The MINOR PLANET CIRCULARS/MINOR PLANETS AND COMETS are published, on behalf of Commission 20 of the International Astronomical Union, usually in batches on the date of each full moon, by:

Minor Planet Center
Smithsonian Astrophysical Observatory
Cambridge, MA 02138, U.S.A.

TWX 710-320-6842 ASTROGRAM CAM ** Brian G. Marsden, Director
Telephone 617-864-5758 ** Conrad M. Bardwell, Associate Director

EDITORIAL NOTICE.

The next MPCs will be published on or about Sept. 22. No MPCs will be issued in August.

Recent communications to the Minor Planet Center indicate that there is some confusion concerning future IAU policy. The following statement is issued following consultation with E. Roemer, President of Commission 20: "Contributors to these Circulars are advised that, although the new standard equinox 2000.0 (J2000.0) will be brought into use for some purposes as of 1984 Jan. 1, IAU Commission 20 points out that this equinox should not immediately and automatically be used in the publication of observations of comets and minor planets. In general, observations should be reduced exactly as hitherto, in terms of the standard equinox 1950.0 (B1950.0). An exception would be made for minor-planet observations of very high precision specifically referred to some new star catalogue that has been constructed with consideration of the new constant of precession, new theory of nutation, and changed procedure for handling the elliptical-aberration terms. The very great majority of observations are not of this type, however, and it is not appropriate simply to adjust by precession an observation made according to the old procedure. Likewise, orbital elements and ephemerides should continue to be published with reference to the 1950.0 equinox. It is anticipated that the 2000.0 equinox will be introduced in the work of IAU Commission 20 at some time in the future, but not until suitable star catalogues (and charts) are widely available."

* * * * *

ERRATA.

MPC	Line	
3935	20	For 1967 May L read 1967 May 6
5451	-23	For 1971 SU1 read 1977 SU1
5451	-22	For 1971 Sept. 19 read 1977 Sept. 19
6834	- 8	For 1981 Feb. 11 read 1980 Feb. 11
7619	24	For 1965 Jan. 30 read 1966 Jan. 30
7782	-12	For E. Helin read Q. Passey and S. J. Bus
7936	-15	Add The identification 6760 P-L = 1975 TR3 (JASA 3) is invalid.
7942	11	For 1981 XZ read 1961 XZ
7946	- 4	For 1965 UJ read 1975 UJ
8009	-10	For KHARACHKINA read KARACHKINA

CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Mag.	N Obs.
1106	1981 09	27.89962	00 40 08.54	+19 31 14.9	MPC 7309		1 095
1110	1981 09	27.89962	00 43 41.36	+15 45 14.7	MPC 7309		1 095
1112	1981 09	27.89962	00 42 54.63	+19 01 23.0	MPC 7309		1 095
1971	1981 09	27.89962	00 33 17.50	+17 22 52.8	MPC 7309		1 095
2097	1981 09	27.89962	00 57 00.47	+12 39 20.8	MPC 7309		1 095
2546	1981 09	27.89962	00 36 14.62	+17 47 21.5	MPC 7309	17.0	1 095
1981 RR2	1981 09	27.89962	00 33 21.08	+15 56 20.2	MPC 7309	16.5	3 095
1981 RS2	1981 09	27.89962	00 34 37.91	+16 08 49.0	MPC 7309	16.5	1 095
1981 RU2	1981 09	27.89962	00 47 13.80	+20 07 42.3	MPC 7309	16.5	1 095
1981 RV2	1981 09	27.89962	00 51 06.57	+22 13 31.4	MPC 7309	17.0	1 095
1981 SA3 *	1981 09	27.89962	00 21 37.32	+17 37 51.7	MPC 7309	17.0	1 095
1981 SB3 *	1981 09	27.89962	00 34 12.54	+17 19 09.2	MPC 7309	16.5	1 095
1981 SC3 *	1981 09	27.89962	00 39 21.14	+14 50 32.6	MPC 7309	17.5	1 095
1981 SD3 *	1981 09	27.89962	00 40 49.82	+18 32 33.2	MPC 7309	17.5	1 095
1981 SE3 *	1981 09	27.89962	00 42 09.46	+12 56 08.0	MPC 7309	17.0	1 095
1981 SF3 *	1981 09	27.89962	00 44 58.24	+21 07 40.4	MPC 7309	17.0	1 095
1981 SG3 *	1981 09	27.89962	00 52 21.70	+14 15 46.2	MPC 7309	16.5	1 095
1981 SH3 *	1981 09	27.89962	00 59 23.55	+19 31 44.4	MPC 7309	17.0	1 095

Note 1: time originally given as 1981 09 27.87878. 2: 1981 RR2 = (2866). 3 = 1 + 2.

* * * * *

IDENTIFICATION CHANGES.

Continuation to MPC 7983-7984.

Object	Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	N Obs.
1976 SY10*	1976 09	24.87933	23 24 23.63	-02 12 41.4	1976 QD1	17.0	095
1976 SY10	1976 09	28.82845	23 21 36.28	-02 31 12.4	1976 QD1	17.0	095

* * * * *

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

006 Fabra Observatory, Barcelona. Observers J. M. Codina, J. M. Mundet, J. Nunez and N. Torras.
012 Uccle. Observer H. Debehogne.
017 Hoher List. 0.3-m astrograph. Observer M. Geffert.
020 Nice. Observer B. Milet.
046 Klet. Observer A. Mrkos.
051 Cape Observatory. Observers T. W. Russo, J. Churms and J. v. B. Lourens.
056 Skalnate Pleso. Observer M. Antal.
063 Turku-Tuorla. Observers A. Niemi, T. Korhonen and J. Lehtinen.
073 Bucharest. Observers C. Cristescu, V. Ionescu and G. Bocsa.
075 Tartu. Observer H. K. Raudsaar.
076 Hartbeespoort. Observer J. Bruwer.
079 Pretoria. Observers A. D. Thackeray, P. J. Andrews, D. H. P. Jones and J. v. B. Lourens.
095 Crimean Astrophysical Observatory. Observers N. S. Chernykh, L. I.

Chernykh, T. M. Smirnova and V. D. D'yakonova.
123 Byurakan.
210 Alma-Ata.
323 Perth Observatory, Bickley.
330 Purple Mountain Observatory.
370 Kochi. Observer T. Seki.
372 Geisei. Observer T. Seki. In part from Orient. Astron. Assoc. Comet Bull. No. 248.
381 Tokyo Observatory's Kiso Station. Observer H. Kosai.
385 Nihondaira Observatory. Observer T. Urata.
413 Siding Spring. 1.2-m U.K. Schmidt Telescope Unit. Observer K. S. Russell.
474 Mt. John Observatory. 0.6-m reflector. Observer A. C. Gilmore. Measured by P. M. Kilmartin (assisted by R. McIntosh and W. M. Kissling).
485 Carter Observatory, Wellington. Observers A. C. Gilmore and P. M. Kilmartin.
490 Wimborne Minster. Observer M. Swan. 0.30-m reflector. Measured by P. Birtwhistle. Communicated by G. M. Hurst.
504 Le Creusot. Observer J.-C. Merlin. 0.26-m reflector. Measured by P. Birtwhistle. Communicated by G. M. Hurst.
578 Linden Observatory, Randburg. Observer J. Hers.
657 Climenhaga Observatory. Observers D. D. Balam and J. B. Tatum.
675 Palomar. Observations by J. Gibson with the 1.2-m Schmidt, except that S. Swanson measured the July 10 position of comet 1983j from a 1.2-m Schmidt exposure by S. van den Bergh and the July 9 position from a 0.46-m Schmidt exposure by E. Helin, Swanson and E. Miles.
688 Lowell Observatory, Anderson Mesa Station. Observer H. L. Giclas. Measured by E. Bowell.
707 Chamberlin Observatory, field station. Observer E. Everhart.
796 Stamford. Observer C. Scovil.
801 Oak Ridge Observatory. Observers R. E. McCrosky, G. Schwartz and C.-Y. Shao (assisted by C. M. Bardwell, D. W. E. Green and B. G. Marsden).
805 Cerro El Roble.
809 European Southern Observatory. Observer H. Debehogne.
821 Bosque Alegre.
822 Cordoba.
882 JCPM Oi Station. Observer K. Suzuki. Measured by T. Urata. From Nihondaira Obs. Circ. No. 1440.
890 JCPM Tone Station. Observer S. Furuyama. Measured by N. Ishiyama. From Japan Astron. Circ. No. 380.
984 West Chinnock. Observer H. B. Ridley. Measured by P. Birtwhistle.
993 Woolston Observatory. Observers R. L. Waterfield, M. Dykes and M. J. Hendrie. Measured by Waterfield and P. Birtwhistle.
999 Floirac.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N Obs.
		Comet Ikeya (1964 VIII)				
/1964 VIII	1964	07 18.82761	04 25 22.80	+14 56 27.4		330
/1964 VIII	1964	07 19.04722	04 25 39.23	+14 54 08.0		056
/1964 VIII	1964	07 20.04722	04 26 58.34	+14 43 37.7		056
/1964 VIII	1964	07 21.06389	04 28 27.34	+14 32 11.1		056
/1964 VIII	1964	08 14.72309	11 12 37.74	-19 42 42.7		076
/1964 VIII	1964	09 04.73091	14 44 57.45	-18 10 00.9		076
/1964 VIII	1964	09 04.75521	14 44 59.98	-18 09 49.0		076
		Comet Everhart (1964 IX)				
/1964 IX	1964	09 24.81780	16 29 03.43	+25 39 22.1		999
/1964 IX	1964	09 24.82357	16 29 04.03	+25 39 28.1		999

/1964 IX	1964	09	25.83403	16	30	40.02	+26	01	02.8	056
/1964 IX	1964	09	27.82188	16	33	50.75	+26	42	25.4	056
/1964 IX	1964	09	27.83229	16	33	51.73	+26	42	38.9	056
/1964 IX	1964	10	01.50188	16	39	52.28	+27	55	53.4	330
/1964 IX	1964	10	05.87873	16	47	16.88	+29	18	31.2	999
/1964 IX	1964	10	09.72222	16	54	02.20	+30	27	50.7	075
/1964 IX	1964	10	26.71389	17	27	00.29	+35	11	07.3	075
/1964 IX	1964	10	28.81035	17	31	28.17	+35	44	27.3	999
/1964 IX	1964	10	28.82385	17	31	29.84	+35	44	39.7	999
/1964 IX	1964	10	29.82081	17	33	39.20	+36	00	27.7	999
/1964 IX	1964	10	29.83501	17	33	41.10	+36	00	40.2	999

Periodic Comet Tsuchinshan 1

/1965 I	1965	01	08.64653	06	44	24.85	+27	48	35.7	330
/1965 I	1965	01	11.70069	06	44	25.61	+28	51	57.2	330
/1965 I	1965	01	26.57292	06	48	17.24	+33	27	10.6	330
/1965 I	1965	02	02.49722	06	53	06.79	+35	05	28.3	330
/1965 I	1965	02	23.60000	07	21	38.67	+37	41	20.4	330
/1965 I	1965	03	04.49653	07	38	48.77	+37	44	07.8	330

Periodic Comet Tsuchinshan 2

/1965 II	1965	01	14.90208	08	13	36.02	+17	14	41.9	330
/1965 II	1965	01	26.63194	08	06	13.37	+16	02	31.9	330
/1965 II	1965	02	02.60972	08	02	15.14	+15	22	45.9	330
/1965 II	1965	02	11.80556	07	58	40.64	+14	34	27.8	330
/1965 II	1965	02	23.48264	07	58	07.35	+13	39	31.6	330
/1965 II	1965	03	04.55139	08	01	07.32	+13	00	27.6	330

Comet Ikeya-Seki (1965 VIII)

/1965 VIII	1965	10	01.13368	09	43	52.65	-11	52	01.2	056
/1965 VIII	1965	10	01.14097	09	43	55.41	-11	52	08.0	056
/1965 VIII	1965	10	01.15087	09	43	59.13	-11	52	19.5	056
/1965 VIII	1965	10	01.15243	09	43	59.73	-11	52	20.5	056
/1965 VIII	1965	10	02.14340	09	50	21.45	-12	09	54.1	056
/1965 VIII	1965	10	02.14583	09	50	22.41	-12	09	57.2	056
/1965 VIII	1965	10	05.13801	10	11	47.12	-13	02	55.6	051
/1965 VIII	1965	10	06.14798	10	19	51.66	-13	20	43.7	056
/1965 VIII	1965	10	06.15104	10	19	53.22	-13	20	46.7	056
/1965 VIII	1965	10	06.15920	10	19	57.17	-13	20	54.4	056
/1965 VIII	1965	10	06.16094	10	19	58.24	-13	20	55.7	056
/1965 VIII	1965	10	11.14372	11	07	37.84	-14	34	40.3	051
/1965 VIII	1965	10	13.13368	11	30	57.90	-14	51	16.9	051
/1965 VIII	1965	11	01.11825	12	19	01.81	-18	21	37.0	051
/1965 VIII	1965	11	05.10799	12	02	54.07	-20	53	17.7	051
/1965 VIII	1965	11	14.09479	11	29	44.94	-26	13	45.8	051
/1965 VIII	1965	11	14.09583	11	29	44.97	-26	13	49.7	051
/1965 VIII	1965	11	23.08368	10	55	10.05	-31	08	01.1	051
/1965 VIII	1965	11	24.05499	10	51	09.22	-31	37	43.6	079
/1965 VIII	1965	11	24.08395	10	51	01.72	-31	38	38.1	079
/1965 VIII	1965	12	22.98605	08	22	03.32	-39	05	39.3	079
/1965 VIII	1965	12	23.92748	08	16	54.59	-39	00	31.4	079
/1965 VIII	1965	12	23.93691	08	16	51.63	-39	00	27.8	079

Comet Seki (1967 IV)

/1967 IV	1967	02	06.78710	18	31	26.72	+23	35	23.8	385
/1967 IV	1967	02	22.20502	21	22	39.07	+26	28	21.8	020

Periodic Comet Churyumov-Gerasimenko

/1969 IV	1969	10	31.40865	09	55	03.95	+19	00	29.1	796
/1969 IV	1969	11	13.43040	10	26	10.23	+17	20	34.4	796
/1969 IV	1969	11	13.44135	10	26	12.01	+17	20	34.9	796
/1969 IV	1969	12	07.05610	11	08	25.33	+15	11	54.4	123
/1969 IV	1969	12	07.99178	11	09	41.86	+15	08	47.1	210
/1969 IV	1969	12	08.10850	11	09	51.70	+15	08	30.6	123
/1969 IV	1969	12	09.07910	11	11	08.69	+15	05	28.8	123
/1969 IV	1969	12	11.08240	11	13	41.45	+14	59	59.6	123
/1982f	1983	01	17.86535	07	08	36.43	+39	50	19.9	504
/1982f	1983	01	17.87941	07	08	36.40	+39	50	15.2	504
/1982f	1983	04	05.80277	08	19	42.86	+29	10	01.6	095
/1982f	1983	04	05.81040	08	19	43.50	+29	09	56.6	095
/1982f	1983	04	12.82627	08	30	02.68	+28	04	15.6	095
/1982f	1983	04	12.83321	08	30	03.46	+28	04	11.3	095

Comet Bennett (1970 II)

/1970 II	1970	03	28.83698	22	12	47.30	+09	52	48.0	370
/1970 II	1970	03	30.83955	22	17	32.80	+15	50	29.0	370
/1970 II	1970	04	02.06858	22	23	53.17	+22	03	34.7	073
/1970 II	1970	04	02.12502	22	24	03.11	+22	12	37.4	073
/1970 II	1970	04	04.10329	22	30	31.42	+27	15	09.0	073
/1970 II	1970	04	05.83420	22	36	43.70	+31	16	39.0	370
/1970 II	1970	04	10.00770	22	53	26.61	+39	30	01.7	095
/1970 II	1970	04	10.01614	22	53	28.81	+39	30	54.7	095
/1970 II	1970	04	26.07789	00	08	53.60	+57	03	17.7	012
/1970 II	1970	04	26.07893	00	08	53.78	+57	03	18.9	012
/1970 II	1970	04	26.07992	00	08	54.04	+57	03	19.1	012
/1970 II	1970	04	26.08449	00	08	55.35	+57	03	33.5	012
/1970 II	1970	04	26.08657	00	08	56.02	+57	03	38.7	012
/1970 II	1970	04	26.08831	00	08	56.69	+57	03	41.0	012
/1970 II	1970	04	26.09537	00	08	58.82	+57	04	00.1	012
/1970 II	1970	04	26.09635	00	08	59.12	+57	04	01.0	012
/1970 II	1970	04	30.06007	00	27	57.09	+59	20	21.1	012
/1970 II	1970	04	30.06087	00	27	57.54	+59	20	24.7	012
/1970 II	1970	04	30.06180	00	27	57.75	+59	20	26.0	012
/1970 II	1970	04	30.06480	00	27	58.58	+59	20	32.3	012
/1970 II	1970	05	02.92375	00	41	23.38	+60	41	47.8	006
/1970 II	1970	05	05.04424	00	51	09.94	+61	34	42.1	012
/1970 II	1970	05	05.04632	00	51	10.30	+61	34	46.8	012
/1970 II	1970	05	05.04843	00	51	11.03	+61	34	49.2	012
/1970 II	1970	05	05.05051	00	51	11.59	+61	34	50.3	012
/1970 II	1970	05	05.06436	00	51	15.72	+61	35	11.3	012
/1970 II	1970	05	05.06574	00	51	16.23	+61	35	15.3	012
/1970 II	1970	05	05.06713	00	51	16.27	+61	35	15.7	012
/1970 II	1970	05	05.06852	00	51	16.55	+61	35	15.6	012
/1970 II	1970	05	06.05745	00	55	46.07	+61	57	57.7	012
/1970 II	1970	05	06.05883	00	55	46.57	+61	58	01.2	012
/1970 II	1970	05	06.06022	00	55	46.81	+61	58	04.2	012
/1970 II	1970	05	06.06160	00	55	47.10	+61	58	04.6	012
/1970 II	1970	05	06.07199	00	55	49.99	+61	58	18.9	012
/1970 II	1970	05	06.07337	00	55	50.50	+61	58	21.3	012
/1970 II	1970	05	06.07476	00	55	50.71	+61	58	23.2	012
/1970 II	1970	05	06.07614	00	55	51.03	+61	58	24.9	012
/1970 II	1970	05	07.04086	01	00	11.97	+62	19	33.8	012
/1970 II	1970	05	07.06371	01	00	17.80	+62	20	00.3	012
/1970 II	1970	05	07.06510	01	00	18.60	+62	20	03.0	012
/1970 II	1970	05	07.06648	01	00	18.78	+62	20	03.6	012
/1970 II	1970	05	07.06787	01	00	19.08	+62	20	05.3	012

/1970 II	1970	05	09.05656	01	09	08.01	+63	00	30.7	012
/1970 II	1970	05	09.05812	01	09	08.02	+63	00	27.4	012
/1970 II	1970	05	09.05939	01	09	08.51	+63	00	33.1	012
/1970 II	1970	05	09.06071	01	09	09.08	+63	00	33.7	012
/1970 II	1970	05	09.06718	01	09	11.09	+63	00	43.1	012
/1970 II	1970	06	01.89901	02	39	56.72	+67	59	29.5	006
/1970 II	1970	06	01.90734	02	39	58.51	+67	59	35.5	006
/1970 II	1970	07	26.76910	04	39	23.88	+75	05	36.2	370

Periodic Comet d’Arrest

/1970 VII	1970	07	15.39242	03	30	31.16	+07	15	37.6	822
/1970 VII	1970	07	15.40700	03	30	33.45	+07	15	40.8	822
/1976 XI	1976	06	25.71552	18	53	28.35	+21	46	49.1	210
/1976 XI	1976	06	26.81433	18	54	47.38	+21	52	35.1	210
/1976 XI	1976	06	28.77115	18	57	15.86	+22	00	09.8	210
/1976 XI	1976	07	01.77004	19	01	20.90	+22	04	51.1	210
/1976 XI	1976	07	03.89512	19	04	29.58	+22	02	28.5	210
/1976 XI	1976	07	04.89645	19	06	04.32	+21	59	29.3	210
/1976 XI	1976	07	05.84827	19	07	38.66	+21	55	35.2	210
/1976 XI	1976	07	08.85893	19	12	58.64	+21	35	04.5	210
/1976 XI	1976	07	15.69219	19	27	55.90	+19	53	44.9	210
/1976 XI	1976	07	15.69410	19	27	55.92	+19	53	41.1	210
/1976 XI	1976	07	17.73231	19	33	17.71	+19	05	09.4	210
/1976 XI	1976	07	18.74730	19	36	08.87	+18	37	16.9	210
/1976 XI	1976	07	27.72335	20	07	45.68	+12	15	41.7	210
/1976 XI	1976	07	27.72531	20	07	46.12	+12	15	36.1	210
/1976 XI	1976	07	27.72705	20	07	46.52	+12	15	29.1	210
/1976 XI	1976	07	29.79790	20	16	55.56	+10	06	08.2	210
/1976 XI	1976	07	29.79976	20	16	55.95	+10	06	01.8	210
/1976 XI	1976	07	29.80149	20	16	56.42	+10	05	52.0	210
/1976 XI	1976	08	01.66168	20	30	56.47	+06	37	55.2	210
/1976 XI	1976	08	01.66411	20	30	57.01	+06	37	45.2	210
/1976 XI	1976	08	01.66596	20	30	57.78	+06	37	37.7	210
/1976 XI	1976	08	03.94446	20	43	10.44	+03	27	31.8	993
/1976 XI	1976	08	06.88716	21	00	22.44	-01	06	04.6	578
/1976 XI	1976	08	06.90799	21	00	29.73	-01	08	06.9	578
/1976 XI	1976	08	14.21453	21	48	46.72	-13	53	27.8	809
/1976 XI	1976	08	14.26093	21	49	04.98	-13	58	21.8	809
/1976 XI	1976	08	14.26647	21	49	07.36	-13	58	56.4	809
/1976 XI	1976	08	14.26924	21	49	08.42	-13	59	15.9	809
/1976 XI	1976	08	14.27201	21	49	09.50	-13	59	32.2	809
/1976 XI	1976	08	15.03727	21	54	35.20	-15	19	52.3	809
/1976 XI	1976	08	15.04836	21	54	39.81	-15	20	56.9	809
/1976 XI	1976	08	15.09060	21	54	57.00	-15	25	28.7	809
/1976 XI	1976	08	15.36866	21	56	48.73	-15	54	21.7	809
/1976 XI	1976	08	18.14379	22	16	25.16	-20	32	40.6	809
/1976 XI	1976	08	18.14629	22	16	26.17	-20	32	55.1	809
/1976 XI	1976	08	18.14993	22	16	27.64	-20	33	15.9	809
/1976 XI	1976	08	18.15374	22	16	29.18	-20	33	37.9	809
/1976 XI	1976	08	18.16274	22	16	32.86	-20	34	29.3	809
/1976 XI	1976	08	18.20429	22	16	49.51	-20	38	31.1	809
/1976 XI	1976	08	19.15552	22	23	30.19	-22	08	00.2	809
/1976 XI	1976	08	19.15863	22	23	31.54	-22	08	17.8	809
/1976 XI	1976	08	19.16140	22	23	32.53	-22	08	33.6	809
/1976 XI	1976	08	19.20296	22	23	49.12	-22	12	24.2	809
/1976 XI	1976	08	20.20818	22	30	48.14	-23	43	00.7	809
/1976 XI	1976	08	20.21061	22	30	49.03	-23	43	13.0	809
/1976 XI	1976	08	20.24246	22	31	01.62	-23	46	00.8	809
/1976 XI	1976	08	20.28402	22	31	18.11	-23	49	40.0	809

/1976 XI	1976	08	20.55796	22	33	12.37	-24	13	21.7	485
/1976 XI	1976	08	21.13066	22	37	10.34	-25	02	23.7	809
/1976 XI	1976	08	21.13309	22	37	11.29	-25	02	35.9	809
/1976 XI	1976	08	21.13863	22	37	13.40	-25	03	04.7	809
/1976 XI	1976	08	22.15113	22	44	05.47	-26	25	56.7	809
/1976 XI	1976	08	22.15320	22	44	06.22	-26	26	06.6	809
/1976 XI	1976	08	22.15429	22	44	06.74	-26	26	13.7	809
/1976 XI	1976	08	22.19614	22	44	22.68	-26	29	32.9	809
/1976 XI	1976	08	22.39682	22	45	45.20	-26	45	07.0	485
/1976 XI	1976	08	23.14148	22	50	42.17	-27	42	29.2	809
/1976 XI	1976	08	23.18303	22	50	57.79	-27	45	40.6	809
/1976 XI	1976	08	23.18511	22	50	58.54	-27	45	49.0	809
/1976 XI	1976	09	18.68401	00	42	19.03	-40	38	27.3	485
/1976 XI	1976	09	28.67627	00	57	04.53	-40	02	16.4	323
/1976 XI	1976	09	28.67869	00	57	04.72	-40	02	14.9	323
/1976 XI	1976	09	28.68201	00	57	04.86	-40	02	13.2	323
/1976 XI	1976	10	20.71730	01	10	49.87	-35	02	46.8	323
/1976 XI	1976	12	14.58542	01	45	33.5	-16	20	22	372

Periodic Comet Pons-Winnecke

/1970 VIII	1970	08	22.47500	15	42	14.93	-32	47	06.3	323
/1970 VIII	1970	08	22.48889	15	42	17.70	-32	47	34.6	323

Periodic Comet du Toit-Neujmin-Delporte

/1970 XIII	1970	07	31.98955	15	32	27.24	-14	53	50.1	821
/1970 XIII	1970	08	01.00882	15	32	28.62	-14	53	58.1	821
/1970 XIII	1970	08	01.02745	15	32	29.66	-14	54	02.4	821
/1970 XIII	1970	08	01.08469	15	32	33.49	-14	54	19.1	821
/1970 XIII	1970	08	05.04840	15	37	33.81	-15	16	21.6	821
/1970 XIII	1970	08	05.07965	15	37	36.19	-15	16	32.0	821
/1983g	1983	07	10.39759	23	47	10.73	+01	57	36.6	707

Periodic Comet Tempel 1

/1972 V	1972	03	13.95657	12	53	14.49	+16	03	51.6	046
/1972 V	1972	03	13.97098	12	53	14.16	+16	03	58.2	046
/1972 V	1972	03	14.97986	12	52	40.58	+16	11	09.6	046
/1972 V	1972	03	14.99444	12	52	39.99	+16	11	15.2	046
/1972 V	1972	03	15.99247	12	52	04.99	+16	18	16.7	046
/1972 V	1972	03	16.00670	12	52	04.55	+16	18	21.8	046
/1972 V	1972	03	16.96468	12	51	29.44	+16	25	00.3	046
/1972 V	1972	03	16.97909	12	51	28.84	+16	25	04.9	046
/1972 V	1972	03	17.98333	12	50	50.18	+16	31	53.6	046
/1972 V	1972	03	17.99792	12	50	49.57	+16	32	00.1	046
/1972 V	1972	03	18.97317	12	50	10.49	+16	38	25.8	046
/1972 V	1972	03	18.98741	12	50	09.86	+16	38	32.2	046
/1972 V	1972	03	19.93638	12	49	30.37	+16	44	40.0	046
/1972 V	1972	03	19.95096	12	49	29.83	+16	44	44.2	046
/1972 V	1972	03	20.89191	12	48	49.16	+16	50	40.1	046
/1972 V	1972	03	20.90858	12	48	48.37	+16	50	45.2	046
/1972 V	1972	03	21.01656	12	48	43.51	+16	51	26.0	046
/1972 V	1972	03	21.03115	12	48	42.70	+16	51	30.9	046
/1972 V	1972	04	04.71694	12	35	56.60	+17	52	41.6	210
/1972 V	1972	04	11.78205	12	29	15.58	+17	53	49.6	210
/1972 V	1972	06	16.05834	12	39	23.22	+02	11	59.0	821
/1972 V	1972	06	16.06072	12	39	23.48	+02	11	56.6	821
/1972 V	1972	06	16.98677	12	40	41.39	+01	50	40.1	821
/1972 V	1972	07	05.01442	13	10	55.38	-05	16	07.7	821
/1972 V	1972	07	05.01719	13	10	55.68	-05	16	11.8	821
/1972 V	1972	07	05.01997	13	10	56.02	-05	16	15.9	821

/1972 V	1972	07	08.00139	13	16	46.74	-06	27	56.0		821
/1972 V	1972	07	08.00348	13	16	47.01	-06	27	59.2		821
/1972 V	1972	07	08.00551	13	16	47.30	-06	28	02.0		821
/1972 V	1972	07	09.01894	13	18	49.53	-06	52	23.4		821
/1972 V	1972	07	09.02160	13	18	49.78	-06	52	27.0		821
/1972 V	1972	07	09.02403	13	18	50.09	-06	52	30.6		821
/1972 V	1972	07	10.00692	13	20	50.19	-07	16	06.3		821
/1972 V	1972	07	10.00935	13	20	50.44	-07	16	10.0		821
/1972 V	1972	07	10.01189	13	20	50.77	-07	16	13.3		821
/1982j	1983	03	13.96090	13	11	01.18	+13	58	36.1		095
/1982j	1983	04	10.86780	12	51	35.11	+15	53	35.7		095
/1982j	1983	04	12.89244	12	49	43.82	+15	52	07.6		095
/1982j	1983	05	13.86134	12	31	36.08	+11	24	06.4	10.4T	046
/1982j	1983	05	13.86852	12	31	36.00	+11	24	05.0		046
/1982j	1983	05	13.94831	12	31	35.30	+11	22	44.7		993
/1982j	1983	05	14.77778	12	31	34.41	+11	09	39.5		095
/1982j	1983	05	14.78495	12	31	34.48	+11	09	31.7		095
/1982j	1983	05	16.85035	12	31	38.41	+10	35	40.4		046
/1982j	1983	05	16.85903	12	31	38.39	+10	35	37.3		046
/1982j	1983	05	30.80608	12	36	57.30	+06	11	53.3		095
/1982j	1983	05	30.81603	12	36	57.68	+06	11	40.9		095
/1982j	1983	06	03.06630	12	39	22.61	+05	02	58.6		801
/1982j	1983	06	03.81597	12	39	59.48	+04	46	46.1		095
/1982j	1983	06	03.82292	12	39	59.82	+04	46	36.7		095
/1982j	1983	06	05.79861	12	41	43.86	+04	03	27.8		095
/1982j	1983	06	05.80590	12	41	44.20	+04	03	18.5		095
/1982j	1983	06	07.26779	12	43	07.27	+03	30	53.7		657
/1982j	1983	06	10.53905	12	46	30.17	+02	17	07.9		381
/1982j	1983	06	11.50781	12	47	35.40	+01	54	55.2		381
/1982j	1983	06	11.53479	12	47	37.18	+01	54	13.9		381
/1982j	1983	06	14.49045	12	51	08.28	+00	45	47.1		381
/1982j	1983	06	14.50641	12	51	09.42	+00	45	26.0		381

Comet Sandage (1972 IX)

/1972 IX	1972	08	21.65564	15	14	12.26	+24	21	14.8		210
/1972 IX	1972	08	21.73098	15	14	13.82	+24	21	14.4		210
/1972 IX	1972	08	29.66922	15	17	33.11	+24	14	06.1		210
/1972 IX	1972	09	01.63615	15	18	59.86	+24	11	16.9		210

Comet Araya (1972 XII)

