

RÓMULO GRANDÓN Y DOMINGO ALMENDRAS

Zonas de Estrellas Australes de Gillis

(—65°...—90°)

— OBSERVADAS CON EL —
MERIDIANO REPSOLD



PUBLICADO EN
"LOS ANALES DE LA UNIVERSIDAD DE CHILE"



ESTABLECIMIENTOS GRÁFICOS «BALCELLS & Co.»
SANTIAGO DE CHILE

1930

ZONAS
DE
ESTRELLAS AUSTRALES DE GILLIS

(—65° —90°)



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SANTIAGO DE CHILE
1950

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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 $1 \text{ rev} = 4,087^s$
 » » » » » declinación... $1 \text{ rev} = 18.75''$
 Nivel del caballete..... $1 \text{ div} = 0.074^s$

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 punterías 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:

$$AR = T + C_p + m + n \tan \delta + (c - z) \sec \delta$$

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 des 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 fascículos 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.

R. E. CASTRO
Director del Observatorio

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.	$\Delta \alpha$	$\Delta \delta$	Estrella	Mag.	$\Delta \alpha$	$\Delta \delta$	Estrella	Mag.	$\Delta \alpha$	$\Delta \delta$
Gi. 8248	9.5	-0.01	-2.5	Gi. 8787	9.5	-0.17	+1.3	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.	$\Delta \alpha$	$\Delta \delta$	Estrella	Mag.	$\Delta \alpha$	$\Delta \delta$	Estrella	Mag.	$\Delta \alpha$	$\Delta \delta$
Gi. 9455	10.0	-0.32	+ 2.7	Gi. 9765	9.5	-0.11	+0.2	Gi. 10202	9.0	-0.45	+0.4
» 9455	10.0	-0.42	+ 2.7	» 9767	8.5	-0.27	-3.4	» 10216	9.5	-0.50	+1.8
» 9474	8.0	+3.95	-15.8	» 9788	10.0	-1.12	+0.9	» 10289	9.0	-0.09	-3.9
» 9474	8.0	+3.92	-18.9	» 9806	9.0	-0.38	-3.6	» 10299	9.5	-0.61	-2.6
» 9499	9.0	-0.19	- 1.9	» 9813	9.2	-1.11	+4.5	» 10380	7.7	-0.47	-0.5
» 9499	9.0	-0.23	0.0	» 9868	9.2	-0.37	-1.7	» 10430	8.2	-0.63	-4.2
» 9508	8.0	-0.01	- 1.7	» 9884	8.5	+0.31	-1.7	» 10489	9.0	-0.39	+1.1
» 9598	9.8	-1.15	- 2.4	» 9923	8.3	-0.38	-3.1	» 10562	9.2	-0.19	-1.9
» 9600	9.5	-0.22	0.0	» 9933	9.0	-0.11	-0.5	» 10603	9.5	+0.75	-3.3
» 9607	10.0	+0.01	+22.0	» 9947	6.5	-0.48	+1.0	» 10627	9.0	-0.13	+0.5
» 9607	10.0	-0.20	- 0.6	» 9973	9.8	+0.10	+1.4	» 10665	7.5	-0.57	+0.9
» 9612	6.5	-0.17	+ 1.6	» 9988	9.0	-0.21	-3.2	» 10685	6.5	-0.07	+2.1
» 9635	7.5	-0.24	- 2.1	» 9997	9.5	+0.06	+0.8	» 10704	7.8	-0.49	-1.4
» 9666	8.0	-2.04	- 1.5	» 10007	9.5	-0.41	-4.3	» 10711	7.8	-0.35	-2.4
» 9669	9.0	+0.64	+ 1.3	» 10020	6.5	-0.16	+5.4	» 10728	7.8	-0.07	0.0
» 9693	7.0	-0.02	- 1.4	» 10040	8.8	+0.24	-1.2	» 10743	7.2	-2.31	-1.1
» 9704	9.0	-0.23	-16.2	» 10071	7.0	-0.24	-9.6	» 10743	7.2	-2.28	-9.8
» 9704	9.0	-0.04	-16.0	» 10073	9.2	-0.08	-0.2	» 10767	8.5	-0.29	-0.6
» 9713	9.0	-0.29	- 1.4	» 10116	6.3	+0.42	-4.6	» 10800	4.0	-1.05	+0.9
» 9718	9.5	+1.69	+34.6	» 10124	9.2	-2.52	-7.8	» 10800	4.0	-0.98	-3.8
» 9731	10.0	+0.18	+ 9.2	» 10151	9.0	-1.48	-6.8	» 10857	8.5	-1.16	-4.0
» 9738	9.0	+0.10	- 1.8	» 10167	9.5	+2.15	-4.8	» 10888	9.0	-0.72	-4.5
» 9754	9.2	+3.94	+ 5.0	» 10195	8.5	-0.36	+3.5	» 10895	8.2	-0.15	- 0.6

