ZONAS

DE

ESTRELLAS AUSTRALES DE GILLIS

(—65°..............—90°)

OBSERVADAS CON EL

MERIDIANO REPSOLD

POR

RÓMULO GRANDÓN Y DOMINGO ALMENDRAS

INTRODUCCION

Al hacerme cargo de la Dirección del Observatorio Nacional de Santiago, dependiente de la Universidad de Chile, mi primer anhelo fué emprender la reobservación de las estrellas del Catálogo de Gillis. Este gran astrónomo, miembro distinguido de la marina norteamericana, fué el fundador de la Astrometría en Chile y como un justo y merecido homenaje a tan esclarecido hombre de ciencia el Observatorio Nacional de Santiago, en la nueva etapa que se inicia, ha querido seguir paso a paso las jalones luminosos plantados por Gillis en el firmamento austral.

Valgan estos esfuerzos de los astrónomos chilenos como conmemoración del centenario del eximio astrónomo norteamericano, fundador de la astronomía de precisión en Chile, Cap J. Gillis.

Organización del Trabajo

El Jefe de la Sección Meridiano don Rómulo Grandón ha tenido a su cargo la confección de todo el trabajo en colaboración con el Astrónomo de Sección don Domingo Almendras y la Calculista Srta. Isabel Grandón. (La descripción del Mer. Repsold está en el Anuario del Observatorio de Santiago para 1919).

Al astrónomo señor Grandón le correspondió observar

en el anteojo y determinar el nadir mientras el Sr. Almendras leía los microscopios del círculo; las lecturas de la cinta cronográfica fueron hechas por la Srta. Grandón. Los cálculos fueron ejecutados por el Sr. Grandón, el Sr. Almendras, la Sta. Grandón y el suscrito.

Para la determinación del nadir fué necesario que el mecánico Sr. Ricardo Wüst hiciera una cubeta flotante a fin de evitar las vibraciones de la calle.

Constantes del Instrumento

Paso del tornillo micrométrico en ascensión recta 1rev = 4,087ˢ
» » » » » declinación... 1rev = 18.75″
Nivel del caballete................................... 1div = 0.074ˢ

La colimación se determinó siempre por inversión en los pasos de estrellas circumpolares. Las demás constantes instrumentales se dedujeron por la aplicación de la fórmula de Bessel a estrellas fundamentales. La corrección del cronógrafo fué obtenida por la misma fórmula.

La inclinación del hilo de declinación ha sido nula durante todas las observaciones por haberse ajustado su orientación al movimiento diurno. La curvatura del paralelo se tomó en cuenta en cada caso en que se observó la declinación fuera del grupo central, pues hay tres grupos de 7 hilos cada uno.

Determinación de las Coordenadas Ecuatoriales

a) Ascensión recta.—De la cinta cronográfica se leyeron las punterias a cada hilo del retículo y se redujeron al hilo medio ideal; se ha obtenido así la hora cronográfica del paso observado. La ascensión recta se determinó entonces por la fórmula de Bessel:

$$AR = T + C_p + m + n \ t.g \ \delta + (c - \varkappa) \ sec\delta$$

b) Declinación.— El término medio de las lecturas de los cuatro microscopios en el caso de las estrellas funda-

mentales se corrigió por refracción, curvatura, runs, reducción al cero del micrómetro de declinación y se obtuvo así el *punto del ecuador*.

. Las estrellas fundamentales han sido tomadas del Connaissance des Temps, Berliner Jahrbuch, American Ephemeris y Nautical Almanac.

Las tablas de refracción empleadas son las del Connaissance de Temps.

Comparación con el Catálogo de Gillis

Las posiciones aparentes de las estrellas observadas han sido reducidas al equinoccio medio de 1929.0 y enseguida se han reducido a este mismo equinoccio las posiciones de Gillis. Los valores $\Delta \alpha$ y $\Delta \delta$ son las diferencias en el sentido

Santiago 1929 menos Santiago 1850

Plan General de la Publicación

La Universidad Chile, bajo cuya tutela está ahora el Observatorio Nacional de Santiago, publicará periódicamente los fasciculos de las zonas observadas y cuando éstas estén agotadas se dará a luz el Catálogo de Santiago con las estrellas de Gillis, lo que servirá para determinar el movimiento propio de un gran número de esos lejanos soles.

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R. E. CASTRO
Director del Observatorio

</div>

15 de Septiembre de 1929.

Constantes para obtener el error de Runs
en las distintas fechas

1929	Mayo	6....................	+0.0017
»	»	10..	+0.0017
»	»	13....................	−0.0009
»	»	15....................	−0.0007
»	»	22....................	−0.0041
»	»	27....................	−0.0035
»	Junio	12....................	−0.0010
»	»	14....................	−0.0020
»	»	28....................	−0.0024
»	Julio	2....................	−0.0012
»	»	5....................	−0.0011
»	»	31....................	−0.0017

Comparación con el Catálogo de Gillis

Estrella	Mag.	Δα	Δδ	Estrella	Mag.	Δα	Δδ	Estrella	Mag.	Δα	Δδ
Gi. 8248	9.5	−0.01	−2.5	Gi. 8787	9.5	−0.17	+1.3	Gi. 9178	9.0	+0.02	−2.6
» 8276	9.5	−1.23	−1.0	» 8797	9.2	−0.58	−6.0	» 9193	9.0	+0.86	−11.0
» 8365	6.5	−0.53	+0.2	» 8818	9.0	−0.52	+1.2	» 9213	9.0	−0.67	−0.5
» 8386	7.7	−0.34	−1.9	» 8832	4.5	−0.36	+1.0	» 9217	9.8	−0.30	−2.1
» 8399	9.8	−0.78	−4.3	» 8832	4.5	−0.08	+0.7	» 9227	10.0	−0.63	+0.6
» 8470	10.0	−0.01	+1.7	» 8866	8.5	−2.02	+0.9	» 9232	8.5	−0.66	−1.8
» 8470	10.0	−0.22	+0.3	» 8882	9.0	+0.42	−2.6	» 9244	8.0	−2.54	+0.7
» 8474	8.8	−0.35	+2.1	» 8898	8.5	−0.06	+0.2	» 9264	10.0	−0.71	+1.9
» 8527	5.8	−4.13	+0.9	» 8906	9.0	−1.42	−1.9	» 9267	9.5	−0.21	+3.4
» 8552	9.5	+0.33	−3.4	» 8906	9.0	−1.28	−2.8	» 9275	9.0	−0.52	−0.6
» 8569	6.8	−0.18	+0.1	» 8916	9.5	−0.15	−3.2	» 9279	8.0	−0.03	+2.2
» 8606	8.8	+2.73	+0.1	» 8943	9.5	−2.21	−2.4	» 9289	9.0	−2.19	−2.4
» 8612	8.2	−0.63	....	» 8954	9.5	−0.51	−3.7	» 9313	8.0	+0.05	−1.2
» 8633	9.5	−0.73	+2.9	» 8981	8.3	−2.95	+1.9	» 9328	8.2	−0.56	−1.9
» 8636	9.5	−0.77	−2.4	» 9046	9.0	+0.29	−1.0	» 9343	7.5	−2.85	−1.0
» 8662	9.0	−0.28	−1.8	» 9093	10.0	−1.47	+3.6	» 9344	9.2	+2.03	−1.2
» 8676	9.5	+0.19	+4.7	» 9104	8.5	−0.26	−0.7	» 9372	9.0	−2.89	+8.3
» 8687	9.5	−0.42	−0.7	» 9104	8.5	−0.24	−2.4	» 9374	10.0	−0.07	−3.4
» 8706	9.5	−0.13	+9.2	» 9149	8.0	−0.06	+0.1	» 9385	9.0	−0.50	+1.0
» 8732	9.5	+0.09	+1.5	» 9168	7.5	−0.22	−0.1	» 9405	9.5	−1.58	−2.4
» 8771	8.0	−0.57	+1.0	» 9172	9.2	+0.27	−3.6	» 9447	10.0	−0.39	+2.1

Estrella	Mag.	$\Delta\alpha$	$\Delta\delta$
Gi.			
» 9455	10.0	−0.32	+2.7
» 9455	10.0	−0.42	+2.7
» 9474	8.0	+3.95	−15.8
» 9474	8.0	+3.92	−18.9
» 9499	9.0	−0.19	−1.9
» 9499	9.0	−0.23	0.0
» 9508	8.0	−0.01	−1.7
» 9598	9.8	−1.15	−2.4
» 9600	9.5	−0.22	0.0
» 9607	10.0	+0.01	+22.0
» 9607	10.0	−0.20	−0.6
» 9612	6.5	−0.17	+1.6
» 9635	7.5	−0.24	−2.1
» 9666	8.0	−2.04	−1.5
» 9669	9.0	+0.64	+1.3
» 9693	7.0	−0.02	−1.4
» 9704	9.0	−0.23	−16.2
» 9704	9.0	−0.04	−16.0
» 9713	9.0	−0.29	−1.4
» 9718	9.5	+1.69	+34.6
» 9731	10.0	+0.18	+9.2
» 9738	9.0	+0.10	−1.8
» 9754	9.2	+3.94	+5.0
Gi.			
» 9765	9.5	−0.11	+0.2
» 9767	8.5	−0.27	−3.4
» 9788	10.0	−1.12	+0.9
» 9806	9.0	−0.38	−3.6
» 9813	9.2	−1.11	+4.5
» 9868	9.2	−0.37	−1.7
» 9884	8.5	+0.31	−1.7
» 9923	8.3	−0.38	−3.1
» 9933	9.0	−0.11	−0.5
» 9947	6.5	−0.48	+1.0
» 9973	9.8	+0.10	+1.4
» 9988	9.0	−0.21	−3.2
» 9997	9.5	+0.06	+0.8
» 10007	9.5	−0.41	−4.3
» 10020	6.5	−0.16	+5.4
» 10040	8.8	+0.24	−1.2
» 10071	7.0	−0.24	−9.6
» 10073	9.2	−0.08	−0.2
» 10116	6.3	+0.42	−4.6
» 10124	9.2	−2.52	−7.8
» 10151	9.0	−1.48	−6.8
» 10167	9.5	+2.15	−4.8
» 10195	8.5	−0.36	+3.5
Gi.			
» 10202	9.0	−0.45	+0.4
» 10216	9.5	−0.50	+1.8
» 10289	9.0	−0.09	−3.9
» 10299	9.5	−0.61	−2.6
» 10380	7.7	−0.47	−0.5
» 10430	8.2	−0.63	−4.2
» 10489	9.0	−0.39	+1.1
» 10562	9.2	−0.19	−1.9
» 10603	9.5	+0.75	−3.3
» 10627	9.0	−0.13	+0.5
» 10665	7.5	−0.57	+0.9
» 10685	6.5	−0.07	+2.1
» 10704	7.8	−0.49	−1.4
» 10711	7.8	−0.35	−2.4
» 10728	7.8	−0.07	0.0
» 10743	7.2	−2.31	−1.1
» 10743	7.2	−2.28	−9.8
» 10767	8.5	−0.29	−0.6
» 10800	4.0	−1.05	+0.9
» 10800	4.0	−0.98	−3.8
» 10857	8.5	−1.16	−4.0
» 10888	9.0	−0.72	−4.5
» 10895	8.2	−0.15	−0.6

Estrella	Mag.	Δα	Δδ
Gi. 10905	6.8	+1.46	+1.3
» 10905	6.8	+1.45	−0.5
» 10908	9.5	−0.20	−1.5
» 10993	8.0	−0.24	+0.6
» 11031	8.0	−1.60	−5.0
» 11039	8.0	−0.15	+0.1
» 11060	8.0	+0.06	+1.0
» 11062	8.0	+0.57	−1.6
» 11123	9.2	−0.47	+20.1
» 11131	9.8	−0.40	+0.3
» 11145	9.2	−0.41	+5.0
» 11151	8.2	+0.69	+3.4
» 11152	8.8	−0.48	+0.4
» 11154	9.5	−0.05	−2.6
» 11159	9.0	−0.58	−14.3
» 11201	9.5	−0.40	−0.0
» 11210	9.5	−0.95	−9.1
» 11210	9.5	−0.95	−3.7
» 11214	9.5	−0.22	+0.1
» 11219	9.0	−0.19	+2.2
» 11249	8.5	−0.10	−0.3
» 11256	8.2	0.00	−1.3
» 11270	7.2	+0.07	−0.4

Estrella	Mag.	Δα	Δδ
Gi. 11275	8.8	−0.05	+3.3
» 11299	9.0	−0.03	−2.8
» 11305	5.2	+0.04	−2.6
» 11314	9.0	+0.05	+5.9
» 11326	8.8	−0.15	+0.3
» 11342	8.2	−0.10	+1.8
» 11359	9.5	−0.26	−6.2
» 11362	9.0	+0.17	−2.6
» 11393	7.0	+0.53	+0.7
» 11450	8.0	−0.46	−0.6
» 11455	9.5	−0.60	−0.4
» 11462	8.8	−0.13	−0.8
» 11499	9.0	−0.81	−0.9
» 11519	3.8	−0.74	−1.4
» 11519	8.8	−0.75	−2.0
» 11519	8.8	−0.30	−0.5
» 11541	8.8	−0.01	−6.6
» 11572	9.5	−0.41	−1.0
» 11583	9.5	+0.41	−5.0
» 11593	8.5	−0.75	+0.3
» 11598	9.8	−0.32	+0.3
» 11608	8.0	+0.35	−9.2
» 11639	8.8	−0.38	−3.4