/1972 XII	1973	02	25.05066	02	44	17.43	-48	03	44.5		821
/1972 XII	1973	02	25.06594	02	44	17.17	-48	03	35.4		821
/1972 XII	1973	02	26.04084	02	44	00.56	-47	54	36.3		821
/1972 XII	1973	02	26.05682	02	44	00.34	-47	54	27.5		821
/1972 XII	1973	08	27.36652	02	29	38.54	-55	43	34.7		805
/1972 XII	1973	10	24.17237	00	24	14.06	-59	38	27.8		821
/1972 XII	1973	10	24.18817	00	24	12.09	-59	38	21.9		821
/1972 XII	1975	06	17.27011	22	10	05.35	-24	51	54.7	1	821
/1972 XII	1975	06	17.30622	22	10	04.36	-24	51	45.0	1	821

Periodic Comet Clark

/1973 V	1973	06	28.28713	21	11	04.49	-34	49	55.3		821
/1973 V	1973	06	28.28852	21	11	04.53	-34	49	56.1		821
/1973 V	1973	06	28.28991	21	11	04.60	-34	49	57.0		821
/1973 V	1973	06	28.29130	21	11	04.58	-34	49	58.3		821
/1973 V	1973	06	28.29269	21	11	04.68	-34	50	00.2		821
/1973 V	1973	06	28.29546	21	11	04.75	-34	50	01.0		821
/1973 V	1973	06	28.29685	21	11	04.74	-34	50	02.0		821
/1973 V	1973	06	28.29824	21	11	04.79	-34	50	02.7		821

/1973 V	1973 06 28.29963	21 11 04.87	-34 50 04.2			821
/1973 V	1973 06 28.30102	21 11 04.89	-34 50 04.9			821
/1973 V	1973 08 23.13510	20 57 15.34	-38 23 24.3			821
/1973 V	1973 08 23.14204	20 57 15.22	-38 23 21.5			821
/1973 V	1973 08 23.14899	20 57 15.10	-38 23 18.8			821
/1973 V	1973 08 23.15593	20 57 14.97	-38 23 16.5			821
/1978 XXIII	1978 04 27.55730	10 32 40.2	+21 32 06			372

Periodic Comet Tuttle-Giacobini-Kresak

/1973 VI	1973 07 06.87708	12 45 42.97	+14 56 36.6			056
/1973 VI	1973 07 07.88507	12 49 56.63	+14 32 57.7			056
/1973 VI	1973 07 07.89653	12 49 59.49	+14 32 39.9			056
/1973 VI	1973 07 09.88058	12 58 14.96	+13 45 26.8			056
/1973 VI	1973 07 10.86111	13 02 17.79	+13 21 51.1			056
/1973 VI	1973 07 10.86667	13 02 19.45	+13 21 42.0			056
/1973 VI	1973 07 10.87778	13 02 22.14	+13 21 25.3			056
/1973 VI	1973 07 29.71057	14 15 26.23	+05 33 02.5			210
/1973 VI	1973 07 30.67646	14 18 56.18	+05 09 19.3			210
/1973 VI	1973 08 01.67042	14 26 05.85	+04 20 48.0			210
/1973 VI	1973 08 04.66674	14 36 39.57	+03 09 00.1			210
/1973 VI	1973 08 05.67743	14 40 11.37	+02 45 12.4			210

Comet Gibson (1973 IX)

/1973 IX	1974 01 15.09223	02 09 18.77	-53 41 30.0			821
/1973 IX	1974 01 15.10820	02 09 18.34	-53 41 26.5			821
/1973 IX	1974 01 16.10297	02 08 39.76	-53 37 16.0			821
/1973 IX	1974 01 16.13006	02 08 38.70	-53 37 09.8			821
/1973 IX	1974 01 17.07650	02 08 04.03	-53 33 08.6			821
/1973 IX	1974 01 17.08067	02 08 03.87	-53 33 07.7			821
/1973 IX	1974 07 26.71528	04 40 53.96	-68 55 32.6			485

Comet Kohoutek (1973 XII)

/1973 XII	1973 05 29.98429	08 15 01.09	+08 31 38.7			821
/1973 XII	1973 05 29.98777	08 15 01.18	+08 31 39.1			821
/1973 XII	1973 05 30.95464	08 15 30.99	+08 32 03.4			821
/1973 XII	1973 05 30.95742	08 15 31.11	+08 32 03.4			821
/1973 XII	1973 11 04.21725	11 42 54.04	-08 53 44.0			012
/1973 XII	1973 11 06.20643	11 48 42.50	-09 32 23.8			012
/1973 XII	1973 11 06.32743	11 49 03.89	-09 34 41.6			822
/1973 XII	1973 11 06.33166	11 49 04.85	-09 34 46.2			822
/1973 XII	1973 11 07.20836	11 51 43.98	-09 52 23.3			012
/1973 XII	1973 11 08.19666	11 54 47.39	-10 12 29.6			006
/1973 XII	1973 11 12.20822	12 07 58.72	-11 38 05.4			012
/1973 XII	1973 11 17.20599	12 26 30.96	-13 34 03.2			012
/1973 XII	1973 11 17.20945	12 26 31.70	-13 34 06.3			012
/1973 XII	1973 11 17.21741	12 26 33.63	-13 34 19.8			012
/1973 XII	1973 11 19.32332	12 35 12.85	-14 26 15.7			822
/1973 XII	1973 11 19.32645	12 35 13.57	-14 26 21.3			822
/1973 XII	1973 11 20.31117	12 39 28.06	-14 51 19.3			822
/1973 XII	1973 11 20.31395	12 39 28.89	-14 51 23.7			822
/1973 XII	1973 11 21.21446	12 43 28.54	-15 14 45.8			012
/1973 XII	1973 11 21.22450	12 43 31.20	-15 15 00.7			012
/1973 XII	1973 11 25.33091	13 03 19.29	-17 04 44.6			805
/1973 XII	1973 11 25.33369	13 03 20.04	-17 04 48.8			805
/1973 XII	1973 11 25.33629	13 03 20.86	-17 04 54.8			805
/1973 XII	1973 11 25.33837	13 03 21.54	-17 04 58.2			805
/1973 XII	1973 11 28.31499	13 19 33.69	-18 28 09.4			822
/1973 XII	1973 11 28.31638	13 19 34.18	-18 28 12.4			822
/1973 XII	1973 11 29.31152	13 25 23.15	-18 56 29.5			822

/1973 XII	1973	11	29.31291	13	25	23.66	-18	56	32.7	822
/1973 XII	1973	12	01.24083	13	37	16.73	-19	51	54.2	012
/1973 XII	1973	12	03.30457	13	50	59.92	-20	50	51.1	822
/1973 XII	1973	12	03.30596	13	51	00.52	-20	50	52.9	822
/1973 XII	1973	12	05.32402	14	05	30.02	-21	47	57.7	822
/1973 XII	1973	12	05.32541	14	05	30.70	-21	48	00.3	822
/1973 XII	1973	12	08.32054	14	29	11.91	-23	09	03.8	822
/1973 XII	1973	12	08.32193	14	29	12.48	-23	09	06.4	822
/1973 XII	1973	12	10.32749	14	46	38.90	-23	58	58.3	822
/1973 XII	1973	12	10.32888	14	46	39.62	-23	59	00.4	822
/1973 XII	1973	12	17.33218	15	58	34.72	-25	56	12.0	822
/1973 XII	1973	12	17.33385	15	58	35.80	-25	56	12.6	822
/1973 XII	1973	12	19.34609	16	22	38.63	-26	03	31.5	822
/1973 XII	1973	12	19.34745	16	22	39.26	-26	03	35.1	822
/1973 XII	1974	01	07.72224	20	53	07.60	-13	35	16.7	012
/1973 XII	1974	01	11.73088	21	40	06.03	-09	56	58.1	012
/1973 XII	1974	01	11.73556	21	40	09.32	-09	56	40.9	012
/1973 XII	1974	01	11.75218	21	40	20.97	-09	55	44.5	012
/1973 XII	1974	01	11.75495	21	40	22.86	-09	55	33.9	012
/1973 XII	1974	01	13.72611	22	03	04.00	-08	01	31.4	012
/1973 XII	1974	01	13.74741	22	03	18.58	-08	00	17.6	012
/1973 XII	1974	01	13.76726	22	03	32.10	-07	59	06.5	012
/1973 XII	1974	01	16.73506	22	36	40.11	-05	04	35.3	012
/1973 XII	1974	01	16.73685	22	36	41.32	-05	04	29.9	012
/1973 XII	1974	01	20.70175	23	18	05.73	-01	18	14.3	063
/1973 XII	1974	01	20.77989	23	18	52.23	-01	13	56.3	012
/1973 XII	1974	01	25.78736	00	04	59.64	+02	59	26.4	012
/1973 XII	1974	01	25.78892	00	05	00.28	+02	59	30.7	012
/1973 XII	1974	01	25.79324	00	05	02.52	+02	59	42.1	012
/1973 XII	1974	01	25.79654	00	05	04.14	+02	59	51.2	012
/1973 XII	1974	01	27.75298	00	21	06.70	+04	26	12.0	012
/1973 XII	1974	01	27.76909	00	21	14.39	+04	26	51.8	012
/1973 XII	1974	01	29.76415	00	36	28.60	+05	47	22.4	012
/1973 XII	1974	01	29.77800	00	36	34.68	+05	47	55.1	012
/1973 XII	1974	01	29.79531	00	36	42.32	+05	48	32.6	012
/1973 XII	1974	01	30.71690	00	43	22.18	+06	23	13.4	095
/1973 XII	1974	01	30.72170	00	43	24.26	+06	23	22.9	095
/1973 XII	1974	01	30.75068	00	43	36.86	+06	24	25.1	012
/1973 XII	1974	01	31.75090	00	50	35.38	+07	00	13.1	012
/1973 XII	1974	01	31.76405	00	50	40.60	+07	00	41.9	012
/1973 XII	1974	02	01.74781	00	57	17.46	+07	34	09.5	012
/1973 XII	1974	02	02.74994	01	03	47.27	+08	06	38.5	012

Periodic Comet Schwassmann-Wachmann 1

/1974 II	1970	08	04.98382	14	46	51.76	-26	14	46.0	821
/1974 II	1970	08	05.01438	14	46	52.13	-26	14	45.2	821
/1974 II	1972	06	16.08473	19	30	45.91	-28	25	39.1	821
/1974 II	1972	06	16.10904	19	30	45.24	-28	25	41.2	821
/1974 II	1972	06	17.27910	19	30	14.89	-28	26	28.5	821
/1974 II	1972	06	17.29507	19	30	14.45	-28	26	29.1	821
/1974 II	1972	06	19.26645	19	29	22.01	-28	27	47.1	821
/1974 II	1972	06	19.28242	19	29	21.51	-28	27	47.5	821
/1974 II	1972	07	08.22765	19	19	50.75	-28	36	27.9	821
/1974 II	1972	07	08.24281	19	19	50.31	-28	36	28.0	821
/1974 II	1972	07	09.23090	19	19	18.51	-28	36	38.5	821
/1974 II	1972	07	09.26817	19	19	17.22	-28	36	43.7	821
/1974 II	1972	08	10.17328	19	03	53.10	-28	25	12.3	821
/1974 II	1972	08	10.18786	19	03	52.77	-28	25	12.2	821

/1974 II	1973	06	28.37444	21 42 45.65	-14 39 33.2			821
/1974 II	1973	06	28.39684	21 42 45.34	-14 39 33.5			821
				Comet Bennett (1974 XV)				
/1974 XV	1974	11	15.09337	11 17 14.78	-35 16 16.0			578
/1974 XV	1974	11	24.62116	11 24 25.53	-46 13 38.9			485
				Periodic Comet Smirnova-Chernykh				
/1975 VII	1976	05	17.46042	13 31 30.05	-02 48 37.1			323
				Periodic Comet Gunn				
/1976 III	1983	06	22.41181	23 11 49.08	-18 19 49.5			707
				Comet Bowell (1980b)				
/1980b	1983	07	08.41944	22 22 31.84	-11 13 10.2			707
				Periodic Comet Tempel 2				
/1982d	1983	06	19.40868	00 41 32.42	-02 04 26.2			707
				Periodic Comet Kopff				
/1982k	1983	04	12.34047	15 46 01.76	-11 01 24.4			801
/1982k	1983	05	13.92911	15 39 38.05	-09 25 11.4		11.0T	046
/1982k	1983	05	31.57951	15 29 07.32	-09 11 32.5			882
/1982k	1983	06	01.88137	15 28 25.04	-09 13 12.5		9.8T	046
/1982k	1983	06	01.89549	15 28 24.53	-09 13 13.0			046
/1982k	1983	06	03.31713	15 27 40.20	-09 15 24.5			657
/1982k	1983	06	06.15828	15 26 18.75	-09 21 22.0			801
/1982k	1983	06	06.29229	15 26 15.29	-09 21 44.3			657
/1982k	1983	06	07.30507	15 25 49.01	-09 24 19.9			657
/1982k	1983	06	09.98125	15 24 46.98	-09 32 40.0			984
/1982k	1983	06	10.56190	15 24 34.84	-09 34 41.3			381
/1982k	1983	06	11.57168	15 24 15.76	-09 38 30.6			381
/1982k	1983	06	11.60540	15 24 15.08	-09 38 38.0			381
/1982k	1983	06	14.54183	15 23 30.63	-09 51 14.0			381
/1982k	1983	06	14.57656	15 23 30.03	-09 51 23.4			381
/1982k	1983	06	30.30243	15 25 02.19	-11 35 49.0			657
/1982k	1983	07	02.26563	15 25 56.21	-11 52 40.0			707
/1982k	1983	07	05.26247	15 27 38.66	-12 19 56.7			657
				Periodic Comet Bowell-Skiff				
/1983c	1983	03	06.46461	09 18 18.77	+17 41 45.1			474
/1983c	1983	03	06.49319	09 18 18.73	+17 41 37.5			474
/1983c	1983	03	21.40395	09 20 28.83	+16 32 13.3			474
/1983c	1983	03	21.43253	09 20 29.46	+16 32 01.9			474
/1983c	1983	06	06.07946	10 53 59.52	+05 00 19.3			801
				Comet IRAS-Araki-Alcock (1983d)				
/1983d	1983	05	08.98125	17 35 58.88	+66 57 09.3			490
/1983d	1983	05	08.98264	17 35 52.94	+66 57 34.0			490
/1983d	1983	05	10.78167	11 12 13.29	+67 09 14.6			095
/1983d	1983	05	10.78514	11 11 20.87	+67 04 05.2			095
/1983d	1983	05	10.78862	11 10 28.45	+66 58 53.6			095
/1983d	1983	05	10.79869	11 07 57.38	+66 43 36.4			095
/1983d	1983	05	10.80008	11 07 36.86	+66 41 28.7			095
/1983d	1983	05	10.80146	11 07 16.31	+66 39 21.3			095
/1983d	1983	05	10.88766	10 47 15.24	+64 17 18.8			095
/1983d	1983	05	10.88974	10 46 48.06	+64 13 38.5			095
/1983d	1983	05	10.89182	10 46 20.93	+64 09 58.2			095
/1983d	1983	05	10.89391	10 45 54.07	+64 06 18.1			095

/1983d	1983	05	10.90287	10	43	58.89	+63	50	19.9				095
/1983d	1983	05	10.90634	10	43	14.93	+63	44	06.1				095
/1983d	1983	05	10.90982	10	42	30.97	+63	37	49.3				095
/1983d	1983	05	10.94974	10	34	23.36	+62	23	52.3				095
/1983d	1983	05	10.95148	10	34	02.72	+62	20	34.6				095
/1983d	1983	05	10.95356	10	33	38.33	+62	16	36.8				095
/1983d	1983	05	10.95846	10	32	40.94	+62	07	15.9				095
/1983d	1983	05	10.96050	10	32	17.19	+62	03	20.3				095
/1983d	1983	05	10.96259	10	31	52.82	+61	59	20.1				095
/1983d	1983	05	10.96467	10	31	28.65	+61	55	18.3				095
/1983d	1983	05	10.96675	10	31	05.00	+61	51	20.5				095
/1983d	1983	05	11.77297	08	59	42.19	+29	18	01.6				095
/1983d	1983	05	11.77505	08	59	34.17	+29	12	44.1				095
/1983d	1983	05	11.77714	08	59	26.03	+29	07	25.7				095
/1983d	1983	05	11.77922	08	59	17.96	+29	02	12.6				095
/1983d	1983	05	11.78130	08	59	09.98	+28	56	54.8				095
/1983d	1983	05	11.82036	08	56	43.63	+27	18	45.4				095
/1983d	1983	05	11.82244	08	56	35.94	+27	13	33.1				095
/1983d	1983	05	11.82453	08	56	28.50	+27	08	19.4				095
/1983d	1983	05	11.82661	08	56	20.92	+27	03	10.9				095
/1983d	1983	05	11.82869	08	56	13.25	+26	57	59.6				095
/1983d	1983	05	11.85716	08	54	32.38	+25	47	30.6				095
/1983d	1983	05	11.85994	08	54	22.70	+25	40	38.4				095
/1983d	1983	05	11.86271	08	54	13.11	+25	33	51.4				095
/1983d	1983	05	11.86549	08	54	03.44	+25	26	59.7				095
/1983d	1983	05	11.90226	08	52	00.62	+23	58	24.7				006
/1983d	1983	05	11.90434	08	51	53.35	+23	53	20.5				006
/1983d	1983	05	11.95104	08	49	22.89	+22	02	05.4				006
/1983d	1983	05	11.95538	08	49	09.13	+21	51	45.4				006
/1983d	1983	06	16.33936	07	19	51.84	-42	54	13.2				474
/1983d	1983	06	16.35626	07	19	51.68	-42	54	17.3				474
/1983d	1983	07	11.34444	07	19	53.40	-45	05	42.1		16	T	474
/1983d	1983	07	12.34411	07	19	56.01	-45	13	01.0		16	T	474

Comet Sugano-Saigusa-Fujikawa (1983e)

/1983e	1983	05	14.79500	01	17	16.32	+40	38	10.2				372
/1983e	1983	05	17.78090	01	09	34.88	+40	56	44.3		8	T	372
/1983e	1983	05	18.75903	01	07	07.03	+41	00	53.0				890
/1983e	1983	05	18.76215	01	07	06.44	+41	00	53.6				890
/1983e	1983	05	22.46111	00	57	46.79	+41	08	57.0				688
/1983e	1983	05	30.98646	00	31	14.0	+40	42	43				017
/1983e	1983	06	04.01620	00	08	14.74	+39	46	52.0		8.8	T	2 046
/1983e	1983	06	04.01916	00	08	13.83	+39	46	46.9				2 046
/1983e	1983	06	04.02778	00	08	09.11	+39	46	34.4				2 046
/1983e	1983	06	08.03507	23	17	12.4	+36	27	07				017
/1983e	1983	06	08.05023	23	16	54.4	+36	25	49				017
/1983e	1983	06	09.98679	22	21	04	+30	40	.1				3 993
/1983e	1983	06	09.99512	22	20	40	+30	36	.7				3 993
/1983e	1983	06	10.04653	22	18	39	+30	22	.4				3 984
/1983e	1983	06	10.05278	22	18	25	+30	21	.2				3 984
/1983e	1983	06	11.25391	21	18	14.0	+21	15	53				4 801
/1983e	1983	06	11.29142	21	15	56.4	+20	50	59				4 801
/1983e	1983	06	12.55764	19	44	55.65	+02	11	05.9				5 474
/1983e	1983	06	12.57034	19	43	54.78	+01	57	15.0				5 474
/1983e	1983	06	17.26780	15	30	27.26	-38	10	22.5				6 675

Periodic Comet Russell 3 (1983i)

/1983i	1983	06	17.46884	20	35	36.99	-03	31	14.4		17	N	675
/1983i	1983	06	18.46640	20	35	17.62	-03	25	32.7				675

/1983i	1983	06	18.73611	20	35	12.16	-03	24	03.7	16.5T	372
/1983i	1983	06	18.76354	20	35	11.53	-03	23	55.0		372
/1983i	1983	06	20.46293	20	34	35.02	-03	14	31.8		675
/1983i	1983	06	21.73472	20	34	05.19	-03	07	49.1	16.5T	372
/1983i	1983	07	03.28333	20	28	12.03	-02	17	29.5		707
/1983i	1983	07	04.47155	20	27	28.20	-02	13	22.7	16 T	474
/1983i	1983	07	04.58243	20	27	23.80	-02	13	03.4		474
/1983i	1983	07	04.60946	20	27	22.92	-02	12	54.3		413
/1983i	1983	07	14.57590	20	20	32.60	-01	48	44.5		413
/1983i	1983	07	14.63146	20	20	29.90	-01	48	39.4		413

Periodic Comet IRAS (1983j)

/1983j	1983	06	30.47126	01	24	17.64	-21	22	40.2	15 T	675
/1983j	1983	07	01.47471	01	25	20.53	-21	01	08.7		675
/1983j	1983	07	02.47126	01	26	21.77	-20	39	37.5		675
/1983j	1983	07	03.47613	01	27	22.14	-20	17	45.7		675
/1983j	1983	07	04.62352	01	28	29.56	-19	52	29.7	15 T	474
/1983j	1983	07	04.65425	01	28	31.30	-19	51	45.1		474
/1983j	1983	07	05.74850	01	29	33.64	-19	27	34.0	15 T	474
/1983j	1983	07	05.76389	01	29	34.49	-19	27	12.4		474
/1983j	1983	07	06.62535	01	30	22.65	-19	07	58.0		474
/1983j	1983	07	06.64144	01	30	23.41	-19	07	35.8		474
/1983j	1983	07	09.43194	01	32	51.79	-18	04	23.8		675
/1983j	1983	07	10.46458	01	33	43.72	-17	40	35.1		675
/1983j	1983	07	20.48062	01	40	37.76	-13	36	16.4		675
/1983j	1983	07	21.48305	01	41	09.61	-13	10	18.0		675

Note 1: identification uncertain. 2: very uncertain; comet very diffuse and difficult to measure. 3: image about 5′ in diameter, almost completely uncondensed; ends of trails measured. 4: very uncertain; comet extremely diffuse. 5: observation with 0.25-m astrograph. 6: low altitude.

* * * * *

OBSERVATIONS MADE AT KLET BY A. MRKOS AND Z. VAVROVA.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N Obs.
34	1983 05	30.87106	15 25 40.22	-11 24 10.3		046
34	1983 05	30.88524	15 25 39.54	-11 24 07.6		046
34	1983 05	31.87899	15 24 54.15	-11 21 02.5		046
34	1983 05	31.89039	15 24 53.64	-11 21 00.8		046
34	1983 06	01.88137	15 24 09.22	-11 18 07.4		046
34	1983 06	01.89549	15 24 08.64	-11 18 04.8		046
34	1983 06	03.90243	15 22 41.53	-11 12 25.3		046
34	1983 06	03.91672	15 22 40.86	-11 12 23.1		046
87	1983 05	30.87106	15 18 43.45	-13 36 44.1		046
87	1983 05	30.88524	15 18 42.88	-13 36 44.7		046
87	1983 05	31.87899	15 18 01.35	-13 36 40.3		046
87	1983 05	31.89039	15 18 00.88	-13 36 40.2		046
131	1983 06	08.94375	16 31 26.87	-23 06 08.2		046
131	1983 06	08.95833	16 31 25.90	-23 06 09.5		046
211	1983 06	08.94375	16 27 57.71	-22 55 44.2		046
211	1983 06	08.95833	16 27 56.95	-22 55 41.5		046
236	1983 06	03.94479	16 10 14.83	-10 43 44.0		046
236	1983 06	03.95903	16 10 14.08	-10 43 42.1		046
236	1983 06	04.90521	16 09 26.09	-10 40 49.8		046
236	1983 06	04.91944	16 09 25.37	-10 40 48.0		046
236	1983 06	07.89873	16 06 56.35	-10 32 23.6		046
236	1983 06	07.91586	16 06 55.38	-10 32 21.0		046
319	1983 06	03.94479	16 19 08.21	-09 09 06.8		046

319		1983	06	03.95903	16	19	07.64	-09	09	05.1		046
319		1983	06	04.90521	16	18	29.02	-09	07	02.6		046
319		1983	06	04.91944	16	18	28.29	-09	07	01.5		046
319		1983	06	07.89873	16	16	28.11	-09	01	07.3		046
319		1983	06	07.91586	16	16	27.48	-09	01	05.9		046
420		1983	06	08.94375	16	22	40.41	-20	33	16.8		046
420		1983	06	08.95833	16	22	39.77	-20	33	13.8		046
518		1983	05	30.87106	15	19	02.22	-11	32	04.6		046
518		1983	05	30.88524	15	19	01.44	-11	32	01.1		046
518		1983	05	31.87899	15	18	11.86	-11	26	42.0		046
518		1983	05	31.89039	15	18	11.32	-11	26	38.7		046
521		1983	06	01.88137	15	24	40.60	-10	26	39.9		046
521		1983	06	01.89549	15	24	39.95	-10	26	40.5		046
521		1983	06	03.90243	15	23	05.06	-10	25	49.8		046
521		1983	06	03.91672	15	23	04.38	-10	25	48.9		046
946		1983	06	08.94375	16	35	28.83	-22	08	11.5		046
962		1983	03	13.91240	11	43	49.56	+03	43	23.7		046
962		1983	03	13.92657	11	43	48.90	+03	43	29.2		046
1055		1983	06	02.98403	16	15	07.60	-10	39	37.9		046
1055		1983	06	02.99826	16	15	06.70	-10	39	36.2		046
1055		1983	06	03.94479	16	14	07.13	-10	37	45.8		046
1055		1983	06	03.95903	16	14	06.21	-10	37	44.5		046
1055		1983	06	04.90521	16	13	06.97	-10	36	01.4		046
1055		1983	06	04.91944	16	13	06.12	-10	36	01.1		046
1055		1983	06	07.89873	16	10	01.80	-10	31	37.7		046
1055		1983	06	07.91586	16	10	00.70	-10	31	36.4		046
1076		1983	05	16.94861	15	38	04.80	-14	05	17.7		046
1076		1983	05	16.96285	15	38	04.32	-14	05	11.8		046
1201		1983	05	16.94861	15	41	39.99	-13	29	33.0		046
1201		1983	05	16.96285	15	41	39.36	-13	29	28.8		046
1201		1983	06	01.88137	15	28	25.52	-12	15	11.9		046
1201		1983	06	01.89549	15	28	24.42	-12	15	08.6		046
1201		1983	06	03.90243	15	26	53.92	-12	07	16.9		046
1201		1983	06	03.91672	15	26	53.23	-12	07	13.7		046
1408		1983	05	16.94861	15	37	42.00	-12	38	02.6		046
1408		1983	05	16.96285	15	37	41.73	-12	37	59.9		046
1408		1983	05	31.87899	15	26	41.34	-11	38	03.0	17.0	046
1408		1983	05	31.89039	15	26	40.90	-11	38	01.7		046
1589		1983	05	16.94861	15	40	57.65	-14	37	50.8		046
1589		1983	05	16.96285	15	40	56.69	-14	37	51.1		046
1680		1983	05	16.91221	15	10	53.70	-13	34	53.1		046
1680		1983	05	16.92703	15	10	52.78	-13	34	54.0		046
2024		1983	05	16.91221	15	10	43.76	-13	57	20.2	17.0	046
2024		1983	05	16.92703	15	10	42.80	-13	57	13.7		046
2283		1983	05	16.98299	16	10	30.64	-12	15	04.8		046
2283		1983	05	16.99711	16	10	30.02	-12	15	01.8		046
2535		1983	05	16.91221	15	08	24.48	-12	11	45.4		046
2535		1983	05	16.92703	15	08	23.67	-12	11	41.6		046
2563		1983	05	16.91221	15	04	49.90	-14	32	56.5		046
2563		1983	05	16.92703	15	04	48.85	-14	32	53.2		046
1983	CZ2	1983	03	08.98184	11	02	12.03	-00	22	50.6		046
1983	CZ2	1983	03	08.99602	11	02	11.30	-00	22	48.6		046
1983	CZ2	1983	03	09.93844	11	01	14.81	-00	21	22.8		046
1983	CZ2	1983	03	09.95343	11	01	13.88	-00	21	18.5		046
1983	CZ2	1983	03	10.90140	11	00	17.22	-00	19	46.0		046
1983	CZ2	1983	03	10.91558	11	00	16.56	-00	19	42.4		046
1983	CZ2	1983	03	12.90603	10	58	18.87	-00	16	11.6		046
1983	CZ2	1983	03	12.92021	10	58	18.01	-00	16	10.2		046
1983	CZ2	1983	03	13.87906	10	57	22.62	-00	14	22.2		046

1983	CZ2		1983	03	13.89318	10	57	21.55	-00	14	21.3		046
1983	EV		1983	03	12.94289	11	45	14.43	+03	38	19.1	16.4	046
1983	EV		1983	03	12.95707	11	45	14.02	+03	38	24.2	1	046
1983	EV		1983	03	13.91240	11	44	23.44	+03	42	07.4		046
1983	EV		1983	03	13.92657	11	44	22.66	+03	42	11.2		046
1983	EB1	*	1983	03	04.91194	11	12	44.19	+05	03	08.6		046
1983	EB1		1983	03	04.92606	11	12	43.33	+05	03	14.2		046
1983	JH		1983	05	16.94861	15	37	29.40	-12	45	40.5		046
1983	JH		1983	05	16.96285	15	37	28.72	-12	45	37.0		046
1983	JJ	*	1983	05	15.02390	16	08	59.98	-13	23	19.9	16.1	046
1983	JJ		1983	05	15.03819	16	08	58.94	-13	23	23.7		046
1983	JJ		1983	05	16.98299	16	07	10.91	-13	28	42.9		046
1983	JJ		1983	05	16.99711	16	07	10.24	-13	28	44.5		046
1983	KA	*	1983	05	16.91221	15	03	57.64	-14	22	12.6	17.0	046
1983	KA		1983	05	16.92703	15	03	56.92	-14	22	06.3		046
1983	KB	*	1983	05	17.01545	15	51	30.22	-13	30	08.0	16.6	046
1983	KB		1983	05	17.02957	15	51	29.36	-13	30	12.6		046
1983	KC	*	1983	05	31.87899	15	26	10.38	-11	14	58.9	17.0	046
1983	KC		1983	05	31.89039	15	26	09.88	-11	14	50.7		046
1983	LN	*	1983	06	07.89873	16	08	55.19	-07	49	22.3	17.0	046
1983	LN		1983	06	07.91586	16	08	54.29	-07	49	17.3		046
1983	LO	*	1983	06	07.89873	16	11	29.00	-07	52	01.5	17.2	046
1983	LO		1983	06	07.91586	16	11	27.98	-07	51	59.8		046
1983	LP	*	1983	06	07.97616	17	03	48.95	-13	11	32.2	16.3	046
1983	LP		1983	06	07.99034	17	03	48.16	-13	11	31.7		046
1983	LP		1983	06	08.98038	17	02	48.58	-13	08	30.5		046
1983	LP		1983	06	08.99444	17	02	47.70	-13	08	29.0		046

Note 1: on a star.

OBSERVATIONS MADE AT THE CRIMEAN ASTROPHYSICAL OBSERVATORY BY N. S. CHERNYKH, L. I. CHERNYKH, L. G. KARACHKINA, T. M. SMIRNOVA AND L. V. ZHURAVLEVA (53RD REPORT).

