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

CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Mag.	N	Obs.
244	1945 12	07.90	02 59.6	+14 04	MPC 86	12.5	1	062
329	1982 05	25.88924	15 56 21.10	+03 47 38.3	MPC 7747			563
329	1982 05	25.89688	15 56 20.62	+03 47 39.7	MPC 7747			563
329	1982 05	26.85208	15 55 31.82	+03 52 14.8	MPC 7747			563
329	1982 05	26.85972	15 55 31.50	+03 52 16.5	MPC 7747			563
329	1982 05	26.86736	15 55 31.10	+03 52 18.8	MPC 7747			563
329	1982 05	26.88264	15 55 30.23	+03 52 23.3	MPC 7747			563
329	1982 05	26.88889	15 55 29.71	+03 52 25.0	MPC 7747			563
329	1982 05	26.89306	15 55 29.62	+03 52 27.2	MPC 7747			563
329	1982 06	17.88333	15 39 37.72	+04 26 11.3	MPC 7747			563
329	1982 06	17.89097	15 39 37.46	+04 26 10.6	MPC 7747			563
329	1982 06	17.90625	15 39 36.97	+04 26 09.3	MPC 7747			563
329	1982 06	17.91389	15 39 36.72	+04 26 09.2	MPC 7747			563
329	1982 06	17.92153	15 39 36.50	+04 26 09.3	MPC 7747			563
373	1948 09	01.02	00 30.3	-00 16	MPC 182		2	062
373	1948 10	09.84	23 56.2	+00 06	MPC 183		2	062
417	1945 12	07.90	02 59.2	+11 22	MPC 86	12.9	3	062
942	1982 11	21.76944	01 45 12.28	+01 15 46.2	MPC 7747			563
942	1982 11	21.78958	01 45 11.51	+01 15 50.7	MPC 7747			563
942	1982 11	21.80000	01 45 11.11	+01 15 49.8	MPC 7747			563
942	1982 11	21.81042	01 45 10.90	+01 15 53.9	MPC 7747			563
1043	1983 01	06.80278	04 31 23.06	+09 45 27.5	MPC 7747			563
1043	1983 01	06.81319	04 31 22.71	+09 45 27.7	MPC 7747			563
1043	1983 01	06.84444	04 31 21.89	+09 45 30.8	MPC 7747			563
1043	1983 01	11.83750	04 29 20.46	+09 57 17.5	MPC 7747			563
1043	1983 01	11.84653	04 29 20.34	+09 57 20.3	MPC 7747			563
1043	1983 01	11.85486	04 29 20.16	+09 57 21.6	MPC 7747			563
1043	1983 01	11.88958	04 29 19.37	+09 57 26.3	MPC 7747			563
1043	1983 01	11.89861	04 29 19.20	+09 57 27.2	MPC 7747			563
1043	1983 01	11.91181	04 29 19.02	+09 57 29.8	MPC 7747			563
1261	1949 02	01.9578	07 55 01.96	+23 55 38.9	TI 12			062
1278	1939 01	19.89	08 37.1	+27 37	RI 1915	15.0	4	062
1278	1939 01	20.81	08 36.0	+27 43	RI 1917		4	062
1344	1938 03	22.79362	08 36 18.10	+27 38 23.0	TI 32			062
1359	1972 04	18.33230	13 18 46.10	+03 39 05.8	MPC 3322		5	774
1398	1936 09	09.0080	23 13 17.16	+10 50 15.6	TI 12			062
1453	1938 03	28.7934	12 19 42.71	-01 46 24.3	TI 12			062
1470	1938 09	16.92160	00 33 30.65	+03 59 31.6	TI 32			062
1484	1970 05	28.86736	17 29 10.94	-25 02 08.9	MPC 3165	14.7	6	078
1520	1983 01	11.75139	04 31 19.40	+18 39 24.8	MPC 7747			563
1520	1983 01	11.76181	04 31 19.26	+18 39 20.2	MPC 7747			563
1520	1983 01	11.77083	04 31 19.09	+18 39 19.1	MPC 7747			563

1520		1983	01	11.79583	04	31	18.56	+18	39	12.5	MPC 7747		563
1520		1983	01	11.80764	04	31	18.28	+18	39	09.6	MPC 7747		563
1551		1938	03	05.9780	11	11	31.87	+10	50	07.9	TI 12		062
1554		1952	06	16.21147	15	57	28.60	-10	04	21.9	MPC 1560	16.5	7 760
1596		1939	11	20.92	03	49.4		+24	06		RI 2058		8 062
1601		1942	05	23.90324	15	24	48.05	-15	37	49.3	MPC 1099	13.2	9 008
1601		1962	09	19.12251	16	24	06.41	-23	32	39.7	MPC 2334		689
1607		1957	05	02.15660	12	51	04.49	+07	05	10.5	MPC 2131	17.1	760
1607		1957	05	02.19825	12	51	02.84	+07	05	16.9	MPC 2131		760
1609		1956	12	10.30781	06	03	29.10	+13	31	54.5	MPC 2285		760
1611		1969	06	20.01086	19	06	59.05	-18	08	08.6	MPC 3455		020
1611		1969	06	20.02402	19	06	58.23	-18	08	08.7	MPC 3455		020
1612		1951	04	12.99759	16	45	59.11	-44	38	20.3	MPC 629	15.0	074
1629		1949	03	30.05	14	10.1		+05	24		MPC 294		A 062
1661		1971	05	16.83233	14	00	54.41	-16	09	08.0	MPC 3459		095
1678		1973	10	20.29861	01	51	57.37	+21	48	24.2	MPC 3622		760
1713		1971	08	18.94028	23	40	50.79	-10	35	52.0	MPC 3265		076
1768		1942	09	08.01	00	53.4		+04	14		RI 2404		B 062
1768		1942	09	11.99	00	51.2		+04	09		RI 2406		B 062
1775		1970	11	25.98890	01	45	17.11	+03	25	50.9	MPC 3192		C 026
1780		1975	12	02.91715	04	37	34.34	+30	32	07.0	MPC 4227		095
1781		1976	08	20.22405	21	29	21.84	-27	48	47.8	MPC 4914		D 808
1784		1935	08	07.94141	19	05.8		-23	40		RI 1225	13.2	078
1852		1939	03	22.99225	12	34	20.29	+14	22	42.1	MPC 2825		062
2002		1942	04	17.96022	13	56	24.20	-03	56	00.4	TI 32		062
1943	OE *	1943	07	26.908	20	57.5		-17	38		RI 2532	13.5	E 078
1955	US1	1955	12	03.41528	01	53	20.01	+18	26	51.1	MPC 2587		F 388

Note 1: observation originally erroneously attributed to (1122). 2: originally erroneously attributed to (1227). 3: originally erroneously attributed to (995). 4: originally erroneously attributed to (1393). 5: originally erroneously attributed to (1681). 6: date originally given as 1970 05 08. 7: originally given as 1952 06 26. 8: observation originally erroneously attributed to (1421). 9: date originally given as 1942 05 21. A: observation originally erroneously attributed to (1211). B: originally erroneously attributed to (1162). C: date originally given as 1969 11 25. D: originally given as 1976 08 21. E: 1943 OE = (1604). F: observation originally erroneously attributed to (1662).

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DELETED OBSERVATIONS.

The following observations are to be deleted.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Obs.
943	1948 12 28.92		04 33.5	+10 41	MPC 238	062
1291	1947 04 18.88		12 16.6	-07 18	MPC 207	062
1424	1949 03 01.99990		11 27 28.05	+15 52 20.4	TI 32	062
1486	1940 02 02.94		08 51.4	+17 40	RI 2093	062
1613	1955 12 10.62604		05 46 42.06	+36 20 35.1	MPC 2159	388
1681	1948 12 23.83033		04 05 01.02	+16 13 31.5	MPC 250	020
1681	1948 12 26.93956		04 03 12.80	+16 24 10.5	MPC 250	020
1712	1935 06 25.77383		16 49 58.11	-11 30 53.3	BAN 8	078
1725	1968 03 29.97297		13 57 18.32	-05 33 48.1	MPC 3457	020
1725	1968 03 29.98336		13 57 23.30	-05 33 59.8	MPC 3457	020
1826	1940 12 03.80		03 48.9	+27 35	RI 2204	062

IDENTIFICATION CHANGES.

Continuation to MPC 7875.