Estrella	Mag.	$\Delta \alpha$	$\Delta \delta$	Estrella	Mag.	$\Delta \alpha$	$\Delta \delta$	Estrella	Mag.	$\Delta \alpha$	$\Delta \delta$
Gi. 10905	6.8	+1.46	+1.3	Gi. 11275	8.8	-0.05	+3.3	Gi. 11672	8.5	+0.03	+0.6
» 10905	6.8	+1.45	-0.5	» 11299	9.0	-0.03	-2.8	» 11677	8.0	+0.27	...
» 10908	9.5	-0.20	-1.5	» 11305	5.2	+0.04	-2.6	» 11693	8.8	+0.43	-3.1
» 10993	8.0	-0.24	+0.6	» 11314	9.0	+0.05	+5.9	» 11710	8.0	-0.70	-9.9
» 11031	8.0	-1.60	-5.0	» 11326	8.8	-0.15	-0.3	» 11742	6.8	-0.26	-4.4
» 11039	8.0	-0.15	+0.1	» 11342	8.2	-0.10	+1.8	» 11790	8.8	-0.35	-4.0
» 11060	8.0	+0.06	+1.0	» 11359	9.5	-0.26	-6.2	» 11814	9.0	+0.35	-4.7
» 11062	8.0	-0.57	-1.6	» 11362	9.0	+0.17	-2.6	» 11833	9.0	-0.61	-4.0
» 11123	9.2	-0.47	+20.1	» 11393	7.0	+0.53	+0.7	» 11885	9.0	-2.69	-14.0
» 11131	9.8	-0.40	+0.3	» 11450	8.0	-0.46	-0.6	» 11892	7.5	+0.20	-2.3
» 11145	9.2	-0.41	+5.0	» 11455	9.5	-0.60	-0.4	» 11924	9.8	-0.30	-1.4
» 11151	8.2	+0.69	+3.4	» 11462	8.8	-0.13	-0.8	» 11952	7.0	+0.30	-2.7
» 11152	8.8	-0.48	-0.4	» 11499	9.0	-0.81	-0.9	» 11970	8.2	0.00	-2.1
» 11154	9.5	-0.05	+2.6	» 11519	8.8	-0.74	-1.4	» 11990	7.0	+1.03	+2.6
» 11159	9.0	-0.58	-14.3	» 11519	8.8	-0.75	-2.0	» 11993	6.0	+0.09	-1.1
» 11201	9.5	-0.40	0.0	» 11519	8.8	-0.30	-0.5	» 12021	8.0	-0.01	0.0
» 11210	9.5	-0.95	-9.1	» 11541	8.8	-0.01	-6.6	» 12037	8.8	-0.13	-4.4
» 11210	9.5	-0.95	-3.7	» 11572	9.5	-0.41	-1.0	» 12039	8.5	+0.10	+1.2
» 11214	9.5	-0.22	+0.1	» 11583	9.5	+0.41	-5.0	» 12072	7.5	-1.34	-7.7
» 11219	9.0	-0.19	+2.2	» 11593	8.5	-0.75	+0.3	» 12122	9.0	-0.03	-2.1
» 11249	8.5	-0.10	-0.3	» 11598	9.8	-0.32	+0.3	» 12122	9.0	+0.04	-3.0
» 11256	8.2	0.00	-1.3	» 11608	8.0	+0.35	-9.2	» 12135	8.0	-0.45	-10.2
» 11270	7.2	+0.07	-0.4	» 11639	8.8	-0.38	-3.4	» 12175	9.0	+0.37	-1.7

Estrella	Mag.	$\Delta \alpha$	$\Delta \delta$	Estrella	Mag.	$\Delta \alpha$	$\Delta \delta$	Estrella	Mag.	$\Delta \alpha$	$\Delta \delta$
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	» 13631	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	-4.4
» 12440	9.0	+0.74	+2.8	» 13250	8.5	-0.40	-2.5	» 13898	9.0	+0.34	-8.3
» 12466	8.0	+0.40	+0.4	» 13303	7.2	-0.07	-1.2	» 13900	9.0	+0.99	-4.5
» 12472	8.2	+0.04	0.0	» 13350	9.8	-0.02	-1.6	» 13922	6.5	+0.96	-2.9
» 12744	8.0	+0.15	+4.5	» 13385	7.8	+0.14	+0.4				

Zona N.º 1 — 1929 Mayo 6

$m = +0.059$
 $n = -0.019$

$c-\alpha = -0.235$
 $C_p = -3.200$

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

Zona N. 1 — 1929 Mayo 6

Lectura ecuador = $71^{\circ} 38' 52.39''$ Observador: Grandón
 Lectura nadir = $285^{\circ} 12' 37.73$ Ayudante: Castro

N.o	Lectura co- regida	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.º 2 — 1929 Mayo 10

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

$c-\alpha = -0.235$
 $C_p = -5.97$

Tornillo al Oeste

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

-6.03

-5.89

-6.05

-6.03

N.º	Estrella	Mag	t	I	T	α aparente	Red. a 1929	α 1929	C p
19	Gi 9328	8.2	h 13 22 19.13	s -0.27	h 13 22 18.86	h 13 22 12.89	s -2.31	h 13 22 10.58	s
20	» 9374	10.	13 26 33.40	-0.30	13 26 33.10	13 26 27.13	-2.51	13 26 24.62	
21	» Virg.	3.4	13 31 11.80	-0.16	13 31 11.64	13 31 5.73	...	.....	-5.91
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	» 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	c Bootis	4.5	14 31 43.44	-0.26	14 31 43.18	14 31 37.11	...	.....	-6.07