Object			Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
1643			1979 12	18.07770	06 13 46.53	+25 25 10.0		1	095
2377			1979 12	18.07770	06 14 26.77	+23 12 16.9		1	095
1086			1979 12	18.07770	06 17 23.76	+31 41 41.6		1	095
215			1979 12	18.07770	06 17 41.56	+25 45 59.9			095
1979	YB7	*	1979 12	18.07770	06 17 50.16	+26 06 14.6	17.0		095
1979	YC7	*	1979 12	18.07770	06 19 35.06	+24 14 17.2	17.0		095
1979	YD7	*	1979 12	18.07770	06 21 29.89	+29 50 46.3	16.5		095
1979	YE7	*	1979 12	18.07770	06 25 18.04	+24 38 31.7	17.0		095
1979	YF7	*	1979 12	18.07770	06 26 04.10	+22 33 43.9	17.0	1	095
1979	YG7	*	1979 12	18.07770	06 28 54.12	+27 45 34.6	16.0		095
2818			1979 12	18.07770	06 31 26.44	+25 59 32.0			095
1202			1979 12	18.07770	06 32 27.91	+26 22 02.9			095
2206			1979 12	18.07770	06 37 57.23	+31 16 34.9		1	095
1979	YH7	*	1979 12	18.07770	06 40 02.25	+23 21 50.4	17.0	1	095
224			1979 12	18.07770	06 43 39.90	+31 53 30.9		1	095
2149			1979 12	18.07770	06 45 11.18	+29 21 47.1			095
1979	YJ7	*	1979 12	18.07770	06 48 46.12	+24 51 56.4	17.0		095
1979	YK7	*	1979 12	18.07770	06 49 30.21	+22 44 00.8	17.0	1	095
91			1979 12	18.07770	06 52 57.72	+26 29 50.1		1	095
1805			1979 12	18.07770	06 53 15.93	+24 01 48.6		1	095
2621			1979 12	18.07770	06 54 21.34	+23 05 44.1	16.0	1	095
1979	YL7	*	1979 12	23.93754	06 57 07.78	+17 43 55.4	17.5	1	095
677			1979 12	23.93754	06 58 18.02	+21 19 46.8		1	095
1269			1979 12	23.93754	07 00 46.06	+20 37 18.8		1	095
1979	YM7	*	1979 12	23.93754	07 01 05.72	+20 35 14.8	17.5	1	095
1979	YN7	*	1979 12	23.93754	07 04 21.24	+22 58 09.1	17.0		095

723		1979	12	23.93754	07	05	51.03	+15	55	03.4			1	095
90		1979	12	23.93754	07	07	50.78	+24	06	31.8			1	095
1979	YO7 *	1979	12	23.93754	07	08	21.00	+16	51	37.0		17.5		095
1979	YP7 *	1979	12	23.93754	07	08	53.82	+15	46	47.0		17.5	1	095
1979	YQ7 *	1979	12	23.93754	07	09	08.30	+20	32	10.0		17.5		095
1979	YR7 *	1979	12	23.93754	07	10	16.66	+22	48	22.4		16.5		095
1658		1979	12	23.93754	07	10	27.15	+23	50	56.1				095
1979	YS	1979	12	23.93754	07	11	00.51	+24	56	15.0		17.0	1	095
1962		1979	12	23.93754	07	11	27.16	+24	51	24.8			1	095
1979	YS7 *	1979	12	23.93754	07	11	29.84	+20	35	12.3		17.0		095
1979	YT7 *	1979	12	23.93754	07	11	46.04	+20	02	07.9		17.5		095
1979	YU7 *	1979	12	23.93754	07	12	36.66	+21	44	58.1		17.0		095
1979	YV7 *	1979	12	23.93754	07	12	49.14	+24	27	33.0		17.0	1	095
1979	YW7 *	1979	12	23.93754	07	14	24.92	+19	45	35.1		17.5		095
1979	YX7 *	1979	12	23.93754	07	14	28.18	+18	04	51.1		16.0		095
1979	YY7 *	1979	12	23.93754	07	14	32.02	+22	00	44.2		17.0		095
1979	YZ7 *	1979	12	23.93754	07	14	36.92	+25	00	14.6		17.0	1	095
1040		1979	12	23.93754	07	16	31.88	+21	35	06.2				095
1979	YA8 *	1979	12	23.93754	07	17	47.10	+20	50	21.6		16.5		095
370		1979	12	23.93754	07	18	23.18	+24	31	30.6			1	095
1979	YB8 *	1979	12	23.93754	07	19	16.79	+21	22	06.8		17.5		095
1979	YC8 *	1979	12	23.93754	07	19	47.68	+21	45	15.2		17.0		095
1979	YD8 *	1979	12	23.93754	07	22	57.08	+23	25	46.5		17.0		095
1979	YE8 *	1979	12	23.93754	07	23	17.34	+25	13	16.2		17.0	1	095
1979	YF8 *	1979	12	23.93754	07	25	22.98	+16	20	59.2		16.5	1	095
334		1979	12	23.93754	07	25	55.20	+19	21	35.0				095
1979	YG8 *	1979	12	23.93754	07	26	46.68	+22	37	17.5		17.5		095
1979	YH8 *	1979	12	23.93754	07	27	32.45	+18	10	28.4		16.5		095
1979	YJ8 *	1979	12	23.93754	07	28	04.06	+23	17	27.1		17.0		095
2773		1979	12	23.93754	07	28	19.64	+21	59	27.0				095
1979	YK8 *	1979	12	23.93754	07	31	24.02	+24	43	50.8		17.5	1	095
882		1979	12	23.93754	07	31	58.78	+17	45	32.6				095
1704		1979	12	23.93754	07	32	27.62	+21	03	41.3				095
1979	YL8 *	1979	12	23.93754	07	32	53.29	+22	48	50.0		17.0		095
1979	YM8 *	1979	12	23.93754	07	33	01.45	+21	55	40.4		16.5		095
913		1979	12	23.93754	07	33	19.92	+23	11	59.4				095
1979	YN8 *	1979	12	23.93754	07	33	22.09	+18	31	57.7		16.0	1	095
1964	VM1	1979	12	23.93754	07	33	44.45	+25	10	26.5			1	095
1979	YO8 *	1979	12	23.93754	07	35	14.99	+22	38	57.2		16.5	1	095
1979	YP8 *	1979	12	23.93754	07	35	21.04	+22	30	04.3		17.5	1	095
1979	YQ8 *	1979	12	23.93754	07	38	48.88	+20	59	01.7		17.0	1	095
2123		1979	12	23.93754	07	38	52.66	+22	11	30.1			1	095
1979	YR8 *	1979	12	24.08571	08	23	51.18	+21	40	35.1		16.5	1	095
514		1979	12	24.08571	08	26	06.38	+16	48	44.1			1	095
1979	YS8 *	1979	12	24.08571	08	27	51.38	+24	15	16.6		17.0	1	095
2841		1979	12	24.08571	08	28	46.82	+21	49	20.1		17.0	1	095
213		1979	12	24.08571	08	29	47.88	+17	51	58.7			1	095
1979	YT8 *	1979	12	24.08571	08	30	10.31	+18	58	07.2		17.0		095
1979	YU8 *	1979	12	24.08571	08	30	11.20	+22	06	59.6		17.0	2	095
1979	YV8 *	1979	12	24.08571	08	30	46.76	+21	29	24.6		16.5		095
1979	YW8 *	1979	12	24.08571	08	31	39.15	+19	24	05.0		17.0		095
1234		1979	12	24.08571	08	34	40.41	+20	51	15.9				095
1979	YX8 *	1979	12	24.08571	08	38	28.50	+17	14	03.6		16.5		095
863		1979	12	24.08571	08	39	21.58	+18	36	05.7				095
991		1979	12	24.08571	08	41	54.28	+20	33	14.8				095
277		1979	12	24.08571	08	42	33.32	+16	42	18.6			1	095
1979	YY8 *	1979	12	24.08571	08	42	52.59	+16	33	35.4		16.0	1	095
2110		1979	12	24.08571	08	43	12.57	+17	24	41.8		17.5		095
1308		1979	12	24.08571	08	44	10.51	+25	09	15.0			1	095

1979	YZ8	*	1979	12	24.08571	08	44	22.02	+20	48	05.0		17.5	095
1979	YA9	*	1979	12	24.08571	08	46	00.82	+17	46	23.6		16.0	095
177			1979	12	24.08571	08	46	15.79	+19	40	44.2			095
1979	YB9	*	1979	12	24.08571	08	48	50.79	+19	47	15.5		16.5	095
1450			1979	12	24.08571	08	49	36.06	+22	54	04.4			095
1979	YC9	*	1979	12	24.08571	08	50	11.78	+22	14	48.8		17.5	095
1278			1979	12	24.08571	08	50	39.16	+24	49	20.0			1 095
549			1979	12	24.08571	08	52	16.99	+17	25	05.4			095
2264			1979	12	24.08571	08	53	43.79	+17	20	02.8		16.0	095
578			1979	12	24.08571	08	54	06.21	+26	02	02.0			1 095
2172			1979	12	24.08571	08	55	14.76	+20	06	22.0			095
1274			1979	12	24.08571	08	56	20.92	+21	17	21.2			095
2168			1979	12	24.08571	08	56	51.04	+19	10	15.0		17.5	095
100			1979	12	24.08571	08	57	10.66	+16	23	04.8			1 095
1979	YD9	*	1979	12	24.08571	08	57	52.35	+25	41	02.9		17.5	1 095
1979	YE9	*	1979	12	24.08571	08	59	18.50	+20	33	08.4		16.5	095
2324			1979	12	24.08571	08	59	56.97	+17	14	31.0		17.5	1 095
462			1979	12	24.08571	09	05	49.54	+17	52	07.4			1 095
1979	YF9	*	1979	12	25.04317	06	05	47.30	+30	58	48.6		17.5	1 095
390			1979	12	25.04317	06	07	03.84	+34	53	08.6			1 095
1086			1979	12	25.04317	06	10	37.69	+31	32	55.4			1 095
1979	YG9	*	1979	12	25.04317	06	11	01.56	+28	37	22.4		17.0	1 095
1979	YH9	*	1979	12	25.04317	06	11	23.12	+33	59	04.6		17.5	095
1979	YJ9	*	1979	12	25.04317	06	13	46.79	+29	04	56.4		16.0	095
1979	YK9	*	1979	12	25.04317	06	14	06.86	+28	57	58.6		17.0	095
1979	YL9	*	1979	12	25.04317	06	15	15.87	+28	40	55.4		17.5	095
1640			1979	12	25.04317	06	15	57.58	+36	04	58.6			1 095
1790			1979	12	25.04317	06	17	46.38	+32	58	40.8			095
1979	YM9	*	1979	12	25.04317	06	20	01.65	+35	34	26.0		17.5	095
1979	YN9	*	1979	12	25.04317	06	20	10.11	+34	56	24.9		17.0	095
1979	YO9	*	1979	12	25.04317	06	21	27.29	+32	50	37.8		17.5	095
1979	YP9	*	1979	12	25.04317	06	22	13.08	+31	45	31.6		17.5	095
1979	YQ9	*	1979	12	25.04317	06	23	34.20	+30	40	25.3		17.5	095
1979	YR9	*	1979	12	25.04317	06	24	20.64	+33	58	29.8		17.5	095
1979	YS9	*	1979	12	25.04317	06	24	21.48	+34	31	23.5		17.0	095
1979	YT9	*	1979	12	25.04317	06	24	28.84	+32	44	11.0		17.0	095
1979	YU9	*	1979	12	25.04317	06	25	50.39	+36	52	40.7		17.5	1 095
1979	YV9	*	1979	12	25.04317	06	26	31.71	+27	50	00.8		17.0	1 095
1979	YW9	*	1979	12	25.04317	06	30	08.42	+34	52	11.5		16.0	095
2206			1979	12	25.04317	06	31	14.21	+31	42	57.2			095
224			1979	12	25.04317	06	36	13.20	+32	01	58.2			095
1979	YX9	*	1979	12	25.04317	06	37	13.39	+32	37	14.5		17.0	095
2149			1979	12	25.04317	06	37	45.01	+29	46	28.0			095
1240			1979	12	25.04317	06	39	52.96	+34	24	56.3			095
721			1979	12	25.04317	06	40	28.27	+33	10	12.6			095
1979	YY9	*	1979	12	25.04317	06	44	30.96	+29	52	52.7		17.0	095
829			1979	12	25.04317	06	53	29.58	+36	12	57.1			1 095
390			1980	01	22.77825	05	39	32.24	+31	40	15.1			1 095
1086			1980	01	22.77825	05	46	42.10	+30	13	42.2			095
1790			1980	01	22.77825	05	46	55.32	+32	10	51.0			095
1980	BK3	*	1980	01	22.77825	05	50	51.04	+33	15	58.8		17.5	095
143			1980	01	22.77825	05	58	04.71	+36	42	23.0			095
2206			1980	01	22.77825	06	04	43.12	+32	40	49.1			095
1979	YW9		1980	01	22.77825	06	05	15.30	+33	36	45.5		16.0	095
224			1980	01	22.77825	06	07	09.00	+31	37	29.0			095
2149			1980	01	22.77825	06	08	14.42	+30	38	07.2			095
1240			1980	01	22.77825	06	11	17.72	+33	13	43.9			095
2239			1980	01	22.77825	06	13	26.70	+38	19	11.7			1 095
1654			1980	01	22.77825	06	15	57.66	+37	45	51.3			1 095

721		1980	01	22.77825	06	16	25.22	+33	32	19.8			095
829		1980	01	22.77825	06	21	48.02	+35	30	41.0		1	095
1980	BL3 *	1980	01	22.84219	06	06	37.03	+26	42	35.8	17.0	1	095
1980	BM3 *	1980	01	22.84219	06	13	50.56	+28	06	39.0	17.0	1	095
1661		1980	01	22.84219	06	13	51.09	+21	22	32.2			095
1980	BN3 *	1980	01	22.84219	06	15	11.97	+21	25	39.4	17.0		095
857		1980	01	22.84219	06	15	52.06	+26	42	56.9			095
1980	BO3 *	1980	01	22.84219	06	17	53.02	+25	30	45.9	17.0		095
91		1980	01	22.84219	06	17	56.06	+26	51	48.4			095
1980	BP3 *	1980	01	22.84219	06	18	23.05	+26	08	11.2	17.5		095
2874		1980	01	22.84219	06	19	24.02	+27	29	01.6	16.5		095
1980	BQ3 *	1980	01	22.84219	06	20	30.28	+26	15	16.5	17.0		095
1980	BR3 *	1980	01	22.84219	06	21	11.19	+28	17	54.6	16.5	1	095
1980	BS3 *	1980	01	22.84219	06	21	52.96	+24	21	14.4	16.5		095
2259		1980	01	22.84219	06	22	09.26	+22	48	32.9			095
1805		1980	01	22.84219	06	22	17.33	+24	54	17.4			095
1300		1980	01	22.84219	06	22	34.30	+28	34	18.0		1	095
2621		1980	01	22.84219	06	22	42.01	+25	41	11.4	16.5		095
1980	BT3 *	1980	01	22.84219	06	24	09.08	+26	56	43.4	17.5		095
1607		1980	01	22.84219	06	24	47.61	+19	16	41.9		1	095
1618		1980	01	22.84219	06	25	31.14	+23	26	04.2			095
1980	BU3 *	1980	01	22.84219	06	28	18.59	+28	45	11.1	17.5	1	095
1980	BV3 *	1980	01	22.84219	06	30	04.36	+21	29	48.4	17.5		095
677		1980	01	22.84219	06	31	06.72	+20	35	46.4		1	095
1980	BW3 *	1980	01	22.84219	06	31	41.58	+21	54	42.0	17.0		095
1980	BX3 *	1980	01	22.84219	06	32	15.87	+23	55	11.4	17.5		095
2763		1980	01	22.84219	06	32	32.27	+25	19	59.4	16.5		095
1980	BY3 *	1980	01	22.84219	06	38	37.92	+23	52	37.4	17.5		095
1979	YS	1980	01	22.84219	06	38	42.02	+22	55	33.6	17.0		095
1978	SR	1980	01	22.84219	06	38	56.71	+24	43	50.8			095
1269		1980	01	22.84219	06	39	20.51	+21	18	25.6			095
2423		1980	01	22.84219	06	40	18.70	+20	27	45.7		1	095
1658		1980	01	22.84219	06	40	27.80	+25	37	53.6			095
1980	BZ3 *	1980	01	22.84219	06	41	09.64	+22	28	45.0	17.5		095
1258		1980	01	22.84219	06	41	09.98	+25	45	56.2			095
1980	BA4 *	1980	01	22.84219	06	42	18.36	+20	49	38.6	17.5	1	095
90		1980	01	22.84219	06	42	48.77	+24	48	25.3			095
1980	BB4 *	1980	01	22.84219	06	43	48.70	+24	50	54.2	17.5	1	095
370		1980	01	22.84219	06	44	05.86	+23	29	43.7		1	095
1962		1980	01	22.84219	06	44	52.40	+25	25	00.2		1	095
2609		1980	01	22.84219	06	45	25.20	+25	28	23.2		1	095
1980	BC4 *	1980	01	22.84219	06	45	33.52	+21	41	56.0	17.5	1	095
1980	BD4 *	1980	01	22.84219	06	48	22.14	+24	16	32.4	17.0	1	095
1980	BE4 *	1980	01	22.84219	06	48	23.96	+25	13	46.0	17.0	1	095
1979	YB9	1980	01	22.92731	08	29	12.23	+21	36	24.7	16.5	1	095
1979	YC9	1980	01	22.92731	08	30	32.27	+24	36	02.2	17.0	1	095
1274		1980	01	22.92731	08	30	35.57	+22	15	25.6		1	095
549		1980	01	22.92731	08	30	50.16	+17	16	43.8		1	095
2168		1980	01	22.92731	08	31	14.78	+20	12	22.8		1	095
1980	BF4 *	1980	01	22.92731	08	31	42.00	+23	02	31.6	17.0	1	095
1980	BG4 *	1980	01	22.92731	08	32	10.49	+20	53	52.8	17.5	1	095
1980	BH4 *	1980	01	22.92731	08	32	25.82	+19	22	44.2	16.5	1	095
2772		1980	01	22.92731	08	33	32.14	+16	31	18.2		1	095
2264		1980	01	22.92731	08	33	55.18	+18	35	15.1			095
1980	BJ4 *	1980	01	22.92731	08	34	36.84	+22	57	09.4	17.5		095
747		1980	01	22.92731	08	35	01.65	+15	46	19.9		1	095
1980	BK4 *	1980	01	22.92731	08	35	24.78	+16	21	55.9	16.5	1	095
2738		1980	01	22.92731	08	37	24.88	+18	06	04.0			095
1979	YE9	1980	01	22.92731	08	37	25.37	+21	50	53.0	16.0		095

1980	BL4	*	1980	01	22.92731	08	37	26.44	+17	52	51.6	16.5	095
1980	BM4	*	1980	01	22.92731	08	37	45.86	+22	17	20.1	16.5	095
100			1980	01	22.92731	08	38	09.55	+18	12	27.5		095
2783			1980	01	22.92731	08	38	28.83	+17	17	16.0	17.5	095
1980	BN4	*	1980	01	22.92731	08	38	32.31	+22	45	46.6	17.5	095
2324			1980	01	22.92731	08	40	37.88	+18	29	49.7		095
1980	BO4	*	1980	01	22.92731	08	41	15.48	+21	16	52.8	17.5	095
1980	BP4	*	1980	01	22.92731	08	42	12.31	+16	32	04.1	17.0	1 095
1980	BQ4	*	1980	01	22.92731	08	42	41.40	+18	17	01.2	17.5	095
1980	BR4	*	1980	01	22.92731	08	43	02.46	+21	26	49.6	17.0	095
1980	BS4	*	1980	01	22.92731	08	43	38.35	+18	57	42.2	17.5	095
1980	BT4	*	1980	01	22.92731	08	43	57.39	+20	08	36.9	17.0	095
2756			1980	01	22.92731	08	44	10.95	+24	51	37.6	17.0	1 095
1980	BU4	*	1980	01	22.92731	08	44	55.98	+20	09	39.0	17.5	095
1980	BV4	*	1980	01	22.92731	08	45	07.52	+21	13	22.8	17.0	095
1980	BW4	*	1980	01	22.92731	08	45	34.68	+20	00	32.8	17.5	095
1980	BX4	*	1980	01	22.92731	08	45	43.64	+22	20	08.2	17.5	095
1980	BY4	*	1980	01	22.92731	08	45	55.96	+20	37	51.2	17.0	095
462			1980	01	22.92731	08	46	01.26	+19	45	49.6		095
1980	BZ4	*	1980	01	22.92731	08	46	07.60	+22	03	32.6	17.5	095
1980	BA5	*	1980	01	22.92731	08	46	24.32	+21	46	22.0	17.0	095
1980	BB5	*	1980	01	22.92731	08	47	06.96	+23	53	04.8	16.0	095
1980	BC5	*	1980	01	22.92731	08	47	24.96	+17	29	51.5	17.0	2 095
1980	BD5	*	1980	01	22.92731	08	48	51.59	+21	43	24.0	17.5	095
1980	BG		1980	01	22.92731	08	49	36.82	+21	57	12.4	16.0	095
1980	BE5	*	1980	01	22.92731	08	49	55.10	+24	18	11.0	16.0	1 095
1717			1980	01	22.92731	08	50	37.80	+25	12	42.6		1 095
1980	BF5	*	1980	01	22.92731	08	53	03.66	+18	19	43.3	17.0	2 095
1980	BG5	*	1980	01	22.92731	08	53	10.34	+22	27	16.2	16.5	095
167			1980	01	22.92731	08	53	47.50	+15	22	23.3		1 095
1980	BH5	*	1980	01	22.92731	08	55	23.95	+22	49	22.8	17.0	095
2208			1980	01	22.92731	08	56	01.87	+23	10	11.2		095
1808			1980	01	22.92731	08	56	48.24	+20	27	51.3		095
1980	BJ5	*	1980	01	22.92731	08	57	29.67	+18	37	20.2	17.5	095
1980	AB		1980	01	22.92731	08	57	36.01	+21	02	59.6	16.5	2 095
1980	BK5	*	1980	01	22.92731	08	59	27.48	+23	12	21.8	17.0	095
1980	BL5	*	1980	01	22.92731	08	59	52.65	+25	37	02.4	17.0	3 095
1980	BM5	*	1980	01	22.92731	09	00	10.97	+24	53	24.8	17.5	3 095
1980	BN5	*	1980	01	22.92731	09	00	43.20	+20	05	02.3	17.5	095
381			1980	01	22.92731	09	01	56.93	+18	19	33.6		095
987			1980	01	22.92731	09	04	32.94	+19	42	07.0		1 095
1549			1980	01	22.92731	09	06	41.82	+23	55	32.8		1 095
2415			1980	01	22.92731	09	07	49.44	+18	57	09.6		1 095
1978	RH		1980	01	22.92731	09	08	13.60	+17	37	57.2	17.0	1 095
1980	BO5	*	1980	01	22.92731	09	08	34.78	+24	40	28.9	17.5	1 095
2118			1980	01	22.92731	09	09	19.02	+21	07	07.1		1 095
1980	BP5	*	1980	01	23.89840	08	02	28.68	+22	47	41.8	17.5	3 095
213			1980	01	23.89840	08	05	11.58	+20	02	18.2		1 095
1979	YV8		1980	01	23.89840	08	07	52.87	+22	57	45.6	16.5	1 095
1234			1980	01	23.89840	08	08	57.70	+21	03	00.3		1 095
1980	BQ5	*	1980	01	23.89840	08	10	33.87	+25	07	26.8	17.5	095
2110			1980	01	23.89840	08	13	09.56	+19	20	00.7		1 095
1980	BR5	*	1980	01	23.89840	08	14	37.26	+19	20	10.0	16.0	1 095
1980	BS5	*	1980	01	23.89840	08	17	22.68	+24	18	40.8	18.0	095
863			1980	01	23.89840	08	17	41.47	+23	13	48.0		095
1980	BA		1980	01	23.89840	08	19	04.00	+22	41	13.6	17.5	095
1308			1980	01	23.89840	08	19	19.50	+26	30	40.4		095
177			1980	01	23.89840	08	19	56.99	+21	10	23.4		095
991			1980	01	23.89840	08	19	59.96	+22	04	35.2		095

1980	BT5	*	1980	01	23.89840	08	20	15.68	+22	12	26.0		17.5	095
1980	BU5	*	1980	01	23.89840	08	20	45.73	+22	43	57.9		17.5	095
1979	YY8		1980	01	23.89840	08	21	27.38	+18	23	59.7		16.0	1 095
1980	BV5	*	1980	01	23.89840	08	22	09.30	+21	53	51.5		17.5	095
1980	BW5	*	1980	01	23.89840	08	22	16.02	+22	55	24.2		17.0	095
1980	BX5	*	1980	01	23.89840	08	22	23.90	+22	12	50.0		17.5	095
1278			1980	01	23.89840	08	22	31.72	+28	17	34.5			1 095
1980	BY5	*	1980	01	23.89840	08	22	51.64	+24	49	27.0		17.0	095
1980	BZ5	*	1980	01	23.89840	08	23	15.73	+22	26	28.0		17.5	095
1980	BA6	*	1980	01	23.89840	08	24	15.34	+22	23	14.7		18.0	095
1980	BB6	*	1980	01	23.89840	08	24	48.62	+18	56	28.2		17.5	1 095
1980	BC6	*	1980	01	23.89840	08	25	31.83	+25	24	38.5		17.5	095
1450			1980	01	23.89840	08	26	41.22	+25	50	48.6			095
1980	BD6	*	1980	01	23.89840	08	26	51.40	+21	27	12.3		18.0	095
1980	BE6	*	1980	01	23.89840	08	27	02.68	+26	57	05.4		17.0	1 095
1979	YB9		1980	01	23.89840	08	28	21.77	+21	40	11.3		16.5	095
1980	BF6	*	1980	01	23.89840	08	28	52.91	+27	20	36.1		17.0	1 095
578			1980	01	23.89840	08	29	30.62	+28	03	48.0			1 095
1979	YC9		1980	01	23.89840	08	29	31.38	+24	40	22.2		16.5	095
1719			1980	01	23.89840	08	29	34.68	+27	24	29.3			1 095
1113			1980	01	23.89840	08	29	39.42	+26	56	26.9			1 095
2168			1980	01	23.89840	08	30	12.74	+20	14	35.2			095
1980	BG6	*	1980	01	23.89840	08	30	26.72	+25	44	07.8		17.5	095
1980	BF4		1980	01	23.89840	08	30	42.90	+23	03	05.2		17.0	095
1980	BG4		1980	01	23.89840	08	31	10.80	+21	02	00.4		17.5	095
1980	BH6	*	1980	01	23.89840	08	32	08.52	+21	28	16.6		17.5	095
2172			1980	01	23.89840	08	33	06.80	+22	16	02.0			095
2264			1980	01	23.89840	08	33	07.86	+18	38	07.9			1 095
1980	BJ4		1980	01	23.89840	08	33	43.82	+23	00	45.5		17.5	095
1979	YE9		1980	01	23.89840	08	36	22.72	+21	53	40.2		16.5	095
1980	BM4		1980	01	23.89840	08	36	39.58	+22	18	38.0		16.5	095
1980	BJ6	*	1980	01	23.89840	08	37	18.90	+25	44	28.0		17.5	095
100			1980	01	23.89840	08	37	23.14	+18	16	33.0			1 095
1980	BN4		1980	01	23.89840	08	37	24.34	+22	48	13.4		17.0	095
1980	BO4		1980	01	23.89840	08	40	16.48	+21	24	01.6		18.0	1 095
1980	BY4		1980	01	23.89840	08	44	51.02	+20	41	08.4		17.5	1 095
2839			1980	01	23.89840	08	44	53.33	+27	21	20.1		15.5	1 095
462			1980	01	23.89840	08	45	09.84	+19	50	02.9			1 095
1980	BB5		1980	01	23.89840	08	46	15.56	+23	56	47.2		16.0	1 095
177			1980	02	20.78223	07	56	42.53	+22	04	01.0			1 095
277			1980	02	20.78223	07	57	14.82	+19	06	27.1			1 095
1274			1980	02	20.78223	07	59	52.02	+22	32	48.5			1 095
873			1980	02	20.78223	08	03	06.73	+17	42	31.0			1 095
1980	DW5	*	1980	02	20.78223	08	03	35.60	+18	20	50.6		16.5	095
1113			1980	02	20.78223	08	04	34.86	+25	41	15.8			1 095
1979	YB9		1980	02	20.78223	08	07	10.60	+23	01	16.6		16.5	095
549			1980	02	20.78223	08	07	42.98	+17	29	18.6			095
1980	BL4		1980	02	20.78223	08	09	05.31	+19	22	34.4		16.5	095
1979	YE9		1980	02	20.78223	08	09	51.36	+22	35	30.0		16.0	095
2772			1980	02	20.78223	08	11	09.83	+21	34	39.3			095
2738			1980	02	20.78223	08	11	56.54	+19	21	51.1			095
2264			1980	02	20.78223	08	12	13.70	+19	48	35.6			095
747			1980	02	20.78223	08	12	26.66	+20	44	04.7			095
1980	DX5	*	1980	02	20.78223	08	15	55.58	+23	21	40.8		16.5	095
100			1980	02	20.78223	08	16	30.99	+20	03	30.9			095
1717			1980	02	20.78223	08	19	32.56	+24	32	22.6			1 095
1980	BE5		1980	02	20.78223	08	20	09.84	+24	24	47.6		16.0	1 095
1980	DY5	*	1980	02	20.78223	08	21	34.50	+25	18	54.8		16.0	1 095
462			1980	02	20.78223	08	22	05.05	+21	31	24.4			095

270		1980	02	20.78223	08	27	21.10	+15	45	31.0	1 095
1980	BG5	1980	02	20.78223	08	27	38.20	+22	31	03.2	16.5 095
1980	DZ5 *	1980	02	20.78223	08	29	31.17	+23	13	35.8	17.0 2 095
1980	DA6 *	1980	02	20.78223	08	29	35.35	+22	23	09.8	17.5 095
167		1980	02	20.78223	08	29	49.39	+17	13	26.1	1 095
1808		1980	02	20.78223	08	30	48.82	+21	45	52.5	095
1191		1980	02	20.78223	08	31	26.58	+18	42	57.9	095
1980	DB6 *	1980	02	20.78223	08	32	18.66	+21	41	15.6	17.0 095
2661		1980	12	11.06461	05	48	08.24	+36	17	26.1	095
2855		1981	09	27.89962	00	53	20.84	+14	13	48.2	17.0 095

Note 1: near edge of plate. 2: measurement uncertain. 3 = 1 + 2.

OBSERVATIONS MADE AT GEISEI (CODE 372) BY T. SEKI AND AT KARASUYAMA ASTRONOMICAL OBSERVATORY (CODE 889) BY S. INODA. FROM NIHONDAIRA OBS. CIRC. NOS. 1440 AND 1442.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
1981 YE	1983 06	01.61233	17 23 13.52	-26 54 14.4	16.5		372
1981 YE	1983 06	01.62222	17 23 13.00	-26 54 14.7			372
1983 JA	1983 06	10.58542	15 52 44.98	-14 22 00.8		1	372
1983 JA	1983 06	10.59688	15 52 44.42	-14 22 01.0		1	372
1983 LA	1983 06	08.72292	16 25 16.9	-21 16 36		1	372
1983 LA	1983 06	10.55833	16 23 47.6	-21 07 49		1	372
1983 LA	1983 06	10.57465	16 23 46.7	-21 07 45		1	372
1983 LA	1983 06	14.54978	16 20 38.7	-20 48 43		7	889
1983 LA	1983 06	14.65070	16 20 34.1	-20 48 17		3	372
1983 LG *	1983 06	01.61233	17 23 14.08	-26 55 51.1	16.5		372
1983 LG	1983 06	01.62222	17 23 13.93	-26 55 49.8			372

Note 1: measured by T. Urata. 2: poor distribution of reference stars. 3 = 1 + 2. 4: observatory code 889, Long. and Parallax 140.15, -342, -253 (see MPC 7759). 7 = 3 + 4.