Estrella	Mag.	Δα	Δδ
Gi. 11672	8.5	+0.03	+0.6
» 11677	8.0	+0.27	..
» 11693	8.8	+0.43	−3.1
» 11710	8.0	−0.70	−9.9
» 11742	6.8	−0.26	−4.4
» 11790	8.8	−0.35	−4.0
» 11814	9.0	+0.35	−4.7
» 11833	9.0	−0.61	−4.0
» 11885	9.0	−2.69	−14.0
» 11892	7.5	+0.20	−2.3
» 11924	9.8	−0.30	−1.4
» 11952	7.0	+0.30	−2.7
» 11970	8.2	0.00	−2.1
» 11990	7.0	+1.03	−2.6
» 11993	6.0	+0.09	+1.1
» 12021	8.0	−0.01	−0.0
» 12037	8.8	−0.13	+4.4
» 12039	8.5	+0.10	−1.2
» 12072	7.5	−1.34	−7.7
» 12122	9.0	−0.03	−2.1
» 12122	9.0	+0.04	−3.0
» 12135	8.0	−0.45	−10.2
» 12175	9.0	+0.37	−1.7

Estrella	Mag.	Δα	Δδ	Estrella	Mag.	Δα	Δδ	Estrella	Mag.	Δα	Δδ
Gi. 12233	7.0	+0.27	−10.9	Gi. 12833	9.0	−0.56	+2.8	Gi. 13578	8.0	−0.22	−2.2
» 12249	9.0	+1.41	+0.3	» 12882	9.5	−0.60	−12.2	» 13681	9.5	−0.72	−5.7
» 12282	8.0	−0.24	−0.3	» 12902	8.0	+0.42	−1.6	» 13671	5.2	+1.95	−3.8
» 12293	6.5	−0.26	−4.4	» 12955	9.8	−0.08	−0.5	» 13685	8.2	−0.43	−0.3
» 12299	9.0	−0.05	+0.3	» 12969	9.0	+0.11	−3.6	» 13728	8.8	−2.18	+3.3
» 12407	7.2	−0.19	−11.3	» 13059	8.2	−1.49	+5.9	» 13848	9.0	−0.05	−3.3
» 12440	9.0	+0.74	+2.8	» 13250	8.5	−0.40	−2.5	» 13898	9.0	+0.34	+4.4
» 12466	8.0	+0.40	+0.4	» 13303	7.2	−0.07	−1.2	» 13900	9.0	+0.99	−8.3
» 12472	8.2	+0.04	+0.0	» 13350	9.8	−0.02	−1.6	» 13922	6.5	+0.96	−4.5
» 12744	8.0	+0.15	+4.5	» 13385	7.8	+0.14	+0.4				−2.9

Zona N.° 1   —   1929 Mayo 6

m = +0.059
n = −0.019

c−x = −0.235
C_p = −3.200

N.o	Estrella	Mag	t	I	T	α aparente	Red. a 1929	α 1929	C_p
			h m s	s	h m s	h m s	s	h m s	s
1	Gi 8365	6.5	12 1 3.23	−0.52	12 1 2.71	12 0 52.51	−1.55	12 0 57.96	
2	» 8470	10.0	12 8 46.02	−0.50	12 8 45.52	12 8 42.32	−1.60	12 8 40.72	
3	» 8552	9.5	12 16 47.79	−0.68	12 16 47.11	12 16 43.91	−2.14	12 16 41.77	
4	» 8636	10.0	12 24 57.72	−0.50	12 24 57.22	12 24 54.02	−1.79	12 24 52.23	−3.20
5	β Corvi	2.8	12 30 43.67	−0.19	12 30 43.48	12 30 40.28	.....	.....	
6	Gi 8787	9.5	12 37 41.81	−0.51	12 37 41.30	12 37 38.10	−1.94	12 37 36.16	
7	» 8880	9.5	12 46 18.38	−0.52	12 46 17.86	12 46 14.66	−2.05	12 46 12.61	
8	5235 Lacai.	6.6	12 55 18.95	−21.00	12 54 57.95	12 54 54.68	.....	.....	
9	ε Virginis	2.9	12 58 43.21	−0.18	12 58 43.03	12 58 39.84	.....	.....	−3.19
10	Gi 9104	8.5	13 5 25.46	−0.48	13 5 24.98	13 5 21.78	−2.14	13 5 19.64	
11	» 9178	9.0	13 11 13.69	−0.53	13 11 13.16	13 11 9.96	−2.35	13 11 7.61	
12	» 9264	10.	13 17 30.73	−0.55	13 17 30.18	13 17 26.98	−2.49	13 17 24.49	−3.15
13	i Virginis	5.6	13 23 2.49	−0.18	13 23 2.31	13 22 59.16	.....	.....	
14	Gi 9405	9.5	13 28 44.13	−0.53	13 28 43.60	13 28 40.40	−2.51	13 28 37.89	
15	» 9446	10.	13 32 10.81	−0.50	13 32 10.31	13 32 7.11	−2.47	13 32 4.64	
16	83 Virginis	5.7	13 40 44.38	−0.18	13 40 44.20	13 40 41.01	.....	.....	−3.19
17	Gi 9612	6.5	13 46 20.76	−0.54	13 46 20.22	13 46 17.02	−2.76	13 46 14.26	
18	» 9704	9.0	13 53 34.92	−0.55	13 53 34.37	13 53 31.17	−2.84	13 53 28.33	
19	» 9806	9.0	14 2 37.66	−0.58	14 2 37.08	14 2 33.88	−3.03	14 2 30.85	
20	d Bootis	4.8	14 7 14.77	−0.21	14 7 14.56	14 7 11.26	.....	.....	−3.30

Zona N.° 1　—　1929 Mayo 6

Observador: Grandón
Ayudante: Castro

Lectura ecuador = 71° 38′ 52.39″
Lectura nadir = 285 12 37.73

N.o	Lectura co-rregida	Refrac.	Lectura apa-rente	δ Aparente	Red. a 1929	δ 1929	Ec.	C.P.D.
1	139 34 30.84	+37.50	139 35 8.37	-67 56 15.98	+16.86	-67 55 59.12	...	67 1896
2	138 51 34.52	+36.54	138 52 11.06	-67 13 18.67	+16.64	-67 13 2.03	...	66 1716
3	144 38 46.17	+45.13	144 39 31.30	-73 0 38.91	+16.33	-73 0 22.08	...	72 1238
4	138 54 37.15	+36.61	138 55 13.76	-67 16 21.37	+16.13	-67 16 5.24	...	66 1772
5	94 39 30.35	-10.23	94 39 20.12	-23 0 27.44			52.68	
6	139 2 40.33	+36.79	139 3 17.12	-67 24 24.73	+15.67	-67 24 9.06	...	67 2043
7	139 23 4.84	+37.27	139 23 42.11	-67 44 49.72	+15.39	-67 44 34.33	...	67 2090
8	161 2 16.90	+80.69	161 3 37.59	-89 24 43.93			53.66	
9	60 19 27.59	-54.64	60 18 32.95	+11 20 19.78			52.73	
10	137 59 32.95	+35.44	138 0 8.39	-66 21 16.00	+14.57	-66 21 1.43	...	66 2092
11	139 49 23.99	+37.89	139 50 1.88	-68 11 9.49	+14.26	-68 10 55.23	...	67 2227
12	140 37 47.38	+39.02	140 38 26.40	-68 59 34.01	+13.95	-68 59 20.06	...	68 1898
13	83 59 44.28	-21.30	83 59 22.98	-12 20 29.96			53.02	
14	139 47 43.28	+37.84	139 48 21.12	-68 9 28.73	+13.43	-68 9 15.30	...	67 2305
15	138 59 26.03	+36.71	139 0 2.73	-67 21 10.35	+13.28	-67 20 57 07	...	67 2318
16	87 28 42.05	-17.56	87 28 24.49	-15 49 32.31			52.18	
17	140 41 22.95	+39.11	140 42 2.06	-69 3 9.67	+12.48	-69 2 57.19	...	68 2014
18	140 48 17.42	+39.28	140 48 56.70	-69 10 4.31	+12.08	-69 9 52.23	...	68 2049
19	141 44 15.09	+40.64	141 44 55.73	-70 6 3.34	+11.52	-70 5 51.82	...	69 2002
20	46 14 49.32	-90.98	46 13 18.34	+25 25 31.75			50.09	

Zona N.° 2   —   1929 Mayo 10

$m = +0.073^s$
$n = -0.107$

$c-x = -0.235^s$
$C_p = -5.97$

Tornillo al Oeste

N.o	Estrella	Mag	t	I	T	α aparente	Red. a 1929	α 1929	C p
			h m s	s	h m s	h m s	s	h m s	s
1	Gi 8276	9.5	11 56 0.94	−0.25	11 56 0.69	11 55 54.72	−1.28	11 55 53.44	
2	» 8386	7.7	12 2 14.99	−0.31	12 2 14.68	12 2 8.71	−1.53	12 2 7.18	
3	» 8470	10.	12 8 48.29	−0.29	12 8 48.03	12 8 42.03	−1.52	12 8 40.56	
4	» 8527	5.8	12 13 50.81	−0.28	12 13 50.53	12 13 44.56	−1.60	12 13 42.96	
5	12 Comae	4.5	12 19 3.91	−0.24	12 19 3.67	12 18 57.64	.....	.....	−6.03
6	Gi 8612	8.2	12 23 11.74	−0.48	12 23 11.26	12 23 5.29	−2.92	12 23 2.37	
7	» 8662	9.0	12 27 56.76	−0.29	12 27 56.47	12 27 50.50	−1.80	12 27 48.70	
8	» 8706	9.5	12 31 50.51	−0.28	12 31 50.23	12 31 44.26	−1.80	12 31 42.46	
9	» 8771	8.0	12 36 39.44	−0.32	12 36 39.12	12 36 33.15	−2.06	12 36 31.09	
10	» 8818	9.0	12 40 45.48	−0.30	12 40 45.18	12 40 39.21	−2.00	12 40 37.21	
11	35 Virg.	6.7	12 44 21.70	−0.17	12 44 21.53	12 44 15.64	.....	.....	−5.89
12	Gi 8906	9.0	12 48 41.14	−0.31	12 48 40.83	12 48 34.86	−2.17	12 48 32.69	
13	5235 Lacai.	6.6	12 44 11.18	−12.41	12 54 58.77	12 54 52.72	.....	.....	−6.05
14	Gi 9046	9.0	13 0 15.22	−0.27	13 0 14.95	13 0 8.98	−2.07	13 0 6.91	
15	» 9104	8.5	13 5 28.02	−0.27	13 5 27.75	13 5 21.78	−2.12	13 5 19.66	
16	43 Comae	4.3	13 8 41.50	−0.25	13 8 41.25	13 8 35.22	.....	.....	−6.03
17	Gi 9213	9.0	13 13 14.04	−0.28	13 13 13.76	13 13 7.79	−2.25	13 13 5.54	
18	» 9275	9.0	13 18 31.31	−0.29	13 18 31.02	13 18 25.05	−2.42	13 18 22.63	

N.o	Estrella	Mag	t (h m s)	I (s)	T (h m s)	α aparente (h m s)	Red. a 1929 (s)	α 1929 (h m s)	O p (s)
19	Gi 9328	8.2	13 22 19.13	− 0.27	13 22 18.86	13 22 12.89	− 2.31	13 22 10.58	
20	» 9374	10.	13 26 33.40	− 0.30	13 26 33.10	13 26 27.13	− 2.51	13 26 24.62	− 5.91
21	ζ Virg.	3.4	13 31 11.80	− 0.16	13 31 11.64	13 31 5.73	...	....	
22	Gi 9508	8.0	13 37 12.14	− 0.32	13 37 11.82	13 37 5.85	− 2.80	13 37 3.05	
23	» 9553	10.	13 39 8.46	− 0.29	13 39 8.17	13 39 2.20	− 2.59	13 38 59.61	
24	» 9598	9.8	13 45 23.87	− 0.34	13 45 23.53	13 45 17.56	− 3.01	13 45 14.55	
25	η Bootis	2.8	13 51 25.89	− 0.21	13 51 25.67	13 51 19.75	...	....	− 5.92
26	Gi 9731	10.	13 55 32.85	− 0.29	13 55 32.56	13 55 26.59	− 2.75	13 55 23.84	
27	» 9788	10.	14 1 10.71	− 0.42	14 1 10.29	14 1 4.32	− 3.76	14 1 0.56	
28	» 9852	10.	14 6 35.13	− 0.30	14 6 34.83	14 6 28.86	− 2.89	14 6 25.97	
29	i Virg.	4.2	14 12 24.82	− 0.15	14 12 24.67	14 12 18.72	...	....	
30	Gi 9988	9.0	14 16 2.89	− 0.32	14 16 2.57	14 15 56.60	− 3.19	14 15 53.41	
31	» 10040	8.8	14 19 30.88	− 0.29	14 19 30.59	14 19 24.62	− 2.95	14 19 21.67	
32	» 10073	9.2	14 22 17.62	− 0.32	14 22 17.30	14 22 11.33	− 3.26	14 22 8.07	
33	» 10151	9.0	14 27 31.16	− 0.30	14 27 30.86	14 27 24.89	− 3.11	14 27 21.78	
34	ζ Bootis	4.5	14 31 43.44	− 0.26	14 31 43.18	14 31 37.11	...	....	− 6.07