Zona N.º 2 — 1929 Mayo 10

Lectura ecuador = 71° 38' 53.54"
 Lectura nadir = 285 12 38.14

Observador: Grandón
 Ayudante: Castro

N.º	Lectura co- rregida			Refrac.	Lectura apa- rente			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	23.87	+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

$$c-z = -0.235$$

$$C_p = -7.07$$

$$m = +0.070$$

$$n = -0.140$$

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
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	...	...	...	...
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	...	...	...	...
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	...	...	...	...
12	g Virginis	4.5	13	6	24.76	-0.15	13	6	24.61	13	6	17.51	...	...	...	...
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
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			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	τ Bootis	4.5	13	44	2.14	-0.22	13	44	1.92	13	43	54.77	-2.50	13	47	59.28	-7.15
20	Gi 9635	7.5	13	48	9.04	-0.19	13	48	8.85	13	48	1.78	-2.68	13	51	59.85	
21	» 9693	7.0	13	52	9.83	-0.21	13	52	9.62	13	52	2.55	-2.60	13	55	59.97	
22	» 9738	9.0	13	56	9.84	-0.20	13	56	9.64	13	56	2.57	-2.78	14	6	10.90	-6.97
23	π Hidra	3.5	14	2	27.87	-0.12	14	2	27.75	14	2	20.78	-2.91	14	10	5.38	-7.05
24	Gi 9868	9.2	14	6	20.95	-0.20	14	6	20.75	14	6	13.68					
25	» 9923	8.3	14	10	15.57	-0.21	14	10	15.36	14	10	8.29					
26	2 Librae	6.3	14	19	44.78	-0.14	14	19	44.64	14	19	37.59					

Lectura ecuador = 71°38'51.36"
Lectura nadir = 285 12 35.16

Observador: Grandón
Ayudante: Almendras

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

N.º	Lectura co- rregida			Refrac.			Lectura apa- rente			δ Aparente			Red. a 1929			δ 1929			Ec.	C. P. D.
	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"	°	'	"		
19	53	51	29.56				53	50	21.35	+17	48	30.55	...			...			51.90	
20	137	48	14.60				137	48	49.52	-66	9	58.16	+14.60			-66	9	43.56	...	65 2503
21	139	17	58.24				139	18	35.21	-67	39	43.85	+14.36			-67	39	29.43	...	67 2438
22	138	6	46.28				138	7	21.63	-66	28	30.27	+14.18			-66	28	16.09	...	66 2405
23	97	59	37.52				97	59	30.60	-26	20	39.60	...			...			51.00	
24	138	57	0.09				138	57	36.57	-67	18	45.21	+13.60			-67	18	31.11	...	67 2518
25	139	51	0.79				139	51	38.54	-68	12	47.18	+13.36			-68	12	33.82	...	67 2536
26	83	2	48.76				83	2	26.50	-11	23	36.77	...			...			49.73	

$$c - \alpha = -0.235$$

$$C_p = -7.69$$

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.	h. m. s.	h. m. s.			
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	12 18 9.43	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	12 24 44.63	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	12 29 41.14	12 29 41.14	
5	» 8732	9.5	12 38 53.78	-0.18	12 38 53.60	12 38 45.91	-1.65	12 38 44.26	12 38 44.26	12 38 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	12 41 54.12	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	12 47 22.24	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	12 51 39.23	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	13 4 0.72	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	13 12 21.34	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	13 14 49.74	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	13 20 28.43	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	13 23 49.77	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	13 32 36.96	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	13 34 4.87	13 34 4.87	

$$m = +0.187$$

$$m = -0.055$$

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.	...	h.	m.	s.	
19	83 Virg.	5.7	13	40	48.77	-0.04	13	40	48.73				...				-7.71
20	Gi 9607	10.0	13	45	57.60	-0.18	13	45	57.42				-2.48	13	45	47.25	
21	» 9666	8.0	13	50	45.05	-0.26	13	50	44.79				-2.94	13	50	34.16	
22	» 9713	9.0	13	54	13.58	-0.18	13	54	13.40				-2.55	13	54	3.16	
23	» 9754	9.2	13	57	6.59	-0.18	13	57	6.41				-2.59	13	56	56.13	
24	» 9767	8.5	13	58	20.54	-0.17	13	58	20.37				-2.59	13	58	10.09	
25	d Bootis	4.8	14	7	19.15	-0.10	14	7	19.05				...				-7.79
26	Gi 9933	9.0	14	11	30.96	-0.21	14	11	30.75				-2.89	14	11	20.17	
27	» 9973	9.8	14	14	38.05	-0.21	14	14	37.84				-2.93	14	14	27.22	
28	2 Libra	6.3	14	19	45.30	-0.04	14	19	45.26				...				-7.76