OBSERVATIONS MADE WITH THE 1.2-M U.K. SCHMIDT TELESCOPE AT SIDING SPRING BY K. S. RUSSELL.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
1983 LC	1983 06	14.52340	16 22 25.57	-12 53 06.2	413
1983 LC	1983 06	14.56507	16 22 17.37	-12 52 04.3	413

OBSERVATIONS MADE WITH THE 0.6-M F/14 REFLECTOR AT MT. JOHN UNIVERSITY OBSERVATORY BY A. C. GILMORE. MEASURED BY P. M. KILMARTIN (ASSISTED BY R. McINTOSH AND W. M. KISSLING).

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
1316	1983 02	15.45270	07 07 32.20	-12 49 25.6			474
1316	1983 02	15.48962	07 07 30.80	-12 49 01.6			474
1620	1983 03	05.38887	10 18 03.63	-05 10 34.7			474
1620	1983 03	05.42382	10 17 48.13	-05 14 35.6			474
1620	1983 03	11.42652	09 23 33.54	-18 58 05.9		1	474
1620	1983 03	11.43589	09 23 26.72	-18 59 37.0		1	474
1620	1983 03	18.46825	07 44 12.52	-36 53 34.5			474
1620	1983 03	18.47036	07 44 10.33	-36 53 50.5			474
1620	1983 03	21.36656	06 54 26.34	-42 15 50.5			474
1620	1983 03	21.36946	06 54 22.99	-42 16 06.2			474
1980	1983 03	21.47872	11 09 46.30	-38 52 33.5			474
1980	1983 03	21.52142	11 09 42.66	-38 52 03.0			474
2368	1983 05	22.50494	16 12 15.52	-30 18 41.1			474
2368	1983 05	22.52792	16 12 13.75	-30 18 36.0			474
1951 AJ	1983 04	17.47998	14 55 13.10	-18 54 40.0			474
1951 AJ	1983 04	17.50197	14 55 11.86	-18 54 36.5			474
1977 YA	1983 04	16.44525	13 37 21.85	-26 24 09.9			474
1977 YA	1983 04	16.46736	13 37 19.84	-26 24 17.8			474

1979	QU9		1983	03	18.57936	15	36	48.11	-36	46	12.8	2 474
1979	QU9		1983	03	18.60373	15	36	48.13	-36	46	21.9	2 474
1979	QU9		1983	04	16.49954	15	25	45.36	-39	30	23.4	2 474
1979	QU9		1983	04	16.52234	15	25	44.32	-39	30	28.5	2 474
1979	QU9		1983	04	17.52627	15	24	59.82	-39	34	19.3	474
1979	QU9		1983	04	17.54537	15	24	58.95	-39	34	23.6	474
1979	WO		1983	05	22.60419	17	09	24.36	-33	33	49.1	474
1979	WO		1983	05	22.62676	17	09	23.20	-33	33	51.5	474
1980	LA		1983	05	19.48058	12	33	01.86	-31	52	08.4	474
1980	VL1		1983	06	07.37541	12	41	29.38	-22	24	11.6	16 1 474
1980	VL1		1983	06	07.41881	12	41	29.77	-22	23	52.7	1 474
1980	VL1		1983	06	12.41042	12	42	37.84	-21	49	12.3	1 474
1980	VL1		1983	06	12.45428	12	42	38.45	-21	48	56.2	1 474
1981	UL		1983	03	20.55257	11	49	21.15	-19	37	12.2	474
1981	UL		1983	03	20.57574	11	49	19.92	-19	37	03.5	474
1982	BZ2		1983	03	21.63300	16	40	48.00	-29	28	46.9	474
1982	BZ2		1983	03	21.65963	16	40	48.99	-29	28	56.8	474
1982	BZ2		1983	04	17.56968	16	48	29.89	-32	02	46.6	474
1982	BZ2		1983	04	17.59132	16	48	29.74	-32	02	53.4	474
1982	BZ2		1983	05	22.55488	16	26	19.64	-34	07	13.6	474
1982	BZ2		1983	05	22.57769	16	26	18.15	-34	07	14.9	474
1982	FK		1983	04	16.54954	17	51	34.31	-35	04	05.2	474
1982	FK		1983	04	16.57266	17	51	34.75	-35	04	12.5	474
1982	TA		1983	05	22.65847	19	13	19.79	-41	50	30.8	474
1982	TA		1983	05	22.68718	19	13	16.66	-41	50	46.8	474
1982	TA		1983	06	12.69620	18	27	36.10	-43	55	39.8	474
1982	TA		1983	06	12.74528	18	27	29.15	-43	55	44.8	474
1983	LB		1983	07	06.51991	15	28	31.83	-50	24	17.7	474
1983	LB		1983	07	06.54225	15	28	27.76	-50	25	57.2	474
1983	LE	*	1983	06	07.37541	12	38	38.87	-22	18	50.3	17 1 474
1983	LE		1983	06	07.41881	12	38	39.77	-22	18	34.1	1 474
1983	LF	*	1983	06	07.37541	12	43	05.05	-21	54	31.2	16 1 474
1983	LF		1983	06	07.41881	12	43	06.10	-21	54	22.7	1 474
1983	LF		1983	06	12.41042	12	45	15.91	-21	33	56.0	1 474
1983	LF		1983	06	12.45428	12	45	17.11	-21	33	46.3	1 474
1983	LF		1983	07	05.44780	13	02	58.21	-20	51	06.6	16.6 474
1983	LF		1983	07	05.47049	13	02	59.54	-20	51	06.3	474
1983	LF		1983	07	11.43993	13	09	19.57	-20	52	45.4	16.6 474
1983	LF		1983	07	11.46169	13	09	21.17	-20	52	45.6	474

Note 1: 0.25-m f/7 Cooke astrograph. 2: image near edge of film.

OBSERVATIONS MADE WITH THE 0.46-M SCHMIDT AT PALOMAR BY C. SHOEMAKER, E. SHOEMAKER, S. SMREKAR AND D. STEVENSON. SCANNED AND MEASURED BY C. SHOEMAKER.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
301	1983	06 14.23333	16 13 43.84	-13 33 15.9	15	675
301	1983	06 14.25416	16 13 42.76	-13 33 16.7		675
1330	1983	06 11.32013	16 47 13.37	+00 59 45.1		675
1330	1983	06 11.34236	16 47 12.55	+00 59 45.2	15.5	675
1330	1983	06 13.28750	16 45 46.72	+00 58 52.2		675
1330	1983	06 14.28958	16 45 03.08	+00 58 10.1		675
1511	1983	06 14.27430	17 39 56.37	-23 41 34.9	16	675
1511	1983	06 14.29444	17 39 54.81	-23 41 37.9		675
1660	1983	06 11.32013	16 49 10.54	-00 00 28.9		675
1660	1983	06 11.34236	16 49 09.18	-00 00 22.3	16.5	675
1660	1983	06 13.28750	16 47 16.77	+00 08 20.1		675
1660	1983	06 14.28958	16 46 19.75	+00 12 29.4		675
2035	1983	06 11.20902	14 52 34.42	-00 35 26.5		675
2035	1983	06 14.34930	14 48 57.66	-02 10 26.1		675

2604		1983	06	11.32013	16	45	15.89	+01	51	02.0	675
2604		1983	06	11.34236	16	45	14.75	+01	50	47.5	16 675
2604		1983	06	13.28750	16	43	35.70	+01	30	49.4	675
2604		1983	06	14.28958	16	42	45.62	+01	20	01.9	675
1981	YB	1983	03	11.34930	12	58	32.32	+18	42	05.7	16.5 675
1981	YB	1983	03	11.36944	12	58	31.30	+18	42	15.1	675
1981	YB	1983	03	13.33055	12	56	59.65	+18	55	29.4	675
1981	YB	1983	03	13.35138	12	56	58.41	+18	55	39.8	675
1981	YB	1983	03	15.43750	12	55	16.59	+19	09	10.4	675
1981	YB	1983	03	15.46805	12	55	15.09	+19	09	21.8	675
1982	XB	1983	01	13.50763	10	56	34.14	+42	34	57.7	675
1983	EX	1983	03	11.34930	13	05	02.49	+19	49	53.7	17 675
1983	EX	1983	03	11.36944	13	05	01.79	+19	50	01.4	675
1983	EX	1983	03	13.33055	13	03	50.79	+20	02	53.4	675
1983	EX	1983	03	13.35138	13	03	49.84	+20	03	03.4	675
1983	EX	1983	03	15.43750	13	02	30.46	+20	16	14.4	675
1983	EX	1983	03	15.46805	13	02	29.26	+20	16	26.4	675
1983	LH	1983	06	11.32013	16	41	41.79	-02	36	40.6	675
1983	LH *	1983	06	11.34236	16	41	40.85	-02	36	36.4	18 675
1983	LH	1983	06	13.28750	16	40	07.99	-02	31	09.2	675
1983	LH	1983	06	14.28958	16	39	21.00	-02	28	41.6	675
1983	LJ	1983	06	11.32013	16	42	01.33	-00	55	41.0	675
1983	LJ *	1983	06	11.34236	16	42	00.15	-00	55	36.0	18 675
1983	LJ	1983	06	13.28750	16	40	21.04	-00	51	09.0	675
1983	LJ	1983	06	14.28958	16	39	30.78	-00	49	10.6	675
1983	LM	1983	06	13.38472	20	12	21.63	-00	37	42.7	675
1983	LM	1983	06	13.41111	20	12	21.36	-00	37	29.8	675
1983	LM *	1983	06	14.35694	20	12	10.74	-00	29	37.7	17 675
1983	LM	1983	06	14.38055	20	12	10.43	-00	29	25.9	675

OBSERVATIONS MADE WITH THE 1.2-M SCHMIDT AT PALOMAR BY J. GIBSON.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
1983 LB	1983 06	17.32578	16 22 20.65	-22 19 23.7	675
1983 LB	1983 06	18.24663	16 20 05.86	-23 40 29.8	675
1983 LB	1983 06	19.38480	16 17 12.67	-25 22 10.5	675
1983 LB	1983 06	20.37161	16 14 40.72	-26 51 29.0	675
1983 LC	1983 06	17.34314	16 12 24.60	-11 34 40.1	675
1983 LC	1983 06	18.28272	16 08 34.55	-11 03 46.8	675
1983 LC	1983 07	01.20076	14 13 03.09	+05 36 39.5	675
1983 LC	1983 07	02.19070	13 54 02.52	+08 19 22.4	675
1983 LC	1983 07	02.19695	13 53 54.58	+08 20 26.2	675
1983 LC	1983 07	02.34626	13 50 45.32	+08 46 17.1	675
1983 LD	1983 06	18.29592	17 21 01.61	-05 17 55.4	675
1983 LD	1983 06	20.34314	17 18 40.33	-04 47 44.9	675

OBSERVATIONS MADE AT THE LOWELL OBSERVATORY'S ANDERSON MESA STATION BY H. L. GICLAS AND B. A. SKIFF. MEASURED BY E. BOWELL, C. SHOEMAKER AND S. SWANSON.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
59	1983 05	06.16111	10 11 57.21	+11 08 53.0			688
59	1983 05	06.19167	10 11 57.88	+11 08 52.5			688
289	1983 05	06.21042	11 18 58.30	+04 32 56.5			688
289	1983 05	06.26667	11 18 57.91	+04 33 03.9			688
294	1983 05	06.16111	10 27 54.65	+13 46 24.5			688
294	1983 05	06.19167	10 27 54.81	+13 46 23.0			688
359	1983 05	06.16111	10 27 02.02	+11 50 10.2			688
359	1983 05	06.19167	10 27 02.26	+11 50 04.5			688
378	1983 05	07.15069	11 04 04.37	-01 16 47.2			688
378	1983 05	07.20833	11 04 04.49	-01 16 36.9			688

421		1983	05	06.21042	11	15	44.15	+04	09	34.7		688
421		1983	05	06.26667	11	15	43.98	+04	09	43.3	1	688
515		1983	05	06.21042	11	24	25.67	+06	15	49.5		688
515		1983	05	06.26667	11	24	25.33	+06	15	50.6		688
688		1983	05	06.21042	11	22	55.51	+07	45	13.2		688
688		1983	05	06.26667	11	22	55.32	+07	45	19.5		688
826		1983	05	07.15069	11	27	43.24	-03	20	19.9		688
826		1983	05	07.20833	11	27	43.20	-03	20	03.4		688
838		1983	05	07.15069	11	09	49.98	-06	17	52.4		688
838		1983	05	07.20833	11	09	49.89	-06	17	37.4		688
871		1983	05	06.16111	10	34	53.67	+11	50	11.0		688
871		1983	05	06.19167	10	34	54.90	+11	50	05.8		688
883		1983	05	07.15069	11	11	16.60	-01	50	34.1		688
883		1983	05	07.20833	11	11	16.24	-01	50	25.5		688
900		1983	05	06.16111	10	10	31.54	+08	41	33.7		688
900		1983	05	06.19167	10	10	32.46	+08	41	37.1		688
962		1983	05	06.21042	11	16	34.71	+06	49	36.8		688
962		1983	05	06.26667	11	16	34.44	+06	49	36.0		688
971		1983	04	18.15278	12	36	40.75	+18	06	06.1		688
971		1983	04	18.18472	12	36	39.19	+18	06	04.3		688
1058		1983	05	06.21042	11	12	42.86	+02	00	12.1	17.2	688
1058		1983	05	06.26667	11	12	42.72	+02	00	22.5		688
1121		1983	05	06.21042	11	15	22.28	+03	34	33.3		688
1121		1983	05	06.26667	11	15	22.05	+03	34	30.0		688
1261		1983	05	06.16111	10	17	13.68	+13	42	32.9		688
1261		1983	05	06.19167	10	17	14.59	+13	42	26.0		688
1332		1983	05	06.21042	11	21	59.67	+04	42	38.8		688
1332		1983	05	06.26667	11	21	59.21	+04	42	39.1		688
1544		1983	05	06.16111	10	35	25.82	+12	56	41.7		688
1544		1983	05	06.19167	10	35	26.49	+12	56	32.8		688
1728		1983	05	07.15069	11	07	48.01	-02	51	51.8		688
1728		1983	05	07.20833	11	07	48.24	-02	51	39.2		688
1746		1983	05	07.15069	11	10	35.51	-01	02	39.9		688
1746		1983	05	07.20833	11	10	34.97	-01	02	36.3		688
2002		1983	05	06.16111	10	18	19.37	+10	18	06.8		688
2002		1983	05	06.19167	10	18	20.44	+10	18	05.9		688
2067		1983	05	06.16111	10	16	10.48	+11	49	07.3		688
2067		1983	05	06.19167	10	16	10.82	+11	49	04.1		688
2111		1983	05	06.16111	10	18	08.36	+11	09	33.4		688
2111		1983	05	06.19167	10	18	08.96	+11	09	33.5		688
2142		1983	05	06.21042	11	09	39.82	+05	50	24.2		688
2142		1983	05	06.26667	11	09	40.08	+05	50	23.1		688
2201		1983	06	28.17361	13	27	24.30	-11	09	04.8		688
2201		1983	06	28.19444	13	27	39.48	-11	10	45.6		688
2207		1983	05	06.21042	11	17	34.77	+07	13	34.9		688
2207		1983	05	06.26667	11	17	34.39	+07	13	36.0		688
2271		1983	05	06.16111	10	13	40.79	+13	22	20.5		688
2271		1983	05	06.19167	10	13	41.35	+13	22	15.2		688
2291		1983	05	06.16111	10	11	01.01	+11	26	11.6		688
2291		1983	05	06.19167	10	11	01.87	+11	26	17.2		688
2380		1983	05	06.16111	10	23	16.71	+08	28	38.9		688
2380		1983	05	06.19167	10	23	17.70	+08	28	33.4		688
2674		1983	05	06.21042	11	14	09.57	+04	51	21.4		688
2674		1983	05	06.26667	11	14	09.24	+04	51	23.8		688
2719		1983	05	06.21042	11	10	39.87	+06	10	48.1		688
2719		1983	05	06.26667	11	10	40.52	+06	10	42.3		688
1981	YB	1983	04	18.15278	12	25	12.08	+20	43	47.8	17.0	688
1981	YB	1983	04	18.18472	12	25	10.61	+20	43	44.3		688
1983	CB	1983	05	06.16111	10	25	52.42	+08	39	41.5	17.0	688

1983	CB		1983	05	06.19167	10	25	52.51	+08	39	31.9		688
1983	CS2		1983	05	06.16111	10	24	23.50	+08	57	13.8	17.2 1	688
1983	CS2		1983	05	06.19167	10	24	24.94	+08	57	03.3		688
1983	EW		1983	05	06.21042	11	27	40.83	+06	15	57.8	17.2	688
1983	EW		1983	05	06.26667	11	27	41.59	+06	15	55.5		688
1983	FC		1983	05	07.15069	11	13	21.46	-06	01	30.6	17.0	688
1983	FC		1983	05	07.20833	11	13	21.85	-06	01	30.2		688
1983	LC		1983	07	02.19930	13	53	51.30	+08	20	51.8		688
1983	LC		1983	07	02.21944	13	53	25.80	+08	24	18.2		688
1983	LM		1983	07	13.26389	19	56	18.56	+01	57	20.8	16.2	688
1983	LM		1983	07	13.29514	19	56	17.12	+01	57	22.4		688
1983	NA	*	1983	07	10.34583	21	00	48.89	-09	33	45.9	16.5 2	688
1983	NA		1983	07	13.32639	20	56	14.89	-08	27	18.7		688

Note 1: declination uncertain. 2: discoverer Bowell.

OBSERVATIONS MADE AT THE LOWELL OBSERVATORY BY C. D. SLAUGHTER. MEASURED BY E. BOWELL.

Object	Date	UT	R. A. (1950)	Decl.	N	Obs.
311	1959	03 06.32639	11 04 30.79	+11 13 39.0		690
311	1959	03 07.30556	11 03 43.00	+11 18 40.3		690
311	1959	03 09.31944	11 02 04.74	+11 28 46.0		690
311	1959	03 10.30556	11 01 16.79	+11 33 37.9		690
733	1959	03 06.32639	10 45 44.73	+08 21 58.2		690
733	1959	03 07.30556	10 44 50.36	+08 21 30.4		690
733	1959	03 09.31944	10 42 59.36	+08 20 26.6		690
733	1959	03 10.30556	10 42 05.48	+08 19 54.1		690
1003	1959	03 06.32639	10 38 49.24	+09 33 38.5		690
1003	1959	03 07.30556	10 38 05.27	+09 38 30.0		690
1003	1959	03 09.31944	10 36 35.67	+09 48 21.7	3	690
1003	1959	03 10.30556	10 35 53.00	+09 53 00.8		690
2009	1959	03 09.31944	10 50 23.87	+11 15 23.7		690
2009	1959	03 10.30556	10 49 39.53	+11 20 09.9		690
2357	1959	03 09.31944	10 56 55.49	+05 49 02.7		690
2357	1959	03 10.30556	10 56 26.43	+05 52 21.6		690
2595	1959	03 09.31944	10 50 35.95	+11 18 50.4	3	690
2595	1959	03 10.30556	10 49 50.31	+11 26 29.7		690
2629	1959	03 06.32639	11 00 51.85	+04 28 36.3	4	690
2629	1959	03 07.30556	10 58 38.13	+04 15 50.7	4	690
2629	1959	03 09.31944	10 54 00.32	+03 49 19.7	3	690
2629	1959	03 10.30556	10 51 44.01	+03 36 07.6	4	690
1959	ER	1959 03 06.32639	10 42 51.53	+04 17 58.7		690
1959	ER	1959 03 07.30556	10 41 49.24	+04 18 41.0		690
1959	ER	1959 03 09.31944	10 39 42.68	+04 20 09.4	1	690
1959	ER	1959 03 10.30556	10 38 41.07	+04 20 53.4		690
1959	ES	1959 03 06.32639	10 43 48.13	+05 59 12.7		690
1959	ES	1959 03 07.30556	10 42 56.93	+06 03 07.0		690
1959	ES	1959 03 09.31944	10 41 12.93	+06 11 11.1		690
1959	ES	1959 03 10.30556	10 40 22.07	+06 15 00.2		690
1959	EW	1959 03 06.32639	11 05 18.91	+03 52 03.7		690
1959	EW	1959 03 07.30556	11 04 13.58	+03 52 02.6		690
1959	EW	1959 03 09.31944	11 01 59.33	+03 52 03.2	1	690
1959	EW	1959 03 10.30556	11 00 53.60	+03 52 03.9		690
1959	EX	1959 03 06.32639	11 08 30.99	+07 09 35.2		690
1959	EX	1959 03 07.30556	11 07 24.05	+07 05 50.1		690
1959	EX	1959 03 09.31944	11 05 06.73	+06 58 00.1		690
1959	EX	1959 03 10.30556	11 04 00.08	+06 54 08.1		690

Note 1: right ascension uncertain. 2: declination uncertain. 3 = 1 + 2. 4: remeasurement of the observations on MPC 2407.

OBSERVATIONS MADE AT THE LINCOLN LABORATORY ETS, NEW MEXICO, UNDER THE DIRECTION OF L. G. TAFF.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
197	1983 05	08.23079	13 51 06.85	-00 47 16.7	704
197	1983 05	08.26786	13 51 04.85	-00 47 16.3	704
253	1983 05	08.24071	14 24 13.81	-07 08 50.5	704
253	1983 05	08.28891	14 24 11.25	-07 08 31.6	704
345	1983 05	13.28626	16 28 55.40	-13 48 34.3	704
345	1983 05	13.31664	16 28 53.56	-13 48 30.0	704
369	1983 05	08.24448	14 15 18.65	+03 51 11.7	704
369	1983 05	08.29299	14 15 16.02	+03 51 19.0	704
411	1983 05	08.22306	15 39 38.61	+01 22 53.0	704
411	1983 05	08.28462	15 39 35.39	+01 22 56.2	704
560	1983 05	08.23576	13 51 44.16	+01 37 20.8	704
560	1983 05	08.27197	13 51 42.41	+01 37 31.7	704
727	1983 05	08.21147	15 38 01.81	+04 02 38.3	704
727	1983 05	08.27636	15 37 57.94	+04 02 52.7	704
727	1983 05	08.28051	15 37 58.04	+04 02 56.5	704
992	1983 05	13.25763	14 09 00.36	-10 31 48.5	704
992	1983 05	13.29551	14 08 58.87	-10 31 30.1	704
1355	1983 05	13.25077	16 23 43.78	-09 20 16.7	704
1355	1983 05	13.29075	16 23 41.49	-09 19 16.6	704
1680	1983 05	13.26172	15 14 06.80	-13 39 01.2	704
1680	1983 05	13.29922	15 14 04.72	-13 38 56.3	704

OBSERVATIONS MADE AT THE GOETHE LINK OBSERVATORY. MEASURED AND REDUCED AT INDIANA UNIVERSITY.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
1953 VA2	1953 11	11.09997	03 49 29.99	+14 11 51.6	760
1953 VA2	1953 11	11.14512	03 49 27.15	+14 11 34.6	760

OBSERVATIONS MADE AT THE OAK RIDGE OBSERVATORY BY R. E. MC CROSKY, C.-Y. SHAO AND G. SCHWARTZ (WITH ASSISTANCE FROM C. M. BARDWELL, D. W. E. GREEN AND B. G. MARSDEN).

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1940 YF	1983 06	11.12895	13 42 51.61	-06 54 17.8		801
1942 RN	1983 06	09.23011	17 39 09.67	-08 15 23.8	16.5	801
1942 RN	1983 06	11.18763	17 37 25.25	-08 13 31.4		801
1978 LB	1983 04	14.14726	10 46 22.49	+32 45 30.6		801
1981 YD	1983 06	09.17725	15 39 42.94	-18 06 25.3		801
1981 YR1	1983 06	11.21443	17 43 04.98	-12 17 28.7		801
1982 BK1	1983 06	09.11332	15 58 51.44	+01 12 17.3	18	801
4583 P-L	1983 06	09.15687	15 30 54.56	-17 31 59.9		801

OBSERVATIONS MADE AT THE JCPM OI STATION BY K. SUZUKI. MEASURED BY T. URATA. FROM NIHONDAIRA OBS. CIRC. NO. 1440.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
153	1983 06	01.52361	16 07 25.70	-17 33 24.5	882
153	1983 06	01.56528	16 07 23.90	-17 33 13.7	882
240	1983 06	01.52361	16 07 48.07	-18 34 42.2	882
240	1983 06	01.56528	16 07 45.74	-18 34 35.4	882
420	1983 06	01.54444	16 28 10.33	-20 55 56.0	882
420	1983 06	01.58611	16 28 08.32	-20 55 48.6	882
1963	1983 05	18.69375	15 59 01.6	+11 17 17	882
1963	1983 05	18.73125	15 58 59.07	+11 17 10.0	882

ORBITAL ELEMENTS OF ONE-OPPOSITION MINOR PLANETS.

The orbit computers and authors of double designations are B = C. M. Bardwell, g = A. C. Gilmore, I = H. Oishi, M = B. G. Marsden, U = T. Urata. For further information see MPC 7828.

Planet	B(1,0)	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1959 ER	13.0	590313	304.89	258.22	332.20	11.99	0.1090	2.5944	6	4	1	B
1959 ES	12.0	590313	217.50	347.77	325.65	4.67	0.1302	2.7363	4	4	1	M
1976 SE1	15.6	760919	347.02	182.33	187.08	3.07	0.0996	2.2255	34	6	2	I
1979 YS	15.0	791213	351.98	177.18	288.52	8.02	0.1322	2.3992	36	5		M
1979 YC9	16.0	791213	350.59	67.82	49.99	2.54	0.1822	2.1597	31	3		M
1983 CZ2	15.0	830307	10.46	192.46	319.00	6.46	0.1741	2.4107	29	0		B
1983 EV	13.0	830307	234.91	305.21	5.73	6.09	0.1564	2.7242	4	5	1	M
1983 EX	12.5	830307	54.77	12.23	92.95	17.30	0.1934	3.4347	6	8		B
1983 LA	12.5	830615	326.50	55.89	249.53	6.84	0.2312	3.1129	13	7		U
1983 LD	15.0	830615	17.81	5.07	238.86	19.11	0.0397	1.9186	7	4		B
1983 LF	12.5	830705	358.33	288.11	301.29	11.31	0.0833	2.6062	34	8		g
1983 LH	15.0	830615	359.89	64.10	191.26	12.80	0.1098	2.6832	3	4		M
1983 LJ	14.5	830615	105.32	309.21	190.80	14.80	0.0883	2.5464	3	4		M
1983 LM	14.0	830705	2.97	71.24	218.24	12.59	0.1683	2.6491	30	6		M

Note 1: e assumed. 2: double designation 1976 SE1 = 1976 QD1 (I, JAM 1442).

* * * * *

ORBITAL ELEMENTS BY B. G. MARSDEN, SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

The identifications are by B. G. Marsden unless otherwise stated.

Comet Elias (1981 XV)
Epoch 1981 Aug. 24.0 ET = JDE 2444840.5
T 1981 Aug. 18.22568 ET

		(1950.0)	P	Q
q	4.7425175			
z	-0.0001390	Peri.	310.24103	-0.66716755	-0.74224309
	+/-0.0000127	Node	176.00680	+0.01707388	+0.06924718
e	1.0006593	Incl.	115.31702	-0.74471198	+0.66654334

From 23 observations 1981 Apr. 3-1983 Apr. 14, mean residual 1".4.

Comet Bowell (1980b)
Epoch 1982 Mar. 12.0 ET = JDE 2445040.5
T 1982 Mar. 12.29258 ET

		(1950.0)	P	Q
q	3.3639514			
z	-0.0170387	Peri.	134.88634	-0.35903118	+0.93294845
	+/-0.0000025	Node	114.05619	-0.86424910	-0.32159285
e	1.0573175	Incl.	1.66483	-0.35237778	-0.16181852

From 91 observations 1980 Feb. 11-1983 July 8, mean residual 1".1.

Comet Austin (1982g)
Epoch 1982 Aug. 19.0 ET = JDE 2445200.5
T 1982 Aug. 24.72931 ET

		(1950.0)	P	Q
q	0.6478114			
z	+0.0009243	Peri.	33.82600	+0.71537986	-0.41400783
	+/-0.0000053	Node	325.56373	-0.61100200	+0.02015860
e	0.9994012	Incl.	84.48951	+0.33898113	+0.91005007

From 97 observations 1982 June 19-1983 Apr. 3, mean residual 1".1.

Periodic Comet Russell 3 (1983i)
T 1982 Nov. 22.60062 ET

		(1950.0)	P	Q
q 2.5166839				
n 0.13256041	Peri.	353.52309	-0.47337615	+0.85137648
a 3.8094314	Node	248.01789	-0.79680192	-0.52324702
e 0.3393544	Incl.	14.10568	-0.37552858	+0.03702223
P 7.44				

From 15 observations 1983 June 14-July 14.

Comet IRAS (1983f)
T 1983 Jan. 19.03044 ET

		(1950.0)	P	Q
q 1.4164834				
	Peri.	227.06895	-0.23740700	-0.88144720
	Node	118.92541	-0.69841843	+0.44699987
e 1.0	Incl.	152.19479	-0.67516635	-0.15245312

From 7 observations 1983 May 18-June 12.

Periodic Comet Bowell-Skiff (1983c)
Epoch 1983 Mar. 7.0 ET = JDE 2445400.5
T 1983 Mar. 15.17040 ET

		(1950.0)	P	Q
q 1.9447919				
n 0.06290824	Peri.	168.99679	-0.90345095	-0.42837610
a 6.2612979	Node	345.60478	+0.38810489	-0.80102635
e 0.6893948	Incl.	3.79174	+0.18207406	-0.41815153
P 15.67				

From 31 observations 1983 Feb. 11-June 10, mean residual 1".4.

Comet Sugano-Saigusa-Fujikawa (1983e)
Epoch 1983 Apr. 16.0 ET = JDE 2445440.5
T 1983 May 1.32877 ET

		(1950.0)	P	Q
q 0.4710806				
z -0.0000420	Peri.	82.16611	+0.13138922	-0.11643230
+/-0.0000380	Node	82.34232	-0.28157200	-0.95656104
e 1.0000198	Incl.	96.62217	+0.95050201	-0.26727230

From 46 observations 1983 May 9-June 17, mean residual 1".9.

Comet IRAS-Araki-Alcock (1983d)
Epoch 1983 May 26.0 ET = JDE 2445480.5
T 1983 May 21.25236 ET

		(1950.0)	P	Q
q 0.9913413				
z +0.0098827	Peri.	192.84348	-0.59934118	+0.35769672
+/-0.0000287	Node	48.40522	-0.62327061	+0.35285731
e 0.9902029	Incl.	73.25074	-0.50231852	-0.86460671

From 75 observations 1983 Apr. 27-July 12, mean residual 1".3.