Zona N.° 2 — 1929 Mayo 10

Observador: Grandón
Ayudante: Castro

Lectura ecuador = 71° 38′ 53.54″
Lectura nadir = 285 12 38,14

N.o	Lectura corregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C. P. D.
1	136 38 36.61	+ 33.86	136 39 10.47	−65 0 16.93	+17.88	−64 59 59·05	″	64 1764
2	140 49 11.41	+ 39.67	140 49 51.08	−69 10 57.54	+17.81	−69 10 39.73	...	68 1612
3	138 51 34.30	+ 36.91	138 52 11.21	−67 13 17.67	+17.62	−67 13 0.05	...	66 1716
4	139 12 29.63	+ 37.36	139 13 6.99	−67 34 13.45	+17.48	−67 33 55.97	...	67 1931
5	45 26 4.67	− 94.80	45 24 29.87	+26 14 23.82			53.69	
6	......		......	......		......		76 734
7	139 36 37.52	+ 37.92	139 38 15.44	−67 58 21.90	+17.06	−67 58 48.84		67 1980
8	138 47 15.21	+ 36.77	138 47 51.98	−67 8 58.44	+16.92	−67 8 41.52		66 1828
9	141 40 20.26	+ 40.92	141 41 1.18	−70 2 7.64	+16.76	−70 1 50.88		69 1690
10	140 17 1.07	+ 38.89	140 17 39.96	−68 38 46.42	+16.61	−68 38 29.81	...	68 1744
11	67 42 7.92	− 42.50	67 41 25.42	+3 57 29.67			55.09	
12	141 8 8.27	+ 40.13	141 8 48.40	−69 29 54.86	+16.31	−69 29 38.55		69 1721
13	161 2 18.42	+ 81.43	161 3 39.85	−89 24 45.34			54.51	
14	138 6 54.58	+ 35.84	138 7 30.42	−66 28 36.88	+15.85	−66 28 21.03		66 2054
15	137 59 36.57	+ 35.68	138 6 12.25	−66 21 18.71	+15.63	−66 21 3.08		66 2092
16	43 26 22.23	− 102.82	43 24 39.41	+28 14 13.44			52.85	
17	138 42 17.68	+ 36.55	138 42 54.23	−67 4 0.69	+15.29	−67 3 45.40		66 2149
18	140 3 45.55	+ 38.58	140 4 24.13	−68 25 30.59	+15.04	−68 25 15.55		68 1995

N.o	Lectura corregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C. P. D.
	° ′ ″	″	° ′ ″	° ′ ″	″	° ′ ″	″	° ″
19	138 17 44.71	+ 36.09	138 18 20.80	−66 39 27.26	+14.89	−66 39 12.37		66 2222
20	140 6 10.45	+ 38.63	140 6 49.08	−68 27 55.54	+14.65	−68 27 40.89	...	68 1939
21	71 53 39.07	− 36.40	71 53 2.67	− 0 14 9.21	...	......	53.46	
22	141 41 55.98	+ 40.95	141 42 36.93	−70 3 43.39	+14.08	−70 3 29.31	...	69 1910
23	139 24 7.15	+ 37.64	139 24 44.79	−67 45 51.25	+13.94	−67 45 37.31	...	67 2369
24	142 40 50.89	+ 42.43	142 41 33.32	−71 2 39.78	+13.61	−71 2 26.17	...	70 1680
25	52 55 0.64	− 71.54	52 53 49.10	+18 45 4.35	...	......	53.45	
26	139 41 3.35	+ 38.04	139 41 41.49	−68 2 47.95	+13.16	−68 2 34.79	...	67 2459
27	145 59 22.09	+ 47.77	146 0 9.86	−74 21 16.32	+12.57	−74 21 3.75	...	74 1139
28	140 6 16.84	+ 38.64	140 6 55.48	−68 28 1.94	+12.52	−68 27 49.42	...	68 2090
29	77 19 18.28	− 29.32	77 18 48.96	− 5 39 54.97	...	...	53.99	
30	141 53 37.11	+ 41.25	141 54 18.36	−70 15 24.82	+12.06	−70 15 12.76	...	70 1742
31	139 41 2.90	+ 38.04	139 41 40.94	−68 2 47.40	+11.79	−68 2 35.61	...	67 2575
32	141 53 23.78	+ 41.25	141 54 5.03	−70 15 11.49	+11.52	−70 14 59.97	...	70 1759
33	140 28 44.73	+ 39.17	140 29 23.90	−68 50 30.36	+11.27	−68 50 19.09	...	68 2128
34	41 37 38.87	−111.02	41 35 47.85	+30 3 3.42	...	......	51.27	

Zona N.° 3   —   1929 Mayo 13

Tornillo al Oeste

$m = +0.070$
$n = -0.140$

$c-x = -0.235$
$C_p = -7.07$

N.o	Estrella	Mag	t	I	T	α aparente	Red. a 1929	α 1929	C_p
			h m s	s	h m s	h m s	s	h m s	s
1	Gi 8248	9.5	11 53 49.31	−0.19	11 53 49.12	11 53 42.05	−1.20	11 53 40.85	
2	» 8399	9.8	12 3 5.80	−0.18	12 3 5.62	12 2 58.55	−1.23	12 2 57.32	
3	» 8474	8.8	12 9 24.42	−0.24	12 9 24.18	12 9 17.11	−1.60	12 9 15.51	
4	η Virginis	4.0	12 16 24.60	−0.17	12 16 24.43	12 16 17.38		......	−7.05
5	Gi 8606	8.8	12 23 33.12	−0.07	12 23 32.05	12 23 24.98	−6.30	12 23 18.68	
6	» 8676	9.5	12 28 44.86	−0.13	12 28 44.73	12 28 37.66	−1.83	12 28 35.83	
7	f Virginis	5.9	12 33 16.11	−0.16	12 33 15.95	12 33 8.90		......	−7.05
8	Gi 8797	9.2	12 38 45.99	−0.27	12 38 45.72	12 38 38.65	−2.22	12 38 36.43	
9	» 8866	8.5	12 44 45.62	−0.22	12 44 45.40	12 44 38.33	−2.01	12 44 36.32	
10	» 8916	9.5	12 49 39.50	−0.20	12 49 39.30	12 49 32.23	−1.93	12 49 30.30	
11	5235 Lac.	6.6	12 55 6.21	−9.10	12 54 57.10	12 54 49.92		......	−7.18
12	ϑ Virginis	4.5	13 6 24.76	−0.15	13 6 24.61	13 6 17.51		......	−7.10
13	Gi 9168	7.5	13 10 27.09	−0.23	13 10 26.86	13 10 19.79	−2.44	13 10 17.35	
14	» 9227	9.0	13 14 28.11	−0.20	13 14 27.91	13 14 20.84	−2.24	13 14 18.60	
15	» 9289	9.0	13 19 26.43	−0.20	13 19 26.23	13 19 19.16	−2.27	13 19 16.89	
16	70 Virginis	5.2	13 25 6.12	−0.21	13 25 5.91	13 24 58.81		......	
17	Gi 9455	10.0	13 32 46.76	−0.20	13 32 46.56	13 32 39.49	−2.45	13 32 37.04	−7.10
18	» 9474	8.0	13 34 14.63	−0.20	13 34 14.43	13 34 7.36	−2.46	13 34 4.90	

N.o	Estrella	Mag.	t (h m s)	I (s)	T (h m s)	α aparente (h m s)	Red. a 1929 (s)	α 1929 (h m s)	C_p (s)
19	τ Bootis	4.5	13 44 2.14	−0.22	13 44 1.92	13 43 54.77			−7.15
20	Gi 9635	7.5	13 48 9.04	−0.19	13 48 8.85	13 48 1.78	−2.50	13 47 59.28	
21	» 9693	7.0	13 52 9.83	−0.21	13 52 9.62	13 52 2.55	−2.68	13 51 59.85	
22	» 9738	9.0	13 56 9.84	−0.20	13 56 9.64	13 56 2.57	−2.60	13 55 59.97	
23	π Hidra	3.5	14 2 27.87	−0.12	14 2 27.75	14 2 20.78			−6.97
24	Gi 9868	9.2	14 6 20.95	−0.20	14 6 20.75	14 6 13.68	−2.78	14 6 10.90	
25	» 9923	8.3	14 10 15.57	−0.21	14 10 15.36	14 10 8.29	−2.91	14 10 5.38	
26	2 Librae	6.3	14 19 44.78	−0.14	14 19 44.64	14 19 37.59			−7.05

Zona N.° 3 — 1929 Mayo 13

Lectura ecuador = 71°38′51.36″
Lectura nadir = 285 12 35.16

Observador: Grandón
Ayudante: Almendras

N.o	Lectura corregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C. P. D.
1	137 50 28.40	+34.97	137 51 3.37	−66 12 12.01	+18.73	−66 11 53.28	...	65 1756
2	135 11 22.48	+31.52	135 11 54.00	−63 33 2.64	+18.43	−63 32 44.21	...	63 2143
3	144 1 45.82	+40.88	142 2 26.70	−70 23 35.34	+18.49	−70 23 16.85		70 1470
4	75 7 46.57	−31.64	75 7 14.93	−0 16 27.32	...	......	53.41	
5	156 49 12.25	+68.84	156 50 21.09	−85 11 29.73	+17.68	−85 11 12.05	...	84 394
6	141 10 24.85	+39.62	141 11 4.47	−69 32 13.11	+17.93	−69 31 55.18		69 1666
7	77 5 53.10	−29.18	77 5 23.92	−5 26 35.15	...	......	48.77	
8	144 2 20.38	+43.95	144 3 4.33	−72 24 12.97	+17.61	−72 23 55.36	...	72 1292
9	140 38 47.21	+38.86	140 39 26.07	−69 0 34.71	+17.39	−69 0 17.32	...	68 1764
10	138 36 4.18	+36.00	138 36 40.18	−66 57 48.82	+17.20	−66 57 31.62		66 1984
11	161 2 17.81	+80.30	161 3 38.11	−89 24 46.39	...	......	51.72	
12	76 49 8.62	−29.53	76 48 39.09	−5 9 46.18	...	......	52.91	
13	141 44 32.92	+40.45	141 45 13.37	−70 6 22.01	+16.37	−70 6 5.64		69 1783
14	138 53 25.87	+36.40	138 54 2.27	−67 15 10.91	+16.20	−67 14 54.71		66 2161
15	138 35 10.68	+35.98	138 35 46.66	−66 56 55.30	+15.99	−66 56 39.31		66 2192
16	57 30 30.24	−59.98	57 29 30.26	+14 9 31.15	...	......	51.41	
17	138 59 22.61	+36.53	138 59 59.14	−67 21 7.78	+15.59	−67 20 52.19		67 2320
18	138 56 50.45	+36.48	138 57 26.93	−67 18 35.57	+15.29	−67 18 20.28		67 2325

N.o	Lectura co-rregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C.P.D.
	° ′ ″	″	° ′ ″	° ′ ″	″	° ′ ″	″	°
19	53 51 29.56	−68.21	53 50 21.35	+17 48 30.55	...	....	51.90	
20	137 48 14.60	+34.92	137 48 49.52	−66 9 58.16	+14.60	−66 9 43.56	...	65 2503
21	139 17 58.24	+36.97	139 18 35.21	−67 39 43.85	+14.36	−67 39 29.43	...	67 2438
22	138 6 46.28	+35.35	138 7 21.63	−66 28 30.27	+14.18	−66 28 16.09	...	66 2405
23	97 59 37.52	− 6.92	97 59 30.60	−26 20 39·60	...	....	51.00	
24	138 57 0.09	+36.48	138 57 36.57	−67 18 45.21	+13.60	−67 18 31.11	...	67 2518
25	139 51 0.79	+37.75	139 51 38.54	−68 12 47.18	+13.36	−68 12 33.82	...	67 2536
26	83 2 48.76	−22.26	83 2 26.50	−11 23 36.77	...	....	49.73	

Zona N.° 4 — 1929 Mayo 15

$$m = +0.187 \quad\quad c - \varkappa = -0.235$$
$$m = -0.055 \quad\quad C_p = -7.69$$

Tornillo al Oeste

N.o	Estrella	Mag.	t	I	T	α aparente	Red. α 1929	α 1929	C_p
			h. m. s.	s.	h. m. s.	h. m. s.		h. m.	
1	γ Corvi	2.8	12 12 17.65	−0.04	12 12 17.61	12 12 10.04	...	......	−7.57
2	Gi 8569	6.8	12 18 18.78	−0.19	12 18 18.59	12 18 10.90	−1.47	12 18 9.43	
3	» 8633	9.5	18 24 54.25	−0.24	12 24 54.01	12 24 46.32	−1.69	12 24 44.63	
4	» 8687	9.5	12 29 50.88	−0.26	12 29 50.62	12 29 42.93	−1.79	12 29 41.14	
5	» 8732	9.5	12 33 53.78	−0.18	12 33 53.60	12 33 45.91	−1.65	12 33 44.26	
6	ρ Virginis	4.9	12 38 26.33	−0.06	12 38 26.27	12 38 18.72	...	......	−7.55
7	Gi 8832	4.5	12 42 3.91	−0.20	12 42 3.71	12 41 56.02	−1.90	12 41 54.12	
8	» 8898	8.5	12 47 31.93	−0.18	12 47 31.75	12 47 24.06	−1.82	12 47 22.24	
9	» 8913	9.5	12 51 48.97	−0.18	12 51 48.79	12 51 41.10	−1.87	12 51 39.23	
10	5235 Lac	6.6	12 55 12.32	−17.38	12 54 54.94	12 54 47.14	...	......	−7.80
11	Gi 9093	10.0	13 4 10.62	−0.18	13 4 10.44	13 4 2.75	−2.03	13 4 0.72	
12	43 Comae	4.3	13 8 43.09	−0.12	13 8 42.97	13 8 35.20	...	......	−7.77
13	Gi 9193	9.0	13 12 31.74	−0.27	13 12 31.47	13 12 23.78	−2.44	13 12 21.34	
14	» 9232	8.5	13 15 0.18	−0.26	13 14 59.92	13 14 52.23	−2.49	13 14 49.74	
15	» 9313	8.0	13 20 38.71	−0.21	13 20 38.50	13 20 30.81	−2.38	13 20 28.43	
16	» 9344	9.2	13 24 0.41	−0.27	13 24 0.14	13 23 52.45	−2.68	13 23 49.77	
17	» 9455	10.0	13 32 47.25	−0.19	13 32 47.06	13 32 39.37	−2.41	13 32 36.96	
18	» 9474	8.0	13 34 15.17	−0.19	13 34 14.98	13 34 7.29	−2.42	13 34 4.87	

