

P/ Giclas 1978k

The following improved orbital elements, by S. Nakano,  
 are from 43 observations 1978 September 3 to 1979 January 24.  
 Perturbations by all nine planets were taken into account.  
 The mean residual is 1"50 and the mean error of period is  $\pm 0.001$  (year) ( $\pm 0.5$  day).

T = 1978 Nov. 21.1876 ET	Epoch = 1978 Nov. 28.0 ET
$\omega = 247^\circ 1992$	$e = 0.511655$
$\Omega = 141.5459$	$a = 3.546405$ AU
$i = 8.5458$	$n^o = 0.1475780$
$q = 1.731870$ AU	$P = 6.679$ years

The following residuals in seconds of arc are from the above elements:

Date/	$\Delta\alpha \cos\delta$	$\Delta\delta$	Observer
1978 Sept. 3.330 UT	- 0.1	- 4.2	Giclas
8.302	+ 1.3	- 1.6	"
10.338	+ 2.1	- 1.4	"
11.347	- 0.4	+ 0.1	"
12.367	+ 1.3	- 0.6	"
13.722	+ 0.4	+ 1.3	Perth Obs.
13.737	+ 2.3	+ 0.3	"
14.324	+ 3.4	+ 0.7	Shao
16.767	- 1.6	+ 3.3	Seki
16.779	+ 0.7	- 0.5	Perth Obs.
16.801	- 0.4	+ 0.1	"
21.717	+ 0.8	- 0.7	"
22.621	+ 0.1	+ 3.2	"
23.231	- 2.0	- 1.3	Giclas
24.591	- 0.1	+ 0.2	Perth Obs.
24.715	- 2.1	+ 1.8	Alma-Ata Obs.
24.735	+ 0.8	+ 2.3	"
24.868	+ 0.5	- 1.6	Mrkos
24.883	- 1.4	- 1.9	"
25.557	+ 1.8	+ 1.1	Perth Obs.
25.872	- 1.7	- 0.2	Mrkos
25.887	- 0.9	+ 0.2	"
26.157	- 0.7	+ 0.3	H.C.O.
27.263	- 0.1	- 1.8	Giclas
30.293	+ 0.7	0.0	"

continued

Date/		$\Delta\alpha \cos\delta$	$\Delta\delta$	Observer
1978	Sept. 30.599 UT	- 1.5	- 0.2	Seki
	30.616	- 0.9	+ 3.0	"
Oct.	2.521	+ 0.4	+ 1.0	Urata
	3.705	- 0.3	- 0.3	Perth Obs.
	7.308	+ 0.4	- 2.6	Giclas
	8.573	- 1.1	+ 1.2	Urata
	8.930	- 1.2	+ 0.7	Mrkos
	8.945	- 0.7	+ 0.5	"
	9.927	- 2.7	- 0.2	"
	9.941	- 2.4	- 0.1	"
	10.284	- 0.2	+ 2.0	Palomar Obs.
	10.325	+ 1.3	- 2.9	Giclas
	23.473	+ 0.6	+ 1.7	Seki
	23.551	- 0.5	- 2.2	"
	28.185	+ 2.3	- 1.7	Giclas
Nov.	20.154	+ 2.4	+ 0.9	"
Dec.	27.158	+ 1.3	0.0	"
1979	Jan. 24.117	- 0.7	- 1.0	"

1979 May 5

S. Nakano