Periodic Comet IRAS (1983j)
T 1983 Aug. 23.69472 ET

		(1950.0)	P	Q
q 1.6978602				
n 0.07399708	Peri.	356.81805	+0.99537031	+0.08935863
a 5.6190080	Node	357.18788	-0.06422512	+0.34438275
e 0.6978363	Incl.	46.17807	-0.07150574	+0.93456704
P 13.32				

From 13 observations 1983 June 30-July 21.

(1672) Gezelle
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	202.08971	(1950.0)	P	Q
n	0.17083821	Peri. 252.89193	+0.28239171	-0.95929916
a	3.2167159	Node 180.70518	+0.88687740	+0.26116175
e	0.2525840	Incl. 1.04356	+0.36565474	+0.10742283
P	5.77	B(1,0) 13.1		

Residuals in seconds of arc (or two decimals in units of degrees)

240312	024	(11.3- | 10.0+)		350422	754	2.1+	0.2-	741219	330	0.4+	1.9-
290108	029	(0.00+ | 0.03+)X		350422	754	2.7+	3.0+	750108	049	0.2+	0.1-
290117	029	(76.3- | 25.8-)X		391111	062	3.0-	1.3+	750108	049	0.4+	0.3-
330920	094	4.8-	2.0+		391120	062	(45.7- | 49.0+)X	750109	049	0.3+	0.1-
330920	094	4.8-	2.3+		621201	760	0.6-	1.9-	750109	049	0.4-	0.3+
330925	094	4.1+	4.1+		621201	760	0.6-	1.0-	750110	330	0.0	0.5-
350129	012	3.7+	3.5+		621202	760	0.7+	1.9-	750115	095	1.8-	1.4-
350207	012	0.6+	0.9+		621202	760	0.9+	1.5-	750116	330	(0.9+ | 9.3+)
350208	012	0.7-	1.6+		700411	805	1.2-	0.1+	750117	095	1.6-	1.2-
350226	012	2.1+	5.0+		700411	805	0.8-	0.9-	760401	095	1.2-	0.9-
350304	012	4.3+	3.4-		700411	805	1.3-	0.4-	760404	095	1.6-	0.3-
350307	012	(0.04- | 0.05-)		730827	095	0.1-	1.1-	760502	095	2.5-	1.1-
350307	012	(5.5+ | 0.9+)		730831	095	2.6+	0.6+	790827	095	0.4-	0.5-
350309	012	2.1+	1.4-		730905	095	2.6+	0.1+	790902	095	0.5+	0.2-
350324	012	(0.08-	0.02+)		730922	095	(6.9-	0.6-)	790924	095	1.2+	1.2-
350327	012	(0.16-	0.02-)		730923	095	(10.0-	0.5+)	810110	688	1.5+	0.8-
350402	012	(7.8- | 3.2+)		730925	095	0.8+	0.3-	810110	688	0.6+	0.7-
350403	012	2.4+	0.2+		730928	095	(5.6- | 0.7+)				

(1676) Kariba
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	85.53198	(1950.0)	P	Q
n	0.29482795	Peri. 204.09855	-0.20418933	+0.97508584
a	2.2357520	Node 54.23036	-0.87985910	-0.14398559
e	0.1868577	Incl. 6.13305	-0.42913246	-0.16874763
P	3.34	B(1,0) 14.2		

Residuals in seconds of arc

390515	078	2.2+	3.1+		531014	760	5.4-	0.3-	790419	807	(1.4- | 1.6-)
390525	078	0.7+	0.0		531014	760	2.8-	0.1-	790424	095	1.5-	2.4-
390607	078	1.5+	0.1-		531031	760	0.6+	0.9+	790426	807	1.3-	1.6-
390615	078	0.0	0.1+		531031	760	1.2+	1.4+	790426	807	1.9-	1.5-
390621	008	(7.6- | 0.5+)		531105	760	0.1-	0.7-	801015	095	1.5+	0.9+
390622	008	0.9+	0.2-		531105	760	1.8+	2.2+	801017	095	2.3+	1.5+
390622	078	0.5+	0.2-		590604	760	0.7-	0.6-	820130	688	1.6-	3.2-
420314	062	2.0-	4.0+		590604	760	0.6-	1.5+	820130	688	0.6-	2.9-
420317	062	(5.6+ | 8.7+)		690507	095	2.3+	2.1-	820221	688	0.7+	2.5-
490520	078	2.7+	2.5-		690519	095	2.9+	4.9+	820221	688	4.2-	1.8-
490531	760	0.4+	0.2-		690521	030	(7.0- | 1.2-)	820304	688	0.4+	0.7-
490531	760	0.3+	1.0-		731029	095	0.6-	1.2-				
520226	711	3.6+	3.7+		790331	095	2.8-	0.2-				

(2002) Euler
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	350.18623	(1950.0)	P	Q
n	0.26231614	Peri. 51.53456	-0.64312052	+0.76575412
a	2.4168668	Node 178.42274	-0.74059012	-0.62061452
e	0.0703012	Incl. 8.52043	-0.19473641	-0.16869574
P	3.76	B(1,0) 13.4		

Residuals in seconds of arc

380222	062	(92.9-	13.3+)X	730829	095	0.5-	4.4-	770911 095	0.1+	1.2+
380224	062	(38.2-	22.8+)X	730902	095	0.2-	3.0-	770918 095	0.9+	0.8-
420414	062	1.5-	0.0	730922	095	0.1-	2.1+	770919 095	0.5-	1.2-
420417	062	1.0+	1.0+	730923	095	0.5-	1.3+	771009 095	1.6-	0.0
530309	012	1.5+	1.3-	730925	095	2.9+	0.0	830410 688	0.9-	1.4-
530316	012	0.9-	0.4-	730928	095	0.5+	1.4+	830410 688	0.2+	1.5-

(2005) Hencke

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	92.24143		(1950.0)	P	Q
n	0.23233714	Peri.	110.33601	+0.73117872	-0.65290379
a	2.6205370	Node	290.98391	+0.51975642	+0.72089815
e	0.1669110	Incl.	12.22592	+0.44184945	+0.23242737
P	4.24	B(1,0)	13.6		

Residuals in seconds of arc

730902	026	0.8-	0.8+	750115	801	2.7+	1.0+	760604 485	0.3-	0.5+
730903	026	1.5-	0.2+	750115	801	2.2+	1.0+	770815 801	1.3-	0.9+
730904	026	0.1-	0.3+	750203	801	0.2+	0.3-	770815 026	2.8-	0.7+
730907	026	1.0-	0.9-	750205	026	1.7+	0.5-	770818 801	0.4+	0.3+
730925	026	0.8+	0.8-	750207	026	0.2-	0.3-	770904 026	1.1-	1.8+
730927	026	1.5+	0.2-	750208	801	0.2+	0.2-	770912 026	1.7+	1.1+
730930	026	3.3+	0.7+	760402	485	0.1-	0.0	790119 330	0.5+	0.3-
731004	026	0.0	0.6-	760402	485	2.8-	0.5-	810606 688	0.8-	0.5+
731020	026	1.1-	0.1-	760424	485	0.7+	0.8-	810606 688	0.5+	0.1-
731022	026	0.3+	0.5+	760424	485	0.7+	0.4-	810725 688	1.3+	1.2-
731223	801	2.4-	0.1+	760521	485	0.6-	0.7-	810725 688	2.0+	2.0-
750111	026	1.5+	2.5+	760521	485	2.2+	1.1-	821115 688	0.3+	2.0-
750111	026	5.3-	0.1-	760604	485	2.5-	2.0+	821115 688	1.8-	1.3-

(2263) Shaanxi

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	5.17181		(1950.0)	P	Q
n	0.18809768	Peri.	316.91555	+0.97013996	-0.18166003
a	3.0168040	Node	54.23572	+0.23851719	+0.83480344
e	0.1106668	Incl.	11.42352	-0.04402287	+0.51971419
P	5.24	B(1,0)	12.5		

Residuals in seconds of arc (or two decimals in units of degrees)

361116	020	(0.00+	0.03+)	781030	330	0.5-	1.3-	800214 801	0.5-	0.1-
430103	020	(20.8+	3.0+)X	781101	095	0.5+	0.5+	800313 801	1.8-	0.6-
571021	760	(61.8-	36.6-)X	781103	330	0.8+	2.1-	810330 688	0.7-	0.8-
690115	095	4.2-	1.5+	781107	330	0.7+	0.8-	810602 688	0.4-	1.9-
731220	095	3.5+	2.7+	781127	330	0.7-	1.1-	810602 688	1.0-	2.4-
731221	095	3.3+	0.4+	781130	330	1.9-	2.1-			
781009	095	0.8+	0.4-	800123	095	1.6+	0.5+			

(2318) 6521 P-L

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	263.48639		(1950.0)	P	Q
n	0.29152212	Peri.	241.28158	+0.82700551	-0.56146328
a	2.2526223	Node	152.84553	+0.53520354	+0.77067796
e	0.1313790	Incl.	3.59922	+0.17210187	+0.30135437
P	3.38	B(1,0)	15.0		

Residuals in seconds of arc

600924	675	0.4+	0.2+	601026	675	0.7+	0.7+	771108	330	0.0	0.9-
600926	675	0.5+	0.2+	700828	095	4.2-	3.6-	771111	330	0.0	0.0
600927	675	0.4+	0.5-	760502	095	1.5-	2.8-	800709	801	1.5+	0.5-
600928	675	0.6+	0.2-	770923	095	0.2+	1.6-	800813	801	0.4+	0.3-
601017	675	0.7-	0.5+	771012	330	2.9+	1.9+	800904	801	2.7+	0.4-
601022	675	0.2+	0.5+	771103	330	1.6-	1.3-	820130	688	0.7+	2.8-
601025	675	0.1-	0.8+	771104	330	0.8-	2.1-	820130	688	1.9-	2.2-

(2500) 1926 GC
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	35.06939		(1950.0)	P	Q
n	0.29385451	Peri.	159.84376	-0.88544726	+0.45595795
a	2.2406867	Node	47.61533	-0.44131958	-0.76429019
e	0.0997634	Incl.	6.99237	-0.14567148	-0.45602943
P	3.35	B(1,0)	14.0		

Residuals in seconds of arc (or two decimals in units of degrees)

260402	024	2.6+	4.3-	460326	012	0.2+	1.7+	811105	688	0.9+	0.5-
260407	024	0.2-	0.6+	460401	012	0.9+	0.7+	811120	688	1.4-	0.0
260413	024	0.9-	0.1+	460402	012	(96.5+	47.7-)	811120	688	2.1-	0.4-
260414	024	3.0+	4.2+	811031	704	0.3+	6.0+	811202	688	2.6-	0.4+
260415	024	0.4-	3.0+	811102	688	1.2+	1.4-	811202	688	0.6+	0.1+
260415	024	(7.6-	1.2+)	811102	688	2.2+	1.4-	830316	688	0.9-	3.3-
271003	024	(0.02-	0.05-)X	811105	688	0.2-	1.3-	830316	688	2.3-	2.7-

(2893)* 1975 QD = 1933 BJ = 1970 EE = 1979 YV4 = 1981 AP

Discovered 1975 Aug. 30 at the El Leoncito Station of the Felix Aguilar Observatory. The key identification 1975 QD = 1981 AP is by E. Bowell (MPC 7599).

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	263.95860		(1950.0)	P	Q
n	0.08232709	Peri.	170.31034	+0.15140456	+0.95894482
a	5.2332830	Node	108.09816	-0.92291796	+0.22401393
e	0.0778894	Incl.	14.61223	-0.35397613	-0.17390399
P	11.97	B(1,0)	10.0		

Residuals in seconds of arc

330125	024	0.3+	4.5-	750902	808	0.5+	0.2-	810109	688	0.6+	1.9+
330126	024	0.4+	0.5+	750903	808	0.5-	1.1+	810109	688	0.7-	1.0+
700307	095	0.4-	0.3-	750905	808	0.0	0.2+	810109	688	0.6-	2.4+
750830	808	0.6-	0.1-	750905	808	1.4-	0.5+	830314	801	1.1+	0.3-
750830	808	0.1-	0.2+	750909	808	0.1+	1.5-	830414	801	0.9-	1.3+
750831	808	0.0	0.7-	750909	808	2.1-	0.8-				
750902	808	4.0+	1.9+	791218	095	0.2+	0.8-				

(2894)* 1978 SH5 = 1978 TZ4 = 1953 FQ = 1962 XZ = 1975 ET3 = 1979 YB9

Discovered 1978 Sept. 27 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	242.25618		(1950.0)	P	Q
n	0.17979963	Peri.	35.63544	-0.52168898	-0.85194549
a	3.1089246	Node	85.85001	+0.77185507	-0.49382220
e	0.1458928	Incl.	2.58884	+0.36342861	-0.17415085
P	5.48	B(1,0)	13.5		

Residuals in seconds of arc (or two decimals in units of degrees)

530316	024	0.5-	1.6-	780927	095	0.1-	0.8-	800122	095	0.1-	0.2+
530320	024	0.1+	0.0	781003	095	0.3-	1.0-	800123	095	0.4+	0.7-
621203	760	(0.04-	0.00-)X	781007	095	1.0+	0.6-	800220	095	0.8-	1.2+
750314	095	0.4-	1.1-	791224	095	0.7+	1.0-				

(2895)* 1981 AE1 = 1981 CL

Discovered 1981 Jan. 10 by N. G. Thomas at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M 160.29269	(1950.0)	P	Q	
n 0.08305100	Peri. 274.78477	+0.58650688	-0.73843774	
a 5.2028280	Node 133.38853	+0.79548647	+0.60245825	
e 0.0500150	Incl. 27.25023	-0.15235138	+0.30290881	
P 11.87	B(1,0) 10.5			

Residuals in seconds of arc

810103 688	0.4-	0.2-	810209 046	1.1-	2.6+	830220 801	2.4-	2.0+
810103 688	1.3+	2.3-	810209 046	0.2+	2.2+	830314 801	0.6+	0.6-
810110 688	0.1+	1.0-	820430 675	0.3-	0.7-	830414 801	2.1+	0.6-
810110 688	0.1+	0.6-	820430 675	0.4-	0.6-			

1964 VM1 = 1978 RL

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M 334.06752	(1950.0)	P	Q	
n 0.20266355	Peri. 352.56807	+0.76574728	-0.64219743	
a 2.8704709	Node 47.44891	+0.59244889	+0.68327721	
e 0.0734221	Incl. 2.71045	+0.25027068	+0.34744024	
P 4.86	B(1,0) 13.5			

Residuals in seconds of arc

641109 330	0.8-	0.7+	780901 095	0.1-	2.4-	781004 095	1.2-	1.7+
641127 330	0.6+	1.5+	780905 095	0.6-	1.3-	781009 095	0.1+	1.4+
641225 330	0.6+	1.8+	780907 095	0.7+	1.0-	791223 095	0.0	1.7-
650101 330	1.8-	1.1+	780912 095	2.0+	0.2+			

1979 TK = 1939 UE = 1969 TT4 = 1976 YZ4

The key identification 1979 TK = 1939 UE is by E. Bowell.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M 104.28489	(1950.0)	P	Q	
n 0.29522269	Peri. 282.58246	+0.73997795	+0.67025222	
a 2.2337630	Node 35.37750	-0.57296406	+0.67211925	
e 0.1939495	Incl. 5.60239	-0.35234191	+0.31467072	
P 3.34	B(1,0) 15.5			

Residuals in seconds of arc

391018 062	0.0	1.2-	791012 330	1.3-	2.0+	791026 330	4.4+	2.2+
391020 062	2.7+	2.5-	791014 095	0.9-	1.8-	791110 095	0.5-	0.1+
691014 095	(19.6+	10.7+)	791016 330	2.2-	0.5+	791111 095	0.4-	0.4+
761218 095	0.2-	0.6+	791021 330	0.2+	1.0+			

1983 LB

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M 14.79138	(1950.0)	P	Q	
n 0.28424420	Peri. 220.12593	+0.45445996	+0.78360658	
a 2.2909115	Node 80.93719	-0.66688226	+0.61456079	
e 0.4786359	Incl. 25.40049	-0.59053720	-0.09097120	
P 3.47	B(1,0) 18.5			

From 10 observations 1983 June 13-July 6, mean residual 1".9.

1983 LC

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M 8.92710	(1950.0)	P	Q	
n 0.23086688	Peri. 184.69196	+0.96012686	+0.27940443	
a 2.6316510	Node 159.07591	-0.25561272	+0.89107478	
e 0.7091899	Incl. 1.51866	-0.11321907	+0.35765752	
P 4.27	B(1,0) 20.0			

From 12 observations 1983 June 13-July 2, mean residual 1".6.

ORBITAL ELEMENTS BY C. M. BARDWELL, SMITHSONIAN ASTROPHYSICAL OBSERVATORY.

The identifications are by C. M. Bardwell unless otherwise stated.

(2896)* 1931 RN = A908 UA = 1934 NT = 1964 RF = 1970 GV1 = 1977 PH = 1983 AM2

Discovered 1931 Sept. 15 by K. Reinmuth at Heidelberg. The key identification 1931 RN = 1983 AM2 is by O. Kippes. The identification 1983 AM2 = 1977 PH was independently found by W. Landgraf.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

		(1950.0)	P	Q
M	311.35652			
n	0.29789815	Peri. 120.60673	+0.37414465	+0.92723630
a	2.2203640	Node 171.32081	-0.88257626	+0.36124156
e	0.1870920	Incl. 5.99778	-0.28473657	+0.09867812
P	3.31	B(1,0) 14.0		

Residuals in seconds of arc

081027	024	(10.2+	7.3+)	340712	078	(17.4+	19.3+)X	830113	033	2.4+	0.2+
310915	024	(11.0-	6.9-)	640907	760	(40.7+	8.4-)X	830113	033	1.1+	0.6+
310915	012	(16.2+	16.8+)	700412	805	0.6+	0.0	830310	688	1.1-	0.3-
310916	024	1.9-	2.7-	700412	805	0.0	0.1+	830310	688	0.7-	0.4-
311005	024	1.5+	0.2-	700412	805	0.3-	0.1+	830316	688	2.3-	0.4+
311013	690	(9.1-	0.6-)	770805	095	0.1+	0.6+	830316	688	1.3+	0.4-
311017	690	0.3+	2.9+	770806	095	0.1-	0.0				

(2897)* 1932 CK = 1949 FJ = 1971 UP4 = 1979 BA1

Discovered 1932 Feb. 5 by K. Reinmuth at Heidelberg. Contrary to MPC 6655, L. K. Kristensen has shown the identification 1932 CK = 1971 UP4 to be valid (MPC 6888). The identification 1932 CK = 1949 FJ is by O. Kippes (MPC 1083).

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

		(1950.0)	P	Q
M	109.55700			
n	0.29244576	Peri. 100.86601	-0.85165954	-0.51862109
a	2.2478768	Node 47.94286	+0.43224125	-0.77658259
e	0.1007465	Incl. 5.84038	+0.29638410	-0.35770328
P	3.37	B(1,0) 14.0		

Residuals in seconds of arc

320205	024	1.9+	0.5+	320325	024	1.7-	0.4-	790124	095	0.1+	0.2+
320211	024	3.3-	1.7-	490329	760	1.6-	1.7-	830414	801	0.8-	0.4+
320301	024	2.9+	0.5-	490329	760	0.2-	2.6-	830513	801	1.0+	0.1+
320310	024	3.1+	6.3+	711029	095	0.1+	2.3-				

(2898)* 1938 DN = 1930 FL = 1976 OF

Discovered 1938 Feb. 20 by Y. Vaisala at Turku. The identifications are by L. D. Schmadel (MPC 7468).

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

		(1950.0)	P	Q
M	243.36226			
n	0.24126080	Peri. 210.63686	+0.82374617	+0.52189690
a	2.5555137	Node 116.28312	-0.45707202	+0.84246936
e	0.0225586	Incl. 14.30295	-0.33545107	+0.13367493
P	4.09	B(1,0) 13.0		

Residuals in seconds of arc

300331	024	1.7+	0.5+	380401	062	2.0-	0.9-	830122	801	3.0+	1.2+
380220	062	1.9-	0.9+	380404	062	0.1-	1.7-	830216	801	1.1+	0.6+
380220	062	1.8+	0.7-	760727	095	1.3+	0.9+	830414	801	0.6-	0.3-
380222	062	0.0	1.6-	760729	095	1.4-	0.7-	830513	801	3.1-	1.3+

(2899)* 1964 TR2 = 1981 SG1

Discovered 1964 Oct. 8 at the Purple Mountain Observatory. The identification is by E. Bowell (MPC 6475).

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	245.48788	(1950.0)	P	Q
n	0.28974457	Peri. 303.40806	+0.79656962	+0.60425681
a	2.2618259	Node 19.43742	-0.53427032	+0.71812600
e	0.1558210	Incl. 3.22530	-0.28289937	+0.34520827
P	3.40	B(1,0) 14.0		

Residuals in seconds of arc

641008	330	0.4+	2.1+	810926	688	0.5-	1.6-	811120	688	1.0+	0.9+
641030	330	1.4-	0.7+	811004	688	0.1-	1.0-	830219	801	0.2+	0.2+
641101	330	0.9-	1.1+	811004	688	0.0	0.6+	830219	688	1.7-	1.9-
641109	330	1.2-	1.9+	811102	688	0.6-	0.8-	830219	688	0.8-	1.9-
810907	688	3.1+	1.8-	811102	688	0.6-	2.3-	830515	801	2.9+	4.2+
810926	688	1.5+	0.7+	811120	688	0.5-	0.0				

(2900)* 1972 AR = 1974 OZ

Discovered 1972 Jan. 14 by L. Kohoutek at Bergedorf.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	255.18268	(1950.0)	P	Q
n	0.18776178	Peri. 287.54084	+0.57190721	+0.81857054
a	3.0204009	Node 17.66000	-0.66966650	+0.50356322
e	0.1069084	Incl. 10.16131	-0.47378151	+0.27634463
P	5.25	B(1,0) 13.0		

Residuals in seconds of arc

720114	029	1.4-	0.2+	740716	808	0.1-	0.2+	740818	809	3.4+	5.5-
720115	029	0.5-	0.8-	740717	808	1.0-	0.5+	800907	095	0.5-	1.7+
720116	029	0.1+	0.4-	740717	808	1.4-	0.1+	800909	095	0.3+	1.3-
720117	029	1.3+	0.4-	740720	808	0.2+	0.8+	830119	801	1.3+	1.2-
740716	808	0.4-	0.1-	740720	808	0.5-	1.2+	830211	801	1.1-	1.2+

(2901)* 1973 DP = 1959 JE = 1980 SE

Discovered 1973 Feb. 27 by L. Kohoutek at Bergedorf. The identifications are by L. D. Schmadel (MPC 7468).

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	279.06659	(1950.0)	P	Q
n	0.20333660	Peri. 240.23533	+0.62975235	+0.77507061
a	2.8641275	Node 68.88854	-0.69213296	+0.59011060
e	0.0514310	Incl. 3.17970	-0.35265271	+0.22590934
P	4.85	B(1,0) 13.0		

Residuals in seconds of arc

590502	760	0.3-	0.7+	730307	029	0.5-	0.0	800916	046	1.3+	1.8-
590502	760	0.4-	2.2-	730330	095	2.4+	0.3+	830316	688	0.2-	0.1+
730227	029	1.1-	0.2+	730331	095	0.2+	0.5-	830316	688	0.6+	2.7-
730228	029	1.6-	0.1-	800916	046	0.6+	1.7-	830418	801	1.1-	0.8+

(2902)* 1980 FN3 = 1968 UF2 = 1981 SB

Discovered 1980 Mar. 16 by C.-L. Lagerquist at the European Southern Observatory. The identification 1980 FN3 = 1981 SB was found independently by E. Bowell (MPC 6475).

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	235.18294	(1950.0)	P	Q
n	0.30146278	Peri. 158.29197	+0.91585625	+0.40149776
a	2.2028263	Node 178.03037	-0.37866957	+0.86591628
e	0.1989006	Incl. 4.37362	-0.13347913	+0.29830946
P	3.27	B(1,0) 15.5		

Residuals in seconds of arc

681023	095	0.3+	0.5-	810925	688	0.7+	1.4-	811005	688	1.7+	0.5+
800316	809	0.6-	0.7-	810925	688	1.5+	0.5-	811005	688	1.0-	0.2-
800316	809	0.4-	1.1-	810925	688	1.1+	1.5-	811005	688	0.4-	1.2-
800316	809	0.6-	1.4-	810925	046	0.7+	0.3+	811006	046	0.3-	1.2+
800316	809	0.2-	1.5-	810925	046	0.5+	1.1-	811006	046	0.4+	1.9+
800317	809	0.5-	1.1-	810926	688	1.1+	0.8-	811006	801	1.2-	1.0+
800317	809	0.2-	1.0-	810926	688	0.8+	0.8-	811007	046	1.3-	0.4-
800317	809	0.4-	1.2-	810929	801	0.3+	1.0-	811007	046	2.0-	1.0-
800317	809	0.3-	1.4-	810930	801	0.7+	1.0+	811031	801	0.1-	0.2+
800323	809	1.0-	1.5-	811001	801	0.9-	1.2+	811101	801	0.5-	0.5+
810925	688	0.9+	1.8-	811005	688	0.1+	2.0-	830216	801	0.8+	1.4+

(2903)* 1981 UV9 = 1955 MC = 1973 UK4 = 1975 GC = 1977 TN7 = 1977 VL2

Discovered 1981 Oct. 23 at the Purple Mountain Observatory. The identifications 1981 UV9 = 1975 GC = 1977 TN7 = 1977 VL2 are by S. Nakano and K. Hurukawa (JAM 1262). The identification 1981 UV9 = 1973 UK4 is by L. D. Schmadel, who also independently found the identification and double designation 1981 UV9 = 1977 TN7 = 1977 VL2 (MPC 7469).

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	91.58873		(1950.0)	P	Q
n	0.24035881	Peri.	240.02567	-0.36174783	-0.91124430
a	2.5619030	Node	232.50940	+0.91778854	-0.31100190
e	0.0570653	Incl.	14.36892	+0.16371528	-0.27002156
P	4.10	B(1,0)	13.0		

Residuals in seconds of arc

550616	760	0.1+	0.3+	750418	805	1.4-	1.3+	811028	330	0.6+	0.5-
550616	760	0.4+	1.4+	771010	095	1.0+	0.8+	811118	330	1.7-	6.2+
731029	095	0.8-	3.5-	771106	095	0.0	0.2-	830121	801	1.2+	0.2+
750411	805	1.0+	1.2+	811023	330	0.4-	0.0	830412	801	0.0	0.1+

(2904)* 1981 YB = 1939 VF = 1939 XG = 1960 WO = 1960 XB

Discovered 1981 Dec. 20 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory. The identifications are by L. D. Schmadel.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	161.70120		(1950.0)	P	Q
n	0.23476404	Peri.	331.08597	+0.61964989	-0.74010944
a	2.6024456	Node	79.36408	+0.76149809	+0.48625102
e	0.1402178	Incl.	15.41786	+0.19014378	+0.46454059
P	4.20	B(1,0)	13.0		

Residuals in seconds of arc

391107	012 (6.2+	7.0+)X	811220	046	0.7-	1.4+	830309	688	0.8+	3.0-
391204	119(83.4-	8.5-)X	811220	046	1.9-	2.2+	830309	688	0.4-	2.1-
601122	760	0.2-	1.6-	811224	330	0.9+	0.1-	830311	675	0.9+	0.3-
601122	760	0.0	2.3-	811228	046	1.2-	1.0-	830311	675	0.0	0.7+
601215	760	0.7+	1.3+	811228	046	0.5+	1.8+	830313	675	0.0	0.1+
601215	760	0.9+	0.4+	811230	688	2.0+	2.0-	830313	675	3.0-	2.1+
811118	330	1.1-	2.9+	811230	688	1.5+	1.6-	830315	675	1.0-	0.3-
811201	330	1.1-	0.5+	811230	046	0.4+	0.6-	830315	675	0.0	0.4-
811220	688	1.1+	0.5-	820116	688	1.6+	2.5-	830418	688	0.8-	1.3-
811220	688	1.4-	0.8-	820116	688	0.8+	0.3+	830418	688	0.1-	2.4-
811220	330	1.7-	1.4+	830214	801	4.3+	4.9+	830418	801	0.2+	2.8+

(2905)* 1982 BZ2 = 1973 FP = 1973 FJ2 = 1978 GV3

Discovered 1982 Jan. 24 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	39.84536		(1950.0)	P	Q
n	0.20982016	Peri.	220.05634	-0.64793215	+0.76125643
a	2.8048172	Node	9.65537	-0.65322881	-0.53782997
e	0.0970610	Incl.	8.89508	-0.39176019	-0.36225346
P	4.70	B(1,0)	13.0		

Residuals in seconds of arc

730326	095	0.3+	0.5+	820131	688	0.7+	0.2-	830417	474	0.7-	1.3-
730331	049	0.8+	0.0	820131	688	1.2-	0.9+	830417	474	0.1-	1.2-
730331	049	0.1+	0.4-	820221	688	0.7+	0.3+	830522	474	1.1-	0.1+
780411	095	0.6-	2.5+	820221	688	2.5-	0.2-	830522	474	1.9-	0.3+
820124	688	0.3-	0.3-	830321	474	3.1+	0.3-				
820124	688	1.7+	2.3-	830321	474	2.7+	0.4-				

1977 YA

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	83.78033		(1950.0)	P	Q
n	0.21773305	Peri.	108.58413	-0.51066768	-0.85017952
a	2.7364489	Node	14.39692	+0.45484689	-0.39359093
e	0.3561071	Incl.	31.01517	+0.72961142	-0.34968695
P	4.53	B(1,0)	15.5		

Residuals in seconds of arc

771218	561	1.4-	0.2-	780116	801	1.2-	0.8-	780406	801	1.4-	0.2+
780102	561	(20.2-	13.6+)	780201	801	1.7+	0.8-	780611	801	0.9+	0.2-
780105	561	0.5+	0.5-	780204	711	1.4+	0.8-	830416	474	1.9-	0.3-
780106	561	0.0	0.8-	780205	801	1.9+	1.8-	830416	474	1.1+	0.2-
780116	801	1.3-	3.0-	780318	801	2.2+	3.2+				

1979 YE9 = 1964 TZ = 1975 XK1 = 1978 RF14

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	357.10838		(1950.0)	P	Q
n	0.27553516	Peri.	150.40889	-0.75323312	-0.65769950
a	2.3389390	Node	348.45467	+0.59485931	-0.67567716
e	0.1104696	Incl.	2.41696	+0.28068179	-0.33300411
P	3.58	B(1,0)	14.0		

Residuals in seconds of arc

641008	330	0.6+	1.5-	791224	095	0.5-	0.7+	800220	095	1.6+	1.2-
751201	095	0.2-	1.1+	800122	095	1.7-	0.2+				
780906	809	0.2-	0.4+	800123	095	0.5+	0.0				

1980 VL1 = 1963 YC

The identification was made by L. D. Schmadel and W. Landgraf, who found it independently.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	243.92981		(1950.0)	P	Q
n	0.17263000	Peri.	97.25329	+0.92419472	+0.18390592
a	3.1944253	Node	252.59529	-0.28285500	+0.91849495
e	0.0392458	Incl.	20.53555	+0.25662651	+0.35006519
P	5.71	B(1,0)	12.0		