N.o	Estrella	Mag	t			I	T			α aparente			Red. a 1929	α 1929			C_p
			h.	m.	s.	s.	h.	m.	s.	h.	m.	s.	s.	h.	m.	s.	
19	83 Virg.	5.7	13	40	48.77	−0.04	13	40	48.73	13	40	41.02	...		......		−7.71
20	Gi 9607	10.0	13	45	57.60	−0.18	13	45	57.42	13	45	49.73	−2.48	13	45	47.25	
21	» 9666	8.0	13	50	45.05	−0.26	13	50	44.79	13	50	37.10	−2.94	13	50	34.16	
22	^ 9713	9.0	13	54	13.58	−0.18	13	54	13.40	13	54	5.71	−2.55	13	54	3.16	
23	» 9754	9.2	13	57	6.59	−0.18	13	57	6.41	13	56	58.72	−2.59	13	56	56.13	
24	^ 9767	8.5	13	58	20.54	−0.17	13	58	20.37	13	58	12.68	−2.59	13	58	10.09	
25	d Bootis	4.8	14	7	19.15	−0.10	14	7	19.05	14	7	11.26	...		......		−7.79
26	Gi 9933	9.0	14	11	30.96	−0.21	14	11	30.75	14	11	23.06	−2.89	14	11	20.17	
27	^ 9973	9.8	14	14	38.05	−0.21	14	14	37.84	14	14	30.15	−2.93	14	14	27.22	
28	2 Libra	6.3	14	19	45.30	−0.04	14	19	45.26	14	19	37.60	...		......		−7.76

Zona N.° 4 — 1929 Mayo 15

Observador: Grandón
Ayudante: Almendras

Lectura ecuador = 71°38′51.53″
Lectura nadir = 285 12 34.75

N.o	Lectura corregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C. P. D.
	° ′ ″	″	° ′ ″	° ′ ″	″	° ′ ″	″	°
1	88 48 9.97	− 16.28	88 47 53.69	−17 9 3.20	…	…	50.49	
2	138 46 13.95	+ 36.68	138 46 50.63	−67 7 59.10	+18.69	−67 7 40.41	…	66 1747
3	141 9 17.95	+ 40.10	141 9 58.05	−69 31 6.52	+18.26	−69 30 48.26	…	69 1658
4	141 34 11.31	+ 40.72	141 34 52.03	−69 56 0.50	+18.45	−69 55 42.05	…	69 1670
5	138 9 59.31	+ 35.89	138 10 35.20	−66 31 43.67	+18.24	−66 31 25.43	…	66 1853
6	61 2 14.53	+ 53.75	61 1 20.78	+10 37 31.44	…	…	52.22	
7	139 21 40.84	+ 37.56	139 22 18.40	−67 43 26.87	+18.82	−67 43 9.05	…	67 2064
8	138 6 43.80	+ 35.83	138 7 19.63	−66 28 28.10	+17.83	−66 28 10.27	…	66 1969
9	138 2 54.90	+ 35.76	138 3 30.66	−66 24 39.13	+17.67	−66 24 21.46	…	66 1997
10	161 2 16.58	+ 81.51	161 3 38.09	−89 24 47.07	…	…	51.02	
11	138 15 49.74	+ 36.08	138 16 20.82	−66 37 34.29	+17.23	−66 37 17.06	…	66 2085
12	43 26 21.14	− 102.95	43 24 38.19	+28 14 14.29	…	…	52.48	
13	142 7 25.23	+ 41.67	142 8 6.90	−70 29 15.37	+16.91	−70 28 58.46	…	70 1582
14	142 7 18.26	+ 41.66	142 7 59.92	−70 29 8.39	+16.80	−70 28 51.59	…	70 1589
15	139 41 59.11	+ 38.28	139 48 37.39	−68 9 45.86	+16.56	−68 9 29.30	…	67 2275
16	142 44 26.57	+ 42.63	142 45 9.20	−71 6 17.67	+16.39	−71 6 1.28	…	70 1621
17	138 59 22.61	+ 37.15	138 59 59.76	−67 21 8.23	+16.01	−67 20 52.22	…	67 2320
18	138 56 53.73	+ 37.10	138 57 30.83	−67 18 39.30	+15.94	−67 18 23.36	…	67 2325

N.º	Lectura corregida			Refrac.	Lectura aparente			δ Aparente			Red. a 1929	δ 1929			Ec.	C.P.D.
	°	'	"	"	°	'	"	°	'	"	"	°	'	"	"	°
19	87	28	42.25	− 17.77	87	28	24.48	−15	49	32.60	...	...			51.88	66 2348
20	138	6	45.99	+ 35.96	138	7	21.95	−66	28	30.42	+15.36	−66	28	15.06	...	70 1692
21	142	5	49.80	+ 41.76	142	6	31.56	−70	27	40.03	+15.07	−70	27	24.96	...	66 2394
22	138	0	26.88	+ 35.83	138	1	2.71	−66	22	11.18	+14.94	−66	21	56.24	...	66 2411
23	138	5	15.58	+ 35.96	139	5	51.54	−66	27	0.01	+14.78	−66	26	55.23	...	66 2419
24	138	2	6.10	+ 35.88	138	2	41.98	−66	23	50.45	+14.73	−66	23	35.72	51.79	
25	46	14	50.65	− 92.27	46	13	18.38	+25	25	33.41						
26	139	43	3.68	+ 38.28	139	43	41.96	−68	4	50.43	+13.97	−68	4	36.46	...	67 2544
27	139	51	1.53	+ 38.47	139	51	40.00	−68	12	48.47	+13.79	−68	12	34.68		67 2556
28	83	2	50.27	− 22.70	83	2	27.57	−11	23	36.76	...	...			50.81	

Zona N.° 5 — 1929 Ma o 22

$m = 0.126$
$n = 0.134$

$c - \varkappa = -0.235$
$C_p = -11.40$

Tornillo al Oeste

N.o	Estrella	Mag	t	I	T	α aparente	Red. a 1929	α 1929	C_p
			h. m. s.	s.	h. m. s.	h. m. s.	s.	h. m. s.	s.
1	χ Virginis	4.8	12 35 47.31	−0.09	12 35 47.22	12 35 35.80	−1.64	12 ..... 54.39	−11.42
2	Gi 8832	4.5	12 42 7.60	−0.17	12 42 7.43	12 41 56.03	−1.84	12 41 54.39	
3	» 8906	9.0	12 48 46.22	−0.19	12 48 46.03	12 48 34.63	−1.86	12 48 32.79	
4	» 8954	9.5	12 53 2.91	−0.18	12 53 2.73	12 52 51.33		12 52 49.47	
5	5235 Lac	6.6	12 54 59.59	−9.74	12 54 49.85	12 54 38.46		.....	
6	θ Virginis	4.5	13 6 29.00	−0.10	13 6 28.90	13 6 17.48		.....	−11.39
7	Gi 9172	9.2	13 10 51.95	−0.16	13 10 51.79	13 10 40.39	−1.98	13 10 38.41	−11.42
8	» 9244	8.0	13 15 47.77	−0.18	13 15 47.59	13 15 36.19	−2.23	13 15 33.96	
9	» 9279	8.0	13 19 10.38	−0.20	13 19 10.18	13 18 58.78	−2.38	13 18 56.40	
10	» 9343	7.5	13 23 49.65	−0.18	13 23 49.47	13 23 38.07	−2.35	13 23 35.72	
11	» 9372	9.0	13 26 28.25	−0.18	13 26 28.07	13 26 16.67	−2.34	13 26 14.33	
12	ζ Virginis	3.4	13 31 17.19	−0.11	13 31 16.08	13 31 5.71		.....	−11.37
13	Gi 9499	9.0	13 35 57.04	−0.15	13 35 56.89	13 35 45.49	−2.26	13 35 43.23	

Zona N.° 5 — 1929 Mayo 22

Observador: Grandón
Ayudante: Almendras

Lectura ecuador = 71°38'51.03''
nadir = no se observó.

N.o	Lectura co- rregida	Refrac.	Lectura apa- rente	δ Aparente	Red. n 1920	δ 1929	Fc.	C. P. D.
	° ′ ″	″	° ′ ″	° ′ ″	″	° ′ ″	″	°
1	79 15 45.97	−26.90	79 15 19.07	− 7 36 26.89	......	......	52.18	
2	139 21 42.37	+37.49	139 22 19.86	−67 43 28.83	+19.43	−67 43 9.40	...	67 2064
3	141 8 7.17	+40.03	141 8 47.90	−69 29 56.87	+19.30	−69 29 37.57	...	69 1721
4	140 26 2.28	+39.02	140 26 41.30	−68 47 50.27	+19.15	−68 47 31.12	...	68 1801
5	161 2 18.23	+81.23	161 3 39.46	−89 24 49.03	......	......	50.46	
6	76 49 7.40	−29.87	76 48 37.53	− 5 9 45.88	......	......	51.65	
7	138 16 46.33	+35.98	138 17 22.31	−66 38 31.28	+18.47	−66 38 12.81	...	66 2129
8	140 56 56.34	+39.77	140 57 36.11	−69 18 45.08	+18.37	−69 18 26.71	...	69 1808
9	142 3 9.38	+41.39	142 3 50.77	−70 24 59.74	+18.26	−70 24 41.48	...	70 1601
10	140 53 58.31	+39.69	140 54 38.00	−69 15 46.97	+18.05	−69 15 28.92	...	69 1929
11	140 23 59.01	+38.97	140 24 37.98	−68 45 46.95	+17.93	−68 45 29.02	...	68 1938
12	71 53 34.71	−36.33	71 52 58.38	− 0 14 8.53	......	......	49.85	
13	137 53 57.19	+35.46	137 54 32.65	−66 15 41.62	+17.47	−66 15 24.15	...	66 2420

Zona N.° 6   —   1929 Mayo 27

Tornillo al Oeste

$m = +0.260$
$n = -0.005$

$c - \varkappa = -0.235$
$C_p = -13.72$

N.o	Estrella	Mag	t (h m s)	I (s)	T (h m s)	α aparente (h m s)	Red. a 1929 (s)	α 1929 (h m s)	C_p (s)
1	31 Comae	5.1	12 48 29.79	−0.01	12 48 29.78	12 48 15.88	...	...	−13.90
2	Gi 8981	8.3	12 54 55.26	0.43	12 54 54.83	12 54 41.11	−1.84	12 54 39.27	−13.81
3	5235 Lacai	6.6	12 55 8.03	−22.23	12 54 45.80	12 54 31.99	...	...	
4	Gi 9149	8.0	13 8 52.96	0.36	13 8 52.60	13 8 38.88	−1.93	13 8 36.95	
5	» 9217	9.8	13 13 56.55	0.37	13 13 56.18	13 13 42.46	−2.02	13 13 40.44	
6	» 9267	9.5	13 17 52.68	−0.38	13 17 52.30	13 17 38.58	−2.10	13 17 36.48	
7	i Virginis	5.6	13 23 12.86	0.02	13 23 12.88	13 22 59.12	...	...	−13.76
8	Gi. 9385	9.0	13 27 13.00	0.34	13 27 12.66	13 26 58.94	−2.14	13 26 56.80	
9	» 9499	9.0	13 35 59.42	0.32	13 35 59.10	13 35 45.38	−2.19	13 35 43.19	
10	83 Virgen	5.7	13 40 54.61	0.02	13 40 54.63	13 40 41.01	...	...	−13.62
11	Gi 9600	9.5	13 45 16.59	0.32	13 45 16.27	13 45 2.55	−2.33	13 45 0.22	
12	» 9607	10.0	13 46 3.64	0.32	13 46 3.32	13 45 49.60	−2.35	13 45 47.25	
13	» 9659	9.0	13 49 53.78	0.38	13 49 53.40	13 49 39.68	−2.56	13 49 37.12	
14	» 9718	9.5	13 54 39.10	0.34	13 54 38.76	13 54 25.04	−2.52	13 54 22.52	
15	x Virgen	4.3	14 9 21.31	0.02	14 9 21.33	14 9 7.72	...	...	−13.61
16	Gi 9947	6.5	14 13 33.61	0.51	14 13 33.10	14 12 19.38	−3.63	14 12 15.75	
17	» 10007	9.5	14 18 1.06	0.41	14 18 0.65	14 17 46.93	−3.08	14 17 43.85	
18	f Bootis	5.4	14 23 24.57	0.01	14 23 24.58	14 23 10.77	...	...	−13.81