Object		Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	N	Obs.
1935 EX	*	1935 03	10.91736	08 01 56.72	+19 37 58.9	1711			012
1935 EX		1935 03	27.91664	08 02 52.22	+20 21 07.5	1711			012
1935 HH	*	1935 04	26.96436	11 46 12.55	+04 17 46.5	1631			020
1935 HH		1935 05	03.87222	11 41 21.20	+04 37 01.8	1631			020
1936 FY1	*	1936 03	17.90464	10 50 22.85	-01 50 00.1	1604			020
1936 FY1		1936 03	17.93961	10 50 21.39	-01 49 46.7	1604			020
1937 BK	*	1937 01	29.80	01 57.9	+18 22	1631	12.6		020
1937 BK		1937 02	02.78	02 01.3	+18 37	1631	12.6		020
1937 BK		1937 02	10.79	02 08.7	+19 09.6	1631	12.7		020
1944 RL	*	1944 09	13.96	00 24.6	+06 13	1257	14.9		062
1945 AC	*	1945 01	15.94	07 47.2	+12 08	1395	15.8		062
1948 AK	*	1948 01	14.89	06 21.7	+33 42	1641	14.5		020
1950 DK1	*	1950 02	16.97892	10 02 07.01	+07 11 25.7	1673			012
1950 RL1	*	1950 09	13.01	01 00.6	+05 12	1162	15.5		062
1952 KJ1	*	1952 05	27.13267	13 16 50.25	+07 45 52.5	1614	18.0		760
1952 KJ1		1952 05	28.16673	13 16 48.64	+07 46 15.8	1614	18.0		760
1953 XN1	*	1953 12	09.93	06 12.6	+29 25	1750			210
1954 KQ	*	1954 05	27.93091	17 49 21.72	-31 10 26.5	1608	13.3		078
1956 EO1	*	1956 03	12.71667	13 03 22.49	-28 12 02.4	1612			388
1956 GV	*	1956 04	05.58958	12 43 03.28	-29 00 02.1	1612			388
1956 XS	*	1956 12	04.08966	02 03 09.32	+15 40 16.6	1728	15.7		760
1956 XS		1956 12	04.18200	02 03 07.41	+15 40 15.2	1728			760
1958 OD	*	1958 07	22.10112	18 23 06.99	-21 15 11.6	1615			839
1958 OD		1958 07	22.11809	18 23 06.34	-21 15 12.3	1615		1	839
1958 XY	*	1958 12	13.23264	03 42 56	+25 56.6	1608	13.0		690
1958 XY		1958 12	15.24792	03 41 21	+25 53.5	1608	13.0		690
1959 NQ	*	1959 07	10.21385	19 38 24.30	-18 42 01.9	1635			760
1959 NQ		1959 07	10.25758	19 38 20.12	-18 41 12.6	1635			760
1960 BE	*	1960 01	24.20	05 16.5	+40 11	1612			760
1961 AP	*	1961 01	12.25998	08 18 11.65	+14 24 57.5	1611	16		760
1961 AP		1961 01	12.30477	08 18 09.33	+14 25 06.1	1611			760
1964 PP	*	1964 08	10.87402	19 43 40.11	-28 11 35.5	1608			095
1964 PQ	*	1964 08	12.21388	20 51 00.88	-15 30 31.3	1635	16.0		760
1964 PQ		1964 08	12.25763	20 50 58.43	-15 30 41.2	1635			760
1964 QB	*	1964 08	29.78868	20 05 57.85	-25 22 12.8	1625			095
1965 MD	*	1965 06	26.17609	16 11 27.56	-22 05 35.6	1669			760
1965 MD		1965 06	26.22193	16 11 25.40	-22 05 27.8	1669			760
1965 PD	*	1965 08	03.29964	21 07 01.19	-15 24 30.7	1645	16.0		760
1965 PD		1965 08	03.34304	21 06 58.67	-15 24 41.8	1645			760
1966 KD	*	1966 05	17.12019	14 02 47.63	-15 52 42.5	1716			760
1966 KD		1966 05	17.16394	14 02 47.22	-15 54 01.6	1716			760
1966 WE	*	1966 11	17.92	02 57.9	+13 49	1633			020
1966 WF	*	1966 11	17.92	03 01.7	+16 25	1630			020
1966 WG	*	1966 11	18.04432	04 30 20.96	+16 01 23.0	1634			020
1966 WG		1966 11	18.05888	04 30 20.48	+16 01 19.7	1634			020
1966 YC	*	1966 12	17.04588	07 09 11.88	+21 18 10.3	1623			020
1966 YC		1966 12	17.06043	07 09 10.76	+21 18 06.2	1623			020
1966 YC		1966 12	21.08279	07 06 26.50	+21 25 03.2	1623			020
1967 CG	*	1967 02	07.93499	09 32 25.93	+12 38 48.2	1635			020
1967 CG		1967 02	07.94884	09 32 24.88	+12 38 56.5	1635			020
1967 CG		1967 02	18.92429	09 23 19.04	+13 20 10.1	1635			020
1967 CG		1967 02	18.93885	09 23 18.41	+13 20 12.1	1635			020
1967 EE1	*	1967 03	07.85931	08 22 43.45	+18 01 36.7	1604			095
1967 EF1	*	1967 03	11.99864	11 31 02.94	-04 02 47.0	1677			020

1967	EF1		1967	03	12.01044	11	31	02.15	-04	02	39.2	1677		020
1967	EF1		1967	03	15.90394	11	27	05.04	-04	02	43.2	1677		020
1967	EF1		1967	03	15.91848	11	27	03.34	-04	02	41.1	1677		020
1967	GU	*	1967	04	11.98260	10	41	01.6	+10	09	35	1768		026
1967	JU	*	1967	05	02.89434	14	32	23.17	-11	22	16.8	1674		095
1967	JV	*	1967	05	10.02042	15	20	37.16	-15	08	48.9	1602		020
1967	JV		1967	05	10.03462	15	20	36.79	-15	08	46.3	1602		020
1967	TM	*	1967	10	14.01417	03	51	56.93	+25	49	48.3	1643		095
1968	BK	*	1968	01	27.97369	07	33	35.44	+22	35	33.6	1653		020
1968	BK		1968	01	27.99516	07	33	33.88	+22	35	45.9	1653		020
1968	FS	*	1968	03	29.93766	13	01	19.29	-02	46	16.0	1623		020
1968	FS		1968	03	29.95497	13	01	19.05	-02	46	13.6	1623		020
1968	FS		1968	04	03.91054	12	58	01.55	-02	25	23.4	1623		020
1968	FS		1968	04	03.93893	12	58	00.50	-02	25	04.3	1623		020
1968	SC	*	1968	09	24.85262	00	02	06.11	+14	30	55.7	1683		020
1968	SC		1968	09	24.86924	00	02	05.15	+14	31	03.0	1683		020
1968	TO	*	1968	10	15.77160	23	44	53.68	-08	33	27.7	1602		095
1968	UP3	*	1968	10	16.87845	23	41	34.44	+13	31	21.1	1714		020
1968	UP3		1968	10	16.89161	23	41	33.66	+13	31	33.8	1714		020
1968	UQ3	*	1968	10	16.87845	23	45	46.28	+10	54	47.4	1683		020
1968	UQ3		1968	10	16.89161	23	45	45.26	+10	55	04.3	1683		020
1968	UR3	*	1968	10	23.05822	03	47	03.03	+17	38	58.7	1774	16.0	095
1969	MG	*	1969	06	19.96793	16	02	46.89	-28	04	56.0	1749		020
1969	MG		1969	06	19.98109	16	02	46.34	-28	04	47.3	1749		020
1970	GO2	*	1970	04	11.07165	11	04	04.80	+07	42	57.2	1722		805
1970	GO2		1970	04	11.08204	11	04	04.54	+07	42	57.6	1722		805
1970	GO2		1970	04	11.09243	11	04	04.23	+07	42	59.2	1722		805
1970	NL	*	1970	07	04.84227	16	13	30.53	-25	34	35.4	1653		095
1971	FK1	*	1971	03	19.95577	13	25	14.74	-03	24	35.9	1730		095
1971	HZ	*	1971	04	20.86736	14	10	51.41	-02	56	06.5	1689	15.9	076
1971	QL3	*	1971	08	16.90069	21	13	32.33	-22	24	26.6	1602	15.9	076
1972	DA	*	1972	02	22.88423	08	23	41.58	+09	25	25.7	1614		020
1972	DA		1972	02	22.90432	08	23	41.05	+09	25	39.2	1614		020
1972	LL1	*	1972	06	07.84994	15	11	02.97	-24	18	15.9	1700		095
1972	LM1	*	1972	06	15.96540	19	44	46.22	-22	22	47.5	1669		095
1972	UG	*	1972	10	29.81903	23	53	59.06	-33	01	08.2	1609		020
1972	UG		1972	10	29.82284	23	53	58.96	-33	01	00.9	1609		020
1973	CH	*	1973	02	05.98485	08	25	51.74	+08	01	41.1	1718		020
1973	CH		1973	02	05.99662	08	25	51.17	+08	01	45.4	1718		020
1973	FM2	*	1973	03	27.88897	12	03	38.62	-05	58	12.4	1653		095
1974	KS	*	1974	05	24.90417	17	19	37.85	-24	26	23.9	1713	15.8	076
1974	TX1	*	1974	10	06.12143	22	57	08.15	+01	27	10.1	1796		805
1977	PK2	*	1977	08	05.83035	18	52	45.18	-08	29	15.5	1767		095
1977	PK2		1977	08	06.84430	18	51	54.62	-08	31	38.9	1767		095
1977	XL	*	1977	12	08.55438	04	34	53.74	+21	57	51.0	1761		330
1978	SF8	*	1978	09	25.84992	00	04	58.95	+20	33	25.9	1695		049
1978	SF8		1978	09	25.86654	00	04	58.24	+20	33	22.8	1695		049
1978	XL1	*	1978	12	05.26042	06	49	45.74	+25	56	08.3	1741		688
1979	XY1	*	1979	12	07.10139	02	22	06.79	+07	55	16.4	1795		688

Note 1: the right ascension was originally given as 12 23 06.34.

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OBSERVATIONS OF COMETS.

Observations are published here for the observatory codes in the following list. Many of the observations are old ones that have been used in orbit improvements but that are not currently in the machine-readable file of observations. Some of these observations have already been published

elsewhere but others have not. They appear here in connection with the effort to make the machine-readable file complete back to 1964.

006 Fabra Observatory, Barcelona. Observers J. M. Codina, J. M. Mundet and N. Torras.
012 Uccle. Observer H. Debehogne.
020 Nice. Observer B. Milet.
022 Pino Torinese. Observer W. Ferreri. Reduction by G. De Sanctis.
026 Zimmerwald. Observer P. Wild.
029 Bergedorf. Observers C. de Vegt, K. U. Gehlich and T. Kleine.
045 Vienna. Observers P. L. Fischer and P. Jackson.
046 Klet. Observer A. Mrkos.
055 Cracow.
056 Skalnate Pleso. Observer M. Antal.
063 Turku-Tuorla. Observers A. Niemi, T. Korhonen and J. Lehtinen.
064 Turku-Kevola. Observer M.-A. Snare.
073 Bucharest. Observers C. Cristescu, V. Ionescu and G. Bocsa.
074 Boyden Observatory. Observer A. D. Andrews.
075 Tartu. Observer H. K. Raudsaar.
076 Hartbeespoort. Observer J. Bruwer.
095 Crimean Astrophysical Observatory.
102 Zvenigorod. Observers V. P. Osipenko and Yu. V. Rusin. From Kiev. Komet. Tsirk. No. 302.
105 Moscow. Observer V. A. Eliseev. From Kiev. Komet. Tsirk. No. 300.
123 Byurakan.
136 Engelhardt Observatory, Kazan.
191 Dushanbe.
210 Alma-Ata.
323 Perth Observatory, Bickley. Observers M. P. Candy and V. Candy.
330 Purple Mountain Observatory. Observers Q. Wang, Y.-l. Ge, S.-c. Wang, D.-c. Wang, J.-x. Yang, C.-l. Yuan and Y.-z. Wu.
370 Kochi. Observer T. Seki.
372 Geisei. Observer T. Seki.
380 Ishiki. Observer N. Kojima. Measured by T. Seki.
385 Nihondaira Observatory. Observer T. Urata.
386 Yatsugatake Observatory. Observer Y. Takatsuki. Measured by T. Urata.
413 Siding Spring. 1.2-m U.K. Schmidt Telescope Unit. Observer K. S. Russell.
414 Uppsala Southern Station, Mt. Stromlo. Observer C.-I. Lagerkvist.
415 Kambah. Observer D. Herald.
474 Mt. John University Observatory. Observer A. C. Gilmore. Measured by P. M. Kilmartin.
485 Carter Observatory, Wellington. Observers A. C. Gilmore and P. M. Kilmartin.
491 Yebes. Observers M. de Pascual, J. Garcia, C. Cabanas and F. Sanchez.
494 Stakenbridge. Observer B. Manning.
502 Colchester. Observer M. J. Hendrie.
509 La Seyne sur Mer. Observatoire Club Antares.
558 Warsaw.
662 Lick Observatory. 0.51-m astrograph. Observers E. A. Harlan and K. Baker. Measured by A. R. Klemola.
675 Palomar. 1.2-m Schmidt. Observers C. Kowal, F. Schweizer and J. Gibson. Measured by Gibson.
688 Lowell Observatory, Anderson Mesa Station. Observer H. L. Giclas. Measured by E. Bowell.
707 Chamberlin Observatory, field station. Observer E. Everhart.
765 Cincinnati. Observer P. Nohr. Measured by F. N. Bowman.
786 U.S. Naval Observatory, Washington. Observer B. L. Mintz.
801 Oak Ridge Observatory. Observers R. E. McCrosky, G. Schwartz and