Zona N.º 4 — 1929 Mayo 15

Lectura ecuador = 71°38'51.53"
Lectura nadir = 285 12 34.75

Observador: Grandón
Ayudante: Almendras

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

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

Zona N.º 5 — 1929 Ma o 22

$m = 0.126$
 $n = 0.134$

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

Tornillo al Oeste

N.º	Estrella	Mag	t		I	T		α aparente	Red. a 1929	α 1929		C p
			h.	m.	s.	h.	m.	s.	s.	h.	m.	s.
1	χ Virginis	4.8	12 35	47.31	-0.09	12 35	47.22	12 35 35.80	...	12 41	54.39	-11.42
2	Gi 8832	4.5	12 42	7.60	-0.17	12 42	7.43	12 41 56.03	-1.64	12 48	32.79	-11.39
3	» 8906	9.0	12 48	46.22	-0.19	12 48	46.03	12 48 34.63	-1.84	12 52	49.47	-11.42
4	» 8954	9.5	12 53	2.91	-0.18	12 53	2.73	12 52 51.33	-1.86	...	...	-11.39
5	5235 Lac	6.6	12 54	59.59	-9.74	12 54	49.85	12 54 38.46	...	...	...	-11.42
6	ϕ 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	-11.39
9	» 9279	8.0	13 19	10.38	-0.20	13 19	10.18	13 18 58.78	-2.38	13 18	56.40	-11.39
10	» 9343	7.5	13 23	49.65	-0.18	13 23	49.47	13 23 38.07	-2.35	13 23	35.72	-11.39
11	» 9372	9.0	13 26	28.25	-0.18	13 26	28.07	13 26 16.67	-2.34	13 26	14.33	-11.39
12	ζ Virginis	3.4	13 31	17.19	-0.11	13 31	16.08	13 31 5.71	...	...	...	-11.39
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	-11.39

Zona N.º 5 — 1929 Mayo 22

Lectura ecuador = 71°38'51.03''

Observador: Grandón
Ayudante: Almendras

» nadir = no se observó.

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

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.	
19	Gl.	9.5	14 29	9.72	—	0.42	14 29	9.30	—	3.31	14 28	52.27	
20	»	9.5	14 32	56.03	—	0.35	14 32	55.68	—	3.04	14 32	38.92	
21	»	9.5	14 38	20.77	—	0.42	14 38	20.35	—	3.38	14 38	3.25	
22	109 Virgin	3.8	14 42	54.68	—	0.02	14 42	54.70	—	...	...	—13.72	
23	Gl	8.2	14 47	23.23	—	0.36	14 47	22.87	—	...	...	—13.72	
24	»	9.0	14 50	52.28	—	0.38	14 50	51.90	—	3.24	14 47	5.91	
25	»	8.0	14 53	28.63	—	0.38	14 53	28.25	—	3.33	14 50	34.85	
26	γ Scorpi	3.4	14 59	9.81	—	0.00	14 59	9.81	—	3.38	14 53	11.15	
27	β Centauri	0.9	No se calculó la hora.				14 58	56.21	—	...	...	—13.60	

Lectura ecuador = $71^{\circ}38'50.98''$
 » nadir = $285^{\circ}12'34.90''$

Observador: Grandón
 Ayudante: Almendras

N.º	Lectura co- regida		Refrac.	Lectura apa- rente		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	...	+ 20.37	- 70 15	4.07	52.79	69 1741
2	141	53 33.65	+ 41.77	141	54 15.42	- 70 15 24.44	...	...	...	...	...	...
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 co- rregida	Refrac.	Lectura apa- rente	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	...	...	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 anteojo antes de concluir las lecturas.							
27	131 40 32.75	+ 28.00	131 41 0.75	-60 2 10.12	...	...	50.63	...

Zona N.º 7 — 1929 Junio 12

m = +0.066
n = -0.135

c - z = -0.235
C_p = -12.34

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	89 Virginis	5.1	13	46	14.23	-0.14	13	46	14.09	...	...	...	...	13	53	28.52	-12.27
2	Gi 9704	9.0	13	53	43.24	-0.24	13	53	43.00	-2.14	...	...	-2.14	13	53	28.52	-12.27
3	» 9765	9.5	13	58	43.33	-0.26	13	58	43.07	-2.48	...	...	-2.48	13	58	28.25	-12.27
4	» 9813	9.2	14	3	30.37	-0.23	14	3	30.37	-2.37	...	...	-2.37	14	3	15.66	-12.27
5	» 9884	9.8	14	7	30.90	-0.21	14	7	30.69	-2.30	...	...	-2.30	14	7	16.05	-12.27
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	-2.75	...	...	-2.75	14	16	31.20	-12.35
8	» 10071	7.0	14	21	40.14	-0.20	14	21	39.44	-2.52	...	...	-2.52	14	21	25.08	-12.35
9	» 10116	6.3	14	25	34.35	-0.22	14	25	34.13	-2.67	...	...	-2.67	14	25	19.12	-12.35
10	» 10202	9.0	14	32	9.60	-0.24	14	32	9.36	-2.89	...	...	-2.89	14	31	54.13	-12.35
11	» 10289	9.0	14	37	30.34	-0.24	14	37	30.10	-2.98	...	...	-2.98	14	37	14.78	-12.35
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	-3.09	...	...	-3.09	14	55	37.60	-12.37
15	» 10627	9.0	14	59	33.54	-0.21	14	59	33.33	-3.07	...	...	-3.07	14	59	17.92	-12.37
16	» 10685	6.5	15	3	25.49	-0.22	15	3	25.27	-3.17	...	...	-3.17	15	3	9.66	-12.37
17	» 10743	7.2	15	8	37.67	-0.26	15	8	37.41	-3.67	...	...	-3.67	15	8	21.40	-12.37
18	» 10800	4.0	15	12	30.96	-0.23	15	12	30.73	-3.47	...	...	-3.47	15	12	14.92	-12.37