N.o	Estrella	Mag	t	I	T	α aparente	Red. a 1929	α 1929	C_p
			h. m. s.	s.	h. m. s.	h. m. s.	s.	h. m. s.	s.
19	Gi. 10167	9.5	14 29 9.72	−0.42	14 29 9.30	14 28 55.58	−3.31	14 28 52.27	
20	» 10216	9.5	14 32 56.03	−0.35	14.32 55.68	14 32 41.96	−3.04	14 32 38.92	
21	» 10299	9.5	14 38 20.77	−0.42	14 38 20.35	14 38 6.63	−3.38	14 38 3.25	
22	109 Virgen	3.8	14 42 54.68	−0.02	14 42 54.70	14 42 40.98	...	...	−13.72
23	Gi 10430	8.2	14 47 23.23	−0.36	14 47 22.87	14 47 9.15	−3.24	14 47 5.91	
24	» 10489	9.0	14 50 52.28	−0.38	14 50 51.90	14 50 38.18	−3.33	14 50 34.85	
25	» 10526	8.0	14 53 28.63	−0.38	14 53 28.25	14 53 14.53	−3.38	14 53 11.15	
26	γ Scorpi	3.4	14 59 9.81	−0.00	14 59 9.81	14 58 56.21	...	...	
27	β Centauri	0.9	No se calculó la hora.						−13.60

Zona N.° 6 — 1929 Mayo 27

Observador: Grandón
Ayudante: Almendras

Lectura ecuador = 71°38'50.98''
» nadir = 285°12'34.90''

N.o	Lectura corregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C.P.D.
1	45 44 58.35	−103.06	43 43 15.29	+27 55 37.50	...	...	52.79	
2	141 53 33.65	+ 41.77	141 54 15.42	−70 15 24.44	+20.37	−70 15 4.07	...	69 1741
3	161 2 18.27	+ 81.58	161 3 39.85	−89 24 50.45	...	...	49.40	
4	139 45 51.44	+ 38.66	139 36 30.10	−68 7 39.12	+19.85	−68 7 19.27	...	67 2213
5	137 57 49.24	+ 38.96	137 58 28.20	−66 19 37.22	+19.68	−68 19 17.54	...	68 1873
6	140 11 50.46	+ 39.32	140 12 29.78	−68 33 38.80	+19.52	−68 33 19.28	...	68 1902
7	83 59 42.37	− 21.82	83 59 20.55	−12 20 30.07		...	50.48	
8	138 50 51.75	+ 37.37	138 51 29.12	−67 12 38.14	+19.15	−67 12 18.99	...	66 2248
9	137 53 56.99	+ 36.05	137 54 33.04	−66 15 42.06	+18.76	−66 15 23.30	...	65 2420
10	87 28 41.38	+ 17.97	87 28 23.41	−15 49 32.76		...	50.65	
11	138 6 45.64	+ 36.32	138 7 21.96	−66 28 30.98	+18.38	−66 28 12.60	...	66 2338
12	138 6 47.50	+ 36.33	138 7 23.83	−66 28 32.85	+18.30	−66 28 14.55	...	66 2348
13	140 10 28.21	+ 39.30	140 11 7.51	−68 32 16.53	+18.24	−68 31 58.29	...	68 2027
14	139 56 32.14	+ 37.54	138 57 9.68	−67 18 18.70	+17.88	−67 18 0.82	...	67 2450
15	81 36 4.43	− 24.58	81 35 39.85	− 9 56 48.64	...	...	51.21	
16	145 16 48.67	+ 47.30	145 17 35.97	−73 38 44.99	+16.94	−73 38 28.05	...	73 1267
17	141 17 13.72	+ 40.90	141 17 54.62	−69 39 3.64	+16.77	−69 38 46.87	...	69 2042
18	52 7 27.46	− 74.76	52 6 12.70	+19 32 38.46	...	...	51.16	

N.o	Lectura corregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C. P. D.
19	141 58 50.78	+ 42.03	141 59 32.81	-70 20 41.83	+16.19	-70 20 25.64	//	70 1716
20	139 24 43.91	+ 38.25	139 25 22.16	-67 46 31.18	+15.95	-67 46 15.23	...	67 2621
21	141 37 8.81	+ 41.49	141 37 50.40	-69 58 59.42	+15.64	-69 58 43.78	...	69 2084
22	69 28 12.22	- 40.50	69 27 31.72	+2 11 19.80	...	... 5 ...	51.52	
23	139 44 26.70	+ 38.73	139 45 5.45	-68 6 14.47	+15.07	-68 5 59.40	...	67 2676
24	140 11 36.36	+ 39.39	140 12 15.75	-68 33 24.77	+14.85	-68 33 9.92	...	68 2226
25	140 18 33.37	+ 39.58	140 19 12.95	-68 40 21.97	+14.68	-68 40 7.29	...	68 2243
26	Se movió algo el antéojo antes de concluir las lecturas.							
27	131 40 32.75	+ 28.00	131 41 0.75	-60 2 10.12	...	...	50.63	

Zona N.° 7 — 1929 Junio 12

m = +0.066
n = −0.135

c − x = −0.235
C_p = −12.34

N.o	Estrella	Mag	t (h m s)	I (s)	T (h m s)	α aparente (h m s)	Red. a 1929 (s)	α 1929 (h m s)	C p (s)
1	89 Virginis	5.1	13 46 14.23	−0.14	13 46 14.09	13 46 1.82	...	. ...	−12.27
2	Gi. 9704	9.0	13 53 43.24	−0.24	13 53 43.00	13 53 30.66	−2.14	13 53 28.52	
3	» 9765	9.5	13 58 43.33	−0.26	13 58 43.07	13 58 30.73	−2.48	13 58 28.25	
4	» 9813	9.2	14 3 30.37	−0.23	14 3 30.37	14 3 18.03	−2.37	14 3 15.66	
5	» 9884	9.8	14 7 30.90	−0.21	14 7 30.69	14 7 18.35	−2.30	14 7 16.05	
6	α Bootis	0.2	14 12 39.40	−0.23	14 12 39.17	14 12 26.82	...	....	−12.35
7	Gi 9997	9.5	14 16 46.51	−0.22	14 16 46.29	14 16 33.95	−2.75	14 16 31.20	
8	» 10071	7.0	14 21 40.14	−0.20	14 21 39.44	14 21 27.60	−2.52	14 21 25.08	
9	» 10116	6.3	14 25 34.35	−0.22	14 25 34.13	14 25 21.79	−2.67	14 25 19.12	
10	» 10202	9.0	14 32 9.60	−0.24	14 32 9.36	14 31 57.02	−2.89	14 31 54.13	
11	» 10289	9.0	14 37 30.34	−0.24	14 37 30.10	14 37 17.76	−2.98	14 37 14.78	
12	ε Bootis	2.7	14 42 7.53	−0.27	14 42 7.26	14 41 54.86	...	....	−12.40
13	z Octantis	6.5	14 52 11.79	−0.63	14 52 9.16	14 51 56.79	...	....	−12.37
14	Gi 10562	9.2	14 55 53.25	−0.22	14 55 53.03	14 55 40.69	−3.09	14 55 37.60	
15	» 10627	9.0	14 59 33.54	−0.21	14 59 33.33	14 59 20.99	−3.07	14 59 17.92	
16	» 10685	6.5	15 3 25.49	−0.22	15 3 25.27	15 3 12.83	−3.17	15 3 9.66	
17	» 10743	7.2	15 8 37.67	−0.26	15 8 37.41	15 8 25.07	−3.67	15 8 21.40	
18	» 10800	4.0	15 12 30.96	−0.23	15 12 30.73	15 13 18.39	−3.47	15 12 14.92	

N.o	Estrella	Mag	t	I	T	α aparente	Red. 1929 a	α 1929	C p
			h. m. s.	s.	h. m. s.	h. m. s.	s.	h. m. s.	s.
19	Gi 10905	6.8	15 19 47.16	−0.23	15 19 46.93	15 19 34.59	−3.53	15 19 31.06	−12.39
20	β Comae	3.7	15 25 8.57	−0.28	15 25 8.29	15 24 55.90	.....	15 19	
21	Gi 11062	8,0	15 30 27.44	−0.22	15 30 27.22	15 30 14.88	−3.57	15 30 11.31	
22	»	9.2	15 35 59.02	−0.22	15 35 58.80	15 35 46.46	−3.56	15 35 42.90	
23	»	9.0	15 42 20.74	−0.22	15 42 20.52	15 42 8.18	−3.63	15 42 4.55	
24	»	8.8	15 46 32.01	−0.21	15 46 31.80	15 46 19.46	−3.62	15 46 15.84	
25	»	8.2	15 51 3.53	−0.22	15 51 3.31	15 50 50.97	−3.93	15 50 47.04	
26	49 Librae	5.5	15 56 34.54	−0.14	15 56 34.40	15 56 22.10	.....	15	−12.30

Zona N.° 7 — 1929 Junio 12

Observador: Grandón
Ayudante: Almendras

Lectura ecuador = 71° 38'41.36"
Lectura nadir   = 285° 12'26.46"

N.o	Lectura corregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C.P.D.
1	89 26 1.49	−15.58	89 25 45.91	−17 47 4.13			41.78	
2	140 48 15.78	+39.44	140 48 55.22	−69 10 13.86	+21.84	−69 9 52.02	...	68 2049
3	142 5 31.63	+41.13	142 6 12.76	−70 27 31.40	+21.76	−70 27 9.64	...	70 1704
4	139 49 1.45	+37.80	139 49 39.25	−69 10 57.89	+21.39	−68 10 36.50	...	68 2502
5	137 45 35.78	+35.16	137 46 10.94	−66 7 29.58	+21.04	−66 7 8.54		65 2642
6	52 6 51.52	−71.54	52 5 39.98	+19 33 2.13			42.11	
7	139 50 15.80	+38.06	139 50 53.86	−68 12 12.50	+20.84	−68 11 51.66	...	67 2563
8	137 53 20.04	+35.35	137 53 55.39	−66 15 14.03	+20.45	−66 14 53.58	...	66 2538
9	139 2 25.70	+36.94	139 3 2.64	−67 24 21.28	+20.37	−67 24 0.91	...	67 2595
10	140 16 54.22	+38.72	140 17 32.94	−68 38 51.58	+20.14	−68 38 31.44	...	68 2143
11	140 17 2.36	+38.72	140 18 41.08	−68 38 59.72	+19.86	−68 38 39.86	...	68 2157
12	44 17 59.67	−99.14	44 16 20.53	+27 22 20.81			41.34	
13	159 29 32.75	+76.53	159 30 49.28	−87 52 8.68			40.60	
14	138 45 24.88	+36.70	138 46 1.58	−67 7 20.22	+18.73	−67 7 1.49	...	66 2693
15	138 11 54.41	+35.92	138 12 30.33	−66 33 48.97	+18.46	−66 33 30.51	...	66 2709
16	138 27 5.01	+36.22	138 27 41.23	−66 48 59.87	+18.26	−66 48 41.61	...	66 2725
17	141 53 22.60	+41.22	141 54 3.82	−70 15 22.46	+18.13	−70 15 4.33	...	70 1985
18	140 3 27.38	+38.54	140 4 5.92	−68 25 24.56	+17.79	−68 25 6.77	...	68 2383

N.º	Lectura corregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C.P.D.
	° ′ ″	″	° ′ ″	° ′ ″	″	° ′ ″	″	°
19	139 41 51.11	+ 38.06	139 42 29.17	−68 3 47.81	+17.28	−68 3 30.53		67 2864
20	42 19 33.64	−107.76	42 17 45.88	+29 20 55.97	......	....	41.85	
21	138 53 14.74	+ 37.01	138 53 51.75	−67 15 10.39	+16.51	−67 14 53.88	...	67 2921
22	138 15 24.83	+ 36.14	138 16 0.97	−66 37 19.61	+16.10	−66 37 3.51	...	66 2813
23	138 24 33.30	+ 36.37	138 25 9.67	−66 46 28.31	+15.78	−66 46 12.53	...	66 2827
24	138 3 17.16	+ 35.87	138 3 53.03	−66 25 11.67	+15.62	−66 24 56.05	...	66 2837
25	139 46 14.03	+ 38.31	139 46 52.34	−68 8 10.98	+15.07	−68 7 55.91	...	
26	87 58 39.55	− 17.27	87 58 22.28	−16 19 41.77	......	....	40.51	68 2996