C.-Y. Shao. 0.40-m astrograph and 1.5-m reflector.
805 Cerro El Roble.
806 Cerro Calan. Observer C. Torres.
809 European Southern Observatory. Observers H.-E. Schuster and R. M. West.
821 Bosque Alegre.
822 Cordoba.
882 JCPM Oi Station. Observer K. Suzuki. Measured by T. Urata. From Nihondaira Obs. Circ. No. 1434.
885 JCPM Yakiimo Station. Observer T. Urata.
890 JCPM Tone Station. Observer N. Ishiyama. Long. and Parallax 140.25, -346, -249 (see MPC 7759). From Japan Astron. Circ. No. 372.
983 San Fernando.
993 Woolston Observatory. Observer M. J. Hendrie, assisted by R. L. Waterfield. Measured by P. Birtwhistle.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N Obs.
		Periodic Comet Klemola				
/1965 VI	1965	11 18.77097	23 22 31.88	-07 55 25.5		074
/1965 VI	1965	11 18.78298	23 22 32.77	-07 55 19.6		074
/1965 VI	1965	11 18.90265	23 22 42.73	-07 54 53.7		074
/1965 VI	1965	12 13.07986	23 58 53.00	-05 36 37.0		822
/1976 X	1976	08 23.51583	23 01 33.51	+04 16 28.1		885
		Comet Alcock (1965 IX)				
/1965 IX	1965	09 29.80069	17 05 20.54	+32 57 14.6		056
/1965 IX	1965	09 29.84243	17 05 30.35	+32 55 23.6		056
/1965 IX	1965	09 30.78819	17 09 14.52	+32 13 15.9		056
/1965 IX	1965	10 03.80347	17 21 18.86	+29 53 00.4		056
/1965 IX	1965	10 13.77456	18 02 35.57	+21 09 41.5		020
/1965 IX	1965	10 18.72778	18 23 33.00	+16 23 00.0		075
		Comet Barbon (1966 II)				
/1966 II	1966	09 07.84792	00 45 56.95	-06 18 33.5		076
/1966 II	1966	09 07.88958	00 45 56.06	-06 19 16.7		076
/1966 II	1966	09 20.01696	00 41 14.43	-09 32 58.5		020
		Periodic Comet Van Biesbroeck				
/1966 III	1966	07 11.75313	18 24 00.04	-14 59 41.4		076
/1966 III	1966	07 11.78229	18 23 59.14	-14 59 46.2		076
/1966 III	1966	07 20.83368	18 20 23.49	-15 36 06.0		076
/1966 III	1966	07 20.84896	18 20 23.12	-15 36 08.9		076
/1966 III	1966	07 20.96944	18 20 20.57	-15 36 38.2		076
/1966 III	1966	08 09.74202	18 18 21.48	-17 05 20.1		076
/1966 III	1966	08 09.79722	18 18 21.68	-17 05 35.1		076
/1966 III	1966	08 17.77378	18 20 19.51	-17 41 09.6		076
/1966 III	1966	08 17.82604	18 20 20.58	-17 41 22.1		076
/1966 III	1966	08 19.82014	18 21 05.74	-17 49 59.9		076
/1966 III	1966	08 19.85625	18 21 06.50	-17 50 09.2		076
		Comet Kilston (1966 V)				
/1966 V	1966	08 14.99848	17 55 36.52	+19 20 28.0		983
/1966 V	1966	08 18.8896	17 56 54.48	+17 55 54.2		055
/1966 V	1966	08 18.9321	17 56 54.96	+17 54 57.2		055
/1966 V	1966	08 19.9162	17 57 18.61	+17 33 19.7		055
/1966 V	1966	08 19.9485	17 57 19.60	+17 32 33.7		055
/1966 V	1966	08 22.9197	17 58 39.35	+16 26 12.8		055
/1966 V	1966	08 22.9371	17 58 40.13	+16 25 49.6		055
/1966 V	1966	08 22.9412	17 58 40.06	+16 25 42.5		055

/1966 V	1966 08 23.89114	17 59 08.76	+16 04 17.1		012
/1966 V	1966 08 29.8497	18 02 39.37	+13 48 36.9		055
/1966 V	1966 08 29.8856	18 02 40.64	+13 47 45.2		055
/1966 V	1966 08 29.9039	18 02 41.37	+13 47 19.7		055
/1966 V	1966 08 29.9245	18 02 42.30	+13 46 48.8		055
/1966 V	1966 09 06.80844	18 08 42.90	+10 45 37.9		020
/1966 V	1966 09 07.89012	18 09 39.11	+10 20 45.0		983
/1966 V	1966 09 09.86196	18 11 26.37	+09 35 34.6		012
/1966 V	1966 09 12.8415	18 14 18.14	+08 27 46.3		055
/1966 V	1966 09 12.8624	18 14 19.80	+08 27 23.9		055
/1966 V	1966 09 12.87917	18 14 20.58	+08 26 57.6		983
/1966 V	1966 09 15.95729	18 17 31.17	+07 17 36.8		983
/1966 V	1966 09 17.83754	18 19 33.97	+06 35 40.2		020
/1966 V	1966 10 03.7681	18 39 45.61	+00 59 21.1		055
/1966 V	1966 10 03.7854	18 39 47.37	+00 59 03.5		055
/1966 V	1966 10 03.8139	18 39 49.62	+00 58 30.6		055
/1966 V	1966 10 03.8354	18 39 51.46	+00 58 01.8		055
/1966 V	1966 10 04.78094	18 41 12.30	+00 39 24.3		020
/1966 V	1966 10 04.7847	18 41 12.56	+00 39 19.6		055
/1966 V	1966 10 04.87014	18 41 20.01	+00 37 40.0		983
/1966 V	1966 10 06.82741	18 44 10.48	-00 00 21.3		020
/1966 V	1966 11 03.76441	19 30 45.56	-07 33 34.9		076
/1966 V	1966 11 03.77257	19 30 46.49	-07 33 39.2		076
	Comet Rudnicki (1967 II)				
/1967 II	1966 11 16.81902	01 13 13.56	-06 55 00.4		020
/1967 II	1966 11 20.19940	00 58 45.49	-08 03 14.1		786
/1967 II	1966 12 01.04196	00 06 32.11	-11 24 28.7		822
	Comet Wild (1967 III)				
/1967 III	1967 02 15.8264	05 41 58.6	+70 06 32		026
/1967 III	1967 02 15.8851	05 41 29.8	+69 57 00		026
/1967 III	1967 02 15.8909	05 41 27.7	+69 56 04		026
	Periodic Comet Tuttle				
/1967 V	1967 03 01.76944	02 08 23.69	+19 31 52.0		056
/1967 V	1967 03 04.73194	02 19 22.82	+17 58 51.7		075
/1967 V	1967 03 04.75417	02 19 27.68	+17 58 08.6		075
/1967 V	1967 03 10.77778	02 41 21.19	+14 45 34.2		056
/1967 V	1967 03 11.81721	02 45 03.51	+14 12 03.6		020
/1967 V	1967 03 11.82137	02 45 04.50	+14 11 59.9		020
/1967 V	1967 04 05.79695	04 08 54.36	+00 37 49.4		020
/1967 V	1967 05 04.70347	05 40 46.70	-13 57 52.4		076
/1967 V	1967 05 04.71806	05 40 49.36	-13 58 16.8		076
/1967 V	1967 06 07.70139	07 41 51.29	-28 07 36.9		076
/1967 V	1967 06 07.74097	07 42 00.10	-28 08 24.3		076
	Comet Mitchell-Jones-Gerber (1967 VII)				
/1967 VII	1967 07 23.94609	10 59 08.46	-17 22 18.1		822
/1967 VII	1967 07 28.71354	11 17 33.58	-21 08 45.1		076
/1967 VII	1967 07 28.73160	11 17 37.44	-21 09 32.1		076
/1967 VII	1967 07 30.94751	11 25 32.00	-22 41 14.2		822
/1967 VII	1967 08 03.95110	11 38 57.36	-25 09 16.3		822
/1967 VII	1967 08 04.70452	11 41 22.31	-25 34 51.9		076
/1967 VII	1967 08 04.73458	11 41 27.96	-25 35 53.4		076
	Periodic Comet Tempel 2				
/1967 X	1967 07 12.91806	18 30 58.69	-13 15 23.0		076
/1967 X	1967 07 12.95278	18 30 58.97	-13 16 24.4		076

/1967 X	1967 07 28.75903	18 39 25.45	-21 54 34.5			076
/1967 X	1967 07 28.81667	18 39 28.03	-21 56 32.6			076
/1967 X	1967 08 08.85026	18 52 36.51	-27 54 46.6			020
/1967 X	1967 08 08.85580	18 52 36.93	-27 54 57.7			020
/1967 X	1967 09 25.75069	20 52 41.12	-37 32 36.7			076
/1972 X	1972 06 16.02884	13 23 44.03	+09 35 01.5			821
/1972 X	1972 06 16.04273	13 23 44.01	+09 34 54.5			821
/1972 X	1972 06 17.01870	13 23 47.82	+09 26 25.9			821
/1972 X	1972 06 17.04231	13 23 47.82	+09 26 14.1			821
/1972 X	1972 07 05.04271	13 30 18.83	+06 15 30.8			821
/1972 X	1972 07 05.06528	13 30 19.76	+06 15 17.4			821

Comet Ikeya-Seki (1968 I)