Residuals in seconds of arc

631217	760	1.1-	1.9-	801209	330	0.0	0.8-	830607	474	0.5-	0.4-
631217	760	0.6+	1.7-	801213	330	0.0	0.8-	830612	474	1.1+	1.7+
801013	095	0.1+	1.3+	801227	330	0.0	4.7+	830612	474	0.0	0.3+
801111	330	0.3+	0.1-	830607	474	0.1-	0.3-				

1980 VR1 = 1975 XU = 1978 JG = 1978 LQ

The key identification 1980 VR1 = 1978 LQ is by W. Landgraf.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	188.63007		(1950.0)	P	Q
n	0.20183562	Peri.	21.47741	+0.28144266	-0.92683795
a	2.8783153	Node	53.04074	+0.82882402	+0.10428424
e	0.0288532	Incl.	18.12025	+0.48357085	+0.36068852
P	4.88	B(1,0)	13.0		

Residuals in seconds of arc

751201	095	2.3-	0.6+	780606	119	1.0+	0.2-	801113	055	2.8-	0.4+
751203	095	2.3+	0.5-	780606	119	1.3+	0.4-	801113	055	0.9+	0.2-
780506	330	0.3-	2.3+	801018	095	1.1+	0.9+	801209	330	0.4-	0.6+
780506	095	1.5-	1.0-	801113	330	1.0+	1.1-				

1981 EF17 = 1974 TB1 = 1978 SQ1

The key identificaton 1981 EF17 = 1978 SQ1 is by W. Landgraf.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	108.66990		(1950.0)	P	Q
n	0.23259727	Peri.	112.58657	+0.48903637	+0.87191554
a	2.6185880	Node	186.84682	-0.85677668	+0.47486450
e	0.1811606	Incl.	11.92411	-0.16363724	+0.11944455
P	4.24	B(1,0)	14.5		

Residuals in seconds of arc

741010	808	0.7-	0.2-	810307	413	0.1+	0.4+	810407	413	1.8+	0.1-
741010	808	0.2+	0.6-	810307	413	0.5+	0.5-	810408	413	0.8-	1.5+
780928	095	0.1-	2.1+	810311	413	0.0	0.2-	810408	413	0.9+	0.4-
810301	413	0.8-	1.9+	810315	413	2.5-	0.7+	810411	413	0.1-	1.2+
810301	413	0.3+	0.8-	810315	413	0.1-	0.6-	810411	413	1.0+	0.7-

1983 AG2 = 1978 PZ2

The identification was found independently by W. Landgraf.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	93.65890		(1950.0)	P	Q
n	0.27951565	Peri.	109.58326	+0.13572816	-0.97382185
a	2.3166806	Node	330.69174	+0.71037025	+0.22394782
e	0.3362705	Incl.	21.87000	+0.69061709	-0.03896634
P	3.53	B(1,0)	14.0		

Residuals in seconds of arc

780808	095	0.4+	0.5-	830212	704	0.9+	2.3+	830218	675	0.8-	0.2-
830113	675	0.4-	0.8-	830213	704	0.9-	0.0	830219	688	1.7-	3.3-
830113	675	0.4+	1.0-	830213	704	1.7-	0.8-	830219	688	0.5-	3.0-
830114	675	0.6+	0.3+	830214	704	0.5+	3.3+	830304	046	1.5-	2.3-
830114	675	0.0	1.2-	830214	704	0.7-	1.6+	830304	046	0.2-	2.5-
830122	688	0.2-	1.9-	830215	704	0.4-	2.9+	830305	046	0.1+	2.1-
830122	688	0.9+	2.1-	830215	675	1.4-	0.9-	830305	046	0.3+	1.6-
830211	688	0.1+	2.5-	830215	675	0.9-	0.4-	830308	046	0.6-	0.9+
830211	688	0.2-	1.5-	830215	688	0.8-	2.6-	830308	046	0.7+	0.2+
830211	704	0.2+	3.0+	830215	704	0.3-	1.0+	830309	046	2.8+	2.9+
830211	704	0.1-	2.3+	830215	688	0.5-	2.7-	830309	046	3.2+	3.5+
830211	704	2.1+	5.6+	830216	704	1.5-	0.0	830312	046	0.6-	2.5-
830212	704	1.2+	3.8+	830216	704	0.3+	1.6-	830312	046	0.5-	1.7-
830212	704	3.8+	2.7+	830217	675	1.9-	0.4-				
830212	704	2.1+	1.0+	830218	675	1.4-	0.3-				

1983 CN = 1951 ES = 1959 EW

The key identification 1983 CN = 1959 EW is by E. Bowell.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	53.33716	(1950.0)	P	Q
n	0.24439919	Peri. 160.81549	-0.78866528	-0.60929170
a	2.5335943	Node 340.92421	+0.52601166	-0.59938376
e	0.0266367	Incl. 14.58250	+0.31830616	-0.51913652
P	4.03	B(1,0) 14.0		

Residuals in seconds of arc

510305	760	0.9+	1.7-	590310	690	0.4-	0.0	830219	688	2.0-	1.5-
510305	760	0.7-	0.0	830211	688	0.9+	0.0	830219	688	2.2+	0.5-
590306	690	1.5-	1.2+	830211	688	2.3+	0.4+	830309	688	0.4-	0.5+
590307	690	0.5-	0.8+	830215	688	0.1+	0.4-	830309	688	3.5-	0.3-
590309	690	2.4+	0.4+	830215	688	0.2+	0.6+				

1983 CS2 = 1983 GH = 1949 DH = 1976 UP1 = 1978 ED1

The double designation 1983 CS2 = 1983 GH was found by E. Bowell.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	37.18062	(1950.0)	P	Q
n	0.20305650	Peri. 177.65623	-0.96825794	-0.24964412
a	2.8667665	Node 347.86559	+0.22834373	-0.86323650
e	0.2297029	Incl. 3.38863	+0.10166466	-0.43874884
P	4.85	B(1,0) 13.5		

Residuals in seconds of arc

490225	062	0.4+	0.2+	830215	688	0.8-	0.8-	830506	688	1.8-	0.7+
490225	062	0.5+	2.0+	830215	688	0.6-	0.3-	830506	688	0.9+	0.1+
761026	095	0.7+	1.5-	830410	688	0.3-	1.3-				
780305	095	0.3+	0.8+	830410	688	0.9+	2.1-				

1983 FC = 1952 DF = 1974 CK1

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	46.16682	(1950.0)	P	Q
n	0.22342237	Peri. 199.03054	-0.98976462	-0.11393224
a	2.6897947	Node 333.96405	+0.14249683	-0.82186282
e	0.1231780	Incl. 11.29081	-0.00778741	-0.55817645
P	4.41	B(1,0) 13.5		

Residuals in seconds of arc (or two decimals in units of degrees)

520220	020(0.14+	0.00+)X		830316	688	1.7+	0.1+	830507	688	2.4-	1.9-
520220	711	1.5-	2.3- Y	830316	688	0.8+	0.4+	830507	688	0.2+	1.4+
520228	020(0.09+	0.01-)X		830410	688	0.9-	0.2+				
740215	095	0.7+	1.4+	830410	688	1.2+	0.3+				

* * * * *

ORBITAL ELEMENTS BY W. LANDGRAF, UNIVERSITY OF GOTTINGEN.

(2906)* 1983 AE2 = 1983 CD = 1957 KJ = 1957 MA = 1974 LC = 1976 YS2

Discovered 1983 Jan. 13 by C. Shoemaker at Palomar. The identifications 1983 AE2 = 1957 KJ = 1974 LC = 1976 YS2 are by W. Landgraf. The double designations 1957 KJ = 1957 MA and 1983 AE2 = 1983 CD are by S. Kanda (MPC 1790) and by C. Shoemaker (MPC 7935), respectively.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	128.42139	(1950.0)	P	Q
n	0.17582171	Peri. 297.39431	+0.80592475	-0.30309775
a	3.1556420	Node 84.16255	+0.52931773	+0.75364751
e	0.1199788	Incl. 30.74345	-0.26515662	+0.58322138
P	5.61	B(1,0) 11.0		

Residuals in seconds of arc

570529	760	(16.4+	3.0-)X	761220	095	0.7-	0.3-	830114	675	1.4-	1.1+
570626	760	(72.6+	31.9-)X	770113	095	0.8+	0.7+	830211	675	0.8+	0.5-
740613	095	0.3+	0.5+	830113	675	0.5-	0.2+	830211	675	0.9+	0.5-
761216	095	0.6-	2.7+	830113	675	0.1+	0.7-	830215	675	1.0+	0.7+
761218	095	0.2+	1.0-	830114	675	1.1-	0.0	830215	675	0.4+	0.0

* * * * *

ORBITAL ELEMENTS BY T. URATA, SHIMIZU, JAPAN.

The following orbital elements are from NOC 1443-1445. The identifications are by T. Urata unless otherwise stated.

(2907)* 1975 TT2 = 1952 HL1 = 1968 KT = 1970 XD = 1980 TH7

Discovered 1975 Oct. 3 by L. I. Chernykh at the Crimean Astrophysical Observatory. The identification 1975 TT2 = 1980 TH7 was suggested by T. Furuta.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	197.11406		(1950.0)	P	Q
n	0.18830126	Peri.	195.55756	+0.98955480	-0.14229687
a	3.0146292	Node	172.50837	+0.14376773	+0.96238236
e	0.0956458	Incl.	10.19825	+0.01058959	+0.23145580
P	5.23	B(1,0)	12.5		

Residuals in seconds of arc

520429	760	0.7+	2.0-	751003	095	1.5-	0.4-	751106	095	1.9+	5.3-
520429	760	0.7-	1.9-	751013	095	1.8-	1.0-	801010	095	1.5+	2.3+
680526	095	1.4-	1.6-	751101	095	0.6+	1.8-	801015	095	0.3+	0.5+
701203	095	0.8+	1.2+	751105	095	0.3-	0.0				

(2908)* 1981 WA = 1950 TJ4 = 1955 TQ = 1976 YA4

Discovered 1981 Nov. 18 by T. Furuta at Tokai.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	143.46625		(1950.0)	P	Q
n	0.19205814	Peri.	152.40189	+0.89105898	-0.41439580
a	2.9751868	Node	233.29483	+0.36210251	+0.89500712
e	0.1554152	Incl.	13.35433	+0.27367074	+0.16504056
P	5.13	B(1,0)	13.0		

Residuals in seconds of arc

501010	711	2.8+	2.8+ Y	811121	879	0.9+	2.2+	811202	688	1.2+	0.9-
551012	760	2.1-	1.4+	811124	688	0.7-	2.9-	811218	688	1.6+	2.1-
551012	760	1.4-	1.2+	811124	688	0.5+	1.5-	811218	688	0.3+	3.9-
761218	095	4.0-	0.7+	811128	879	0.7+	1.4+	811230	688	0.4+	1.4-
761220	095	3.7-	1.5+	811128	879	1.4+	1.3+	811230	688	1.7+	1.5-
811118	879	2.0-	1.3+	811129	879	1.0-	1.1-	830112	801	1.9+	1.0+
811118	879	0.5+	1.2+	811129	879	0.0	0.9+	830217	372	0.4+	0.2+
811121	879	1.0+	0.1+	811202	688	0.6+	0.2-	830217	372	0.0	2.3+

(2909)* 1983 JA = 1957 LG = 1969 VV2 = 1972 JN = 1974 UH

Discovered 1983 May 9 by S. Sei at Chirorin.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	267.33326		(1950.0)	P	Q
n	0.18728467	Peri.	282.98148	+0.97006537	-0.14080664
a	3.0255284	Node	85.37098	+0.21166663	+0.88963302
e	0.1123262	Incl.	11.44941	-0.11903959	+0.43442672
P	5.26	B(1,0)	12.0		

Residuals in seconds of arc (or two decimals in units of degrees)

570605	081	(0.03+ | 0.05-)X	830509	383	1.0+	0.8+	Y	830516	372	0.2+	1.1+
691115	095	0.1+	0.1-	830509	383	0.2+	1.8+	Y	830517	372	1.3-	2.6+
720512	095	0.4-	0.8-	830509	383	0.8+	0.7+	Y	830610	372	1.2-	1.7-
741024	095	0.4+	1.4-	830514	372	0.3+	2.4-		830610	372	1.4-	1.2-
741115	095	0.5-	1.5+	830514	372	1.6+	0.9-					

* * * * *

NEW NAMES OF MINOR PLANETS.

(2426) Simonov = 1976 KV

Discovered 1976 May 26 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Konstantin Mikhailovich Simonov (1915-1979), Soviet writer and public figure.

(2467) Kollontai = 1966 PJ

Discovered 1966 Aug. 14 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Aleksandra Mikhailovna Kollantai (1872-1952), who served as Soviet ambassador to Norway, Mexico and Sweden, the first woman of any nation ever to become an accredited minister to a foreign country.

(2483) Guinevere = 1928 QB

Discovered 1928 Aug. 17 by M. Wolf at Heidelberg.

Named for the heroine of the Arthurian legends, the wife of King Arthur, but the lover of Lancelot. When this affair was made public, civil war developed between King Arthur and Lancelot. Lancelot rescued Guinevere from burning at the stake, but these events initiated the downfall of Arthur’s idyllic kingdom. Following a suggestion by F. Pilcher, the name was proposed by E. Bowell, who found the key identification for this planet.

(2537) Gilmore = 1951 RL

Discovered 1951 Sept. 4 by K. Reinmuth at Heidelberg.

Named in honor of Alan C. and Pamela M. (Kilmartin) Gilmore, whose program of astrometric observations of comets and minor planets has for more than a decade been one of the most productive and rapidly responsive such efforts ever to be undertaken in the southern hemisphere. At the Mount John University Observatory since 1980, they were formerly on the staff of the Carter Observatory. They also serve as co-directors of the Comet and Minor Planet Section of the Royal Astronomical Society of New Zealand. Name proposed by C. M. Bardwell and B. G. Marsden, identifiers for this planet.

(2637) Bobrovnikoff = A919 SB

Discovered 1919 Sept. 22 by K. Reinmuth at Heidelberg.

Named in honor of Nicholas T. Bobrovnikoff, director of the Perkins Observatory from 1934 to 1951, currently preparing an authoritative history of astronomy. Perhaps best known for his pioneering investigations on the effect of aperture size on the observed total magnitudes of comets, he made an exhaustive investigation of the 1909-11 apparition of Halley’s Comet and prepared in manuscript form a comprehensive catalogue of physical observations of comets. His spectroscopic study showing differences in the surfaces of minor planets, published in 1929, has been cited as ’so far ahead of its time that it was overlooked’. Following suggestions by D. D. Meisel and N. Sperling, the name was proposed by B. G. Marsden, who found the identifications involving this planet.

(2664) Everhart = 1934 RR

Discovered 1934 Sept. 7 by K. Reinmuth at Heidelberg.

Named in honor of Edgar Everhart, since 1969 in the physics-astronomy department at the University of Denver and director of the Chamberlin Observatory. After an impressive career working on atomic cross-sections, he has made equally fundamental contributions to our knowledge of the distribution of comets and the evolution of cometary orbits, including the development of an efficient integration technique for the purpose. Visual discoverer of comets 1964 IX and 1966 IV, he has more recently designed and constructed a measuring engine and used it in a highly successful program of photographic astrometry of comets. Name proposed by B. G. Marsden, who found the identifications involving this planet.

(2699) Kalinin = 1976 YX

Discovered 1976 Dec. 16 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Mikhail Ivanovich Kalinin (1875-1946), Soviet statesman.

(2725) David Bender = 1978 VG3

Discovered 1978 Nov. 7 by E. Helin and S. J. Bus at Palomar.

Named in honor of David F. Bender, whose analytical techniques and innovations are widely used to evaluate potential space missions to minor planets. A pioneer in the generation of trajectories for both flyby and rendezvous missions, and now a septuagenarian, he is still actively involved in related work at the Jet Propulsion Laboratory, where he has long been a member of the Advance Project Group in the Mission Design Section.

(2807) Karl Marx = 1969 TH6

Discovered 1969 Oct. 15 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Heinrich Karl Marx (1818-1883), author of 'Das Kapital', philosopher of history and a student of the theory of socio-economic systems.

(2822) Sacajawea = 1980 EG

Discovered 1980 Mar. 14 by E. Bowell at the Lowell Observatory's Anderson Mesa Station.

Named for the young Shoshone Indian woman who guided Lewis and Clark on their expedition of discovery across North America to the Pacific Ocean during 1804-1806. She displayed limitless courage and loyalty to both the expedition, in which she faced danger as bravely as any other member, and to her infant son, whom she carried for the entire trip. Name proposed by the discoverer, following a suggestion by Mrs. F. Pilcher.

(2824) Franke = 1934 CZ

Discovered 1934 Feb. 4 by K. Reinmuth at Heidelberg.

Named in honor of Ernst K. Franke, professor of biophysics at the University of Cincinnati. He gained the respect of his students by being a doer first and a teacher second, facts enhanced by his experience and desire to teach the latest technologies. Name proposed by F. N. Bowman, who found the key identification involving this planet.

(2863) Ben Mayer = 1981 QG2

Discovered 1981 Aug. 30 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory.

Named in honor of the Californian amateur astronomer Ben Mayer, who has conceived, developed and coordinated the PROBLICOM Sky Survey for novae.

This project was inspired following his accidental observations of the rise of Nova Cygni 1975. Name proposed by the discoverer, following a suggestion by P. L. Dombrowski.

(2880) Nihondaira = 1983 CA

Discovered 1983 Feb. 8 by T. Seki at Geisei.

Named for a hill and prominent beauty spot in central Japan. Overlooking the city and harbor of Shimizu, it offers a fine view of Mt. Fuji. The minor planet also honors the Nihondaira Observatory, where T. Urata conducts his observational and orbital work on comets and minor planets.

* * * * *

EPHEMERIDES.

Comet Sugano-Saigusa-Fujikawa (1983e) Elements MPC 8052

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1983	07 25	13 58.83	-42 27.1	1.271	1.769	100.8	34.3	14.0
1983	08 04	14 05.61	-42 53.4					
1983	08 14	14 14.18	-43 25.4	1.866	2.074	86.9	29.2	15.5
1983	08 24	14 23.98	-44 02.8					
1983	09 03	14 34.69	-44 44.5	2.437	2.364	73.8	24.2	16.7
1983	09 13	14 46.14	-45 30.1					
1983	09 23	14 58.17	-46 19.1	2.970	2.641	61.4	19.5	17.6
1983	10 03	15 10.69	-47 10.8					
1983	10 13	15 23.62	-48 05.2	3.450	2.907	49.8	15.2	18.3

1983 LB a,e,i = 2.29, 0.48, 25 Elements MPC 8056

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	07 25	14 40.70	-68 23.6	0.367	1.198	111.0	52.4	17.9
1983	08 04	14 27.62	-74 48.7					
1983	08 14	14 35.84	-80 04.0	0.466	1.202	102.2	55.5	18.5
1983	08 24	15 44.77	-84 25.7					
1983	09 03	19 43.43	-85 45.0	0.560	1.244	101.0	52.8	18.9
1983	09 13	22 16.58	-81 55.1					
1983	09 23	23 01.60	-76 20.0	0.649	1.318	103.7	47.7	19.3
1983	10 03	23 21.29	-70 01.4					
1983	10 13	23 33.88	-63 14.4	0.751	1.415	107.2	42.4	19.6
1983	10 23	23 44.44	-56 12.2					
1983	11 02	23 54.59	-49 08.4	0.889	1.527	108.4	38.1	20.0

Periodic Comet Russell 3 (1983i) Elements MPC 8052

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	07 25	20 12.70	-01 40.9	1.937	2.920	161.8	6.3	16.1
1983	08 04	20 05.34	-01 48.6					
1983	08 14	19 58.91	-02 08.5	2.033	2.977	154.1	8.5	16.3
1983	08 24	19 54.06	-02 37.0					
1983	09 03	19 51.16	-03 09.9	2.222	3.037	136.7	13.2	16.6
1983	09 13	19 50.40	-03 43.7					
1983	09 23	19 51.78	-04 15.2	2.486	3.097	118.9	16.5	16.9
1983	10 03	19 55.16	-04 42.2					
1983	10 13	20 00.37	-05 03.0	2.796	3.159	102.1	18.0	17.2
1983	10 23	20 07.17	-05 16.4					
1983	11 02	20 15.33	-05 21.8	3.128	3.222	86.4	17.9	17.6
1983	11 12	20 24.63	-05 18.8					
1983	11 22	20 34.87	-05 07.4	3.460	3.285	71.6	16.6	17.9
1983	12 02	20 45.85	-04 47.6					
1983	12 12	20 57.43	-04 19.7	3.773	3.349	57.5	14.4	18.1
1983	12 22	21 09.44	-03 44.2					

1984 01 01	21 21.76	-03 01.5	4.052	3.412	43.9	11.5	18.4
1984 01 11	21 34.29	-02 12.2					
1984 01 21	21 46.92	-01 16.9	4.284	3.476	30.8	8.3	18.6

Periodic Comet IRAS (1983j) Elements MPC 8052

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1983 07 25	01 42.77	-11 36.5	1.219	1.729	101.0	35.2	14.8
1983 08 04	01 44.92	-06 44.3					
1983 08 14	01 42.71	-01 05.5	0.990	1.701	116.3	32.3	14.3
1983 08 24	01 34.98	+05 29.1					
1983 09 03	01 20.48	+12 57.4	0.826	1.702	135.9	24.4	13.9
1983 09 13	00 58.38	+20 51.6					
1983 09 23	00 29.50	+28 15.2	0.786	1.730	150.2	16.7	13.9
1983 10 03	23 57.12	+34 07.5					
1983 10 13	23 26.43	+38 02.1	0.892	1.785	141.5	20.3	14.3
1983 10 23	23 01.94	+40 16.9					
1983 11 02	22 45.54	+41 27.9	1.101	1.863	125.7	25.6	14.9
1983 11 12	22 37.04	+42 07.0					
1983 11 22	22 35.26	+42 35.9	1.359	1.959	112.3	27.8	15.6
1983 12 02	22 38.84	+43 06.1					
1983 12 12	22 46.69	+43 43.6	1.637	2.070	101.4	27.8	16.2
1983 12 22	22 57.94	+44 30.8					
1984 01 01	23 11.96	+45 27.8	1.923	2.192	92.1	26.6	16.8
1984 01 11	23 28.31	+46 33.9					
1984 01 21	23 46.67	+47 47.8	2.210	2.321	83.9	24.9	17.4
1984 01 31	00 06.81	+49 07.1					
1984 02 10	00 28.60	+50 29.9	2.498	2.456	76.2	23.0	17.9
1984 02 20	00 51.92	+51 53.8					
1984 03 01	01 16.70	+53 16.4	2.783	2.595	68.8	20.9	18.4
1984 03 11	01 42.87	+54 35.4					
1984 03 21	02 10.32	+55 48.5	3.063	2.735	61.7	18.7	18.8

Comet IRAS-Araki-Alcock (1983d) Elements MPC 8052

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1983 07 25	07 20.24	-47 04.2	1.492	1.458	68.0	40.3	12.0
1983 08 04	07 19.51	-48 57.2					
1983 08 14	07 17.13	-51 12.6	1.702	1.692	72.1	34.7	12.9
1983 08 24	07 12.10	-53 48.3					
1983 09 03	07 03.22	-56 39.9	1.856	1.933	78.8	30.8	13.7
1983 09 13	06 48.79	-59 39.7					
1983 09 23	06 26.71	-62 34.3	1.986	2.175	86.9	27.4	14.4
1983 10 03	05 54.97	-65 04.1					
1983 10 13	05 13.06	-66 43.0	2.128	2.415	94.2	24.3	15.0
1983 10 23	04 24.50	-67 05.5					
1983 11 02	03 36.86	-66 00.9	2.316	2.652	98.5	21.7	15.6
1983 11 12	02 57.10	-63 39.3					
1983 11 22	02 27.87	-60 24.5	2.572	2.884	98.2	19.8	16.2
1983 12 02	02 08.19	-56 40.5					
1983 12 12	01 55.99	-52 45.3	2.898	3.111	93.2	18.4	16.7
1983 12 22	01 49.31	-48 51.0					
1984 01 01	01 46.60	-45 05.0	3.279	3.334	84.7	17.1	17.3

1983 LC a,e,i = 2.63, 0.71, 2 Elements MPC 8056

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 08 14	06 33.03	+23 07.0	0.405	0.766	42.6	116.4	20.1
1983 08 24	06 45.69	+22 12.2					
1983 09 03	07 03.72	+21 22.7	0.628	0.824	54.7	86.9	20.6
1983 09 13	07 23.17	+20 31.5					
1983 09 23	07 41.55	+19 38.4	0.795	0.984	65.1	67.7	21.0

(2894) 1978 SH5 a,e,i = 3.11, 0.15, 3 Elements MPC 8055

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	07 25	23 47.35	-04 47.8	2.732	3.427	125.8	13.9	18.7
1983	08 04	23 45.70	-05 08.5					
1983	08 14	23 42.22	-05 40.0	2.518	3.408	146.4	9.5	18.4
1983	08 24	23 37.10	-06 20.4					
1983	09 03	23 30.69	-07 06.6	2.393	3.388	168.4	3.4	18.0
1983	09 13	23 23.51	-07 54.7					
1983	09 23	23 16.24	-08 39.9	2.381	3.367	167.1	3.8	18.0
1983	10 03	23 09.55	-09 18.0					
1983	10 13	23 04.05	-09 45.9	2.481	3.345	144.6	10.0	18.3
1983	10 23	23 00.21	-10 01.4					
1983	11 02	22 58.28	-10 04.1	2.671	3.321	123.3	14.5	18.6
1983	11 12	22 58.35	-09 53.9					
1983	11 22	23 00.38	-09 31.7	2.917	3.297	103.9	16.9	18.8
1983	12 02	23 04.22	-08 58.5					
1983	12 12	23 09.70	-08 15.5	3.185	3.273	86.3	17.5	19.0
1983	12 22	23 16.62	-07 23.8					
1984	01 01	23 24.77	-06 24.6	3.447	3.247	70.1	16.5	19.1

1964 VM1 a,e,i = 2.87, 0.07, 3 Elements MPC 8056

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	07 25	01 09.37	+04 39.9	2.291	2.711	103.3	21.4	18.0
1983	08 04	01 14.26	+05 06.3					
1983	08 14	01 17.08	+05 20.3	2.044	2.701	120.4	18.9	17.6
1983	08 24	01 17.63	+05 21.2					
1983	09 03	01 15.77	+05 09.0	1.840	2.692	140.0	13.9	17.3
1983	09 13	01 11.54	+04 44.3					
1983	09 23	01 05.29	+04 09.4	1.711	2.684	162.1	6.6	16.9
1983	10 03	00 57.62	+03 28.3					
1983	10 13	00 49.40	+02 46.3	1.684	2.677	173.4	2.5	16.7
1983	10 23	00 41.65	+02 09.2					
1983	11 02	00 35.26	+01 42.2	1.764	2.671	150.2	10.6	17.1
1983	11 12	00 30.89	+01 28.8					
1983	11 22	00 28.93	+01 30.8	1.937	2.667	128.6	16.8	17.5
1983	12 02	00 29.44	+01 48.2					
1983	12 12	00 32.35	+02 19.9	2.169	2.663	109.4	20.4	17.8
1983	12 22	00 37.44	+03 04.5					
1984	01 01	00 44.46	+04 00.0	2.430	2.661	92.5	21.7	18.1

1981 EF17 a,e,i = 2.62, 0.18, 12 Elements MPC 8061

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	09 23	05 46.37	+12 17.5	2.617	2.840	92.3	20.7	19.3
1983	10 03	05 52.15	+11 29.3					
1983	10 13	05 55.73	+10 37.0	2.384	2.871	109.2	19.2	19.1
1983	10 23	05 56.91	+09 42.5					
1983	11 02	05 55.55	+08 47.9	2.180	2.900	128.1	15.6	18.9
1983	11 12	05 51.62	+07 55.9					
1983	11 22	05 45.36	+07 09.7	2.040	2.927	148.3	10.2	18.6
1983	12 02	05 37.26	+06 32.7					
1983	12 12	05 28.07	+06 07.7	1.997	2.952	162.7	5.7	18.5
1983	12 22	05 18.74	+05 56.8					
1984	01 01	05 10.22	+06 00.5	2.069	2.975	152.4	8.8	18.6
1984	01 11	05 03.30	+06 17.8					
1984	01 21	04 58.55	+06 46.6	2.244	2.997	132.4	14.0	19.0
1984	01 31	04 56.19	+07 24.1					
1984	02 10	04 56.27	+08 07.5	2.491	3.016	112.9	17.5	19.3
1984	02 20	04 58.66	+08 54.2					
1984	03 01	05 03.14	+09 41.8	2.776	3.033	95.3	19.0	19.6

1975 TR3 a,e,i = 2.42, 0.19, 3 Elements MPC 7936

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	10 13	07 10.39	+19 02.7	1.982	2.250	92.0	26.3	18.9
1983	10 23	07 19.57	+18 35.7					
1983	11 02	07 26.13	+18 12.0	1.783	2.293	108.0	24.3	18.6
1983	11 12	07 29.71	+17 53.9					
1983	11 22	07 30.05	+17 43.5	1.605	2.337	127.1	19.7	18.3
1983	12 02	07 27.00	+17 42.3					
1983	12 12	07 20.69	+17 50.4	1.480	2.381	149.4	12.1	18.0
1983	12 22	07 11.70	+18 06.8					
1984	01 01	07 01.04	+18 28.9	1.445	2.424	173.3	2.7	17.7
1984	01 11	06 50.07	+18 54.0					
1984	01 21	06 40.25	+19 19.4	1.521	2.467	159.5	8.0	18.0
1984	01 31	06 32.67	+19 43.6					
1984	02 10	06 28.05	+20 05.7	1.699	2.508	136.5	15.7	18.5
1984	02 20	06 26.61	+20 25.4					
1984	03 01	06 28.22	+20 42.0	1.948	2.548	116.4	20.4	18.9
1984	03 11	06 32.60	+20 55.2					
1984	03 21	06 39.38	+21 04.2	2.235	2.587	99.1	22.4	19.3

1979 TK a,e,i = 2.23, 0.19, 6 Elements MPC 8056

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	10 13	07 34.09	+26 28.1	2.279	2.449	87.6	24.0	19.8
1983	10 23	07 43.44	+26 34.1					
1983	11 02	07 50.44	+26 46.5	2.051	2.483	103.9	22.8	19.6
1983	11 12	07 54.71	+27 07.1					
1983	11 22	07 55.89	+27 37.0	1.839	2.515	122.8	19.3	19.3
1983	12 02	07 53.70	+28 15.6					
1983	12 12	07 48.00	+29 00.6	1.677	2.544	144.5	13.0	18.9
1983	12 22	07 39.10	+29 47.0					
1984	01 01	07 27.73	+30 28.6	1.602	2.570	167.1	4.9	18.6
1984	01 11	07 15.16	+30 59.3					
1984	01 21	07 02.97	+31 15.5	1.640	2.593	161.8	6.8	18.8
1984	01 31	06 52.59	+31 17.1					
1984	02 10	06 45.07	+31 06.9	1.786	2.613	139.1	14.3	19.2
1984	02 20	06 40.93	+30 48.6					
1984	03 01	06 40.18	+30 25.3	2.010	2.630	118.3	19.4	19.6
1984	03 11	06 42.59	+29 59.0					
1984	03 21	06 47.78	+29 30.7	2.277	2.643	100.3	21.8	19.9