Zona N.° 8 — 1929 Junio 14

Tornillo al Oeste

m = +0.260
n = −0.045

c − x = − 0.235
− C_p = − 10.90

N.o	Estrella	Mag	t	I	T	α aparente	Red. a 1929	α 1929	C_p
			h. m. s.	s.	h. m. s.	h. m. s.	s.	h. m. s.	s.
1	α Bootis	0.2	14 12 37.74	− 0.00	14 12 37.74	14 12 26.81	...	......	−10.93
2	Gi 10020	6.5	14 18 1.60	− 0.22	14 18 1.48	14 17 50.58	−2.43	14 17 48.15	
3	» 10124	9.2	14 26 6.17	+ 0.26	14 26 5.91	14 25 55.01	−2.71	14 25 52.29	
4	» 10125	8.5	14 30 58.68	− 0.22	14 30 58.46	14 30 47.56	−2.62	14 30 44.94	
5	» 10380	7.7	14 40 30.49	− 0.27	14 43 30.22	14 43 19.32	−3.02	14 43 16.30	
6	α Libra	2.9	14 47 9.22	− 0.03	14 47 9.25	14 46 58.37	...	......	−10.88
7	z. Octant.	6.5	14 52 11.88	− 4.85	14 52 7.03	14 51 56.14			−10.89
8	Gi 10603	9.5	14 58 37.74	− 0.24	14 58 37.30	14 58 27.40	−3.17	14 58 24.23	
9	» 10665	7.5	15 2 29.39	− 0.22	15 2 29.17	15 2 18.27	−3.05	15 2 15.22	
10	» 10711	7.8	15 5 26.49	− 0.24	15 5 26.25	15 5 15.35	−3.33	15 5 12.02	
11	» 10767	8.5	15 10 9.03	− 0.29	15 10 8.74	15 9 57.84	−3.56	15 9 54.28	
12	β Libræ	2.7	15 13 23.48	+ 0.03	15 13 23.51	15 13 12.64	...	......	−10.87
13	Gi 10888	9.0	15 18 26.10	− 0.25	15 18 25.85	15 18 14.95	−3.48	15 18 11.47	
14	» 10905	6.5	15 19 45.70	− 0.25	15 19 45.45	15 19 24.55	−3.50	15 19 31.05	
15	» 10993	8.0	15 25 26.91	− 0.27	15 25 26.64	15 25 15.74	−3.64	15 25 12.05	
16	» 11060	8.0	15 30 9.78	− 0.22	15 30 9.56	15 29 58.66	−3.43	15 29 55.23	
17	» 11151	8.2	15 37 22.77	− 0.30	15 37 22.47	15 37 11.57	−4.03	15 37 7.54	
18	» 11201	9.5	15 41 17.88	− 0.29	15 41 17.59	15 41 6.69	−4.03	15 41 2.66	

N.o	Estrella	Mag	t	I	T	α aparente	Red. a 1929	α 1929	C p
			h. m. s.	s.	h. m. s.	h. m. s.	s.	h. m. s.	s.
19	x Serpent.	4.3	15 45 45.30	− 0.00	15 45 45.30	15 45 34.34	...	15 49	− 10.96
20	Gi 11326	8.8	15 49 38.93	− 0.25	15 49 38.68	15 49 27.78	− 3.89	15 49 23.89	
21	» 11393	7.0	15 54 51.58	− 0.23	15 54 51.35	15 54 40.45	− 3.74	15 54 36.71	
22	» 11462	8.8	15 59 38.01	− 0.24	15 59 37.77	15 59 26.87	− 3.92	15 59 22.95	
23	» 11519	8.8	16 4 10.01	− 0.28	16 4 9.73	16 3 58.83	− 4.25	16 3 54.58	
24	» 11593	8.5	16 9 24.67	− 0.27	16 9 24.40	16 9 13.50	− 4.53	16 9 8.97	
25	ε Ophiuchi	3.3	16 14 46.41	+ 0.03	16 14 46.44	16 14 35.57	...	16	− 10.87

Zona N.° 8   —   1929 Junio 14

Observador: Grandón
Ayudante: Almendras

Lectura ecuador = $\left\{\begin{array}{l}71°38'31.99'' \\ 71\ 38\ 40.18\end{array}\right.$

Lectura nadir = 285 12 26.59

N.o	Lectura co-rregida	Refrac.	Lectura apa-rente	δ Aparente	Red.a 1929	δ 1929	Ec.	C/P.D.
1	52 6 42.04	− 72.43	52 5 29.61	+19 33 2.38	...		31.99	
2	137 57 28.31	+ 36.32	137 58 4.63	−66 19 32.68	+20.94	−66 19 11.70	...	66 2519
3	140 7 35.61	+ 39.41	140 8 15.02	−68 29 42.03	+20.83	−68 29 22.20	...	68 2126
4	138 0 28.84	+ 36.36	138 1 5.20	−66 22 33.21	+20.41	−66 22 12.80	...	66 2577
5	140 16 45.42	+ 39.59	140 17 25.01	−68 38 43.83	+19.96	−68 38 23.87	...	68 2185
6	87 24 2.34	− 18.14	87 23 44.20	−15 45 2.77	...		41.43	
7	159 29 32.03	+ 78.27	159 30 50.30	−87 52 9.27	...		41.03	
8	139 29 14.76	+ 38.39	139 29 53.15	−67 51 11.87	+19.32	−67 50 52.65	...	67 2739
9	137 50 32.47	+ 36.04	137 51 8.51	−66 12 27.33	+19.71	−66 12 7.62	...	65 2982
10	139 4 47.47	+ 37.80	139 5 25.27	−67 26 44.09	+18.62	−67 26 25.47	...	67 2780
11	141 15 10.46	+ 40.97	141 15 41.43	−69 37 10.25	+18.47	−69 36 51.78	...	69 2287
12	80 46 34.48	− 35.59	80 46 8.89	−9 7 28.58	...		40.31	
13	139 40 4.82	+ 38.63	139 40 43.45	−68 2 2.27	+17.85	−68 1 44.42	...	67 2856
14	139 41 52.69	+ 38.54	139 42 31.23	−68 3 50.05	+17.78	−68 3 32.27	...	67 2864
15	140 34 7.04	+ 39.93	140 34 46.97	−68 56 5.79	+17.44	−68 55 48.35	...	68 2474
16	137 56 56.07	+ 36.17	137 57 32.24	−66 18 51.06	+16.97	−66 18 34.09	...	66 2796
17	141 42 21.55	+ 41.63	141 43 3.18	−70 4 22.00	+16.66	−70 4 5.34	...	69 2429
18	141 21 4.05	+ 41.07	141 21 45.12	−69 43 3.94	+16.36	−69 42 47.58	...	69 2447

N.o	Lectura corregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C. P. D.
	° ′ ″	″	° ′ ″	° ′ ″	″	° ′ ″	″	°
19	53 18 22.81	− 71.60	53 17 11.21	+18 21 30.76	...	...	41.97	
20	139 40 43.38	+ 38.01	139 41 21.39	−68 2 40.21	+15.66	−68 2 24.55	...	67 2988
21	138 17 9.81	+ 36.62	138 17 46.43	−66 39 5.25	+15.21	−66 38 50.04	...	66 2866
22	139 1 55.72	+ 37.67	139 2 33.39	−67 23 52.21	+14.87	−67 23 37.34	...	67 3015
23	140 56 7.63	+ 40.42	140 56 48.05	−69 18 6.87	+14.59	−69 17 52.28	...	69 2494
24	140 12 32.53	+ 39.33	140 13 11.86	−68 34 30.68	+14.42	−68 34 16.56	...	68 2639
25	75 10 35.84	− 32.31	75 10 3.53	− 4 31 22.37	...	...	41.16	

La primera lectura del ecuador corresponde hasta la estrella N.º 4; la segunda para el resto.

Zona N.° 9 — 1929 Junio 28

Tornillo al Oeste

$m = +0.190'$
$n = -0.187$

$c = x = -0.211$
$C_h = +0.090$

N.o	Estrella	Mag	t	I	T	α aparente	Red. a 1929	α 1929	C p
			h. m. s.	s.	h. m. s.	h. m. s.	s.	h. m. s.	s.
1	z Octant.	6.5	14 51 52.02	−0.46	14 51 51.56	14 51 51.65	...	15	+0.09
2	γ Scorpi	3.4	14 59 56.05	−0.04	14 59 56.09	14 59 56.19	...	15	+0.10
3	Gi 10704	7.8	15 4 47.88	−0.09	15 4 47.97	15 4 48.06	−2.97	15 4 45.09	
4	» 10800	4.0	15 12 17.98	−0.09	15 12 18.07	15 12 18.16	−3.18	15 12 14.98	
5	» 10895	8.2	15 18 43.99	−0.09	15 18 44.08	15 18 44.17	−3.30	15 18 40.87	
6	32 Libra	5.9	15 24 16.45	−0.02	15 24 16.47	15 24 16.63	...	15 27 57.24	+0.16
7	Gi 11039	8.0	15 28 0.53	−0.09	15 28 0.62	15 28 0.71	−3.47	15 27 57.24	
8	» 11123	9.2	15 34 8.37	−0.09	15 34 8.46	15 34 8.55	−3.34	15 34 5.21	
9	» 11159	9.0	15 37 27.51	−0.09	15 37 27.60	15 37 27.69	−3.54	15 37 24.15	
10	» 11210	9.5	15 41 18.85	−0.09	15 41 18.92	15 41 19.01	−3.67	15 41 15.34	
11	» 11256	8.2	15 44 36.37	−0.09	15 44 36.46	15 44 36.55	−3.73	15 44 32.82	
12	ε Serpentis	3.7	15 47 18.20	−0.04	15 47 18.16	15 47 18.25	...	15 52 12.92	+0.09
13	Gi 11362	9.8	15 52 16.58	−0.09	15 52 16.67	15 52 16.76	−3.84	15 52 12.92	
14	» 11519	8.8	16 3 58.55	−0.09	16 3 58.64	16 3 58.73	−4.16	16 3 54.57	
15	» 11572	9.5	16 7 21.86	−0.09	16 7 21.04	16 7 22.01	−3.81	16 7 18.23	
16	δ Ophiuchi	3.0	16 10 39.11	−0.01	16 10 39.10	16 10 39.20	...	16 15 45.80	+0.10
17	Gi 11693	8.8	16 15 48.86	−0.09	16 15 48.95	16 15 49.04	−3.24	16 15 45.80	
18	» 11742	6.8	16 20 6.64	−0.09	16 20 6.73	16 20 6.82	−4.38	16 20 2.44	

N.o	Estrella	Mag	t	I	T	α aparente	Red. a 1929	α 1929	C p.
			h. m. s.	s.	h. m. s.	h. m. s.	s.	h. m. s.	s.
19	Gi 11797	8.8	16 24 2.81	− 0.09	16 24 2.90	16 24 2.99	− 4.04	16 23 58.95	+ 0.14
20	λ Ophiuchi	3.8	16 27 21.61	− 0.03	16 27 21.58	16 27 21.72	......	......	
21	Gi 11892	7.5	16 31 22.42	− 0.09	16 31 22.51	16 31 22.60	− 4.43	16 31 18.17	
22	»	7.0	16 36 13.90	− 0.09	16 36 13.99	16 36 14.08	− 4.29	16 36 9.79	
23	»	7.0	16 39 38.91	− 0.09	16 39 39.00	16 39 39.09	− 4.43	16 39 34.66	
24	»	7.5	16 45 4.71	− 0.09	16 45 4.80	16 45 4.89	− 4.43	16 45 0.46	
25	»	10.0	16 48 26.42	− 0.09	16 48 26.51	16 48 26.60	− 4.38	16 48 22.22	
26	Gould Z.C.	8.2	16 51 21.00	− 0.09	16 51 21.09	16 51 21.18	− 4.39	16 51 16.79	
27	ε Herculis	3.9	16 57 36.58	− 0.17	16 57 36.41	16 57 36.34	......	......	− 0.07

Zona N.° 9 — 1929 Junio 28

Observador: Grandón
Ayudante: Almendras

Lectura del ecuador = 71° 38′41.92″
Lectura del nadir =

N.o	Lectura corregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C. P. D.
1	159 29 37.41	+ 76.67	159 30 54.08	−87 52 12.94	...	...	41.14	
2	96 39 17.35	− 8.31	96 39 9.04	−25 0 27.56	...	...	41.48	
3	139 21 26.07	+ 37.47	139 22 3.54	−67 43 21.62	+21.26	−67 42 59.96	...	67 2776
4	140 3 33.25	+ 38.48	140 4 11.73	−68 25 29.81	+21.31	−68 25 8.50	...	68 2383
5	140 4 53.44	+ 38.54	140 5 31.98	−68 26 50.06	−20.96	−68 26 29.10	...	68 2430
6	88 7 22.40	− 17.00	88 7 5.40	−16 26 22.68	...	...	42.72	
7	140 17 24.44	+ 38.84	140 18 3.28	−68 39 21.36	+20.43	−68 39 0.93	...	68 2493
8	138 12 55.87	+ 37.33	138 13 33.20	−66 34 51.28	+19.84	−66 34 31.44	...	66 2809
9	139 29 43.28	+ 37.73	139 30 31.00	−67 51 49.08	+19.76	−67 51 29.32	...	67 2938
10	140 2 6.82	+ 38.50	140 2 45.32	−68 24 3.40	+19.56	−68 23 43.84	...	68 2557
11	140 4 32.15	+ 38.57	140 5 10.72	−68 26 28.80	+19.32	−68 26 9.48	...	68 2572
12	66 58 5.83	− 43.59	66 57 22.24	+4 41 19.92	...	...	42.16	
13	139 56 14.99	+ 38.38	139 56 53.37	−68 18 11.45	+18.80	−68 17 52.65	...	68 2594
14	140 56 13.04	+ 39.84	140 56 52.88	−69 18 10.96	+18.05	−69 17 52.91	...	69 2494
15	138 8 16.66	+ 35.88	138 8 52.54	−66 30 10.62	+17.54	−66 29 53.08	...	66 2912
16	75 10 5.66	− 32.04	75 9 33.62	−3 30 52.88	...	...	40.74	
17	140 15 48.97	+ 38.87	140 16 17.84	−68 37 35.92	+17.10	−68 37 18.82	...	68 2684
18	140 48 11.82	+ 39.67	140 48 51.49	−69 10 9.57	+16.58	−69 9 52.99	...	69 2553

N.o	Lectura co-rregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C.P.D.
	° ′ ″	″	° ′ ″	° ′ ″	″	° ′ ″	″	°
19	138 12 5.48	+ 37.39	138 12 42.87	−66 34 0.95	+16.25	−66 33 44.70	...	66°2968
20	69 31 11.31	− 39.82	69 30 31.49	+ 2 8 11.79	...	...	43.28	
21	140 12 57.77	+ 38.86	140 13 36.63	−68 34 54.71	+16.83	−68 34 37.88	...	68 2771
22	138 56 6.69	+ 37.03	138 56 43.72	−67 18 1.80	+15.33	−67 17 46.47	...	67 3196
23	139 36 40.58	+ 38.01	139 37 18.59	−67 58 36.67	+15.08	−67 58 21.59	...	67 3202
24	139 11 53.71	+ 37.43	139 12 31.14	−67 33 49.22	+14.59	−67 33 34.63	...	67 3234
25	138 37 20.45	+ 36.85	138 37 57.30	−66 59 15.38	+14.25	−66 59 1.13	...	66 3037
26	138 34 20.70	+ 36.57	138 34 57.27	−66 56 15.35	+14.12	−66 56 1.23	...	66 3043
27	Se movió el anteojo antes de concluir las lecturas.							