/1968 I	1968 01 20.20195	16 49 56.62	+06 15 29.0			020
/1968 I	1968 01 20.21926	16 49 57.37	+06 16 02.0			020
/1968 I	1968 01 22.21188	16 51 28.99	+07 18 37.7			020
/1968 I	1968 01 24.20833	16 53 00.45	+08 24 40.6			020
/1968 I	1968 01 25.80127	16 54 12.81	+09 19 57.1			385
/1968 I	1968 01 26.18989	16 54 30.41	+09 33 44.8			020
/1968 I	1968 02 07.22328	17 03 16.72	+18 02 00.9			020
/1968 I	1968 02 17.22247	17 09 52.13	+27 29 22.9			020
/1968 I	1968 02 17.83987	17 10 14.75	+28 09 32.2			370
/1968 I	1968 02 17.84215	17 10 14.79	+28 09 40.8			370
/1968 I	1968 02 17.84251	17 10 14.90	+28 09 41.9			370
/1968 I	1968 02 24.80394	17 14 06.59	+36 25 18.7			370
/1968 I	1968 02 24.80590	17 14 06.78	+36 25 27.7			370
/1968 I	1968 02 24.80903	17 14 06.85	+36 25 43.1			370
/1968 I	1968 02 25.84306	17 14 36.68	+37 46 03.8			370
/1968 I	1968 03 01.78169	17 16 37.44	+44 32 00.6			370
/1968 I	1968 03 01.80322	17 16 37.90	+44 33 51.5			370
/1968 I	1968 03 02.76639	17 16 56.11	+45 56 56.3			370
/1968 I	1968 03 02.77226	17 16 56.17	+45 57 29.3			370
/1968 I	1968 03 02.77836	17 16 56.25	+45 58 01.0			370
/1968 I	1968 03 02.78271	17 16 56.46	+45 58 24.2			370
/1968 I	1968 03 02.80638	17 16 56.70	+46 00 28.5			370
/1968 I	1968 03 02.80945	17 16 56.82	+46 00 43.5			370
/1968 I	1968 03 11.19615	17 17 31.07	+58 41 30.6			020
/1968 I	1968 04 01.16608	12 57 24.11	+87 07 48.2			020
/1968 I	1968 11 16.74549	06 26 46.10	+38 51 41.8			370
/1968 I	1968 11 21.75347	06 15 35.69	+38 31 17.7			370
/1968 I	1968 11 21.79236	06 15 30.41	+38 31 07.2			370
/1968 I	1968 11 22.7344	06 13 20.9	+38 26 35			380

Comet Wild (1968 III)

/1968 III	1968 11 17.5111	01 46 31.6	+27 59 04			380

Comet Tago-Honda-Yamamoto (1968 IV)

/1968 IV	1968 05 04.79397	01 09 44.92	+49 46 42.4			370
/1968 IV	1968 05 04.79649	01 09 46.94	+49 47 02.4			370
/1968 IV	1968 05 04.79649	01 09 46.83	+49 47 01.7			370

Comet Honda (1968 VI)

/1968 VI	1968 08 04.74625	05 03 59.69	+54 45 59.5			370
/1968 VI	1968 09 11.73918	18 12 15.14	+42 42 58.1			073
/1968 VI	1968 09 11.74610	18 12 14.39	+42 41 42.5			073
/1968 VI	1968 09 15.73792	18 07 01.26	+31 36 06.0			073
/1968 VI	1968 09 16.74072	18 06 09.74	+29 06 38.6			073
/1968 VI	1968 09 16.81413	18 06 06.10	+28 56 00.3			073
/1968 VI	1968 09 29.72831	18 02 59.86	+06 35 41.7			073

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/1968 VI   1968 10 13.77639  18 06 55.37  -05 19 48.9                    076
/1968 VI   1968 11 10.38686  18 22 29.18  -15 47 39.7                    385

                Comet Bally-Clayton (1968 VII)
/1968 VII  1968 08 31.60209  18 33 55.0   +32 46 28                     370

                Periodic Comet Perrine-Mrkos
/1968 VIII 1968 12 19.62153  05 17 22.4   -01 31 36                     380

                Comet Thomas (1969 I)
/1969 I    1969 01 15.48675  04 27 30.9   +80 59 03                     385
/1969 I    1969 01 16.67211  04 26 57.4   +80 52 33                     385

                Periodic Comet Faye
/1969 VI   1969 09 17.83256  04 21 45.05  +18 29 50.1                    210
/1969 VI   1969 09 18.86106  04 23 59.06  +18 24 37.7                    210
/1969 VI   1969 12 08.85180  05 23 42.15  +05 22 44.3                    123
/1969 VI   1969 12 08.86920  05 23 41.21  +05 22 32.9                    123
/1969 VI   1970 02 05.66111  05 25 09.71  +08 56 52.3                    123
/1969 VI   1970 02 05.68542  05 25 10.84  +08 57 01.9                    123

                Comet Fujikawa (1969 VII)
/1969 VII  1969 08 22.77222  06 29 43.80  +18 18 22.0                    370
/1969 VII  1969 08 23.77153  06 34 47.40  +18 10 54.0                    370

                Periodic Comet Comas Sola
/1969 VIII 1969 09 11.92010  07 16 10.56  +25 30 37.4                    210
/1969 VIII 1969 09 16.91038  07 30 10.16  +25 36 51.3                    210
/1969 VIII 1969 09 20.92846  07 41 26.85  +25 39 39.1                    210
/1969 VIII 1970 03 01.85823  11 28 00.10  +30 14 14.1                    210

                Comet Tago-Sato-Kosaka (1969 IX)
/1969 IX   1970 01 19.61259  00 07 01.27  -22 23 52.2                    191
/1969 IX   1970 01 26.07251  01 13 09.74  +03 05 17.0                    806
/1969 IX   1970 02 09.70176  02 37 59.82  +32 36 59.0                    073
/1969 IX   1970 02 11.62014  02 45 33.90  +34 28 24.5                    191
/1969 IX   1970 02 12.68472  02 49 33.35  +35 23 51.0                    191
/1969 IX   1970 02 18.72850  03 10 01.75  +39 33 19.2                    073
/1969 IX   1970 03 03.73600  03 46 10.69  +44 49 45.8                    073

                Comet Daido-Fujikawa (1970 I)
/1970 I    1970 02 09.87527  20 22 59.89  -08 01 13.9                    370

                Comet Kohoutek (1970 III)
/1970 III  1971 02 03.17565  07 22 38.59  -32 18 11.9                    821
/1970 III  1971 02 03.20065  07 22 36.62  -32 18 09.2                    821
/1970 III  1971 02 04.17426  07 21 21.81  -32 16 57.5                    821
/1970 III  1971 02 04.18815  07 21 20.77  -32 16 56.3                    821
/1970 III  1971 02 21.08542  07 03 02.74  -31 24 52.4                    821
/1970 III  1971 02 21.13270  07 03 00.22  -31 24 41.2                    821

                Comet White-Ortiz-Bolelli (1970 VI)
/1970 VI   1970 05 24.94248  05 17 07.90  +12 36 32.7                    822
/1970 VI   1970 06 05.93096  06 05 44.78  +08 49 59.4                    822
/1970 VI   1970 06 05.93513  06 05 45.06  +08 49 51.6                    822

                Comet Suzuki-Sato-Seki (1970 X)
/1970 X    1970 10 20.99120  16 02 13.13  -03 50 44.9                    822
/1970 X    1970 10 20.99190  16 02 13.30  -03 50 41.0                    822
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/1970 X	1970 10 20.99259	16 02 13.61	-03 50 40.5			822
/1970 X	1970 10 21.98304	16 08 33.51	-02 46 46.4			822
/1970 X	1970 10 21.98443	16 08 34.03	-02 46 43.2			822
/1970 X	1970 10 21.98582	16 08 34.55	-02 46 35.7			822
/1970 X	1970 10 22.73125	16 13 13.23	-01 59 09.9			076
	Periodic Comet Kojima					
/1970 XII	1971 01 05.28686	13 41 15.14	-14 33 19.7			822
/1970 XII	1971 01 05.31672	13 41 17.54	-14 33 42.8			822
	Comet Abe (1970 XV)					
/1970 XV	1970 08 31.88924	21 22 06.62	+74 11 35.2			056
/1970 XV	1970 09 07.88160	18 09 52.10	+66 11 36.8			056
/1970 XV	1970 09 08.88924	17 54 50.55	+64 17 55.8			056
/1970 XV	1970 09 08.89757	17 54 43.67	+64 16 56.8			056
/1970 XV	1970 09 09.92882	17 41 41.02	+62 17 04.7			056
/1970 XV	1970 09 10.95104	17 30 39.51	+60 16 29.0			056
/1970 XV	1970 09 15.81558	16 55 31.04	+50 51 39.8			558
/1970 XV	1970 09 22.83697	16 30 24.07	+39 06 29.7			558
/1970 XV	1970 10 08.75266	16 08 41.50	+21 24 28.4			558
	Comet Gehrels (1971 I)					
/1971 I	1972 07 04.97362	10 56 07.71	+04 28 15.7			821
/1971 I	1972 07 07.97362	10 56 21.27	+04 26 57.7			821
/1971 I	1972 07 08.95691	10 56 26.50	+04 26 30.4			821
/1971 I	1973 02 26.14291	10 36 22.61	+04 54 15.6			821
/1971 I	1973 02 26.18944	10 36 20.17	+04 54 27.7			821
/1971 I	1973 02 27.11782	10 35 36.85	+04 58 37.0			821
/1971 I	1973 02 27.21781	10 35 32.36	+04 59 05.0			821
	Periodic Comet Encke					
/1971 II	1970 11 23.41944	21 34 14.50	+15 57 55.0			370
	Periodic Comet Ashbrook-Jackson					
/1971 III	1970 03 09.32499	18 16 18.11	-35 02 30.9			821
/1971 III	1970 03 09.33193	18 16 18.11	-35 02 30.9			821
/1971 III	1970 03 09.34965	18 16 19.10	-35 02 28.4			821
/1971 III	1970 05 01.34995	19 02 23.50	-38 09 57.9			821
/1971 III	1970 05 01.36869	19 02 23.98	-38 10 02.8			821
/1971 III	1970 05 02.26103	19 02 44.14	-38 14 07.3			821
/1971 III	1970 05 02.27492	19 02 44.25	-38 14 11.8			821
/1971 III	1970 05 02.28881	19 02 44.57	-38 14 16.5			821
/1971 III	1970 05 02.30270	19 02 45.25	-38 14 24.1			821
/1971 III	1970 05 03.32837	19 03 06.54	-38 19 03.9			821
/1971 III	1970 05 03.34573	19 03 06.76	-38 19 08.0			821
/1971 III	1970 05 03.36656	19 03 07.18	-38 19 14.3			821
	Periodic Comet Arend-Rigaux					
/1971 IV	1970 08 01.19440	00 26 26.63	-14 59 05.1			821
/1971 IV	1970 08 01.24856	00 26 27.47	-14 59 33.3			821
/1971 IV	1970 08 05.18381	00 27 24.40	-15 34 05.7			821
/1971 IV	1970 08 05.24282	00 27 25.05	-15 34 37.5			821
/1971 IV	1970 08 07.18722	00 27 45.78	-15 52 52.2			821
/1971 IV	1970 08 07.24278	00 27 46.27	-15 53 23.8			821
	Comet Toba (1971 V)					
/1971 V	1971 04 25.13557	22 09 05.71	+05 53 57.5			006
/1971 V	1971 04 30.77245	22 12 22.38	+02 28 21.0			370