1977 EB2 a,e,i = 2.45, 0.14, 3 Elements MPC 6197

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	10 13	07 31.32	+23 39.4	2.598	2.747	87.8	21.3	19.8
1983	10 23	07 39.73	+23 31.2					
1983	11 02	07 46.16	+23 27.4	2.313	2.733	104.3	20.6	19.5
1983	11 12	07 50.26	+23 29.7					
1983	11 22	07 51.74	+23 39.4	2.048	2.717	123.2	17.7	19.1
1983	12 02	07 50.33	+23 57.0					
1983	12 12	07 45.89	+24 21.8	1.834	2.699	144.8	12.1	18.8
1983	12 22	07 38.61	+24 51.4					
1984	01 01	07 29.00	+25 22.1	1.708	2.679	168.7	4.1	18.3
1984	01 11	07 18.05	+25 49.5					
1984	01 21	07 07.07	+26 10.2	1.695	2.658	165.0	5.5	18.4
1984	01 31	06 57.36	+26 22.5					
1984	02 10	06 49.99	+26 26.7	1.793	2.635	141.1	13.6	18.7
1984	02 20	06 45.62	+26 24.3					
1984	03 01	06 44.45	+26 17.0	1.972	2.610	119.8	19.2	19.0
1984	03 11	06 46.41	+26 06.0					
1984	03 21	06 51.23	+25 51.6	2.196	2.584	101.4	22.2	19.3

1981 EG19 a,e,i = 2.35, 0.18, 3 Elements MPC 7937

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	07 46.84	+17 54.1	1.722	2.174	103.1	26.4	17.5
1983	11 12	07 52.86	+17 20.3					
1983	11 22	07 55.69	+16 54.2	1.538	2.214	120.9	22.5	17.2
1983	12 02	07 55.07	+16 37.8					
1983	12 12	07 50.91	+16 32.7	1.396	2.256	142.1	15.5	16.8
1983	12 22	07 43.52	+16 38.8					
1984	01 01	07 33.66	+16 54.4	1.330	2.297	166.0	5.9	16.5
1984	01 11	07 22.56	+17 16.5					
1984	01 21	07 11.79	+17 41.7	1.369	2.338	166.6	5.6	16.6
1984	01 31	07 02.74	+18 06.9					
1984	02 10	06 56.43	+18 30.3	1.514	2.378	143.2	14.4	17.1
1984	02 20	06 53.36	+18 50.7					
1984	03 01	06 53.55	+19 07.2	1.737	2.418	122.5	20.2	17.6
1984	03 11	06 56.80	+19 19.2					
1984	03 21	07 02.70	+19 25.9	2.007	2.456	104.7	23.1	18.0
1984	03 31	07 10.85	+19 26.8					
1984	04 10	07 20.86	+19 21.2	2.297	2.493	89.2	23.7	18.3

(2799) 3071 P-L a,e,i = 2.39, 0.13, 5 Elements MPC 7458

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	07 52.48	+21 50.4	2.250	2.649	102.6	21.4	19.9
1983	11 12	07 56.40	+21 28.1					
1983	11 22	07 57.59	+21 11.4	2.010	2.661	121.4	18.5	19.6
1983	12 02	07 55.81	+21 01.2					
1983	12 12	07 50.99	+20 57.3	1.817	2.671	143.1	12.8	19.2
1983	12 22	07 43.38	+20 58.4					
1984	01 01	07 33.56	+21 02.5	1.711	2.679	167.5	4.6	18.9
1984	01 11	07 22.53	+21 06.9					
1984	01 21	07 11.58	+21 09.6	1.718	2.686	166.9	4.7	18.9
1984	01 31	07 01.94	+21 09.5					
1984	02 10	06 54.58	+21 06.7	1.837	2.690	142.7	12.8	19.3
1984	02 20	06 50.09	+21 01.6					
1984	03 01	06 48.62	+20 54.8	2.041	2.692	121.2	18.4	19.6
1984	03 11	06 50.08	+20 46.3					
1984	03 21	06 54.18	+20 35.7	2.293	2.692	102.6	21.2	19.9
1984	03 31	07 00.60	+20 22.3					
1984	04 10	07 08.98	+20 05.4	2.561	2.689	86.3	21.8	20.2

1981 EC16 a,e,i = 2.36, 0.21, 4 Elements MPC 7768

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	07 58.30	+20 10.4	2.464	2.825	100.9	20.2	19.6
1983	11 12	08 02.13	+19 48.9					
1983	11 22	08 03.48	+19 33.3	2.188	2.811	119.7	17.8	19.3
1983	12 02	08 02.12	+19 24.6					
1983	12 12	07 57.90	+19 23.1	1.958	2.794	141.2	12.7	18.9
1983	12 22	07 50.94	+19 28.3					
1984	01 01	07 41.69	+19 38.3	1.812	2.774	165.3	5.2	18.5
1984	01 11	07 30.95	+19 50.8					
1984	01 21	07 19.90	+20 03.1	1.780	2.752	168.9	4.0	18.4
1984	01 31	07 09.73	+20 13.5					
1984	02 10	07 01.53	+20 21.0	1.863	2.726	144.4	12.2	18.7
1984	02 20	06 56.00	+20 25.5					
1984	03 01	06 53.44	+20 27.2	2.034	2.698	122.4	18.1	19.0
1984	03 11	06 53.88	+20 26.2					
1984	03 21	06 57.11	+20 22.1	2.256	2.667	103.3	21.3	19.3
1984	03 31	07 02.82	+20 14.5					
1984	04 10	07 10.71	+20 02.6	2.493	2.634	86.8	22.3	19.5

4017 P-L a,e,i = 2.72, 0.26, 13 Elements MPC 6639

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 11 02	08 02.62	+37 11.3	1.879	2.313	102.9	24.7	19.3
1983 11 12	08 10.01	+37 52.2					
1983 11 22	08 13.86	+38 41.4	1.713	2.366	119.9	21.2	19.0
1983 12 02	08 13.77	+39 36.8					
1983 12 12	08 09.52	+40 33.7	1.590	2.420	138.9	15.5	18.8
1983 12 22	08 01.32	+41 24.2					
1984 01 01	07 49.97	+41 59.1	1.544	2.475	156.2	9.2	18.6
1984 01 11	07 36.92	+42 10.4					
1984 01 21	07 24.07	+41 54.7	1.598	2.531	156.5	8.9	18.7
1984 01 31	07 13.13	+41 14.4					
1984 02 10	07 05.31	+40 15.6	1.755	2.587	139.6	14.3	19.1
1984 02 20	07 01.15	+39 05.6					
1984 03 01	07 00.56	+37 50.5	1.992	2.642	121.0	18.8	19.5
1984 03 11	07 03.22	+36 34.1					
1984 03 21	07 08.64	+35 18.4	2.279	2.697	103.8	21.0	19.9
1984 03 31	07 16.30	+34 04.0					
1984 04 10	07 25.77	+32 50.7	2.590	2.751	88.4	21.4	20.3

1979 SF2 a,e,i = 2.31, 0.17, 3 Elements MPC 7240

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 11 02	07 58.37	+24 15.0	1.555	2.007	101.7	29.0	18.6
1983 11 12	08 07.64	+23 53.3					
1983 11 22	08 13.60	+23 38.9	1.375	2.037	118.2	25.3	18.3
1983 12 02	08 15.84	+23 33.8					
1983 12 12	08 14.05	+23 38.3	1.228	2.070	138.3	18.4	18.0
1983 12 22	08 08.30	+23 50.7					
1984 01 01	07 59.14	+24 06.9	1.148	2.105	161.9	8.3	17.6
1984 01 11	07 47.77	+24 21.3					
1984 01 21	07 35.98	+24 29.1	1.164	2.143	171.6	3.8	17.5
1984 01 31	07 25.56	+24 28.0					
1984 02 10	07 17.95	+24 18.4	1.282	2.181	147.7	14.0	18.1
1984 02 20	07 13.91	+24 02.1					
1984 03 01	07 13.55	+23 41.0	1.481	2.220	126.7	21.0	18.6
1984 03 11	07 16.64	+23 16.1					
1984 03 21	07 22.72	+22 47.5	1.730	2.259	108.9	24.7	19.0
1984 03 31	07 31.26	+22 14.9					
1984 04 10	07 41.82	+21 37.7	2.005	2.298	93.7	25.8	19.4

1980 CR a,e,i = 2.65, 0.18, 8 Elements MPC 6939

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983 11 02	08 05.97	+13 54.2	2.545	2.854	-0.89	+0.8	18.3
1983 11 12	08 11.14	+13 31.1					
1983 11 22	08 14.17	+13 15.1	2.250	2.822	-1.02	+1.1	17.9
1983 12 02	08 14.81	+13 08.6					
1983 12 12	08 12.86	+13 13.5	1.994	2.788	-1.18	+1.3	17.6
1983 12 22	08 08.31	+13 31.0					
1984 01 01	08 01.39	+14 01.2	1.814	2.754	-1.31	+1.3	17.2
1984 01 11	07 52.67	+14 42.4					
1984 01 21	07 43.06	+15 31.4	1.739	2.718	-1.36	+0.9	16.8
1984 01 31	07 33.66	+16 24.2					
1984 02 10	07 25.60	+17 16.5	1.779	2.681	-1.29	+0.3	17.1
1984 02 20	07 19.76	+18 05.2					
1984 03 01	07 16.66	+18 48.2	1.916	2.643	-1.17	-0.1	17.4
1984 03 11	07 16.52	+19 24.2					
1984 03 21	07 19.26	+19 52.6	2.112	2.605	-1.04	-0.2	17.7
1984 03 31	07 24.65	+20 12.8					
1984 04 10	07 32.40	+20 24.6	2.333	2.567	-0.94	-0.1	17.9

1979 VG a,e,i = 2.31, 0.11, 6 Elements MPC 7137

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983	11 02	08 03.47	+27 24.9	1.688	2.117	-1.61	+4.5	18.4
1983	11 12	08 12.93	+27 37.5					
1983	11 22	08 19.30	+28 00.3	1.490	2.136	-1.87	+6.2	18.1
1983	12 02	08 22.16	+28 34.4					
1983	12 12	08 21.09	+29 19.2	1.327	2.157	-2.21	+7.4	17.7
1983	12 22	08 16.01	+30 11.0					
1984	01 01	08 07.28	+31 02.6	1.232	2.180	-2.53	+7.0	17.4
1984	01 11	07 55.94	+31 45.2					
1984	01 21	07 43.72	+32 10.9	1.233	2.203	-2.59	+5.0	17.3
1984	01 31	07 32.49	+32 16.3					
1984	02 10	07 23.90	+32 02.7	1.336	2.228	-2.33	+3.0	17.7
1984	02 20	07 18.91	+31 34.3					
1984	03 01	07 17.77	+30 55.9	1.521	2.253	-1.95	+2.2	18.2
1984	03 11	07 20.29	+30 11.1					
1984	03 21	07 26.02	+29 21.8	1.756	2.278	-1.61	+2.4	18.6
1984	03 31	07 34.40	+28 28.8					
1984	04 10	07 44.95	+27 31.9	2.016	2.303	-1.35	+2.9	18.9

(2783) 1974 RA2 a,e,i = 2.56, 0.17, 1 Elements MPC 7450

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	08 14.32	+18 58.2	2.171	2.494	97.0	23.3	18.6
1983	11 12	08 20.59	+18 34.0					
1983	11 22	08 24.26	+18 17.7	1.954	2.531	114.6	20.8	18.3
1983	12 02	08 25.08	+18 11.1					
1983	12 12	08 22.85	+18 15.1	1.772	2.566	135.2	15.7	18.0
1983	12 22	08 17.66	+18 29.4					
1984	01 01	08 09.86	+18 52.0	1.661	2.602	158.7	7.9	17.8
1984	01 11	08 00.23	+19 19.9					
1984	01 21	07 49.89	+19 48.8	1.654	2.636	175.9	1.5	17.4
1984	01 31	07 40.09	+20 15.3					
1984	02 10	07 31.98	+20 36.9	1.761	2.670	151.5	10.2	18.0
1984	02 20	07 26.35	+20 52.6					
1984	03 01	07 23.55	+21 02.3	1.964	2.702	129.3	16.5	18.4
1984	03 11	07 23.66	+21 06.2					
1984	03 21	07 26.47	+21 04.4	2.227	2.734	110.0	20.0	18.8
1984	03 31	07 31.65	+20 57.1					
1984	04 10	07 38.88	+20 44.0	2.520	2.763	93.2	21.2	19.1

1980 CG a,e,i = 2.53, 0.29, 10 Elements MPC 5272

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983	11 02	08 16.23	+11 16.0	1.936	2.248	-1.13	-0.2	17.8
1983	11 12	08 23.24	+10 44.6					
1983	11 22	08 27.50	+10 23.6	1.758	2.313	-1.26	-0.0	17.6
1983	12 02	08 28.76	+10 16.3					
1983	12 12	08 26.83	+10 25.3	1.606	2.379	-1.43	+0.2	17.3
1983	12 22	08 21.82	+10 51.9					
1984	01 01	08 14.10	+11 35.8	1.517	2.444	-1.60	+0.5	17.1
1984	01 11	08 04.47	+12 34.0					
1984	01 21	07 54.14	+13 41.1	1.528	2.508	-1.65	+0.5	16.9
1984	01 31	07 44.38	+14 50.9					
1984	02 10	07 36.36	+15 57.9	1.653	2.570	-1.54	+0.2	17.4
1984	02 20	07 30.87	+16 58.1					
1984	03 01	07 28.24	+17 49.2	1.874	2.631	-1.34	+0.0	17.8
1984	03 11	07 28.52	+18 30.4					
1984	03 21	07 31.48	+19 01.6	2.160	2.689	-1.14	+0.1	18.3
1984	03 31	07 36.79	+19 23.0					
1984	04 10	07 44.10	+19 35.0	2.477	2.746	-0.97	+0.3	18.7

1981 GN1 a,e,i = 2.33, 0.13, 10 Elements MPC 7935

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983	11 02	08 18.07	+08 45.2	2.328	2.589	-0.91	+1.3	17.9
1983	11 12	08 23.90	+07 52.4					
1983	11 22	08 27.42	+07 06.1	2.081	2.601	-1.03	+1.5	17.6
1983	12 02	08 28.40	+06 29.0					
1983	12 12	08 26.62	+06 04.2	1.864	2.610	-1.18	+1.8	17.3
1983	12 22	08 22.07	+05 54.9					
1984	01 01	08 15.00	+06 02.9	1.711	2.617	-1.32	+2.0	17.0
1984	01 11	08 05.97	+06 29.0					
1984	01 21	07 55.95	+07 11.5	1.655	2.622	-1.38	+2.1	16.8
1984	01 31	07 46.08	+08 06.6					
1984	02 10	07 37.50	+09 09.1	1.713	2.625	-1.31	+1.8	17.0
1984	02 20	07 31.12	+10 13.6					
1984	03 01	07 27.45	+11 15.6	1.869	2.626	-1.17	+1.4	17.3
1984	03 11	07 26.67	+12 11.9					
1984	03 21	07 28.71	+13 00.2	2.090	2.624	-1.03	+1.1	17.7
1984	03 31	07 33.29	+13 39.4					
1984	04 10	07 40.14	+14 08.8	2.343	2.621	-0.91	+1.0	18.0

(2882) 1981 OG a,e,i = 3.17, 0.18, 0 Elements MPC 7935

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	08 23.79	+19 29.9	3.365	3.589	94.9	16.0	18.7
1983	11 12	08 27.14	+19 18.5					
1983	11 22	08 28.60	+19 13.4	3.095	3.609	113.9	14.5	18.5
1983	12 02	08 28.04	+19 15.3					
1983	12 12	08 25.39	+19 24.4	2.865	3.628	134.9	11.1	18.2
1983	12 22	08 20.76	+19 39.9					
1984	01 01	08 14.40	+20 00.3	2.716	3.646	157.9	5.8	18.0
1984	01 11	08 06.78	+20 23.5					
1984	01 21	07 58.55	+20 46.9	2.678	3.662	177.9	0.6	17.6
1984	01 31	07 50.45	+21 08.4					
1984	02 10	07 43.20	+21 26.2	2.765	3.677	153.9	6.8	18.1
1984	02 20	07 37.41	+21 39.3					
1984	03 01	07 33.46	+21 47.6	2.958	3.690	131.5	11.6	18.4
1984	03 11	07 31.56	+21 51.1					
1984	03 21	07 31.72	+21 50.1	3.224	3.701	111.1	14.5	18.6
1984	03 31	07 33.82	+21 44.9					
1984	04 10	07 37.71	+21 35.5	3.526	3.712	92.8	15.6	18.8

1976 DD a,e,i = 2.59, 0.26, 30 Elements MPC 5219

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	08 37.92	+48 36.2	2.000	2.361	98.5	24.6	19.8
1983	11 12	08 49.02	+48 45.8					
1983	11 22	08 56.59	+49 01.7	1.733	2.303	112.8	23.3	19.4
1983	12 02	08 59.89	+49 23.2					
1983	12 12	08 58.05	+49 46.5	1.495	2.246	128.7	20.0	19.0
1983	12 22	08 50.43	+50 02.8					
1984	01 01	08 36.93	+49 59.1	1.312	2.191	144.8	15.0	18.5
1984	01 11	08 18.60	+49 18.5					
1984	01 21	07 58.00	+47 47.5	1.217	2.138	152.4	12.3	18.3
1984	01 31	07 38.44	+45 23.6					
1984	02 10	07 22.79	+42 17.2	1.224	2.088	141.3	17.2	18.3
1984	02 20	07 12.56	+38 47.0					
1984	03 01	07 07.85	+35 11.0	1.325	2.042	123.1	24.0	18.6
1984	03 11	07 08.10	+31 41.2					
1984	03 21	07 12.46	+28 23.4	1.486	2.002	105.8	28.6	18.9
1984	03 31	07 20.05	+25 18.7					
1984	04 10	07 30.21	+22 25.4	1.677	1.967	90.9	30.6	19.2

1982 RU a,e,i = 3.15, 0.20, 15 Elements MPC 7663

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983	11 02	08 22.77	+03 59.4	2.965	3.150	-0.66	+0.5	18.8
1983	11 12	08 27.00	+03 08.5					
1983	11 22	08 29.27	+02 23.8	2.731	3.189	-0.72	+0.4	18.6
1983	12 02	08 29.47	+01 47.9					
1983	12 12	08 27.51	+01 23.3	2.528	3.227	-0.79	+0.4	18.4
1983	12 22	08 23.49	+01 12.6					
1984	01 01	08 17.69	+01 17.5	2.390	3.265	-0.86	+0.5	18.2
1984	01 11	08 10.55	+01 38.7					
1984	01 21	08 02.76	+02 15.3	2.352	3.301	-0.89	+0.7	18.0
1984	01 31	07 55.07	+03 04.7					
1984	02 10	07 48.24	+04 03.1	2.429	3.337	-0.86	+0.7	18.2
1984	02 20	07 42.88	+05 06.0					
1984	03 01	07 39.38	+06 09.4	2.612	3.372	-0.80	+0.6	18.5
1984	03 11	07 37.95	+07 09.7					
1984	03 21	07 38.60	+08 04.5	2.872	3.406	-0.72	+0.6	18.8
1984	03 31	07 41.21	+08 52.2					
1984	04 10	07 45.60	+09 31.7	3.176	3.438	-0.64	+0.5	19.1

1982 UB1 a,e,i = 3.09, 0.19, 3 Elements MPC 7781

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	08 33.22	+19 28.0	3.144	3.343	92.8	17.2	18.5
1983	11 12	08 37.61	+19 19.8					
1983	11 22	08 40.04	+19 19.1	2.887	3.374	111.3	15.8	18.3
1983	12 02	08 40.36	+19 26.8					
1983	12 12	08 38.46	+19 43.2	2.665	3.403	132.0	12.4	18.1
1983	12 22	08 34.39	+20 07.4					
1984	01 01	08 28.36	+20 37.8	2.516	3.432	154.9	7.0	17.8
1984	01 11	08 20.80	+21 11.6					
1984	01 21	08 12.40	+21 45.6	2.476	3.459	178.1	0.6	17.4
1984	01 31	08 03.94	+22 16.6					
1984	02 10	07 56.22	+22 42.3	2.557	3.485	156.6	6.5	17.9
1984	02 20	07 49.96	+23 01.4					
1984	03 01	07 45.58	+23 13.6	2.748	3.509	134.0	11.7	18.2
1984	03 11	07 43.36	+23 19.3					
1984	03 21	07 43.31	+23 19.0	3.015	3.532	113.5	15.0	18.5
1984	03 31	07 45.32	+23 13.2					
1984	04 10	07 49.22	+23 02.3	3.321	3.554	95.1	16.3	18.7

1981 EN13 a,e,i = 2.22, 0.08, 4 Elements MPC 7587

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983	11 02	08 17.30	+18 21.9	1.821	2.166	-1.41	+5.9	18.6
1983	11 12	08 27.21	+17 24.6					
1983	11 22	08 34.67	+16 31.1	1.575	2.147	-1.65	+7.3	18.2
1983	12 02	08 39.28	+15 43.7					
1983	12 12	08 40.62	+15 05.4	1.357	2.130	-1.96	+8.8	17.8
1983	12 22	08 38.43	+14 38.2					
1984	01 01	08 32.71	+14 23.5	1.194	2.114	-2.31	+9.8	17.3
1984	01 11	08 23.91	+14 21.1					
1984	01 21	08 13.13	+14 28.9	1.117	2.098	-2.49	+9.7	16.8
1984	01 31	08 01.93	+14 43.3					
1984	02 10	07 52.04	+15 00.5	1.142	2.085	-2.36	+8.7	17.1
1984	02 20	07 44.91	+15 16.9					
1984	03 01	07 41.33	+15 30.0	1.257	2.072	-2.05	+7.4	17.5
1984	03 11	07 41.56	+15 38.1					
1984	03 21	07 45.40	+15 39.4	1.430	2.062	-1.72	+6.5	17.9
1984	03 31	07 52.43	+15 33.0					
1984	04 10	08 02.18	+15 17.7	1.633	2.054	-1.47	+6.1	18.3

(2796) 1980 EC a,e,i = 2.64, 0.11, 14 Elements MPC 7457

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	08 22.39	+06 35.8	2.476	2.702	92.2	21.5	18.1
1983	11 12	08 29.15	+05 49.4					
1983	11 22	08 33.92	+05 09.5	2.196	2.680	108.6	20.4	17.8
1983	12 02	08 36.44	+04 39.1					
1983	12 12	08 36.48	+04 21.9	1.942	2.656	127.2	17.2	17.5
1983	12 22	08 33.94	+04 21.2					
1984	01 01	08 28.90	+04 39.8	1.747	2.633	148.0	11.4	17.1
1984	01 11	08 21.72	+05 19.1					
1984	01 21	08 13.14	+06 18.1	1.644	2.609	166.0	5.2	16.7
1984	01 31	08 04.17	+07 32.8					
1984	02 10	07 55.92	+08 57.4	1.651	2.586	156.4	8.8	16.8
1984	02 20	07 49.44	+10 25.0					
1984	03 01	07 45.41	+11 49.5	1.762	2.562	135.2	15.8	17.1
1984	03 11	07 44.22	+13 06.5					
1984	03 21	07 45.93	+14 13.0	1.946	2.539	115.5	20.7	17.4
1984	03 31	07 50.36	+15 07.4					
1984	04 10	07 57.26	+15 49.3	2.168	2.517	98.3	23.2	17.7

1971 UP a,e,i = 2.41, 0.18, 5 Elements MPC 7366

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	08 41.67	+23 30.8	2.512	2.731	91.9	21.3	19.2
1983	11 12	08 48.44	+23 29.6					
1983	11 22	08 52.94	+23 38.1	2.263	2.754	109.4	19.8	18.9
1983	12 02	08 54.88	+23 57.7					
1983	12 12	08 53.99	+24 28.6	2.043	2.775	129.5	15.9	18.6
1983	12 22	08 50.15	+25 09.4					
1984	01 01	08 43.45	+25 57.0	1.887	2.793	151.9	9.5	18.3
1984	01 11	08 34.34	+26 46.1					
1984	01 21	08 23.68	+27 30.6	1.832	2.809	171.8	2.9	18.0
1984	01 31	08 12.64	+28 05.1					
1984	02 10	08 02.46	+28 26.3	1.894	2.823	155.7	8.3	18.3
1984	02 20	07 54.24	+28 33.6					
1984	03 01	07 48.66	+28 28.7	2.060	2.833	133.3	14.7	18.7
1984	03 11	07 46.01	+28 13.8					
1984	03 21	07 46.28	+27 51.2	2.297	2.841	113.2	18.8	19.0
1984	03 31	07 49.22	+27 22.5					
1984	04 10	07 54.50	+26 48.6	2.569	2.847	95.6	20.5	19.3

(2827) Vellamo a,e,i = 2.31, 0.03, 9 Elements MPC 7604

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	08 35.21	+28 05.9	2.009	2.308	94.4	25.4	17.4
1983	11 12	08 45.38	+27 53.2					
1983	11 22	08 53.06	+27 48.5	1.764	2.301	110.3	23.7	17.1
1983	12 02	08 57.83	+27 53.6					
1983	12 12	08 59.24	+28 09.1	1.545	2.295	128.9	19.5	16.7
1983	12 22	08 56.99	+28 33.6					
1984	01 01	08 50.98	+29 03.2	1.382	2.288	150.2	12.3	16.3
1984	01 11	08 41.59	+29 31.5					
1984	01 21	08 29.86	+29 50.3	1.308	2.282	169.1	4.7	15.9
1984	01 31	08 17.35	+29 53.2					
1984	02 10	08 05.89	+29 37.3	1.339	2.275	155.7	10.3	16.2
1984	02 20	07 57.02	+29 04.0					
1984	03 01	07 51.62	+28 17.6	1.466	2.269	134.0	18.3	16.5
1984	03 11	07 50.00	+27 22.3					
1984	03 21	07 51.99	+26 21.1	1.658	2.264	114.8	23.5	16.9
1984	03 31	07 57.14	+25 15.9					
1984	04 10	08 04.97	+24 07.1	1.882	2.259	98.5	26.0	17.2

1981 EO17 a,e,i = 2.25, 0.16, 4 Elements MPC 7937

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	08 24.16	+15 16.5	1.609	1.946	93.8	30.6	18.7
1983	11 12	08 35.91	+14 09.9					
1983	11 22	08 44.99	+13 09.1	1.420	1.970	108.5	28.4	18.4
1983	12 02	08 51.01	+12 17.8					
1983	12 12	08 53.57	+11 39.8	1.251	1.997	126.2	23.5	18.0
1983	12 22	08 52.45	+11 18.5					
1984	01 01	08 47.64	+11 16.0	1.128	2.027	147.5	15.1	17.6
1984	01 11	08 39.62	+11 32.6					
1984	01 21	08 29.50	+12 05.3	1.083	2.059	170.3	4.6	17.3
1984	01 31	08 18.84	+12 48.6					
1984	02 10	08 09.32	+13 35.6	1.137	2.094	160.5	9.0	17.6
1984	02 20	08 02.35	+14 20.4					
1984	03 01	07 58.70	+14 58.5	1.285	2.129	138.3	18.0	18.1
1984	03 11	07 58.59	+15 27.5					
1984	03 21	08 01.84	+15 46.0	1.498	2.165	119.1	23.7	18.6
1984	03 31	08 08.02	+15 53.6					
1984	04 10	08 16.67	+15 50.1	1.750	2.202	102.9	26.3	19.0

(2816) 1982 SO a,e,i = 2.73, 0.19, 8 Elements MPC 7466

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	08 45.08	+20 08.5	2.631	2.816	90.2	20.6	17.8
1983	11 12	08 51.89	+20 07.1					
1983	11 22	08 56.58	+20 15.6	2.392	2.853	107.8	19.3	17.6
1983	12 02	08 58.90	+20 35.6					
1983	12 12	08 58.64	+21 07.8	2.179	2.889	127.7	15.6	17.4
1983	12 22	08 55.70	+21 51.4					
1984	01 01	08 50.19	+22 44.1	2.029	2.923	150.2	9.6	17.1
1984	01 11	08 42.47	+23 41.7					
1984	01 21	08 33.29	+24 38.6	1.978	2.956	172.5	2.5	16.8
1984	01 31	08 23.60	+25 29.4					
1984	02 10	08 14.50	+26 09.8	2.046	2.988	159.1	6.8	17.1
1984	02 20	08 06.96	+26 37.8					
1984	03 01	08 01.63	+26 53.5	2.221	3.018	136.5	13.1	17.4
1984	03 11	07 58.88	+26 58.0					
1984	03 21	07 58.73	+26 53.1	2.474	3.047	116.1	17.1	17.8
1984	03 31	08 01.04	+26 40.2					
1984	04 10	08 05.56	+26 20.4	2.768	3.074	98.1	18.8	18.1

(2811) 1980 JA a,e,i = 2.86, 0.04, 1 Elements MPC 7465

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	08 41.27	+19 07.6	2.565	2.764	90.8	21.0	17.7
1983	11 12	08 48.81	+18 39.3					
1983	11 22	08 54.29	+18 18.1	2.301	2.767	107.8	19.9	17.5
1983	12 02	08 57.48	+18 05.7					
1983	12 12	08 58.11	+18 03.4	2.064	2.771	127.1	16.5	17.2
1983	12 22	08 56.07	+18 11.7					
1984	01 01	08 51.41	+18 29.8	1.886	2.776	149.1	10.5	16.8
1984	01 11	08 44.46	+18 55.5					
1984	01 21	08 35.90	+19 25.2	1.801	2.780	173.2	2.4	16.4
1984	01 31	08 26.68	+19 54.7					
1984	02 10	08 17.92	+20 20.1	1.830	2.786	162.1	6.3	16.7
1984	02 20	08 10.64	+20 38.7					
1984	03 01	08 05.57	+20 49.5	1.967	2.792	139.0	13.5	17.0
1984	03 11	08 03.12	+20 52.2					
1984	03 21	08 03.37	+20 47.2	2.181	2.798	118.5	18.2	17.3
1984	03 31	08 06.18	+20 34.9					
1984	04 10	08 11.29	+20 15.7	2.439	2.804	100.7	20.6	17.6

1981 DE1 a,e,i = 2.26, 0.10, 6 Elements MPC 7614

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	08 38.14	+16 18.7	1.848	2.110	90.8	28.0	18.3
1983	11 12	08 48.70	+15 02.5					
1983	11 22	08 56.78	+13 50.2	1.634	2.128	105.9	26.5	18.0
1983	12 02	09 02.04	+12 44.5					
1983	12 12	09 04.10	+11 48.5	1.438	2.148	123.8	22.4	17.7
1983	12 22	09 02.72	+11 04.8					
1984	01 01	08 57.86	+10 35.6	1.289	2.168	144.9	15.1	17.3
1984	01 11	08 49.86	+10 22.2					
1984	01 21	08 39.62	+10 23.7	1.219	2.190	167.5	5.6	16.9
1984	01 31	08 28.50	+10 37.3					
1984	02 10	08 18.08	+10 58.8	1.251	2.211	162.2	7.8	17.1
1984	02 20	08 09.80	+11 23.3					
1984	03 01	08 04.53	+11 46.8	1.382	2.233	139.9	16.6	17.5
1984	03 11	08 02.66	+12 06.0					
1984	03 21	08 04.13	+12 18.7	1.584	2.256	120.2	22.5	18.0
1984	03 31	08 08.62	+12 23.6					
1984	04 10	08 15.70	+12 19.7	1.826	2.278	103.4	25.3	18.4