Nº	Estrella	Mag	t	I	T	α aparente	Red. a 1929	α 1929	C p
19	Gi 10905	6.8	h. m. s. 15 19 47.16	s. -0.23	h. m. s. 15 19 46.93	h. m. s. 15 19 34.59	s. -3.53	h. m. s. 15 19 31.06	s. -12.39
20	β Comae	3.7	15 25 8.57	-0.28	15 25 8.29	15 24 55.90	...	.....	
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	» 11145	9.2	15 35 59.02	-0.22	15 35 58.80	15 35 46.46	-3.56	15 35 42.90	
23	» 11219	9.0	15 42 20.74	-0.22	15 42 20.52	15 42 8.18	-3.63	15 42 4.55	
24	» 11275	8.8	15 46 32.01	-0.21	15 46 31.80	15 46 19.46	-3.62	15 46 15.84	
25	» 11342	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	...	.....	-12.30

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

Observador: Grandón
 Ayudante: Almendras

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

N.º	Lectura co- rregida			Refrac.	Lectura apa- rente			Red. a 1929	δ 1929			Ec.	C. P. D.
	°	'	"		°	'	"		°	'	"		°
19	139	41	51.11	+ 38.06	139	42	29.17	+17.28	-68	3	30.53		67 2864
20	42	19	33.64	-107.76	42	17	45.88	.....				41.85	
21	138	53	14.74	+ 37.01	138	53	51.75	+16.51	-67	14	53.88	...	67 2921
22	138	15	24.83	+ 36.14	138	16	0.97	+16.10	-66	37	3.51	...	66 2813
23	138	24	33.30	+ 36.37	138	25	9.67	+15.78	-66	46	12.53	...	66 2827
24	138	3	17.16	+ 35.87	138	3	53.03	+15.62	-66	24	56.05	...	66 2837
25	139	46	14.03	+ 38.31	139	46	52.34	+15.07	-68	7	55.91	...	68 2996
26	87	58	39.55	- 17.27	87	58	22.28	.....				40.51	

m = +0.260
n = -0.045

c-z = - 0.235
C_p = -10.90

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.	
1	α Bootis	0.2	14	12	37.74	—	0.00	14	12	37.74	14	12	26.81	...	14	17	48.15
2	Gi 10020	6.5	14	18	1.60	—	0.22	14	18	1.48	14	17	50.58	—2.43	14	25	52.29
3	» 10124	9.2	14	26	6.17	—	0.26	14	26	5.91	14	25	55.01	—2.71	14	30	44.94
4	» 10125	8.5	14	30	58.68	—	0.22	14	30	58.46	14	30	47.56	—2.62	14	43	16.30
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	...	...	...	...
7	z. Octant.	6.5	14	52	11.88	—	4.85	14	52	7.03	14	51	56.14	...	...	...	...
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	...	...	...	...
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	34.55	—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.	h.	m.	s.	h.	m.	s.	h.	m.	s.	h.	m.	s.	h.	m.	s.
19	z Serpent.	4.3	15	45	45.30	—	0.00	—	15	45	45.30	15	45	34.34	...	15	49	23.89	...	—10.96
20	G ₁ 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	14	8.97	...	—10.87

Lectura ecuador = $\begin{cases} 71^{\circ} 38' 31.99'' \\ 71^{\circ} 38' 40.18'' \end{cases}$
 Lectura nadir = $285^{\circ} 12' 26.59''$

Observador: Grandón
 Ayudante: Almendras

N.º	Lectura co- regida		Refrac.	Lectura apa- rente		Aparente		Red. a 1929	δ 1929		Ec.	C/P. D.
	°	'	''	°	'	''	°	'	''	°	'	''
1	52	6	42.04	-	72.43		+19	33	2.38	...	31.99	66 2519
2	137	57	28.31	+	36.32		-66	19	32.68	-66	19	11.70
3	140	7	35.61	+	39.41		-68	29	42.03	-68	29	22.20
4	138	0	28.84	+	36.36		-66	22	33.21	-66	22	12.80
5	140	16	45.42	+	39.59		-68	38	43.83	-68	38	23.87
6	87	24	2.34	-	18.14		-15	45	2.77	...	41.43	68 2185
7	159	29	32.03	+	78.27		-87	52	9.27	...	41.03	67 2739
8	139	29	14.76	+	38.39		-67	51	11.87	-67	50	52.65
9	137	50	32.47	+	36.04		-66	12	27.33	-66	12	7.62
10	139	4	47.47	+	37.80		-67	26	44.09	-67	26	25.47
11	141	15	10.46	+	40.97		-69	37	10.25	-69	36	51.78
12	80	46	34.48	-	35.59		-9	7	28.58	...	40.31	69 2287
13	139	40	4.82	+	38.63		-68	2	2.27	-68	1	44.42
14	139	41	52.69	+	38.54		-68	3	50.05	-68	3	32.27
15	140	34	7.04	+	39.93		-68	56	5.79	-68	55	48.35
16	137	56	56.07	+	36.17		-66	18	51.06	-66	18	34.09
17	141	42	21.55	+	41.63		-70	4	22.00	-70	4	5.34
18	141	21	4.05	+	41.07		-69	43	3.94	-69	42	47.58
											...	69 2447