Zona N.° 10   —   1929 Julio 2

$m = +0.279$
$n = -0.111$

$c - x = -0.211$
$C_p = -0.600$

Tornillo al Oeste

N.o	Estrella	Mag	t			I	T			α aparente			Red. 1929ª	α 1929			C_p
			h.	m.	s.	s.	h.	m.	s.	h.	m.	s.	s.	h.	m.	s.	s.
1	z Octantis	6.5	14	51	53.12	− 2.41	14	51	50.71	14	51	50.09	...		.....		− 0.62
2	ψ Bootis	4.7	15	1	26.46	− 0.01	15	1	26.45	15	1	25.77	...		.....		− 0.68
3	Gi 10728	7.8	15	7	20.66	− 0.04	15	7	20.66	15	7	20.06	− 3.20	15	7	16.86	
4	» 10713	7.2	15	8	25.20	− 0.04	15	8	25.16	15	8	24.56	− 3.21	15	8	21.35	
5	» 10857	8.5	15	16	4.72	+ 0.01	15	16	4.73	15	16	4.13	− 2.96	15	16	1.17	
6	» 10908	9.5	15	19	53.19	− 0.01	15	19	53.18	15	19	52.58	− 3.22	15	19	49.36	
7	χ Libra	4.0	15	31	35.22	+ 0.09	15	31	35.31	15	31	34.78	...		.....		− 0.53
8	χ Gi 11152	8.8	15	37	6.86	− 0.02	15	37	6.84	15	37	6.24	− 3.59	15	37	2.65	
9	» 11210	9.5	15	41	19.37	− 0.01	15	41	19.36	15	41	18.76	− 3.59	15	41	15.17	
10	» 11249	8.5	15	44	22.59	− 0.03	15	44	22.56	15	44	21.96	− 3.78	15	44	18.18	
11	» 11299	9.0	15	48	19.14	− 0.01	15	48	19.13	15	48	18.73	− 3.72	15	48	15.01	
12	» 11305	5.2	15	48	31.54	− 0.01	15	48	31.53	15	48	30.93	− 3.71	15	48	27.22	
13	ε Coronae	4.2	15	54	41.31	− 0.01	15	54	41.30	15	54	40.66	...		.....		− 0.64
14	Gi 11450	8.0	15	58	42.04	− 0.01	15	58	42.03	15	58	14.43	− 3.86	15	48	37.57	
15	» 11499	9.0	16	2	31.70	− 0.02	16	2	31.68	16	2	31.08	− 3.99	16	2	27.09	
16	» 11541	8.8	16	5	33.81	− 0.01	16	5	33.80	16	5	33.20	− 3.89	16	5	29.31	
17	» 11598	9.8	16	9	10.06	− 0.00	16	9	10.06	16	9	9.46	− 3.84	16	9	5.62	
18	» 11639	8.8	16	11	54.01	+ 0.01	16	11	54.01	16	11	54.02	− 3.88	16	11	49.54	

N.o	Estrella	Mag	t (h. m. s.)	I (s.)	T (h. m. s.)	α aparente (h. m. s.)	Red. a 1929 (s.)	α 1929 (h. m. s.)	C_p (s.)
19	Gi 11710	8.0	16 17 5.69	+ 0.01	16 17 5.10	16 17 5.10	—3.83	16 17 1.27	— 0.60
20	ω Herculis	4.5	16 22 10.69	+ 0.03	16 22 10.72	16 22 10.12	...	......	
21	Gi 11833	9.0	16 27 32.08	— 0.03	16 27 32.05	16 27 31.45	— 4.56	16 27 26.89	
22	» 11885	9.0	16 30 50.18	— 0.01	16 30 50.17	16 30 49.57	— 4.27	16 30 45.30	
23	» 11924	9.8	16 34 0.97	· 0.03	16 34 0.34	16 34 0.34	— 4.63	16 33 55.71	
24	» 11970	8.2	16 38 21.05	+ 0.01	16 38 21.06	16 38 20.56	— 4.15	16 38 16.41	
25	» 12037	8.8	16 42 53.37	0.00	16 42 53.37	16 42 52.77	— 4.40	16 42 48.37	
26	» 12122	9.0	16 48 27.25	0.00	16 48 27.25	16 48 26.65	— 4.36	16 48 22.29	
27	» 12135	8.0	16 49 36.96	0.00	16 49 36.96	16 49 36.36	— 4.39	16 36 31.97	
28	x Ophiuchi	3.4	16 54 20.91	+ 0.05	16 54 20.96	16 54 20.31	...	......	— 0.65
29	Gi 12249	9.0	16 58 41.68	— 0.07	16 58 41.61	16 58 41.01	— 4.93	16 58 36.08	
30	» 12293	6.5	17 1 39.52	— 0.02	17 1 39.50	17 1 38.90	— 4.81	17 1 34.09	
31	A Ophiuchi	5.3	17 11 1.40	+ 0.10	17 11 1.50	17 11 0.99	...	......	— 0.51

Zona N.° 10   —   1929 Julio 2

Observador: Grandón
Ayudante: Almendras

Lectura del ecuador = 71°38'38.11''
Lectura del nadir = 285 12 23.50

N.º	Lectura corregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C.P.D.
1	159 29 35.91	+76.72	159 30 52.63	-87 52 13.71	...	......	38.92	
2	44 26 49.90	-98.40	44 25 11.50	+27 13 26.34	...	......	37.84	
3	141 55 54.66	+41.22	141 56 35.88	-70 17 57.77	+22.37	-70 17 35.40	...	70 1977
4	141 53 24.49	+41.16	141 54 5.75	-70 15 27.64	+22.31	-70 15 5.33	...	70 1985
5	137 59 0.93	+35.59	137 59 36.52	-66 20 58.41	+21.43	-66 20 36.98	...	66 2764
6	140 4 1.78	+38.52	140 4 40.30	-68 26 2.19	+21.50	-68 25 40.69	...	68 2438
7	86 12 20.86	-19.04	86 12 1.82	-14 33 23.85	...	......	37.97	
8	140 32 20.61	+39.20	140 32 59.81	-68 54 21.70	+20.55	-68 54 1.15	...	68 2544
9	140 2 4.55	-38.49	140 2 43.04	-68 24 4.93	+20.23	-68 23 44.70	...	68 2557
10	141 4 8.68	+39.98	141 4 48.66	-69 26 10.55	+20.14	-69 25 50.41	...	69 2455
11	140 8 1.42	+38.64	140 8 40.06	-68 30 1.95	+19.79	-68 29 42.16	...	68 2581
12	140 1 56.91	+38.49	140 2 35.40	-68 23 57.29	+19.76	-68 23 37.53	...	68 2585
13	44 35 17.77	-97.97	44 33 39.80	+27 4 56.90	...	......	36.70	
14	139 52 46.72	+38.28	139 53 25.00	-68 14 46.89	+19.05	-68 14 27.84	...	68 2610
15	140 26 4.09	+39.09	140 26 43.18	-68 48 5.07	+18.84	-68 47 46.23	...	68 2620
16	139 21 36.56	+37.55	139 22 14.11	-67 43 36.00	+18.50	± 67 43 17.50	...	67 3031
17	138 16 18.20	+36.49	138 36 54.69	-66 58 16.58	+18.16	-66 57 58.42	...	66 2917
18	138 34 33.80	+37.40	138 35 11.20	-66 56 33.09	+17.96	-66 56 15.13	...	66 2923

N.o	Lectura corregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C. P. D.
19	137 38 46.95	+35.20	138 39 22.15	-66 04 4.04	+17.46	-66 0 26.58		65 3293
20	57 27 59.20	-60.90	57 26 58.30	+14 11 41.26	...	......	39.56	
21	141 29 58.73	+40.66	141 30 39.39	-69 52 1.78	+17.04	-69 51 44.24		69 2582
22	139 31 21.10	+37.80	139 39 58.90	-67 53 20.70	+16.58	-67 53 4.21		67 3172
23	141 22 14.77	+40.47	141 22 55.24	-69 44 17.13	+16.50	-69 44 0.63		69 2608
24	138 0 8.32	+35.69	138 0 44.01	-66 22 5.90	+15.82	-66 21 50.08		66 3005
25	139 17 44.04	+37.49	139 18 21.55	-67 39 43.44	+15.56	-67 39 27.88		67 3220
26	138 37 17.18	+37.95	138 38 55.13	-66 59 17.02	+15.01	-66 59 2.01		66 3037
27	138 41 15.82	+38.06	138 41 53.88	-67 3 15.77	+14.86	-67 3 0.91		66 3038
28	62 10 30.77	-51.72	62 9 39.05	+9 28 59.26	...	......	38.31	
29	141 11 33.84	+40.24	141 12 14.08	-69 33 35.97	+14.34	-69 33 21.63		69 2682
30	140 23 25.95	+39.08	140 24 5.03	-68 45 26.92	+14.00	-68 45 12.92		68 2892
31	98 8 53.68	-6.87	98 8 46.81	-26 30 9.35	...	......	37.46	

Zona N.° 11 — 1929 Julio 5

Tornillo al Oeste

m = +0.222
n = −0.187

c − x = −0.211
C = −1.640

N.o	Estrella	Mag	t	I	T	α aparente	Red. a 1929	α 1929	C p
			h. m. s.	s.	h. m. s.	h. m. s.	s.	h. m. s.	s.
1	Gi 11031	8.0	15 27 34.21	+0.12	15 27 34.33	15 27 32.69	−3.31	15 27 29.38	
2	γ Libræ	4.0	15 31 36.35	+0.05	15 31 36.76	15 31 34.76	...	.....	− 1.64
3	Gi 11131	9.8	15 34 59.60	+0.12	15 34 54.72	15 34 58.08	−3.44	15 34 54.64	
4	» 11154	8.5	15 36 59.56	+0.12	15 36 59.68	15 36 58.04	−3.39	15 36 54.65	
5	» 11214	9.5	15 41 56.15	+0.12	15 41 56.27	15 41 54.63	−3.61	15 41 51.02	
6	» 11270	7.2	15 45 49.54	+0.12	15 45 49.66	15 45 48.02	−3.51	15 45 44.51	
7	» 11314	9.0	15 49 2.08	+0.12	15 49 2.20	15 49 0.56	−3.79	15 48 56.77	
8	» 11359	9.5	15 52 10.58	+0.12	15 52 10.70	15 52 9.06	−3.90	15 52 5.16	
9	δ Scorpii	2.5	15 56 11.28	+0.07	15 56 11.35	15 56 9.76	...	.....	− 1.59
10	Gi 11455	9.5	15 59 30.48	+0.12	15 59 30.60	15 59 28.96	−4.09	15 59 24.87	
11	» 11519	8.8	16 4 0.67	+0.12	16 4 0.79	16 3 59.15	−4.13	16 3 55.02	
12	» 11583	9.5	16 8 26.36	+0.12	16 8 26.48	16 8 24.84	−3.87	16 8 20.97	
13	» 11608	8.0	16 10 6.34	+0.12	16 10 6.46	16 10 4.82	−4.00	16 10 0.82	
14	» 11677	8.0	16 14 39.86	+0.12	16 14 39.98	16 14 38.34	−3.92	16 14 34.42	
15	» 11672	8.5	16 14 22.80	+0.12	16 14 22.92	16 14 21.28	−3.93	16 14 17.35	
16	ω Herculis	4.5	16 22 11.88	−0.04	16 22 11.84	16 22 10.11	...	.....	− 1.73
17	Gi 11814	9.0	16 25 18.72	+0.12	16 25 18.84	16 25 17.20	−4.04	16 25 14.26	
18	1841 B.AC	6.8	16 30 52.40	+0.43	16 30 52.83	16 30 51.20	...	.....	− 1.63

N.o	Estrella	Mag	t (h m s)	I (s)	T (h m s)	α aparente (h m s)	Red. a 1929 (s)	α 1929 (h m s)	C_p (s)
19	Gi 11923	6.0	16 39 36.33	+0.12	16 39 36.45	16 36 34.81	−4.25	16 36 30.56	
20	» 12021	8.0	16 41 38.90	+0.12	16 41 39.02	16 41 37.38	−4.27	16 41 33.11	
21	» 12039	8.5	16 43 4.97	+0.12	16 43 5.09	16 43 3.45	−4.28	16 42 59.17	− 1.71
22	49 Herculis	6.4	16 48 54.52	−0.05	16 48 54.47	16 48 52.76	...	......	
23	Gi 12175	9.0	16 52 50.26	+0.12	16 52 50.38	16 52 48.74	−4.42	16 48 44.32	
24	» 12233	7.0	16 57 11.99	+0.12	16 57 12.11	16 57 10.47	−4.46	16 57 6.01	
25	» 12282	8.0	17 0 39.41	+0.12	17 0 39.53	17 0 38.89	−4.45	17 0 34.44	
26	» 12299	9.0	17 1 45.89	+0.12	17 1 46.01	17 1 44.37	−4.52	17 1 39.85	− 1.62
27	η Ophiuchi	2.6	17 6 21.96	+0.01	17 6 22.01	17 6 20.39	...	......	
28	Gi 12407	7.2	17 10 15.59	+0.12	17 10 15.71	17 10 14.07	−4.60	17 10 9.47	
29	» 12440	9.0	17 13 36.48	+0.12	17 13 36.60	17 13 34.96	−4.94	17 13 30.02	
30	» 12472	8.2	17 16 11.74	+0.12	17 16 11.86	17 16 10.22	−4.57	17 16 5.65	
31	» 12466	8.0	17 15 24.76	+0.12	17 15 24.88	17 15 23.24	−4.55	17 15 18.69	− 1.57
32	b Ophiuchi	4.3	17 22 5.74	+0.07	17 22 5.81	17 22 4.24	...	......	