/1971 V	1971 05 06.78611	22 15 42.00	-01 57 08.4		370
/1971 V	1971 05 08.78715	22 16 45.32	-03 38 48.6		370
/1971 V	1971 05 08.79340	22 16 45.58	-03 39 07.0		370
/1971 V	1971 05 31.37506	22 24 29.18	-35 21 09.7		822
/1971 V	1971 05 31.37714	22 24 29.10	-35 21 24.3		822
/1971 V	1971 05 31.37922	22 24 29.10	-35 21 39.2		822
/1971 V	1971 06 01.37818	22 24 25.78	-37 26 00.4		822
/1971 V	1971 06 01.38096	22 24 25.88	-37 26 21.0		822
/1971 V	1971 06 01.38374	22 24 25.70	-37 26 42.1		822
/1971 V	1971 06 08.41101	22 21 19.74	-53 12 32.8		822
/1971 V	1971 06 26.17738	16 54 28.36	-86 08 39.7		821
/1971 V	1971 06 26.17877	16 54 20.23	-86 08 39.2		821
/1971 V	1971 06 27.15306	15 31 06.49	-85 51 02.8		821
/1971 V	1971 06 27.15444	15 31 00.67	-85 50 59.8		821
/1971 V	1971 06 27.15583	15 30 54.12	-85 50 57.6		821
/1971 V	1971 06 27.15722	15 30 48.44	-85 50 54.7		821
/1971 V	1971 06 30.94115	12 59 40.39	-82 13 36.4		821
/1971 V	1971 06 30.94314	12 59 38.73	-82 13 30.7		821
/1971 V	1971 06 30.94453	12 59 37.22	-82 13 25.8		821
	Periodic Comet Wolf-Harrington				
/1971 VI	1972 02 18.07914	10 30 49.87	-24 07 20.4		821
/1971 VI	1972 02 18.11178	10 30 47.98	-24 07 16.3		821
/1971 VI	1972 02 20.20485	10 28 47.38	-24 01 20.1		821
/1971 VI	1972 02 20.22221	10 28 46.47	-24 01 16.3		821
	Periodic Comet Shajn-Schaldach				
/1971 IX	1971 10 26.22708	02 01 50.54	+04 17 00.5		821
/1971 IX	1971 10 26.25764	02 01 49.53	+04 16 49.7		821
/1971 IX	1971 10 27.28889	02 01 13.53	+04 10 45.9		821
/1971 IX	1971 10 28.19688	02 00 42.25	+04 05 32.4		821
/1971 IX	1971 10 28.21076	02 00 41.75	+04 05 27.9		821
/1971 IX	1971 10 29.25938	02 00 05.61	+03 59 33.9		821
	Comet Bradfield (1972 III)				
/1972 III	1972 04 27.96152	05 25 53.49	-42 42 16.1		822
/1972 III	1972 04 28.98929	05 38 28.26	-41 16 26.2		822
/1972 III	1972 05 02.96846	06 20 54.44	-35 17 45.4		822
/1972 III	1972 05 10.97471	07 20 56.02	-23 29 06.5		822
	Periodic Comet Neujmin 3				
/1972 IV	1972 06 16.30900	22 44 44.39	-06 05 13.5		821
/1972 IV	1972 06 16.33262	22 44 46.16	-06 05 05.3		821
/1972 IV	1972 06 17.32354	22 45 59.93	-05 59 23.2		821
/1972 IV	1972 06 17.34715	22 46 01.48	-05 59 16.3		821
/1972 IV	1972 06 19.36853	22 48 27.58	-05 48 08.4		821
/1972 IV	1972 06 19.39145	22 48 29.08	-05 48 01.5		821
/1972 IV	1972 07 08.27162	23 06 24.40	-04 37 23.4		821
/1972 IV	1972 07 08.29384	23 06 25.35	-04 37 20.9		821
/1972 IV	1972 07 09.29264	23 07 06.36	-04 35 29.2		821
/1972 IV	1972 07 09.31475	23 07 07.08	-04 35 26.6		821
	Periodic Comet Giacobini-Zinner				
/1972 VI	1972 06 11.00486	23 33 38.54	+35 12 35.3		056
/1972 VI	1972 06 20.99653	00 25 09.34	+37 29 36.1		056
/1972 VI	1972 06 21.00278	00 25 11.29	+37 29 42.3		056
/1972 VI	1972 06 21.01736	00 25 16.09	+37 29 49.4		056
/1972 VI	1972 06 21.99792	00 30 38.56	+37 38 43.8		056

/1972 VI	1972	06	22.00694	00	30	41.38	+37	38	48.6	056
/1972 VI	1972	06	22.01875	00	30	45.28	+37	38	54.7	056
/1972 VI	1972	06	22.99931	00	36	10.85	+37	46	55.3	056
/1972 VI	1972	06	23.00417	00	36	12.54	+37	46	57.2	056
/1972 VI	1972	07	04.97847	01	45	33.93	+38	01	52.7	056
/1972 VI	1972	07	05.00069	01	45	41.62	+38	01	44.9	056
/1972 VI	1972	07	09.97708	02	15	19.53	+37	18	58.8	056
/1972 VI	1972	07	09.99097	02	15	24.40	+37	18	49.1	056
/1972 VI	1972	07	20.02500	03	13	55.17	+34	24	17.2	056
/1972 VI	1972	07	20.04514	03	14	01.94	+34	23	51.9	056
/1972 VI	1972	07	20.99514	03	19	23.45	+34	01	38.6	056
/1972 VI	1972	07	22.04375	03	25	15.43	+33	36	04.2	056
/1972 VI	1972	07	24.04167	03	36	16.79	+32	44	29.0	056
/1972 VI	1972	08	09.89135	05	00	08.36	+23	36	27.5	210
/1972 VI	1972	08	09.90795	05	00	12.85	+23	35	50.6	210
/1972 VI	1972	08	09.93417	05	00	19.93	+23	34	53.8	210
/1972 VI	1972	08	10.89836	05	04	36.23	+22	59	27.0	210
/1972 VI	1972	08	10.91485	05	04	40.40	+22	58	50.6	210
/1972 VI	1972	08	11.86741	05	08	49.93	+22	23	37.2	210
/1972 VI	1972	08	11.89138	05	08	56.37	+22	22	36.5	210
/1972 VI	1972	08	11.90526	05	08	59.76	+22	22	12.2	210
/1972 VI	1972	08	12.87674	05	13	10.64	+21	46	08.8	210
/1972 VI	1972	08	12.90694	05	13	18.50	+21	44	59.8	210
/1972 VI	1972	08	13.92161	05	17	36.84	+21	07	01.4	210
/1972 VI	1972	08	13.93317	05	17	39.72	+21	06	38.2	210
/1972 VI	1972	08	14.92819	05	21	49.64	+20	29	19.1	210
/1972 VI	1972	08	15.92925	05	25	57.08	+19	51	35.3	210
/1972 VI	1972	08	18.88610	05	37	48.07	+17	59	45.8	191
/1972 VI	1972	08	18.92395	05	37	56.84	+17	58	24.5	191
/1972 VI	1972	08	21.94312	05	49	31.28	+16	04	03.6	191
/1972 VI	1972	08	21.95574	05	49	34.42	+16	03	33.5	191
/1972 VI	1972	08	22.91443	05	53	08.47	+15	27	17.7	191
/1972 VI	1972	08	22.95259	05	53	16.64	+15	25	53.2	191
/1972 VI	1972	08	29.93045	06	17	46.67	+11	04	56.1	191
/1972 VI	1972	08	29.93598	06	17	47.65	+11	04	41.5	191
/1972 VI	1972	08	31.94598	06	24	23.16	+09	50	52.5	191
/1972 VI	1972	09	01.07292	06	24	47.77	+09	46	14.6	056
/1972 VI	1972	09	01.09444	06	24	51.71	+09	45	27.2	056
/1972 VI	1972	09	03.09653	06	31	13.06	+08	32	44.4	056
/1972 VI	1972	11	13.93734	08	28	54.20	-24	11	44.6	191
/1972 VI	1972	11	14.92201	08	29	04.41	-24	29	56.2	191
/1972 VI	1972	11	15.93240	08	29	12.31	-24	48	20.4	191
/1972 VI	1973	02	27.04491	07	06	40.18	-18	33	19.5	821
/1972 VI	1973	02	27.07546	07	06	40.10	-18	32	46.7	821

Comet Heck-Sause (1972 VIII)

/1972 VIII	1973	01	28.61042	12	04	24.99	+22	58	13.3	385
/1972 VIII	1973	02	25.69781	10	49	12.77	+39	39	16.7	136
/1972 VIII	1973	02	28.71729	10	39	18.32	+41	00	27.9	136
/1972 VIII	1973	03	01.61546	10	36	20.31	+41	23	03.6	136
/1972 VIII	1973	03	01.71488	10	36	00.61	+41	25	32.1	136
/1972 VIII	1973	03	04.77565	10	25	54.39	+42	36	46.8	136
/1972 VIII	1973	03	05.67000	10	22	58.23	+42	56	00.1	136
/1972 VIII	1973	03	05.79720	10	22	32.94	+42	58	42.5	136
/1972 VIII	1973	03	06.84851	10	19	06.51	+43	20	12.5	136
/1972 VIII	1973	03	06.88797	10	18	58.76	+43	21	00.8	136
/1972 VIII	1973	03	13.90725	09	56	41.71	+45	19	56.4	136
/1972 VIII	1973	03	26.03663	09	23	08.10	+47	18	18.1	012

Periodic Comet Kearns-Kwee

/1972 XI	1972	11 30.90919	06 57 55.95	+33 51 01.6		046
/1972 XI	1972	11 30.92377	06 57 55.76	+33 51 00.7		046
/1972 XI	1972	12 01.68153	06 57 44.37	+33 50 39.5		385
/1972 XI	1972	12 01.88725	06 57 41.16	+33 50 27.4		046
/1972 XI	1972	12 02.88860	06 57 24.19	+33 49 51.2		046
/1972 XI	1972	12 02.89971	06 57 23.97	+33 49 51.0		046
/1972 XI	1972	12 04.87679	06 56 44.11	+33 48 21.8		046
/1972 XI	1972	12 05.96218	06 56 18.65	+33 47 25.9		046
/1972 XI	1972	12 05.97676	06 56 18.40	+33 47 24.4		046
/1972 XI	1972	12 06.96919	06 55 53.17	+33 46 27.6		046
/1972 XI	1972	12 06.98308	06 55 52.86	+33 46 23.7		046
/1972 XI	1972	12 13.07218	06 52 42.24	+33 37 57.0		020
/1972 XI	1972	12 13.08152	06 52 41.79	+33 37 56.6		020

Comet Kojima (1973 II)

/1973 II	1972	11 04.29097	08 18 38.44	-19 29 03.1		822
/1973 II	1972	11 04.30596	08 18 37.23	-19 29 12.5		822
/1973 II	1972	11 05.29763	08 17 07.45	-19 39 56.0		822
/1973 II	1972	11 05.31360	08 17 05.98	-19 40 06.4		822
/1973 II	1972	11 14.86056	07 58 57.57	-21 25 09.3		191
/1973 II	1972	11 15.78264	07 56 48.44	-21 35 10.2		380
/1973 II	1972	11 15.90185	07 56 31.52	-21 36 27.6		191
/1973 II	1972	11 18.00899	07 51 17.06	-21 59 08.7		191
/1973 II	1972	11 19.08021	07 48 27.42	-22 10 23.6		074
/1973 II	1972	12 04.71389	06 52 53.28	-24 12 42.9		370
/1973 II	1972	12 14.12784	06 06 36.19	-24 01 09.9		822
/1973 II	1972	12 14.13825	06 06 32.91	-24 01 05.6		822

