26
Juli 20	+0.55913	+94.98	+135.43	-105.09	+8.65	+130.89
Aug. 9	+0.59771	+112.19	+154.63	-110.35	+9.47	+139.83
» 29	+0.63337	+130.34	+173.87	-114.86	+10.25	+148.11
Sept. 18	+0.66618	+149.33	+192.92	-118.70	+10.99	+155.76
Oct. 8	+0.69618	+169.06	+211.57	-121.91	+11.68	+162.79
» 28	+0.72343	+189.44	+229.62	-124.56	+12.32	+169.26
Nov. 17	+0.74798	+210.38	+246.89	-126.70	+12.91	+175.18
Dec. 7	+0.76985	+231.81	+263.19	-128.40	+13.44	+180.60

Auf Grund obiger Elemente und ihrer Variationen ergibt sich folgende

Oppositions-Ephemeride der Hesperia für 12^h M. Z. Berlin.

1889	α app.	δ app.	$\log A$	Ab. Zt.	1889	α app.	δ app.	$\log A$	Ab. Zt.
Juli 20	22 ^h 2 ^m 26 ^s 15	—3° 20' 53".4	0.39717	20 ^m 42 ^s 3	Aug. 12	21 ^h 47 ^m 53 ^s 48	—4° 48' 30".3	0.37376	19 ^m 37 ^s 1
21	22 1 56.25	—3 23 23.0	0.39569	38.1	13	21 47 9.74	—4 53 31.3	0.37331	35.8
22	22 1 25.44	—3 26 0.4	0.39425	34.0	14	21 46 25.80	—4 58 36.7	0.37292	34.8
23	22 0 53.71	—3 28 45.7	0.39285	30.0	15	21 45 41.71	—5 3 46.4	0.37257	33.8
24	22 0 21.10	—3 31 38.7	0.39148	26.1	16	21 44 57.52	—5 9 0.1	0.37228	33.1
25	21 59 47.63	—3 34 39.5	0.39015	22.3	17	21 44 13.27	—5 14 17.6	0.37204	32.4
26	21 59 13.34	—3 37 47.9	0.38886	18.7	18	21 43 28.98	—5 19 38.7	0.37185	32.0
27	21 58 38.25	—3 41 3.8	0.38761	15.3	19	21 42 44.71	—5 25 3.0	0.37172	31.6
28	21 58 2.38	—3 44 27.2	0.38641	11.9	20	21 42 0.51	—5 30 30.4	0.37164	31.4
29	21 57 25.77	—3 47 57.9	0.38524	8.6	21	21 41 16.40	—5 36 0.5	0.37162	31.3
30	21 56 48.44	—3 51 35.8	0.38412	5.4	22	21 40 32.44	—5 41 33.1	0.37165	31.4
31	21 56 10.44	—3 55 20.8	0.38304	20 2.4	23	21 39 48.66	—5 47 8.0	0.37173	31.6
Aug. 1	21 55 31.79	—3 59 12.6	0.38200	19 59.6	24	21 39 5.12	—5 52 44.8	0.37187	32.0
2	21 54 52.51	—4 3 11.2	0.38101	56.9	25	21 38 21.85	—5 58 23.4	0.37206	32.5
3	21 54 12.65	—4 7 16.4	0.38007	54.3	26	21 37 38.90	—6 4 3.5	0.37230	33.2
4	21 53 32.24	—4 11 28.0	0.37917	51.8	27	21 36 56.31	—6 9 44.7	0.37260	34.0
5	21 52 51.33	—4 15 45.9	0.37832	49.4	28	21 36 14.12	—6 15 26.9	0.37295	35.0
6	21 52 9.93	—4 20 9.9	0.37752	47.3	29	21 35 32.37	—6 21 9.7	0.37335	36.1
7	21 51 28.10	—4 24 39.7	0.37677	45.3	30	21 34 51.12	—6 26 52.8	0.37381	37.3
8	21 50 45.85	—4 29 15.2	0.37607	43.4	31	21 34 10.39	—6 32 35.9	0.37431	38.6
9	21 50 3.23	—4 33 56.3	0.37541	41.6	Sept. 1	21 33 30.23	—6 38 18.9	0.37487	40.1
10	21 49 20.27	—4 38 42.6	0.37481	40.0	2	21 32 50.66	—6 44 1.4	0.37547	41.7
11	21 48 37.00	—4 43 34.0	0.37426	19 38.5	3	21 32 11.73	—6 49 43.3	0.37612	19 43.5

Aug. 16 Lichtstärke = 0.55, Grösse = 11^m3.

Kowalczyk.

Elemente des Cometen 1889... (Barnard März 31)

abgeleitet aus Beobachtungen mit eintägigen Zwischenzeiten nach v. Oppolzer's Methode.

Da die Bahn dieses Cometen bei kleinen Zwischenzeiten ein Beispiel bietet für den Fall, in welchem die Methode des Herrn von Oppolzer der Olbers'schen gegenüber einen grossen Vorzug hat (Ausnahmefall, Bahnbestimmung I p. 303), hat Herr Prof. Holden mich veranlasst, dieselbe aus den drei ersten Beobachtungen der Lick-Sternwarte (März 31, April 1, April 2) zu berechnen. — Die Elemente sind:

$$\left. \begin{aligned} T &= 1889 \text{ Mai } 23.8645 \text{ M. Z. Berlin} \\ \omega &= 229^\circ 19' 39".4 \\ \Omega &= 311 \quad 26 \quad 9.1 \\ i &= 164 \quad 4 \quad 53.5 \end{aligned} \right\} \text{M. Aequ. 1889.0}$$

$$\log q = 0.360161$$

$$\text{Mittlere Beobachtung: } \Delta \lambda \cos \beta = +3".7 \quad \Delta \beta = +1".7$$

Die letzte Beobachtung des Herrn Barnard ist:

$$\text{April 29 } 8^h 19^m 58^s \text{ M. Z. M. Ham. } \alpha \text{ app.} = 5^h 7^m 31^s 57 \quad \delta \text{ app.} = +15^\circ 10' 24".7.$$

Correction der Ephemeride nach den obigen Elementen für dies Datum:

$$\Delta \alpha = -9".7 \quad \Delta \delta = -29".1.$$

Lick Observatory 1889 Mai 29.

Armin O. Leuschner, cand. phil.