ELEMENTS OF (469) ARGENTINA=[1907 XZ].

By ELEANOR A. LAMSON.

The asteroid [1907XZ] was discovered by METCALF at Taunton, Mass., and independently by LIAPIN at Pulkowa on March 18, 1907.

Elements were computed from four observations made at Washington by the method Ermittlung der Bahnelemente ohne bestimmte Voraussetzung über die Excentricität aus vier Beobachtungen, von denen nur die äusseren vollständig dargestellt werden sollen, as given by THEODOR R. V. OPPOLZER, in his Bahnbestimmung der Kometen und Planeten.

The observations are as follows:

Date.	Washington Mean Time.	Apparent α .	Apparent δ .	Log $p\Delta$.		Red. to 1907.0	
				α	δ	α	δ
1907	h m s	h m s	° ' "			s	"
Mar. 21	10 0 18	11 38 4.09	-5 44 41.7	9.304 _n	0.784	+0.22	-0.17
Apr. 1	9 55 41	11 28 53.37	-5 29 14.3	9.045 _n	0.786	+0.17	-0.09
12	7 58 17	11 21 30.97	-5 13 16.5	9.370 _n	0.779	+0.10	-0.20
24	10 24 50	11 16 22.58	-5 1 54.0	9.177	0.781	+0.03	+0.13

Elements.

Epoch: 1907, April 24.5, Greenwich Mean Time.

$$\begin{aligned}
 M &= 7 \ 31 \ 46.4 \\
 \omega &= 201 \ 23 \ 58.5 \\
 \Omega &= 335 \ 11 \ 17.5 \\
 i &= 11 \ 45 \ 15.4 \\
 \varphi &= 8 \ 58 \ 51.8 \\
 \mu &= 626''.309 \\
 \log a &= 0.502146
 \end{aligned}
 \left. \vphantom{\begin{aligned} M \\ \omega \\ \Omega \\ i \\ \varphi \end{aligned}} \right\} 1907.0$$

The residuals (O-C) for the middle places are $\cos \beta \Delta \lambda = -0''.1$ and $-0''.4$, $\Delta \beta = +2''.9$ and $-0''.2$.

Heliocentric Coordinates 1907.0

$$\begin{aligned}
 x &= r [9.998407] \sin (65 \ 38 \ 51.1 + v) \\
 y &= r [9.918550] \sin (332 \ 19 \ 44.9 + v) \\
 z &= r [9.752630] \sin (342 \ 49 \ 52.4 + v)
 \end{aligned}$$

Ephemeris for 1907.

Greenwich Mean Time.	Apparent α .	Apparent δ .	Log d .
1907	h m s	° ' "	
Mar. 21.5	11 38 10.24	- 5 44 44.4	0.228331
25.5	11 34 41.69	5 39 38.6	0.229468
29.5	11 31 21.34	5 33 53.9	0.231718
Apr. 2.5	11 28 12.72	5 27 50.6	0.235032
6.5	11 25 18.84	5 21 44.6	0.239358
10.5	11 22 42.61	5 15 56.0	0.244616
14.5	11 20 26.49	5 10 42.2	0.250726
18.5	11 18 32.32	5 6 19.8	0.257596
22.5	11 17 1.39	5 3 2.4	0.265123
26.5	11 15 54.38	5 1' 2.2	0.273212
May 18.5	11 16 51.33	5 17 53.4	0.323943
20.5	11 17 30.61	- 5 21 59.8	0.328824

The observations at Washington give the following corrections to this ephemeris:

Corrections to the Ephemeris.

Date.	O-C		Date.	O-C	
	α	δ		α	δ
1907	s	"	1907	s	"
Mar. 21	+0.14	+0.2	Apr. 12	+0.14	-2.2
22	+0.09	-2.3	16	+0.14	-0.9
25	+0.06	-1.5	20	+0.18	-1.5
28	+0.26	-2.2	24	+0.07	-2.8
Apr. 1	+0.15	+0.8	May 18	-0.46	-1.2

The estimated magnitude on April 16 was 11.8.