(2891) 1980 MD a,e,i = 3.38, 0.11, 9 Elements MPC 8022

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	08 55.00	+17 21.8	3.384	3.480	87.2	16.5	18.2
1983	11 12	09 00.55	+17 14.7					
1983	11 22	09 04.41	+17 15.8	3.108	3.498	105.2	15.8	18.0
1983	12 02	09 06.43	+17 26.0					
1983	12 12	09 06.44	+17 46.3	2.857	3.516	125.1	13.2	17.8
1983	12 22	09 04.41	+18 16.7					
1984	01 01	09 00.40	+18 55.9	2.668	3.534	147.1	8.7	17.6
1984	01 11	08 54.65	+19 41.9					
1984	01 21	08 47.64	+20 31.1	2.577	3.551	170.5	2.6	17.2
1984	01 31	08 39.99	+21 19.8					
1984	02 10	08 32.45	+22 04.3	2.606	3.568	164.7	4.2	17.4
1984	02 20	08 25.77	+22 41.7					
1984	03 01	08 20.51	+23 10.5	2.752	3.583	141.7	9.9	17.7
1984	03 11	08 17.11	+23 30.3					
1984	03 21	08 15.74	+23 41.2	2.987	3.599	120.7	13.8	18.0
1984	03 31	08 16.41	+23 44.0					
1984	04 10	08 19.03	+23 39.4	3.274	3.613	101.7	15.8	18.2

1982 RD1 a,e,i = 2.28, 0.18, 7 Elements MPC 7610

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 02	09 04.51	+21 34.2	2.408	2.544	86.3	22.9	19.0
1983	11 12	09 12.86	+20 59.4					
1983	11 22	09 19.03	+20 32.6	2.164	2.570	102.8	22.0	18.7
1983	12 02	09 22.72	+20 15.5					
1983	12 12	09 23.59	+20 09.2	1.935	2.593	121.8	18.8	18.4
1983	12 22	09 21.43	+20 14.2					
1984	01 01	09 16.17	+20 29.2	1.755	2.614	143.8	12.8	18.1
1984	01 11	09 08.01	+20 51.3					
1984	01 21	08 57.63	+21 15.9	1.661	2.632	168.2	4.4	17.7
1984	01 31	08 46.06	+21 37.9					
1984	02 10	08 34.63	+21 52.6	1.681	2.647	165.2	5.5	17.8
1984	02 20	08 24.64	+21 57.8					
1984	03 01	08 17.04	+21 52.9	1.813	2.660	141.3	13.5	18.2
1984	03 11	08 12.38	+21 39.1					
1984	03 21	08 10.77	+21 17.7	2.026	2.669	120.1	18.8	18.6
1984	03 31	08 12.05	+20 49.8					
1984	04 10	08 15.92	+20 16.1	2.285	2.676	101.8	21.5	18.9

1978 QJ a,e,i = 2.37, 0.31, 9 Elements MPC 7152

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	09 21.43	+10 34.1	2.776	3.091	99.2	18.4	20.6
1983	12 02	09 23.44	+09 52.7					
1983	12 12	09 23.21	+09 19.9	2.504	3.097	118.5	16.2	20.3
1983	12 22	09 20.62	+08 57.0					
1984	01 01	09 15.63	+08 45.1	2.279	3.099	140.2	11.7	20.0
1984	01 11	09 08.42	+08 44.8					
1984	01 21	08 59.45	+08 55.3	2.143	3.098	163.1	5.3	19.7
1984	01 31	08 49.45	+09 14.9					
1984	02 10	08 39.31	+09 40.7	2.123	3.092	166.7	4.2	19.6
1984	02 20	08 30.03	+10 09.4					
1984	03 01	08 22.37	+10 37.7	2.223	3.083	144.3	10.8	19.9
1984	03 11	08 16.91	+11 03.0					
1984	03 21	08 13.91	+11 23.4	2.415	3.070	122.6	15.9	20.2
1984	03 31	08 13.37	+11 37.8					
1984	04 10	08 15.17	+11 45.2	2.661	3.053	103.4	18.6	20.5
1984	04 20	08 19.08	+11 45.4					
1984	04 30	08 24.82	+11 38.0	2.924	3.032	86.4	19.4	20.7

1981 EN17 a,e,i = 2.29, 0.17, 5 Elements MPC 7932

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983	11 22	09 16.34	+10 08.5	1.950	2.337	-1.08	+4.3	18.4
1983	12 02	09 21.29	+09 20.8					
1983	12 12	09 23.46	+08 45.1	1.745	2.375	-1.23	+4.9	18.1
1983	12 22	09 22.64	+08 24.3					
1984	01 01	09 18.74	+08 20.3	1.579	2.412	-1.42	+5.6	17.8
1984	01 11	09 11.94	+08 34.2					
1984	01 21	09 02.88	+09 04.4	1.490	2.447	-1.57	+5.9	17.5
1984	01 31	08 52.54	+09 47.5					
1984	02 10	08 42.19	+10 38.0	1.507	2.480	-1.58	+5.7	17.4
1984	02 20	08 33.13	+11 29.9					
1984	03 01	08 26.33	+12 17.9	1.633	2.511	-1.44	+4.9	17.9
1984	03 11	08 22.35	+12 58.5					
1984	03 21	08 21.37	+13 29.6	1.844	2.540	-1.25	+4.2	18.3
1984	03 31	08 23.22	+13 50.3					
1984	04 10	08 27.64	+14 00.3	2.105	2.567	-1.06	+3.6	18.7
1984	04 20	08 34.25	+13 59.8					
1984	04 30	08 42.69	+13 49.2	2.387	2.591	-0.92	+3.3	19.0

1981 EF10 a,e,i = 2.28, 0.21, 5 Elements MPC 7615

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	09 23.20	+09 37.1	2.430	2.754	98.5	20.8	18.9
1983	12 02	09 27.04	+08 54.5					
1983	12 12	09 28.56	+08 21.7	2.160	2.750	117.0	18.6	18.6
1983	12 22	09 27.53	+08 00.8					
1984	01 01	09 23.83	+07 53.7	1.931	2.742	138.0	13.9	18.2
1984	01 11	09 17.54	+08 01.7					
1984	01 21	09 09.05	+08 24.2	1.781	2.730	161.0	6.8	17.9
1984	01 31	08 59.10	+08 59.1					
1984	02 10	08 48.71	+09 42.6	1.741	2.716	168.8	4.0	17.7
1984	02 20	08 39.05	+10 29.6					
1984	03 01	08 31.11	+11 15.5	1.816	2.698	146.4	11.7	18.0
1984	03 11	08 25.62	+11 56.3					
1984	03 21	08 22.93	+12 29.5	1.982	2.677	124.7	17.8	18.3
1984	03 31	08 23.05	+12 53.7					
1984	04 10	08 25.84	+13 08.1	2.201	2.653	105.6	21.3	18.6
1984	04 20	08 31.01	+13 12.4					
1984	04 30	08 38.23	+13 06.9	2.440	2.626	89.2	22.6	18.9

1977 DT4 a,e,i = 2.35, 0.25, 3 Elements MPC 7228

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	09 22.35	+17 54.7	1.738	2.160	101.3	26.6	18.3
1983	12 02	09 28.88	+17 46.9					
1983	12 12	09 32.30	+17 54.6	1.563	2.218	119.2	22.8	18.0
1983	12 22	09 32.35	+18 19.3					
1984	01 01	09 28.89	+19 00.2	1.427	2.274	140.6	15.9	17.7
1984	01 11	09 22.07	+19 54.0					
1984	01 21	09 12.58	+20 54.2	1.367	2.331	164.7	6.4	17.4
1984	01 31	09 01.55	+21 52.6					
1984	02 10	08 50.48	+22 41.6	1.412	2.386	167.9	5.0	17.5
1984	02 20	08 40.85	+23 16.2					
1984	03 01	08 33.73	+23 34.9	1.564	2.439	144.5	13.7	18.0
1984	03 11	08 29.71	+23 38.7					
1984	03 21	08 28.89	+23 29.7	1.797	2.491	123.6	19.5	18.5
1984	03 31	08 31.03	+23 09.9					
1984	04 10	08 35.77	+22 41.0	2.079	2.540	105.7	22.3	18.9
1984	04 20	08 42.70	+22 04.1					
1984	04 30	08 51.39	+21 20.0	2.382	2.587	90.0	22.9	19.3

(2885) 1939 TC a,e,i = 2.24, 0.19, 3 Elements MPC 7939

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	09 21.83	+18 45.7	1.616	2.057	101.6	28.1	18.3
1983	12 02	09 29.13	+18 18.3					
1983	12 12	09 33.21	+18 04.8	1.439	2.102	119.1	24.2	18.0
1983	12 22	09 33.74	+18 06.8					
1984	01 01	09 30.52	+18 24.3	1.299	2.148	140.1	17.1	17.6
1984	01 11	09 23.66	+18 54.9					
1984	01 21	09 13.87	+19 32.9	1.230	2.193	164.3	7.0	17.3
1984	01 31	09 02.34	+20 11.1					
1984	02 10	08 50.71	+20 42.5	1.262	2.238	169.1	4.8	17.3
1984	02 20	08 40.65	+21 02.3					
1984	03 01	08 33.30	+21 09.0	1.398	2.283	145.2	14.4	17.8
1984	03 11	08 29.31	+21 03.2					
1984	03 21	08 28.74	+20 46.6	1.613	2.326	124.3	20.7	18.3
1984	03 31	08 31.31	+20 20.6					
1984	04 10	08 36.61	+19 46.4	1.877	2.367	106.6	23.9	18.8
1984	04 20	08 44.17	+19 04.6					
1984	04 30	08 53.55	+18 15.8	2.161	2.406	91.4	24.7	19.1

1981 EH16 a,e,i = 2.27, 0.25, 3 Elements MPC 7609

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	09 22.03	+15 48.3	1.494	1.938	100.7	30.1	18.5
1983	12 02	09 29.93	+14 52.5					
1983	12 12	09 34.46	+14 09.6	1.335	1.992	117.6	26.0	18.2
1983	12 22	09 35.31	+13 42.4					
1984	01 01	09 32.31	+13 32.2	1.208	2.049	138.3	18.6	17.9
1984	01 11	09 25.60	+13 38.8					
1984	01 21	09 15.91	+13 58.9	1.147	2.106	162.5	8.1	17.6
1984	01 31	09 04.49	+14 27.3					
1984	02 10	08 53.02	+14 57.5	1.184	2.164	171.2	4.0	17.6
1984	02 20	08 43.16	+15 23.7					
1984	03 01	08 36.05	+15 42.4	1.323	2.221	147.1	14.0	18.2
1984	03 11	08 32.29	+15 51.9					
1984	03 21	08 31.93	+15 51.7	1.543	2.278	126.2	20.7	18.7
1984	03 31	08 34.68	+15 42.1					
1984	04 10	08 40.11	+15 23.4	1.813	2.333	108.5	24.0	19.2
1984	04 20	08 47.76	+14 55.8					
1984	04 30	08 57.18	+14 19.8	2.106	2.386	93.3	24.9	19.6

1978 UC a,e,i = 2.64, 0.15, 12 Elements MPC 7367

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	09 30.31	+26 50.7	1.944	2.357	102.1	24.2	17.4
1983	12 02	09 36.81	+26 35.6					
1983	12 12	09 40.28	+26 31.2	1.739	2.384	119.6	21.0	17.1
1983	12 22	09 40.42	+26 37.3					
1984	01 01	09 37.06	+26 51.8	1.576	2.413	140.0	15.2	16.7
1984	01 11	09 30.29	+27 10.1					
1984	01 21	09 20.71	+27 25.7	1.489	2.443	161.8	7.2	16.5
1984	01 31	09 09.39	+27 31.9					
1984	02 10	08 57.78	+27 23.8	1.507	2.474	165.4	5.8	16.5
1984	02 20	08 47.42	+26 59.4					
1984	03 01	08 39.43	+26 20.5	1.632	2.506	144.6	13.3	16.9
1984	03 11	08 34.50	+25 30.2					
1984	03 21	08 32.77	+24 31.8	1.842	2.538	124.1	19.0	17.3
1984	03 31	08 34.06	+23 28.1					
1984	04 10	08 38.03	+22 20.3	2.104	2.571	106.3	22.0	17.7
1984	04 20	08 44.25	+21 09.2					
1984	04 30	08 52.30	+19 55.1	2.390	2.604	90.6	22.8	18.0

1981 EU22 a,e,i = 2.18, 0.07, 2 Elements MPC 7934

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983	11 22	09 23.65	+17 12.1	1.686	2.107	-1.50	+7.7	17.9
1983	12 02	09 32.75	+16 30.9					
1983	12 12	09 39.20	+16 00.8	1.452	2.093	-1.77	+9.6	17.5
1983	12 22	09 42.60	+15 44.4					
1984	01 01	09 42.57	+15 43.7	1.252	2.080	-2.13	+11.6	17.0
1984	01 11	09 38.88	+15 59.0					
1984	01 21	09 31.74	+16 28.1	1.116	2.067	-2.49	+12.7	16.5
1984	01 31	09 21.90	+17 05.4					
1984	02 10	09 10.75	+17 43.6	1.072	2.057	-2.61	+11.9	16.1
1984	02 20	09 00.09	+18 15.1					
1984	03 01	08 51.55	+18 34.7	1.128	2.048	-2.40	+10.0	16.6
1984	03 11	08 46.29	+18 40.2					
1984	03 21	08 44.82	+18 31.8	1.264	2.040	-2.03	+8.4	17.1
1984	03 31	08 47.04	+18 10.4					
1984	04 10	08 52.61	+17 36.9	1.449	2.034	-1.70	+7.5	17.5
1984	04 20	09 01.03	+16 52.1					
1984	04 30	09 11.77	+15 56.8	1.657	2.030	-1.44	+7.1	17.8

(2789) 1956 XA a,e,i = 2.23, 0.16, 4 Elements MPC 7455

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	09 34.45	+10 36.2	1.845	2.185	96.2	26.7	18.6
1983	12 02	09 41.59	+09 35.0					
1983	12 12	09 46.01	+08 45.4	1.644	2.223	113.1	24.0	18.4
1983	12 22	09 47.40	+08 10.1					
1984	01 01	09 45.55	+07 51.7	1.472	2.260	133.1	18.5	18.0
1984	01 11	09 40.43	+07 52.1					
1984	01 21	09 32.44	+08 10.9	1.362	2.297	156.2	10.0	17.7
1984	01 31	09 22.39	+08 45.4					
1984	02 10	09 11.53	+09 30.6	1.350	2.332	173.1	2.9	17.4
1984	02 20	09 01.33	+10 19.7					
1984	03 01	08 53.02	+11 06.4	1.446	2.366	151.8	11.4	17.9
1984	03 11	08 47.48	+11 45.8					
1984	03 21	08 45.06	+12 15.2	1.633	2.398	130.0	18.5	18.4
1984	03 31	08 45.72	+12 33.3					
1984	04 10	08 49.20	+12 39.7	1.878	2.428	111.3	22.6	18.8
1984	04 20	08 55.11	+12 34.7					
1984	04 30	09 03.05	+12 18.8	2.151	2.456	95.2	24.1	19.2

(2801) 1935 SU1 a,e,i = 2.80, 0.17, 10 Elements MPC 7462

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	09 42.52	+25 01.7	2.767	3.079	98.9	18.5	18.1
1983	12 02	09 46.92	+25 16.8					
1983	12 12	09 49.05	+25 43.5	2.525	3.105	117.5	16.3	17.8
1983	12 22	09 48.72	+26 21.4					
1984	01 01	09 45.82	+27 08.7	2.328	3.129	138.1	12.1	17.6
1984	01 11	09 40.39	+28 01.4					
1984	01 21	09 32.78	+28 54.2	2.215	3.152	158.8	6.5	17.4
1984	01 31	09 23.62	+29 41.0					
1984	02 10	09 13.82	+30 16.2	2.213	3.173	164.1	4.9	17.3
1984	02 20	09 04.42	+30 35.9					
1984	03 01	08 56.34	+30 39.2	2.326	3.193	145.5	10.1	17.6
1984	03 11	08 50.28	+30 27.1					
1984	03 21	08 46.65	+30 02.0	2.533	3.210	125.0	14.7	17.9
1984	03 31	08 45.50	+29 26.7					
1984	04 10	08 46.74	+28 43.3	2.799	3.226	106.2	17.3	18.2
1984	04 20	08 50.13	+27 53.7					
1984	04 30	08 55.38	+26 59.0	3.091	3.240	89.4	18.1	18.4

1972 NW a,e,i = 2.23, 0.19, 1 Elements MPC 7372

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	09 41.83	+12 27.2	2.316	2.597	95.1	22.3	19.4
1983	12 02	09 47.25	+11 52.6					
1983	12 12	09 50.33	+11 29.3	2.065	2.613	113.1	20.3	19.1
1983	12 22	09 50.80	+11 19.3					
1984	01 01	09 48.46	+11 24.0	1.847	2.625	133.8	15.7	18.8
1984	01 11	09 43.27	+11 43.8					
1984	01 21	09 35.52	+12 17.0	1.699	2.635	157.4	8.2	18.4
1984	01 31	09 25.81	+13 00.3					
1984	02 10	09 15.16	+13 48.5	1.656	2.641	176.4	1.4	18.0
1984	02 20	09 04.79	+14 35.5					
1984	03 01	08 55.84	+15 16.5	1.729	2.644	151.9	10.2	18.5
1984	03 11	08 49.20	+15 48.3					
1984	03 21	08 45.36	+16 09.2	1.898	2.644	129.3	17.0	18.9
1984	03 31	08 44.40	+16 19.0					
1984	04 10	08 46.20	+16 18.0	2.129	2.641	109.7	20.9	19.2
1984	04 20	08 50.49	+16 06.8					
1984	04 30	08 56.91	+15 46.0	2.385	2.634	92.8	22.5	19.5

1978 UH2 a,e,i = 2.60, 0.15, 13 Elements MPC 7599

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	09 39.61	-00 34.2	2.601	2.802	91.2	20.6	19.3
1983	12 02	09 44.35	-01 49.4					
1983	12 12	09 46.99	-02 56.2	2.361	2.828	108.2	19.3	19.1
1983	12 22	09 47.35	-03 51.7					
1984	01 01	09 45.33	-04 32.6	2.149	2.852	127.1	16.0	18.8
1984	01 11	09 40.95	-04 55.5					
1984	01 21	09 34.49	-04 57.9	1.999	2.874	146.9	10.8	18.5
1984	01 31	09 26.48	-04 38.6					
1984	02 10	09 17.72	-03 58.6	1.944	2.895	161.0	6.4	18.4
1984	02 20	09 09.15	-03 01.9					
1984	03 01	09 01.67	-01 54.2	2.001	2.914	152.1	9.2	18.5
1984	03 11	08 56.01	-00 42.0					
1984	03 21	08 52.59	+00 28.4	2.159	2.931	133.1	14.4	18.8
1984	03 31	08 51.57	+01 32.4					
1984	04 10	08 52.92	+02 26.8	2.389	2.946	114.3	18.1	19.2
1984	04 20	08 56.45	+03 09.8					
1984	04 30	09 01.90	+03 40.7	2.658	2.960	97.3	19.7	19.4

(2786) 1978 RR5 a,e,i = 2.61, 0.18, 13 Elements MPC 7451

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	09 48.67	+28 58.6	2.156	2.505	98.8	22.9	17.5
1983	12 02	09 55.55	+29 08.3					
1983	12 12	09 59.63	+29 31.1	1.951	2.543	116.1	20.3	17.2
1983	12 22	10 00.60	+30 06.5					
1984	01 01	09 58.23	+30 51.9	1.785	2.581	135.6	15.5	17.0
1984	01 11	09 52.47	+31 42.0					
1984	01 21	09 43.72	+32 29.0	1.693	2.619	155.3	9.0	16.7
1984	01 31	09 32.79	+33 04.5					
1984	02 10	09 20.97	+33 21.1	1.702	2.656	161.4	6.8	16.7
1984	02 20	09 09.74	+33 15.2					
1984	03 01	09 00.36	+32 47.5	1.820	2.692	144.9	12.2	17.0
1984	03 11	08 53.71	+32 01.5					
1984	03 21	08 50.13	+31 02.0	2.027	2.727	125.3	17.3	17.4
1984	03 31	08 49.57	+29 53.2					
1984	04 10	08 51.77	+28 38.3	2.292	2.761	107.3	20.3	17.8
1984	04 20	08 56.35	+27 19.1					
1984	04 30	09 02.88	+25 56.9	2.583	2.793	91.3	21.1	18.1

(2829) 1948 PK a,e,i = 3.09, 0.19, 14 Elements MPC 7604

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	09 53.56	+16 56.9	3.470	3.672	93.9	15.6	17.9
1983	12 02	09 56.52	+16 31.4					
1983	12 12	09 57.69	+16 13.7	3.171	3.669	113.0	14.3	17.7
1983	12 22	09 56.91	+16 04.3					
1984	01 01	09 54.12	+16 02.9	2.912	3.664	134.0	11.1	17.4
1984	01 11	09 49.34	+16 08.9					
1984	01 21	09 42.82	+16 20.4	2.732	3.658	157.0	6.0	17.1
1984	01 31	09 34.95	+16 34.9					
1984	02 10	09 26.36	+16 49.7	2.664	3.650	177.9	0.6	16.6
1984	02 20	09 17.76	+17 01.7					
1984	03 01	09 09.89	+17 09.0	2.721	3.641	154.6	6.7	17.1
1984	03 11	09 03.36	+17 10.0					
1984	03 21	08 58.61	+17 04.2	2.886	3.630	132.1	11.7	17.4
1984	03 31	08 55.85	+16 51.7					
1984	04 10	08 55.12	+16 32.7	3.124	3.617	111.7	14.9	17.6
1984	04 20	08 56.34	+16 07.6					
1984	04 30	08 59.33	+15 36.8	3.399	3.603	93.4	16.2	17.8

1978 SE1 a,e,i = 2.53, 0.20, 8 Elements MPC 7367

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	09 52.00	+18 32.5	2.478	2.743	94.8	21.0	19.6
1983	12 02	09 57.98	+18 36.2					
1983	12 12	10 01.70	+18 53.7	2.242	2.777	112.9	19.1	19.4
1983	12 22	10 02.94	+19 26.0					
1984	01 01	10 01.49	+20 12.6	2.041	2.809	133.4	14.7	19.1
1984	01 11	09 57.30	+21 11.6					
1984	01 21	09 50.60	+22 18.3	1.913	2.840	155.9	8.1	18.9
1984	01 31	09 41.93	+23 26.4					
1984	02 10	09 32.16	+24 28.6	1.891	2.868	170.3	3.3	18.7
1984	02 20	09 22.40	+25 18.5					
1984	03 01	09 13.71	+25 52.4	1.985	2.894	151.4	9.4	19.0
1984	03 11	09 06.97	+26 09.2					
1984	03 21	09 02.71	+26 10.0	2.177	2.918	129.9	15.2	19.4
1984	03 31	09 01.09	+25 57.0					
1984	04 10	09 02.03	+25 32.6	2.434	2.939	110.5	18.6	19.7
1984	04 20	09 05.32	+24 58.6					
1984	04 30	09 10.63	+24 16.8	2.722	2.958	93.4	19.9	20.0

1981 EY15 a,e,i = 2.27, 0.13, 10 Elements MPC 7609

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 11 22	09 57.33	+18 59.6	2.199	2.469	93.7	23.5	19.2
1983 12 02	10 04.07	+18 21.9					
1983 12 12	10 08.35	+17 54.8	1.959	2.489	111.1	21.7	18.9
1983 12 22	10 09.86	+17 39.9					
1984 01 01	10 08.31	+17 37.3	1.747	2.507	131.2	17.2	18.6
1984 01 11	10 03.58	+17 46.4					
1984 01 21	09 55.84	+18 04.0	1.600	2.523	154.3	9.7	18.3
1984 01 31	09 45.66	+18 25.5					
1984 02 10	09 34.07	+18 45.3	1.551	2.536	175.9	1.6	17.8
1984 02 20	09 22.44	+18 58.0					
1984 03 01	09 12.10	+19 00.3	1.618	2.548	154.5	9.7	18.3
1984 03 11	09 04.10	+18 51.1					
1984 03 21	08 59.06	+18 31.1	1.783	2.557	131.8	16.9	18.7
1984 03 31	08 57.09	+18 01.7					
1984 04 10	08 58.08	+17 23.9	2.013	2.564	112.2	21.2	19.1
1984 04 20	09 01.70	+16 38.9					
1984 04 30	09 07.55	+15 47.2	2.273	2.569	95.3	23.0	19.4

1981 EB20 a,e,i = 2.15, 0.09, 1 Elements MPC 7933

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1983 11 22	09 36.49	+13 48.5	1.570	1.951	-1.63	+8.3	17.1
1983 12 02	09 47.97	+12 42.4					
1983 12 12	09 56.94	+11 46.3	1.359	1.950	-1.90	+10.3	16.8
1983 12 22	10 03.01	+11 03.7					
1984 01 01	10 05.76	+10 37.8	1.172	1.952	-2.28	+12.5	16.3
1984 01 11	10 04.83	+10 31.4					
1984 01 21	10 00.21	+10 45.1	1.035	1.956	-2.70	+14.4	15.9
1984 01 31	09 52.33	+11 16.7					
1984 02 10	09 42.29	+12 00.4	0.978	1.964	-2.92	+14.7	15.3
1984 02 20	09 31.78	+12 47.6					
1984 03 01	09 22.56	+13 29.8	1.018	1.974	-2.75	+13.0	15.8
1984 03 11	09 16.09	+14 00.7					
1984 03 21	09 13.17	+14 16.9	1.143	1.986	-2.34	+10.8	16.2
1984 03 31	09 13.94	+14 17.6					
1984 04 10	09 18.16	+14 03.1	1.327	2.001	-1.93	+9.1	16.7
1984 04 20	09 25.35	+13 34.4					
1984 04 30	09 34.99	+12 52.5	1.544	2.018	-1.60	+8.1	17.1

(2810) 1978 RU5 a,e,i = 2.61, 0.15, 13 Elements MPC 7464

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983 11 22	09 41.37	-00 33.8	1.998	2.242	90.8	26.1	17.9
1983 12 02	09 50.46	-02 00.0					
1983 12 12	09 57.36	-03 16.2	1.784	2.259	105.7	24.8	17.6
1983 12 22	10 01.81	-04 18.5					
1984 01 01	10 03.56	-05 02.4	1.589	2.279	123.0	21.2	17.3
1984 01 11	10 02.44	-05 23.0					
1984 01 21	09 58.57	-05 16.1	1.441	2.302	142.6	15.0	16.9
1984 01 31	09 52.36	-04 39.5					
1984 02 10	09 44.62	-03 34.0	1.371	2.327	161.2	7.8	16.7
1984 02 20	09 36.50	-02 05.2					
1984 03 01	09 29.18	-00 22.1	1.402	2.354	159.1	8.7	16.8
1984 03 11	09 23.72	+01 24.4					
1984 03 21	09 20.80	+03 04.7	1.532	2.383	140.0	15.6	17.2
1984 03 31	09 20.66	+04 32.0					
1984 04 10	09 23.28	+05 42.4	1.739	2.414	121.1	20.8	17.6
1984 04 20	09 28.41	+06 34.4					
1984 04 30	09 35.70	+07 08.2	1.991	2.445	104.4	23.5	18.0

(2812) 1981 FN a,e,i = 2.22, 0.09, 7 Elements MPC 7465

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	09 38.15	+20 20.1	1.711	2.098	98.4	27.8	17.9
1983	12 02	09 49.53	+20 13.5					
1983	12 12	09 58.58	+20 22.2	1.476	2.081	114.0	25.6	17.5
1983	12 22	10 04.89	+20 48.9					
1984	01 01	10 07.99	+21 35.3	1.273	2.066	132.2	20.6	17.1
1984	01 11	10 07.48	+22 41.0					
1984	01 21	10 03.24	+24 01.1	1.127	2.053	152.9	12.6	16.6
1984	01 31	09 55.60	+25 26.5					
1984	02 10	09 45.55	+26 44.6	1.067	2.042	167.5	6.0	16.3
1984	02 20	09 34.79	+27 42.9					
1984	03 01	09 25.13	+28 13.6	1.105	2.033	151.9	13.3	16.6
1984	03 11	09 18.18	+28 15.0					
1984	03 21	09 14.84	+27 50.0	1.224	2.027	131.6	21.6	17.0
1984	03 31	09 15.32	+27 03.7					
1984	04 10	09 19.38	+26 00.3	1.397	2.023	114.0	26.9	17.4
1984	04 20	09 26.55	+24 43.4					
1984	04 30	09 36.25	+23 15.4	1.598	2.022	99.3	29.5	17.7

6081 P-L a,e,i = 2.35, 0.17, 2 Elements MPC 7776

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	09 49.42	+10 52.9	2.203	2.458	92.8	23.7	19.2
1983	12 02	09 57.65	+09 58.8					
1983	12 12	10 03.88	+09 13.4	1.914	2.423	109.1	22.6	18.9
1983	12 22	10 07.81	+08 39.4					
1984	01 01	10 09.10	+08 19.4	1.653	2.387	127.9	19.0	18.4
1984	01 11	10 07.48	+08 15.8					
1984	01 21	10 02.89	+08 29.7	1.447	2.350	149.7	12.2	17.9
1984	01 31	09 55.57	+09 00.5					
1984	02 10	09 46.22	+09 44.9	1.329	2.312	173.5	2.8	17.4
1984	02 20	09 36.03	+10 36.9					
1984	03 01	09 26.36	+11 29.4	1.318	2.274	159.9	8.6	17.6
1984	03 11	09 18.55	+12 15.7					
1984	03 21	09 13.57	+12 50.8	1.404	2.236	136.7	17.8	17.9
1984	03 31	09 11.85	+13 12.4					
1984	04 10	09 13.47	+13 19.3	1.556	2.199	116.9	24.0	18.2
1984	04 20	09 18.19	+13 11.7					
1984	04 30	09 25.62	+12 50.0	1.742	2.163	100.3	27.3	18.5

1979 YP a,e,i = 2.36, 0.21, 1 Elements MPC 7773

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	11 22	10 00.14	+11 27.5	1.961	2.203	90.5	26.6	18.8
1983	12 02	10 09.09	+10 35.8					
1983	12 12	10 15.60	+09 56.4	1.762	2.252	106.7	24.8	18.6
1983	12 22	10 19.37	+09 32.0					
1984	01 01	10 20.12	+09 24.8	1.583	2.301	125.8	20.3	18.3
1984	01 11	10 17.68	+09 36.2					
1984	01 21	10 12.15	+10 05.5	1.454	2.349	148.3	12.7	18.0
1984	01 31	10 04.01	+10 49.6					
1984	02 10	09 54.14	+11 43.1	1.414	2.397	173.2	2.8	17.6
1984	02 20	09 43.84	+12 38.5					
1984	03 01	09 34.41	+13 28.6	1.483	2.443	161.4	7.4	18.0
1984	03 11	09 26.98	+14 08.4					
1984	03 21	09 22.24	+14 35.0	1.654	2.488	138.3	15.5	18.4
1984	03 31	09 20.41	+14 47.7					
1984	04 10	09 21.43	+14 47.0	1.897	2.531	118.3	20.4	18.9
1984	04 20	09 25.02	+14 33.9					
1984	04 30	09 30.79	+14 09.7	2.180	2.571	101.1	22.6	19.3