Zona N.° 11 — 1929 Julio 5

Observador: Grandón
Ayudante: Almendras

Lectura ecuador = 71°38'39.52''
Lectura nadir   = 285 12 24.63

N.°	Lectura corregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C. P. D.
1	140 0 43.19	+38.36	140 1 21.49	−68 22 41.97	+21.62	−68 22 20.35	...	68 2489
2	86 12 21.61	−18.98	86 12 2.63	−14 33 23.78	...	.....	38.85	...
3	140 3 30.12	+38.38	140 4 8.50	−68 25 28.98	+21.20	−68 25 7.78	...	68 2535
4	139 17 18.00	+37.29	139 18 5.29	−67 39 25.77	+20.98	−67 39 4.79	...	67 2937
5	140 25 2.31	+38.90	140 25 41.21	−68 47 1.69	+20.83	−68 46 40.86	...	68 2560
6	139 3 54.30	+36.97	139 4 31.27	−67 45 51.75	+20.41	−67 45 31.34	...	67 2973
7	140 49 29.79	+39.48	140 50 9.27	−69 11 29.75	+20.43	−69 11 9.32	...	69 2464
8	141 13 14.48	+40.26	141 13 55.74	−69 35 16.22	+20.26	−69 34 55.96	38.91	69 2472
9	94 4 16.12	−10.87	94 4 5.25	−22 25 26.34	...	.....		
10	141 38 50.83	+40.70	141 39 31.53	−70 0 52.21	+19.80	−70 0 32.21	...	69 2488
11	140 56 10.72	+39.66	140 56 50.38	−69 18 10.86	+19.42	−69 17 51.44	...	69 2494
12	139 4 37.94	+37.02	139 5 14.96	−67 26 35.44	+18.88	−67 26 16.56	...	67 3046
13	139 5 49.29	+37.05	139 6 26.34	−67 27 46.82	+18.76	−67 27 28.06	...	67 3055
14	Se movió el anteojo antes de concluir las lecturas.							67 3082
15	138 51 25.16	+36.71	138 52 1.87	−67 13 22.35	+18.42	−67 13 3.93	...	67 3082
16	57 28 1.06	−60.68	57 27 0.38	+14 11 41.69	...	.....	42.07	67 3079
17	138 13 20.29	+35.42	138 30 55.71	−66 52 16.19	+17.53	−66 51 58.66	...	66 2972
18	168 33 47.71	+109.57	168 35 37.28	−96 56 59.31	...	.....	37.97	

N.o	Lectura corregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C. P. D.
	° ′ ″	″	° ′ ″	° ′ ″	″	° ′ ″	″	° ′
19	138 37 1.22	+36.42	138 37 40.64	−66 50 1.12	+16.58	−66 58 44.54	/	66 3009
20	138 35 43.22	+36.39	138 36 19.61	−66 57 40.09	+16.41	−66 57 23.68	...	66 3017
21	138 32 22.26	+36.31	138 32 58.57	−66 54 19.05	+16.28	−66 54 2.77	...	66 3019
22	56 34 12.54	−62.66	56 33 9.88	+15 5 29.31	...	......	39.19	
23	139 53 5.62	+38.21	139 53 43.83	−68 15 4.31	+15.40	−68 14 48.91	...	68 2853
24	139 48 53.24	+48.10	139 49 41.34	−68 11 1.82	+15.02	−68 10 46.80	...	68 2875
25	138 43 49.06	+36.58	138 44 25.64	−67 5 46.12	+14.52	−67 5 31.60	...	67 3284
26	138 37 6.41	+36.43	138 37 42.84	−66 59 3.22	+14.50	−66 58 48.82	...	66 3061
27	87 17 22.17	−17.86	87 17 4.31	−15 38 25.47	...	......	38.84	
28	138 30 25.70	+36.30	138 31 2.00	−66 52 22.48	+13.71	−66 52 8.77	...	66 3080
29	140 14 15.54	+38.74	140 14 54.28	−68 36 14.76	+13.56	−68 36 1.20	...	68 2912
30	137 54 28.30	+35.48	137 55 3.78	−66 16 24.26	+13.12	−66 16 11.14	...	66 3096
31	137 50 8.84	+35.38	137 50 44.22	−66 12 4.70	+13.18	−66 11 51.52	...	66 3095
32	95 45 39.24	− 9.20	95 45 30.04	−24 6 49.21	...	......	40.83	

Zona N.° 12   —   1929 Julio 31

Tornillo al Oeste

m = +0.234ˢ
n = −0.075

c − x = −0.296ˢ
C_p = −10.210

N.o	Estrella	Mag	t	I	T	α aparente	Red. a 1929	α 1929	C_p
1	Gi 12744	8.0	17h 38m 19.48s	−0.39	17h 38m 19.09s	17h 38m 8.88s	−4.92s	17h 38m 3.96s	s.
2	" 12833	9.0	17 46 8.92	−0.40	17 46 8.52	17 45 58.31	−5.41	17 45 53.20	
3	" 12882	9.5	17 50 15.24	−0.38	17 50 14.86	17 50 4.65	−5.03	17 49 59.62	
4	" 12902	8.0	17 52 21.50	−0.37	17 52 21.13	17 52 10.92	−5.04	17 52 5.88	
5	" 12955	9.8	17 56 35.68	−0.41	17 56 35.27	17 56 25.06	−5.36	17 56 19.70	
6	" 12969	9.0	17 57 45.89	−0.41	17 57 45.48	17 57 35.27	−5.37	17 57 29.90	
7	" 13059	8.2	18 5 11.27	−0.42	18 5 10.80	18 5 0.64	−5.57	18 4 54.07	
8	χ Octantis	5.2	18 14 16.40	−0.19	18 14 11.21	18 14 1.02	...	......	−10.20
9	δ Sagitario	2.8	18 16 39.71	−0.07	18 16 39.64	18 16 29.57	...	......	−10.07
10	Gi 13250	8.5	18 23 27.44	−0.42	18 23 27.02	18 23 16.81	−5.78	18 23 11.03	
11	" 13303	7.2	18 27 17.41	−0.33	18 27 17.08	18 27 6.87	−5.15	18 27 1.72	
12	" 13350	9.8	18 32 42.15	−0.42	18 32 41.73	18 32 31.52	−5.82	18 32 25.70	
13	" 13385	7.8	18 35 10.70	−0.42	18 35 10.28	18 35 0.05	−5.85	18 34 51.22	
14	ψ Sagitario	3.3	18 41 26.17	−0.06	18 41 26.11	18 41 15.96	...	......	
15	β Liræ	var.	18 47 40.09	−0.17	18 47 39.92	18 47 29.60	...	......	
16	Gi 13578	8.0	18 54 27.85	−0.41	18 54 27.44	18 54 17.23	−6.08	18 54 11.15	−10.15
17	" 13631	9.5	18 58 19.12	−0.39	18 58 18.73	18 58 8.52	−5.95	18 58 2.57	−10.32
18	" 13671	5.2	19 2 38.26	−0.38	19 2 37.88	19 2 27.67	−5.92	19 2 21.65	

N.o	Estrella	Mag	t (h. m. s.)	I (s.)	T (h. m. s.)	α aparente (h. m. s.)	Red. a 1929 (s.)	α 1929 (h. m. s.)	C n (s.)
19	Gi 13685	8.2	19 3 42.13	−0.38	19 3 41.75	19 3 31.54	=6.16	19 3 25.38	
20	» 13728	8.8	19 7 59.02	−0.37	19 7 58.65	19 7 48.44	−5.86	19 7 42.58	
21	ψ Sagitario	4.9	19 11 24.29	−0.06	19 11 24.23	19 11 14.05	...	.....	−10.18
22	ω Aquilæ	5.1	19 14 41.50	−0.08	19 14 41.42	19 14 31.22	...	.....	−10.20
23	Gi 13848	9.0	19 18 13.41	−0.36	19 18 13.05	19 18 2.84	−5.83	19 17 57.01	
24	» 13898	9.0	19 21 56.87	−0.39	19 21 56.48	19 21 46.27	−6.12	19 21 40.15	
25	» 13900	9.0	19 22 12.64	+0.39	19 22 12.25	19 22 2.04	−6.10	19 21 55.94	
26	» 13922	6.5	19 24 6.22	−0.38	19 24 5.84	19 23 55.63	−6.09	19 23 49.54	
27	μ Aquilæ	4.6	19 30 49.87	−0.07	19 30 49.80	19 30 39.52	...	.....	−10.28

NOTA.—No se anotan algunas fundamentales observadas sólo en ascensión recta.

Zona N.° 12 — 1929 Iulio 31

Lectura del ecuador = 71°38'40.27"
Lectura del nadir = 285 12 24.48

Observador: Grandón
Ayudante: Almendras

N.o	Lectura corregida	Refrac.	Lectura aparente	δ Aparente	Red.ᵃ 1929	δ 1929	Ec.	C. P. D.
1	140 15 18.10	+ 36.34	140 15 54.44	−68 37 14.17	+11.10	−68 36 57.07	...	68 2936
2	140 40 15.63	+ 39.79	140 40 55.42	−69 2 15.15	+16.46	−69 1 58.69	...	69 2776
3	139 54 46.80	+ 38.89	139 55 25.69	−68 16 45.42	+15.95	−68 16 29.47	...	68 2991
4	139 47 32.82	+ 38.53	139 48 11.35	−68 9 31.08	+15.54	−68 9 15.54	...	68 3001
5	141 9 8.87	+ 40.52	141 9 49.39	−69 31 9.12	+15.57	−69 30 53.55	...	69 2819
6	141 6 55.78	+ 40.46	141 7 36.24	−69 28 55.97	+15.45	−69 28 40.52	...	69 2821
7	141 34 30.66	+ 41.15	141 35 11.81	−69 56 31.54	+14.93	−69 56 16.61	...	69 2840
8	159 17 22.93	+ 77.08	159 18 40.01	−87 39 59.18	...	......	40.83	
9	101 30 25.24	− 3.62	101 30 21.62	−29 51 41.72	...	......	39.90	
10	141 23 31.50	+ 40.91	141 24 12.41	−69 45 32.14	+12.93	−69 45 19.21	...	69 2894
11	137 58 10.58	+ 36.00	137 58 46.58	−66 20 6.31	+12.02	−66 19 54.29	...	66 3380
12	141 3 45.00	+ 40.44	141 4 25.44	−69 25 45.17	+11.91	−69 25 33.26	...	69 2925
13	141 5 24.12	+ 40.48	141 6 4.60	−69 27 24.33	+11.65	−69 27 12.68	...	69 2935
14	98 42 43.78	− 3.68	98 42 40.10	−27 3 59.07		......	41.03	
15	38 23 59.97	−129.94	38 21 50.03	+33 16 49.45		......	39.48	
16	141 12 1.96	+ 40.67	141 12 42.63	−69 34 2.36	+ 9.60	−69 33 52.76	...	69 2952
17	140 30 1.56	+ 39.65	140 30 41.21	−68 52 0.94	+ 9.04	−68 51 51.90	...	68 3183
18	140 10 19.80	+ 39.18	140 10 58.98	−68 32 18.71	+ 8.51	−68 32 10.20	...	68 3185

N.o	Lectura co-rregida	Refrac.	Lectura aparente	δ Aparente	Red. a 1929	δ 1929	Ec.	C.P.D.
	° ′ ″	″	° ′ ″	° ′ ″	″	° ′ ″		°
19	140 8 59.10	−39.15	140 9 38.25	−68 30 57.98	+ 8.51	−68 30 49.47	…	68 3187
20	139 43 32.21	+38.53	139 44 10.74	−68 5 30.47	+ 7.85	−68 5 22.62	…	68 3192
21	97 1 39.85	+ 8.06	97 1 31.79	−25 22 51.42		……	40.37	
22	60 11 35.17	−56.04	60 10 39.13	+11 28 1.04		……	40.17	
23	139 17 38.00	+37.92	139 18 15.92	−67 39 35.65	+ 6.81	−67 39 28.84	…	67 3642
24	140 24 20.69	+39.54	140 25 10.23	−68 46 29.96	+ 6.34	−68 46 23.62	…	68 3244
25	140 20 6.85	+39.44	140 20 46.29	−68 42 6.02	+ 6.30	−68 41 59.72	…	68 3246
26	140 13 1.19	+39.27	140 13 40.46	−68 35 0.19	+ 6.06	−68 34 54.13	…	68 3251
27	64 25 48.47	−48.34	64 25 0.13	+ 7 13 40.00		……	40.13	