N.º	Lectura co- regida			Refrac.	Lectura apa- rente			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	...	- 68	2	24.55	41.97	67 2988
20	139	40	43.38	+ 38.01	139	41	21.39	- 68	2	40.21	+ 15.66	- 66	38	50.04	...	66 2866
21	138	17	9.81	+ 36.62	138	17	46.43	- 66	39	5.25	+ 15.21	- 67	23	37.34	...	67 3015
22	139	1	55.72	+ 37.67	139	2	33.39	- 67	23	52.21	+ 14.87	- 69	17	52.28	...	69 2494
23	140	56	7.63	+ 40.42	140	56	48.05	- 69	18	6.87	+ 14.59	- 68	34	16.56	...	68 2639
24	140	12	32.53	+ 39.33	140	13	11.86	- 68	34	30.68	+ 14.12	...	...	...	41.16	
25	75	10	35.84	- 32.31	75	10	3.53	- 4	31	22.37	...	...	...	...		

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

Zona N.º 9 — 1929 Junio 28

m = +0.190"
n = -0.187

c - z = -0.211
C = +0.090

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	h.	m.	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	4	45.09	+ 0.09
2	γ Scorpi	3.4	14	59	56.05	—	0.04	14	59	56.09	14	59	56.19	...	...	...	15	12	14.98	+ 0.10
3	Gi 10704	7.8	15	4	47.88	—	0.09	15	4	47.97	15	4	48.06	...	...	...	15	18	40.87	
4	» 10800	4.0	15	12	17.98	—	0.09	15	12	18.07	15	12	18.16	...	...	...	15	18	40.87	
5	» 10895	8.2	15	18	43.99	—	0.09	15	18	44.08	15	18	44.17	...	...	...	15	18	40.87	
6	32 Libra	5.9	15	24	16.45	—	0.02	15	24	16.47	15	24	16.63	...	...	...	15	18	40.87	
7	Gi 11039	8.0	15	28	0.53	—	0.09	15	28	0.62	15	28	0.71	...	...	...	15	18	40.87	+ 0.16
8	» 11123	9.2	15	34	8.37	—	0.09	15	34	8.46	15	34	8.55	...	...	...	15	18	40.87	
9	» 11159	9.0	15	37	27.51	—	0.09	15	37	27.60	15	37	27.69	...	...	...	15	18	40.87	
10	» 11210	9.5	15	41	18.85	—	0.09	15	41	18.92	15	41	19.01	...	...	...	15	18	40.87	
11	» 11256	8.2	15	44	36.37	—	0.09	15	44	36.46	15	44	36.55	...	...	...	15	18	40.87	
12	e Serpente	3.7	15	47	18.20	—	0.04	15	47	18.16	15	47	18.25	...	...	...	15	18	40.87	+ 0.09
13	Gi 11362	9.8	15	52	16.58	—	0.09	15	52	16.67	15	52	16.76	...	...	...	15	18	40.87	
14	» 11519	8.8	16	3	58.55	—	0.09	16	3	58.64	16	3	58.73	...	...	...	15	18	40.87	
15	» 11572	9.5	16	7	21.86	—	0.09	16	7	21.04	16	7	22.01	...	...	...	15	18	40.87	
16	δ Ophiuchi	3.0	16	10	39.11	—	0.01	16	10	39.10	16	10	39.20	...	...	...	15	18	40.87	+ 0.10
17	Gi 11693	8.8	16	15	48.86	—	0.09	16	15	48.95	16	15	49.04	...	...	...	15	18	40.87	
18	» 11742	6.8	16	20	6.64	—	0.09	16	20	6.73	16	20	6.82	...	...	...	15	18	40.87	

N.o	Estrella	Mag	t		I	T		α aparente		Red. a 1929	α 1929		C p
			h.	m.	s.	h.	m.	h.	m.	s.	h.	m.	s.
19	Gi 11797	8.8	16 24	2 81	—	16 24	2 90	16 24	2 99	—	16 23	58 95	—
20	λ Ophiuchi	3.8	16 27	21 61	—	16 27	21 58	16 27	21 72	...	...	...	...
21	Gi 11892	7.5	16 31	22 42	—	16 31	22 51	16 31	22 60	—	16 31	18 17	—
22	» 11952	7.0	16 36	13 90	—	16 36	13 99	16 36	14 08	—	16 36	9 79	—
23	» 11990	7.0	16 39	38 91	—	16 39	39 00	16 39	39 09	—	16 39	34 66	—
24	» 12072	7.5	16 45	4 71	—	16 45	4 80	16 45	4 89	—	16 45	0 46	—
25	» 12122	10.0	16 48	26 42	—	16 48	26 51	16 48	26 60	—	16 48	22 22	—
26	Gould Z.C.	8.2	16 51	21 00	—	16 51	21 09	16 51	21 18	—	16 51	16 79	—
27	ϵ Herculis	3.9	16 57	36 58	—	16 57	36 41	16 57	36 34	...	...	...	—0.07