Comet Bradfield (1974 III)

/1974 III	1974	03 12.02435	01 24 32.01	-15 39 19.3		806
/1974 III	1974	04 25.00054	02 34 26.77	+73 12 59.8		064
/1974 III	1974	05 10.90778	03 14 10.5	+87 06 10.8		063
/1974 III	1974	05 12.92167	03 59 01.2	+88 30 05.9		063
/1974 III	1974	05 12.93243	03 59 30.6	+88 30 31.2		063
/1974 III	1974	05 12.94250	03 59 56.0	+88 30 54.2		063
/1974 III	1974	05 12.95083	04 00 20.2	+88 31 17.4		063
/1974 III	1974	05 12.95847	04 00 35.4	+88 31 32.9		063
/1974 III	1974	05 12.96681	04 00 53.6	+88 31 53.4		063
/1974 III	1974	05 13.92410	05 10 24.4	+89 06 47.2		063

Periodic Comet Reinmuth 2

/1974 VI	1973	05 31.10429	15 14 53.36	-26 56 52.6		821
/1974 VI	1973	05 31.13416	15 14 51.74	-26 56 43.1		821

Periodic Comet Borrelly

/1974 VII	1973	08 23.06809	20 47 00.43	-55 26 07.4		821
/1974 VII	1973	08 23.09726	20 46 58.01	-55 26 14.1		821

Comet van den Bergh (1974 XII)

/1974 XII	1976	10 31.25917	04 42 40.30	-10 21 10.9		809

Periodic Comet Schwassmann-Wachmann 2

/1974 XIII	1975	01 13.25380	12 44 58.51	-01 39 32.9		805
/1974 XIII	1975	01 14.25860	12 45 49.04	-01 42 30.7		805
/1974 XIII	1975	04 15.18414	12 27 12.89	+02 58 01.7		805
/1974 XIII	1975	04 18.12493	12 25 31.76	+03 07 24.6		805
/1974 XIII	1975	05 08.07838	12 18 34.28	+03 32 31.5		805

Periodic Comet Honda-Mrkos-Pajdusakova

/1974	XVI	1974	12	12.53865	20	02	10.85	-14	34	04.9	210
/1974	XVI	1974	12	13.52742	20	05	20.09	-14	41	24.1	210
/1974	XVI	1974	12	14.52765	20	08	32.26	-14	49	30.3	210
/1974	XVI	1974	12	15.53148	20	11	44.78	-14	58	27.2	210
/1974	XVI	1975	01	13.05935	21	21	15.20	-33	17	44.1	805
/1974	XVI	1975	01	14.04542	21	22	24.25	-34	45	38.6	805

Periodic Comet Boethin

/1975	I	1975	02	13.40833	01	48	31.86	+16	17	49.4	385

Comet Schuster (1975 II)

/1975	II	1976	03	29.01719	10	26	41.17	-42	00	56.2	809
/1975	II	1976	03	29.02827	10	26	40.45	-42	00	53.3	809
/1975	II	1976	05	17.98802	09	54	39.29	-38	02	19.4	809
/1975	II	1976	05	23.29170	09	53	13.79	-37	37	55.1	485
/1975	II	1976	05	30.00096	09	51	54.69	-37	09	16.3	809
/1975	II	1976	06	04.29441	09	51	13.61	-36	48	48.2	485
/1975	II	1976	06	04.32711	09	51	13.53	-36	48	42.1	485
/1975	II	1976	06	24.98746	09	51	08.08	-35	49	21.4	809
/1975	II	1977	02	18.16590	09	01	55.54	-50	49	57.2	809
/1975	II	1977	05	13.00995	08	14	05.31	-43	32	05.8	809

Periodic Comet West-Kohoutek-Ikemura

/1975	IV	1975	04	12.68296	04	58	11.25	+35	09	13.6	210
/1975	IV	1975	04	12.69674	04	58	13.69	+35	09	33.1	210

Comet Bradfield (1975 V)

/1975	V	1975	04	04.32460	02	40	42.17	-18	13	20.8	485

Comet Lovas (1975 VIII)

/1975	VIII	1975	05	12.39315	13	22	39.86	-69	47	06.2	485
/1975	VIII	1975	05	12.43968	13	22	31.64	-69	47	19.9	485
/1975	VIII	1975	05	22.45291	12	55	51.90	-70	15	58.6	485
/1975	VIII	1975	05	22.47513	12	55	48.70	-70	16	00.4	485
/1975	VIII	1976	08	20.62353	00	47	17.98	-22	25	01.6	485
/1975	VIII	1976	08	20.66763	00	47	16.27	-22	25	02.3	485
/1975	VIII	1976	09	18.57046	00	24	41.50	-22	18	00.9	485
/1975	VIII	1976	09	18.61667	00	24	39.10	-22	17	56.7	485

Comet Kobayashi-Berger-Milon (1975 IX)

/1975	IX	1975	07	15.86125	20	35	17.82	+22	46	32.3	095
/1975	IX	1975	07	22.90796	18	14	25.87	+51	52	56.5	045
/1975	IX	1975	07	27.00347	15	56	38.85	+58	46	56.2	029
/1975	IX	1975	07	27.00624	15	56	33.28	+58	46	59.3	029
/1975	IX	1975	07	28.90270	15	00	04.35	+58	34	34.9	029
/1975	IX	1975	07	28.90442	15	00	01.36	+58	34	29.3	029
/1975	IX	1975	07	29.92765	14	34	23.58	+57	57	25.8	006
/1975	IX	1975	07	29.96071	14	33	37.65	+57	55	53.3	029
/1975	IX	1975	07	29.96260	14	33	35.15	+57	55	48.1	029
/1975	IX	1975	07	30.85727	14	14	04.00	+57	12	54.3	046
/1975	IX	1975	07	31.87882	13	54	40.02	+56	16	49.5	045
/1975	IX	1975	08	01.93156	13	37	27.55	+55	14	48.1	029
/1975	IX	1975	08	01.93314	13	37	26.10	+55	14	42.1	029
/1975	IX	1975	08	02.89520	13	23	49.75	+54	16	53.9	029
/1975	IX	1975	08	02.89676	13	23	48.51	+54	16	48.5	029
/1975	IX	1975	08	03.89073	13	11	31.33	+53	17	15.3	029
/1975	IX	1975	08	03.89212	13	11	30.42	+53	17	10.5	029

/1975 IX	1975 08 04.90382	13 00 32.70	+52 17 45.3			029
/1975 IX	1975 08 04.91354	13 00 27.01	+52 17 11.0			029
/1975 IX	1975 08 04.91563	13 00 25.67	+52 17 02.2			029
/1975 IX	1975 08 05.91146	12 50 54.48	+51 20 20.2			029
/1975 IX	1975 08 05.91354	12 50 53.35	+51 20 13.1			029
/1975 IX	1975 08 05.91563	12 50 52.15	+51 20 06.4			029
/1975 IX	1975 08 06.88993	12 42 34.15	+50 26 35.3			029
/1975 IX	1975 08 06.89132	12 42 33.47	+50 26 30.9			029
/1975 IX	1975 08 06.89271	12 42 32.72	+50 26 26.4			029
/1975 IX	1975 08 07.90104	12 34 49.78	+49 33 11.9			029
/1975 IX	1975 08 07.90243	12 34 49.17	+49 33 07.2			029
/1975 IX	1975 08 07.90382	12 34 48.46	+49 33 02.9			029
/1975 IX	1975 08 09.88993	12 21 39.90	+47 54 25.6			029
/1975 IX	1975 08 09.89132	12 21 39.43	+47 54 21.5			029
/1975 IX	1975 08 09.89271	12 21 38.92	+47 54 17.2			029
/1975 IX	1975 08 10.85313	12 16 04.17	+47 09 20.3			045
/1975 IX	1975 08 10.89132	12 15 51.31	+47 07 35.1			029
/1975 IX	1975 08 10.89271	12 15 50.80	+47 07 31.0			029
/1975 IX	1975 08 10.89410	12 15 50.33	+47 07 27.5			029
/1975 IX	1975 08 11.88160	12 10 32.07	+46 22 59.1			029
/1975 IX	1975 08 11.88299	12 10 31.64	+46 22 55.6			029
/1975 IX	1975 08 11.88438	12 10 31.19	+46 22 52.3			029
/1975 IX	1975 08 22.81701	11 26 44.60	+39 05 42.1			045
/1975 IX	1975 12 04.32570	10 18 48.05	-55 41 21.0			805
/1975 IX	1975 12 07.31529	10 13 53.89	-57 30 13.4			805
/1975 IX	1975 12 30.20089	09 03 21.06	-67 56 21.5			805
/1975 IX	1975 12 31.22590	08 58 41.38	-68 13 40.6			805

Periodic Comet Grigg-Skjellerup

/1977 VI	1977 04 22.72564	20 27 06.88	+01 38 15.7			485

Periodic Comet Schuster

/1978 I	1977 09 07.24792	00 07 13.60	-39 00 43.7			809
/1978 I	1977 10 09.16424	23 33 33.39	-36 59 39.8			809
/1978 I	1977 10 13.17431	23 30 10.89	-36 03 04.1			809

Periodic Comet Chernykh

/1978 IV	1977 08 24.00592	00 19 58.78	-03 25 45.8			095
/1978 IV	1977 09 04.65764	00 17 10.96	-04 18 07.3			372
/1978 IV	1977 09 05.59063	00 16 52.13	-04 22 49.1			885
/1978 IV	1977 09 10.56606	00 14 58.10	-04 48 30.5			414
/1978 IV	1977 09 14.55376	00 13 13.60	-05 09 53.0			414
/1978 IV	1977 09 16.58223	00 12 16.76	-05 20 51.5			414
/1978 IV	1977 09 16.59400	00 12 16.44	-05 20 55.4			414
/1978 IV	1977 09 17.47215	00 11 51.37	-05 25 41.6			414
/1978 IV	1977 09 17.47493	00 11 51.30	-05 25 42.0			414
/1978 IV	1977 09 17.47770	00 11 51.25	-05 25 42.8			414
/1978 IV	1977 09 17.70970	00 11 44.16	-05 26 59.6			414
/1978 IV	1977 09 22.91522	00 09 08.47	-05 55 03.8			095
/1978 IV	1977 09 22.94617	00 09 07.49	-05 55 14.1			095
/1978 IV	1977 09 22.96007	00 09 07.07	-05 55 17.7			095

