ELEMENTS OF (600) [1906 UM].

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This asteroid was discovered by METCALF at Taunton, Mass., on June 14, 1906. The following provisional elements were computed from four observations made at Washington, using the method given in BAUSCHINGER's *Bahnbestimmung der Himmelskörper*.

The observations are as follows:

Date.	Washington Mean Time.	Apparent α .	Apparent δ .	Log $p\Delta$.		Red. to 1906.0	
				α	δ	α	δ
1906	h m s	h m s	° ' "			s	"
June 22	11 33 30	17 37 32.68	- 9 49 8.2	7.662 _n	0.819	-0.75	-6.6
30	10 15 53	17 30 45.29	-10 16 8.1	8.925 _n	0.820	-0.84	-6.0
July 12	11 35 57	17 22 13.75	-11 10 12.7	9.270	0.820	-0.97	-5.6
26	11 31 43	17 16 26.57	-12 27 9.4	9.457	0.815	-1.12	-4.9

Provisional Elements.

Epoch: 1906, June 22.5, Berlin Mean Time.

$$\begin{array}{rcl}
 M = 12 & 41 & 3.5 \\
 \omega = 112 & 42 & 28.8 \\
 \Omega = 139 & 34 & 54.6 \\
 i = 10 & 11 & 20.0 \\
 \varphi = 3 & 8 & 12.2
 \end{array}
 \left. \vphantom{\begin{array}{rcl} M \\ \omega \\ \Omega \\ i \\ \varphi \end{array}} \right\} 1906.0$$

$$\begin{array}{l}
 \mu = 817''.198 \\
 \log a = 0.425120
 \end{array}$$

ω is the longitude of perihelion counted from the node.

Residuals.	June 30.	July 12.
	"	"
O-C { λ	-0.5	-0.6
β	-0.6	-2.3

Heliocentric Coordinates 1906.0

$$\begin{aligned}
 x &= r [9.997125] \sin (342^\circ 44' 19.5'' + v) \\
 y &= r [9.983796] \sin (254^\circ 34' 49.3'' + v) \\
 z &= r [9.464853] \sin (230^\circ 29' 17.0'' + v)
 \end{aligned}$$

Ephemeris for 1906.

Berlin Mean Midnight.	Apparent α .	Apparent δ .	Log A .	Aberr. Time.
	h m s	° ' "		m s
1906 June 22	17 37 44.63	— 9 48 26.4	0.182942	12 40
26	17 34 14.39	10 0 56.2	0.184981	12 43
30	17 30 53.48	10 15 24.0	0.188138	12 49
July 4	17 27 45.69	10 31 40.9	0.192359	12 56
8	17 24 54.22	10 49 36.0	0.197563	13 6
12	17 22 21.81	11 8 59.4	0.203682	13 17
16	17 20 10.86	11 29 40.0	0.210630	13 30
20	17 18 23.43	11 51 27.1	0.218318	13 44
24	17 17 1.14	12 14 9.0	0.226645	14 0
28	17 16 5.01	—12 37 35.3	0.235515	14 17

With the exception of the photographic observations at Taunton, the only observations of this asteroid in 1906 were made at Washington. The latter give the following corrections to this ephemeris:

Corrections to the Ephemeris.

Date.	O-C		Date.	O-C		Date.	O-C	
	α	δ		α	δ		α	δ
1906	s	"	1906	s	"	1906	s	"
June 22	—0.01	+0.3	July 12	+0.03	—1.3	July 21	+0.06	+2.9
22	0.00	+1.3	13	+0.16	—3.5	24	+0.10	+3.8
24	—0.02	+1.9	15	+0.13	+1.0	26	0.00	—0.6
25	—0.19	+1.0	19	+0.14	—0.5	26	+0.08	+0.1
30	+0.01	—0.6	21	+0.07	+3.5			

The estimated magnitudes in 1906 were: 12.6 on July 12, 13.0 on July 15, and 13.0 on July 19.

If the magnitude be represented by the relation

$$M = g + 5 (\log A + \log r),$$

and if we put

$$m_0 = g + 5 [\log a + \log (a-1)],$$

we shall have

$$g = 9.8 \text{ and } m_0 = 13.0.$$

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Heliocentric Coordinates for 1907.0

$$\begin{aligned}
 x &= r [9.997127] \sin (342^\circ 45' 9.8'' + v) \\
 y &= r [9.983800] \sin (254^\circ 35' 36.9'' + v) \\
 z &= r [9.464799] \sin (230^\circ 30' 20.9'' + v)
 \end{aligned}$$

Ephemeris for 1907.

Berlin Mean Midnight.	Apparent α :	Apparent δ :	Log d .	Aberr. Time.
1907	h m s	° ' "		m s
Oct. 9	1 28 51.45	-5 16 5.8	0.245673	14 38
13	1 25 37.03	5 43 19.7	0.246367	14 39
♂ 17	1 22 21.51	6 8 17.9	0.248146	14 43
21	1 19 8.53	6 30 37.0	0.250996	14 48
25	1 16 1.63	6 49 59.0	0.254863	14 56
29	1 13 4.14	7 6 8.8	0.259699	15 6
Nov. 2	1 10 19.13	7 18 55.8	0.265435	15 18
6	1 7 49.48	-7 28 12.3	0.271998	15 32

Magnitude about 13.2.

Five observations made at Washington give the following rather large corrections:

Corrections to the Ephemeris.

Date.	O-C		Date.	O-C	
	α	δ		α	δ
1907	s	"	1907	s	"
Oct. 24	-191.52	-868.3	Oct. 30	-188.17	-840.3
29	-188.79	-844.7	Nov. 4*	-184.78	-814.8

* Two observations.

The provisional elements are in need of correction. If we decrease M arbitrarily by $34' 35''$, leaving the other elements unchanged, the correction to an ephemeris computed with this assumption, as given by the observation of October 24, is $-0^s.5$ in α , $-14''$ in δ .