Zona N.º 9 — 1929 Junio 28

Lectura del ecuador = $71^{\circ} 38' 41.92''$ Observador: Grandón
Ayudante: Almendras

Lectura del nadir =

N.º	Lectura co- rregida		Refrac.	Lectura apa- rente		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	-67 42 59.96	...	67 2776
4	140	3	33.25	+	38.48	140	4	11.73	-68	25	29.81	-68 25 8.50	...	68 2383
5	140	4	53.44	+	38.54	140	5	31.98	-68	26	50.06	-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	-68 39 0.93	...	68 2493
8	138	12	55.87	+	37.33	138	13	33.20	-66	34	51.28	-66 34 31.44	...	66 2809
9	139	29	43.28	+	37.73	139	30	31.00	-67	51	49.08	-67 51 29.32	...	67 2938
10	140	2	6.82	+	38.50	140	2	45.32	-68	24	3.40	-68 23 43.84	...	68 2557
11	140	4	32.15	+	38.57	140	5	10.72	-68	26	28.80	-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	-68 17 52.65	...	68 2594
14	140	56	13.04	+	39.84	140	56	52.88	-69	18	10.96	-69 17 52.91	...	69 2494
15	138	8	16.66	+	35.88	138	8	52.54	-66	30	10.62	-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	-68 37 18.82	...	68 2684
18	140	48	11.82	+	39.67	140	48	51.49	-69	10	9.57	-69 9 52.99	...	69 2553

$$\begin{aligned} m &= +0.279 \\ n &= -0.111 \end{aligned}$$
$$\begin{aligned} C - X &= -0.211 \\ C_p &= -0.600 \end{aligned}$$

Tornillo al Oeste

N.o	Estrella	Mag	t		I	T		α aparente		Red. 1929 ^a	α 1929		C
			h.	m.	s.	h.	m.	s.	h.	m.	s.		
1	z Octantis	6.5	14 51	53.12	—	2.41	14 51	50.71	14 51	50.09	...	h.	s.
2	♃ Bootis	4.7	15 1	26.46	—	0.01	15 1	26.45	15 1	25.77	...	.....	— 0.62
3	♄ Gi	10728	7.8	15 7	20.66	—	0.04	15 7	20.66	15 7	20.06	15 7	16.86
4	»	10713	7.2	15 8	25.20	—	0.04	15 8	25.16	15 8	24.56	15 8	21.35
5	»	10857	8.5	15 16	4.72	+	0.01	15 16	4.73	15 16	4.13	15 16	1.17
6	»	10908	9.5	15 19	53.19	—	0.01	15 19	53.18	15 19	52.58	15 19	49.36
7	♄ Libra	4.0	15 31	35.22	+	0.09	15 31	35.31	15 31	34.78	...	.....	— 0.53
8	♄ Gi	11152	8.8	15 37	6.86	—	0.02	15 37	6.84	15 37	6.24	15 37	2.65
9	»	11210	9.5	15 41	19.37	—	0.01	15 41	19.36	15 41	18.76	15 41	15.17
10	»	11249	8.5	15 44	22.59	—	0.03	15 44	22.56	15 44	21.96	15 44	18.18
11	»	11299	9.0	15 48	19.14	—	0.01	15 48	19.13	15 48	18.73	15 48	15.01
12	»	11305	5.2	15 48	31.54	—	0.01	15 48	31.53	15 48	30.93	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	15 48	37.57
15	»	11499	9.0	16 2	31.70	—	0.02	16 2	31.68	16 2	31.08	16 2	27.09
16	»	11541	8.8	16 5	33.81	—	0.01	16 5	33.80	16 5	33.20	16 5	29.31
17	»	11598	9.8	16 9	10.06	—	0.00	16 9	10.06	16 9	9.46	16 9	5.62
18	»	11639	8.8	16 11	54.01	+	0.01	16 11	54.01	16 11	54.02	16 11	49.54

N.o	Estrella	Mag	t			I	T			α aparente			Red. a 1929	α 1929	C p		
			h.	m.	s.		h.	m.	s.	h.	m.	s.		h.	m.	s.	
19	Gi 11710	8.0	16	17	5.69	+	0.01	16	17	5.10	16	17	5.10	16	17	1.27	
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	z 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.º 10 — 1929 Julio 2

Lectura del ecuador = 71° 38' 38.11'' Observador: Grandón
 Lectura del nadir = 285 12 23.50 Ayudante: Almendras

N.º	Lectura co- rregida	Refrac.	Lectura apa- rente	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 co- regida			Refrac.	Lectura apa- rente			z Aparente			Red. a 1929	z 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.º 11 — 1929 Julio 5

$m = +0.222$
 $n = -0.187$

$c - z = -0.211$
 $C = -1.640$

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.
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 Scorpi	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.A.C	6.8	16	30	52.40	+0.43	16	30	52.83	16	30	51.20	...	...	...	- 1.63