Periodic Comet Whipple

/1978 VIII	1977 08 21.7277	20 58 22.74	-04 50 30.2			210
/1978 VIII	1977 08 21.7344	20 58 22.57	-04 50 29.8			210
/1978 VIII	1977 08 21.7451	20 58 22.18	-04 50 35.9			210
/1978 VIII	1977 08 21.7478	20 58 21.95	-04 50 35.2			210
/1978 VIII	1977 08 21.7708	20 58 21.17	-04 50 43.5			210

/1978 VIII	1977	08	21.7965	20	58	20.10	-04	50	52.8	210
/1978 VIII	1977	08	21.8076	20	58	19.76	-04	50	56.9	210
/1978 VIII	1977	08	22.7538	20	57	44.65	-04	56	51.9	210
/1978 VIII	1977	08	22.7740	20	57	43.74	-04	56	59.5	210
			Periodic Comet Wild 2							
/1978 XI	1978	02	13.83490	05	16	51.24	+20	42	29.6	494
/1978 XI	1978	02	27.47049	05	24	53.84	+21	26	25.9	885
/1978 XI	1978	03	02.48889	05	27	41.99	+21	36	26.8	885
/1978 XI	1978	03	12.88750	05	40	00.98	+22	10	00.5	494
/1978 XI	1978	04	07.44688	06	25	37.28	+23	04	40.3	885
/1978 XI	1978	05	06.82285	07	38	30.30	+22	14	56.6	095
			Periodic Comet Stephan-Oterma							
/1980 X	1980	09	06.89112	03	54	31.10	-00	45	00.4	13.3T 210
/1980 X	1980	09	07.91374	03	56	16.73	-00	40	31.8	13.1T 210
/1980 X	1980	09	18.89022	04	14	48.72	+00	10	23.8	13.0T 210
/1980 X	1980	12	04.77294	05	31	32.75	+21	34	07.0	7.5T 210
/1980 X	1980	12	06.65977	05	31	40.97	+22	36	59.4	7.6T 210
/1980 X	1980	12	07.88529	05	31	43.67	+23	18	01.2	7.0T 210
/1980 X	1980	12	09.74554	05	31	47.02	+24	20	20.6	7.2T 210
/1980 X	1980	12	10.69991	05	31	47.61	+24	52	17.8	7.5T 210
/1980 X	1980	12	12.69362	05	31	47.65	+25	58	49.2	7.7T 210
/1980 X	1980	12	18.05556	05	31	43.71	+28	54	05.8	075
/1980 X	1980	12	18.08264	05	31	43.32	+28	54	57.3	075
			Comet Elias (1981 XV)							
/1981 XV	1983	04	14.21830	11	25	28.50	+20	01	27.1	801
			Comet Bowell (1980b)							
/1980b	1983	06	08.40764	22	23	03.51	-11	00	44.5	707
			Periodic Comet d’Arrest							
/1982e	1982	08	13.91137	16	17	10.17	-02	53	38.8	491
/1982e	1982	10	16.83047	19	50	36.14	-33	00	46.6	491
/1982e	1982	11	17.83173	22	01	02.91	-31	17	05.3	491
/1982e	1982	11	18.84320	22	04	39.70	-31	04	50.1	491
			Periodic Comet Churyumov-Gerasimenko							
/1982f	1982	10	16.03439	05	03	42.32	+19	06	55.9	491
/1982f	1982	10	17.00429	05	06	33.08	+19	24	29.2	491
/1982f	1982	11	18.04677	06	32	24.94	+29	51	19.6	491
/1982f	1982	11	18.94951	06	34	20.21	+30	08	58.7	491
/1982f	1983	01	05.78205	07	09	51.59	+40	02	33.5	105
/1982f	1983	01	05.80271	07	09	51.17	+40	02	35.4	105
/1982f	1983	04	12.08409	08	28	56.68	+28	11	14.7	801
/1982f	1983	05	13.07417	09	15	34.51	+23	16	20.1	801
			Comet Austin (1982g)							
/1982g	1982	08	22.83611	11	11	01.92	+43	55	06.8	075
/1982g	1982	08	23.82848	11	20	50.70	+44	18	01.7	075
/1982g	1982	08	24.79045	11	29	27.52	+44	33	20.6	102
/1982g	1982	08	29.82153	12	02	29.79	+44	42	16.6	075
/1982g	1982	08	30.81122	12	07	08.11	+44	35	23.5	102
/1982g	1982	08	30.82082	12	07	10.04	+44	35	10.7	075
/1982g	1982	09	02.84326	12	18	35.15	+44	04	11.1	491
/1982g	1982	09	02.84463	12	18	35.59	+44	04	07.7	491
/1982g	1982	09	03.82685	12	21	35.02	+43	51	54.8	491

/1982g	1982	09	03.86701	12	21	41.99	+43	51	21.6	491
/1982g	1982	09	06.82401	12	29	03.28	+43	10	20.5	491
/1982g	1982	09	06.86175	12	29	08.15	+43	09	44.0	491
/1982g	1982	09	07.78611	12	31	01.73	+42	56	01.7	075
/1982g	1982	09	11.84916	12	37	38.72	+41	53	26.5	491
/1982g	1982	09	13.86309	12	40	10.03	+41	21	52.6	491
/1982g	1982	09	17.81405	12	44	08.58	+40	20	38.3	102
/1982g	1982	09	21.76667	12	47	13.70	+39	21	35.4	102
/1982g	1982	09	23.72500	12	48	32.29	+38	53	24.8	102
/1982g	1982	09	23.76138	12	48	33.55	+38	52	52.8	102

Periodic Comet Tempel 1

/1982j	1983	04	06.56250	12	55	29.63	+15	50	54.2	882
/1982j	1983	05	02.55046	12	34	49.15	+13	54	22.1	882
/1982j	1983	05	02.55625	12	34	48.84	+13	54	19.2	882
/1982j	1983	05	05.84583	12	33	21.86	+13	16	17.2	046
/1982j	1983	05	05.85307	12	33	21.60	+13	16	10.9	046
/1982j	1983	05	06.86458	12	32	59.72	+13	03	31.8	046
/1982j	1983	06	12.22223	12	48	24.40	+01	38	27.4	707

Periodic Comet Kopff

/1982k	1983	05	06.95903	15	43	08.63	-09	43	44.2	046
/1982k	1983	05	06.97326	15	43	08.13	-09	43	41.6	046
/1982k	1983	05	13.24702	15	40	00.90	-09	26	46.8	801
/1982k	1983	05	14.00723	15	39	36.20	-09	25	02.2	1 993
/1982k	1983	05	14.76458	15	39	09.40	-09	23	20.4	882
/1982k	1983	06	10.27153	15	24	40.58	-09	33	43.8	707

Periodic Comet Bowell-Skiff

/1983c	1983	04	12.06125	09	35	37.72	+14	06	10.3	801
/1983c	1983	06	10.21979	11	00	57.01	+04	12	44.7	707

Comet IRAS-Araki-Alcock (1983d)

/1983d	1983	05	04.37015	18	52	33.88	+53	32	59.3	675
/1983d	1983	05	04.37362	18	52	33.11	+53	33	13.6	675
/1983d	1983	05	05.90537	18	44	05.68	+55	51	54.9	509
/1983d	1983	05	05.94172	18	43	49.56	+55	56	09.6	509
/1983d	1983	05	06.64459	18	37	32.76	+57	27	21.0	330
/1983d	1983	05	06.66543	18	37	20.0	+57	30	16	330
/1983d	1983	05	06.67354	18	37	13.62	+57	31	41.8	330
/1983d	1983	05	06.94866	18	34	01.48	+58	13	59.1	502
/1983d	1983	05	08.53403	17	58	37.92	+64	19	01.1	330
/1983d	1983	05	08.54097	17	58	21.39	+64	21	17.1	330
/1983d	1983	05	08.54514	17	58	11.39	+64	22	40.4	330
/1983d	1983	05	08.58438	17	56	32.26	+64	36	03.7	882
/1983d	1983	05	09.51457	16	47	22.78	+70	40	35.4	330
/1983d	1983	05	09.51984	16	46	44.8	+70	42	51	330
/1983d	1983	05	09.66943	16	24	41.69	+71	49	13.4	330
/1983d	1983	05	09.67707	16	23	26.13	+71	52	32.2	330
/1983d	1983	05	09.67950	16	23	00.93	+71	53	33.2	330
/1983d	1983	05	09.76527	16	07	39.29	+72	28	43.6	330
/1983d	1983	05	09.76874	16	06	59.33	+72	30	05.1	330
/1983d	1983	05	09.77117	16	06	31.60	+72	31	01.8	330
/1983d	1983	05	09.77302	16	06	10.01	+72	31	45.8	330
/1983d	1983	05	09.77435	16	05	54.36	+72	32	16.2	330
/1983d	1983	05	09.91615	15	36	20.87	+73	22	42.2	046
/1983d	1983	05	09.91701	15	36	09.04	+73	22	57.9	046
/1983d	1983	05	09.92155	15	35	08.51	+73	24	26.7	509

