PRELIMINARY ELEMENTS OF MINOR PLANET 1922 MZ (Y. O. 5)

Minor Planet 1922 MZ was discovered by Van Biesbroeck on November 23, 1922. Five observations were secured in November and December, but it could not be found in January. An orbit was computed from the observations of November 24, December 15, and December 22 and an ephemeris was forwarded to Van Biesbroeck. Owing to the proximity of the Moon, and to cloudy weather he was unable to observe the asteroid during February, but on March 10 it was rediscovered about 20 minutes of arc from the predicted position.

The following observations have been furnished by Van Biesbroeck:

		α (1925.0)	δ (1925.0)
1922	Nov. 23.836	4 ^h 37 ^m 18 ^s	+36° 38'.1
	Nov. 24.769	36 12	36 38.1
	Dec. 15.840	12 22	35 48.8
	Dec. 22.707	06 27	35 17.8
1923	Mar. 10.595	4 42 26	+31 16.7

The preliminary elements and constants for the equator 1922.0 are as follows:

ELEMENTS

T	1922 May 17.835
ω	12° 25'.0
Ω	353° 25.8
i	8° 43.1
e	0.19713
μ	827".48
P	4.289 years
$\log a$	2.6393

CONSTANTS FOR THE EQUATOR 1922.0

$$\begin{aligned} x &= r (9.99993) \sin (95^\circ 55'4 + v) \\ y &= r (9.92791) \sin (5^\circ 18.0 + v) \\ z &= r (9.72575) \sin (7^\circ 30.4 + v) \end{aligned}$$

RESIDUALS

	$\Delta \alpha \cos \delta$	$\Delta \delta$
1922 Nov. 23.836	+0'.1	-0'.2
Nov. 24.769	+0.2	-0.2
Dec. 15.840	0.0	0.0
Dec. 22.707	0.0	0.0
1923 Mar. 10.595	-21.0	+4.4

C. D. SHANE.

J. A. PEARCE.

Berkeley Astronomical Department,
1923 March 16

OBSERVATIONS OF COMET 1922 c (BAADE)

Date	Gr.	M.	T.	Star	No. of	Comet-Star	Comet's Apparent	Log $\rho \Delta$	Observer
1922					Comp.	$\Delta \alpha$ $\Delta \delta$	α δ	α δ	
Oct. 23	16 ^h	27 ^m	48 ^s	1	10 10	+10.39 -3' 17".5	19 ^h 55 ^m 56".73 +36° 34' 33".5	9.555 9.991	Aitken
Oct. 24	15 15	54	2	10 10	10 10	+12.99 -3 42.5	19 58 04.55 +36 18 10.8	9.308 9.596	Neubauer
Oct. 28	17 37	58	3	10 10	10 10	- 7.86 + 08.5	20 07 27.11 +35 07 09.2	9.684 0.341	Shane
Oct. 28	18 02	32	4	10 10	10 10	- 5.46 - 10.0	20 07 29.51 +35 06 50.7	9.710 0.410	Aitken
Nov. 11	18 15	00	5	10 10	10 10	- 9.30 -1 23.1	20 41 08.88 +31 12 49.3	9.716 0.537	Pearce
Nov. 11	19 22	00	6	10 10	10 10	- 2.44 -2 11.2	20 41 15.74 +31 12 01.2	9.737 0.652	Pearce
Nov. 17	17 10	45	7	10 10	10 10	+ 6.15 -2 42.4	20 55 46.66 +29 25 54.2	9.660 0.451	Pearce
1923									
Jan. 6	14 55	46	9	10 10	10 10	- 8.04 -2 04.7	22 57 50.08 +19 08 00.1	9.549 0.533	Pearce
Jan. 6	17 32	39	10	10 10	10 10	+ 3.03 + 56.3	22 58 05.38 +19 07 09.6	9.693 0.684	Pearce
Jan. 6	17 59	17	11	10 10	10 10	+ 4.74 + 53.1	22 58 07.04 19 07 06.1	9.694 0.698	Jacobsen
Jan. 13	17 30	15	12	10 10	10 10	-10.90 + 41.1	23 13 52.89 18 17 40.5	9.690 0.690	Jacobsen
*Feb. 17	15 20	40	13	10 8	10 8	-11.02 -2 20.7	0 26 58.10 15 58 32.8	9.656 0.644	Jacobsen

* This observation was made with the 12-inch refractor

MEAN PLACES OF COMPARISON STARS FOR 1922.0

Star	α	Red. to App. place	δ	Red. to App. place	Authority
1	19 ^h 55 ^m 44".52	+1".82	+36° 37' 18".4	+32".6	Potsdam Photo. plate 920, Nr. 442
2	19 57 49.74	+1.82	+36 21 20.7	+32.6	A. G. Lund 8927
3	20 07 33.14	+1.83	+35 06 28.3	+32.4	Potsdam Photo. plate 615, Nr. 245
4	20 07 33.14	+1.83	+35 06 28.3	+32.4	Potsdam Photo plate 615, Nr. 245
5	20 41 16.24	+1.94	+31 13 40.1	+32.3	A. G. Leiden 8445
6	20 41 16.24	+1.94	+31 13 40.1	+32.3	A. G. Leiden 8445
7	20 55 38.53	+1.98	+29 28 04.7	+31.9	Micrometer Comparison with (8)
8	20 55 44.65	+1.98	+29 30 59.9	+31.9	A. G. Cambridge 11980

MEAN PLACES OF COMPARISON STARS FOR 1923.0

Star	α	Red. to App. place	δ	Red. to App. place	Authority
9	22 ^h 57 ^m 58. ^s 65	-0. ^s 53	+19° 09' 58".7	+ 6".1	A. G. Berlin A 9412
10	22 58 02.88	-0.53	+19 06 07.2	+ 6.1	A. G. Berlin A 9413
11	22 58 02.88	-0.53	+19 06 07.2	+ 6.1	A. G. Berlin A 9413
12	23 14 04.29	-0.51	+18 16 54.8	+ 4.5	A. G. Berlin A 9516
13	0 27 09.65	-0.52	+16 00 55.7	- 2.2	A. G. Berlin A 131

With the exception indicated above, all the observations were made with the 36-inch refractor, the measures of $\Delta\alpha$ and $\Delta\delta$ in every case being obtained directly with the micrometer. Corrections for differential refraction have been applied whenever they were appreciable. Acknowledgement is made to Mr. T. S.

Jacobsen for reducing his observations and duplicating part of the computation.

J. A. PEARCE.

Lick Observatory,
May 24, 1923.

Issued August 8, 1923.