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 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	
22	49 Herculis	6.4	16	48	54.52	-0.05	16	48	54.47	16	48	52.76	..	.....	.....	.....	1.71
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	
32	b Ophiuchi	4.3	17	22	5.74	+0.07	17	22	5.81	17	22	4.24	...	.....	.....	.....	1.57

Zona N.º 11 — 1929 Julio. 5

Observador: Grandón
Ayudante: Almendras

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

N.º	Lectura co- rregida	Refrac.	Lectura apa- rente	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 25 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 15 16.22	+20.26	-69 34 55.96	...	69 2472
9	94 4 16.12	- 10.87	94 4 5.25	-22 25 26.34	...	.....	38.91	...
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 3079
16	57 28 1.06	- 60.68	57 27 0.38	+14 11 41.69	...	.....	42.07	...
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			Lectura aparente			Red. a 1929			2 1929			Ec.	C. P. D.
	°	'	"	°	'	"	°	'	"	°	'	"	"	°
19	138	37	1.22				138	37	40.64	-66	50	1.12	+16.58	66 3009
20	138	35	43.22				138	36	19.61	-66	57	40.09	+16.41	66 3017
21	138	32	22.26				138	32	58.57	-66	54	19.05	+16.28	66 3019
22	56	34	12.54				56	33	9.88	+15	5	29.31	...	39.19
23	139	53	5.62				139	53	43.83	-68	15	4.31	+15.40	68 2853
24	139	48	53.24				139	49	41.34	-68	11	1.82	+15.02	68 2875
25	138	43	49.06				138	44	25.64	-67	5	46.12	+14.52	67 3284
26	138	37	6.41				138	37	42.84	-66	59	3.22	+14.50	66 3061
27	87	17	22.17				87	17	4.31	-15	38	25.47	...	38.84
28	138	30	25.70				138	31	2.00	-66	52	22.48	+13.71	66 3080
29	140	14	15.54				140	14	54.28	-68	36	14.76	+13.56	68 2912
30	137	54	28.30				137	55	3.78	-66	16	24.26	+13.12	66 3096
31	137	50	8.84				137	50	44.22	-66	12	4.70	+13.18	66 3095
32	95	45	39.24				95	45	30.04	-24	6	49.21	...	40.83

$$m = +0.234$$

$$n = -0.075$$

$$c - \alpha = -0.296$$

$$C_p = -10.210$$

Tornillo al Oeste

N.º	Estrella	Mag	t	I	T	α aparente	Red. a 1929	α 1929	C p
1	Gi 12744	8.0	h. m. s. 17 38 19.48	s. -0.39	h. m. s. 17 38 19.09	h. m. s. 17 38 8.88	s. -4.92	h. m. s. 17 38 3.96	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	-10.20
8	χ Octantis	5.2	18 14 16.40	-0.19	18 14 11.21	18 14 1.02	...	.....	-10.07
9	δ Sagitario	2.8	18 16 39.71	-0.07	18 16 39.64	18 16 29.57	...	.....	
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 54.22	
14	ψ Sagitario	3.3	18 41 26.17	-0.06	18 41 26.11	18 41 15.96	...	.....	-10.15
15	β Liræ	var.	18 47 40.09	-0.17	18 47 39.92	18 47 29.60	...	.....	-10.32
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	
17	» 13631	9.5	18 58 19.12	-0.39	18 58 18.73	18 58 8.52	-5.95	18 58 2.57	
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		I	T		α aparente		Red. a 1929	α 1929		C
			h.	m. s.	s.	h.	m. s.	h.	m. s.	s.	h.	m. s.	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	♃ Sagitario	4.9	19 11	24.29	-0.06	19 11	24.23	19 11	14.05	...	.....		
22	♄ Aquilæ	5.1	19 14	41.50	-0.08	19 14	41.42	19 14	31.22	...	.....		
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	-10.18
24	» 13898	9.0	19 21	56.87	-0.39	19 21	56.48	19 21	46.27	-6.12	19 21	40.15	-10.20
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	♄ 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.º 12 — 1929 Julio 31

Lectura del ecuador = 71°38'40.27"

Lectura del nadir = 285 12 24.48

Observador: Grandón
Ayudante: Almendras

N.º	Lectura co- rregida			Refrac.	Lectura spa- rente			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- regida			Refrac.	Lectura apa- rente			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 3187
20	139	43	32.21	+38.53	139	44	10.74	-68	5	30.47	+ 7.85	68 3192
21	97	1	39.85	+ 8.06	97	1	31.79	-25	22	51.42	...	...
22	60	11	35.17	-56.04	60	10	39.13	+11	28	1.04	...	40.37
23	139	17	38.00	+37.92	139	18	15.92	-67	39	35.65	...	40.17
24	140	24	20.69	+39.54	140	25	10.23	-68	46	29.96	+ 6.81	67 3642
25	140	20	6.85	+39.44	140	20	46.29	-68	42	6.02	+ 6.34	68 3244
26	140	13	1.19	+39.27	140	13	40.46	-68	35	0.19	+ 6.30	68 3246
27	64	25	48.47	-48.34	64	25	0.13	+ 7	13	40.00	+ 6.06	68 3251
											...	40.13