/1983d	1983	05	09.92209	15	34	59.21	+73	24	50.8	509
/1983d	1983	05	09.94719	15	28	55.61	+73	32	27.4	022
/1983d	1983	05	09.95065	15	28	03.99	+73	33	30.2	022
/1983d	1983	05	10.25365	13	59	23.58	+74	06	11.8	662
/1983d	1983	05	10.25434	13	59	09.19	+74	06	06.8	662
/1983d	1983	05	10.25504	13	58	55.30	+74	06	01.2	662
/1983d	1983	05	10.59652	12	04	09.60	+70	59	30.8	330
/1983d	1983	05	10.60068	12	02	53.5	+70	55	22	330
/1983d	1983	05	10.60138	12	02	38.53	+70	54	30.7	330
/1983d	1983	05	10.73402	11	24	05.70	+68	15	18.8	330
/1983d	1983	05	10.73749	11	23	10.00	+68	10	27.1	330
/1983d	1983	05	10.73818	11	22	57.6	+68	09	20	330
/1983d	1983	05	10.73888	11	22	47.23	+68	08	30.5	330
/1983d	1983	05	10.84941	10	56	01.08	+65	23	19.2	022
/1983d	1983	05	10.85475	10	54	44.08	+65	14	00.8	046
/1983d	1983	05	10.85532	10	54	36.43	+65	13	04.8	046
/1983d	1983	05	10.85841	10	53	56.62	+65	08	17.9	022
/1983d	1983	05	10.86188	10	53	09.39	+65	02	30.1	022
/1983d	1983	05	10.87573	10	50	02.57	+64	38	54.2	022
/1983d	1983	05	10.88611	10	47	44.04	+64	20	52.1	022
/1983d	1983	05	10.88958	10	46	59.04	+64	14	53.6	022
/1983d	1983	05	10.89997	10	44	44.35	+63	56	32.4	022
/1983d	1983	05	10.90343	10	44	00.11	+63	50	17.6	022
/1983d	1983	05	10.97615	10	29	19.98	+61	34	22.6	022
/1983d	1983	05	10.97823	10	28	56.39	+61	30	18.8	022
/1983d	1983	05	10.98030	10	28	32.71	+61	26	15.6	022
/1983d	1983	05	11.19797	09	53	33.38	+53	38	18.3	765
/1983d	1983	05	11.27786	09	43	19.54	+50	27	53.0	662
/1983d	1983	05	11.27856	09	43	14.35	+50	26	12.2	662
/1983d	1983	05	11.27995	09	43	04.15	+50	22	46.2	662
/1983d	1983	05	11.28064	09	42	59.21	+50	21	05.0	662
/1983d	1983	05	11.48778	09	21	29.16	+41	41	27.5	323
/1983d	1983	05	12.19028	08	38	24.04	+13	16	14.6	662
/1983d	1983	05	12.33706	08	32	52.14	+08	36	54.0	474
/1983d	1983	05	12.33996	08	32	45.76	+08	31	30.0	474
/1983d	1983	05	12.35915	08	32	07.20	+07	56	02.3	415
/1983d	1983	05	12.39708	08	30	46.94	+06	48	36.8	415
/1983d	1983	05	13.36287	08	08	06.02	-12	54	41.3	474
/1983d	1983	05	13.36565	08	08	03.22	-12	56	58.6	474
/1983d	1983	05	13.40940	08	07	19.94	-13	31	58.5	474
/1983d	1983	05	13.46675	08	06	28.55	-14	16	57.3	323
/1983d	1983	05	15.35141	07	48	15.92	-28	00	27.6	474
/1983d	1983	05	15.36600	07	48	10.43	-28	04	00.9	474
/1983d	1983	05	16.40336	07	42	55.75	-31	28	06.4	415
/1983d	1983	05	16.44878	07	42	45.30	-31	35	27.5	323
/1983d	1983	05	17.38608	07	39	21.48	-33	38	10.8	415
/1983d	1983	05	18.47431	07	36	22.79	-35	20	30.8	323
/1983d	1983	05	19.42120	07	34	20.37	-36	26	47.0	474
/1983d	1983	05	19.44227	07	34	17.96	-36	28	02.3	474
/1983d	1983	05	19.45000	07	34	17.68	-36	28	55.0	323
/1983d	1983	05	20.34710	07	32	42.44	-37	18	23.9	474
/1983d	1983	05	20.35512	07	32	41.71	-37	18	47.0	474
/1983d	1983	05	20.45208	07	32	32.46	-37	23	44.6	323
/1983d	1983	05	22.29458	07	30	02.52	-38	38	04.2	474
/1983d	1983	05	22.31947	07	30	00.55	-38	38	52.6	474
/1983d	1983	05	23.33778	07	28	54.40	-39	09	51.1	474
/1983d	1983	05	23.34218	07	28	54.11	-39	09	57.8	474
/1983d	1983	05	28.38125	07	25	06.13	-40	47	38.2	415
/1983d	1983	05	28.38539	07	25	06.36	-40	47	42.8	415

/1983d	1983	05	31.38061	07	23	37.28	-41	21	49.3	415
/1983d	1983	05	31.38591	07	23	37.63	-41	21	51.6	415

Comet Sugano-Saigusa-Fujikawa (1983e)

/1983e	1983	05	09.76424	01	31	03.4	+39	41	22	890
/1983e	1983	05	10.77135	01	28	12.61	+39	55	43.1	386
/1983e	1983	05	10.77326	01	28	12.12	+39	55	44.9	882
/1983e	1983	05	10.77500	01	28	11.89	+39	55	46.6	882
/1983e	1983	05	13.47431	01	20	46.76	+40	26	38.7	662
/1983e	1983	05	14.46875	01	18	08.07	+40	35	30.2	662
/1983e	1983	05	19.47575	01	05	18.98	+41	03	18.8	675
/1983e	1983	05	20.46047	01	02	50.78	+41	05	56.5	675
/1983e	1983	05	21.41597	01	00	26.37	+41	07	43.6	707
/1983e	1983	05	21.46863	01	00	18.39	+41	07	50.3	675
/1983e	1983	05	22.46181	00	57	46.82	+41	08	53.5	662
/1983e	1983	05	23.42535	00	55	17.37	+41	09	09.4	707
/1983e	1983	05	26.41181	00	47	04.83	+41	05	26.2	707
/1983e	1983	05	29.29516	00	37	48.3	+40	54	13	2 801
/1983e	1983	05	29.42308	00	37	20.8	+40	53	31	2 707
/1983e	1983	05	31.45978	00	29	08.54	+40	38	47.9	675
/1983e	1983	06	04.41701	00	05	00.43	+39	37	25.7	707
/1983e	1983	06	05.46321	23	55	11.17	+39	05	46.4	675
/1983e	1983	06	06.32510	23	45	09.0	+38	29	35	2 801
/1983e	1983	06	06.46876	23	43	16.65	+38	22	23.7	3 675
/1983e	1983	06	07.44514	23	28	23.86	+37	20	18.9	2 688
/1983e	1983	06	07.46043	23	28	08.78	+37	19	09.1	675
/1983e	1983	06	09.29265	22	45	20.0	+33	28	15	2 801
/1983e	1983	06	10.74576	21	46	39.16	+25	57	49.9	4 474
/1983e	1983	06	10.76218	21	45	44.68	+25	49	50.9	4 474
/1983e	1983	06	11.60836	20	55	33.10	+17	07	20.7	474
/1983e	1983	06	11.61924	20	54	49.10	+16	58	56.6	474

Comet IRAS (1983f)

/1983f	1983	05	18.18200	09	15	52.53	-12	49	09.7	675
/1983f	1983	05	18.35660	09	15	51.56	-12	44	16.5	413
/1983f	1983	05	18.49944	09	15	50.56	-12	40	25.8	413
/1983f	1983	05	20.17054	09	15	44.30	-11	57	00.2	675
/1983f	1983	05	31.17714	09	16	45.91	-08	06	30.6	675
/1983f	1983	06	08.39123	09	19	01.56	-06	03	24.1	474
/1983f	1983	06	10.34447	09	19	42.41	-05	38	58.0	19.0N 474
/1983f	1983	06	10.38978	09	19	43.44	-05	38	26.4	474
/1983f	1983	06	12.39105	09	20	27.62	-05	15	00.3	413

Periodic Comet du Toit-Neujmin-Delporte

/1983g	1983	05	20.44728	22	16	30.63	-07	21	07.9	19 N 675
/1983g	1983	05	21.44519	22	18	41.64	-07	08	17.3	675
/1983g	1983	06	09.39931	22	57	36.33	-03	10	47.9	707

Periodic Comet Johnson

/1983h	1983	06	07.60917	18	43	50.02	-13	35	11.2	19 N 474
/1983h	1983	06	07.65211	18	43	48.67	-13	35	19.9	474

Comet Russell (1983i)

/1983i	1983	06	14.70560	20	36	23.99	-03	47	35.3	16 T 413
/1983i	1983	06	14.74796	20	36	23.31	-03	47	18.1	413
/1983i	1983	06	15.61069	20	36	09.84	-03	42	05.8	413

Note 1: image involved with a star. 2: comet extremely diffuse and difficult to measure. 3: time changed by -5 min. 4: inkdot measured.

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* M. P. C. 8000 *
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INDEX TO ORBITAL ELEMENTS.

The following index to orbital elements continues that on MPC 7000-7005 and refers to orbits of both comets and minor planets published since then. Only the latest orbit for each object is indexed, and multiple-designation minor planets are listed only under the principal designation.

Comet	MPC	Comet	MPC	Comet	MPC	Comet	MPC
/1982g	7454	/1982h	7149	/1982j	7022	/1982k	7022
/1983b	7021	/1983c	7773	/1983g	7454	/1983h	7022

Comet	MPC	Comet	MPC
/Arend	7659	/Arend-Rigaux	7659
/Clark	7658	/Crommelin	7454
/Encke	7455	/Gehrels 3	7660
/Gunn	7773	/Harrington-Abell	7659
/Neujmin 1	7455	/Schaumasse	7660
/Schuster	7658	/Smirnova-Chernykh	7454
/Taylor	7657	/Tritton	7658
/Tsuchinshan 1	7658	/Tsuchinshan 2	7658
/Tuttle-Giacobini-Kresak	7659	/Wild 2	7658
/Wolf	7659		

Planet	MPC	Planet	MPC	Planet	MPC	Planet	MPC	Planet	MPC
(15)	7447	(20)	7589	(944)	7448	(1009)	7225	(1284)	7448
(1313)	7589	(1620)	7774	(1696)	7590	(1701)	7590	(1704)	7590
(1735)	7590	(1776)	7591	(1778)	7591	(1785)	7591	(1809)	7591
(1812)	7591	(1832)	7836	(1834)	7592	(1845)	7592	(1888)	7592
(1928)	7593	(1937)	7593	(1991)	7594	(2008)	7594	(2012)	7594
(2060)	7449	(2078)	7594	(2082)	7836	(2128)	7595	(2147)	7837
(2161)	7595	(2191)	7595	(2234)	7767	(2268)	7596	(2450)	7596
(2468)	7596	(2526)	7596	(2677)	7011	(2678)	7012	(2679)	7012
(2680)	7012	(2681)	7013	(2682)	7013	(2683)	7013	(2684)	7014
(2685)	7014	(2686)	7014	(2687)	7014	(2688)	7015	(2689)	7017
(2690)	7017	(2691)	7017	(2692)	7018	(2693)	7018	(2694)	7018
(2695)	7019	(2696)	7019	(2697)	7611	(2698)	7023	(2699)	7023
(2700)	7023	(2701)	7023	(2702)	7024	(2703)	7024	(2704)	7024
(2705)	7025	(2706)	7025	(2707)	7025	(2708)	7026	(2709)	7026
(2710)	7027	(2711)	7140	(2712)	7141	(2713)	7142	(2714)	7142
(2715)	7143	(2716)	7143	(2717)	7143	(2718)	7144	(2719)	7144
(2720)	7144	(2721)	7144	(2722)	7145	(2723)	7145	(2724)	7145
(2725)	7146	(2726)	7146	(2727)	7146	(2728)	7147	(2729)	7147
(2730)	7147	(2731)	7148	(2732)	7150	(2733)	7150	(2734)	7150
(2735)	7151	(2736)	7151	(2737)	7226	(2738)	7226	(2739)	7228
(2740)	7229	(2741)	7229	(2742)	7229	(2743)	7230	(2744)	7231
(2745)	7231	(2746)	7231	(2747)	7232	(2748)	7232	(2749)	7234
(2750)	7234	(2751)	7235	(2752)	7235	(2753)	7235	(2754)	7236
(2755)	7236	(2756)	7236	(2757)	7237	(2758)	7237	(2759)	7237
(2760)	7830	(2761)	7238	(2762)	7238	(2763)	7238	(2764)	7361
(2765)	7361	(2766)	7361	(2767)	7363	(2768)	7363	(2769)	7364
(2770)	7364	(2771)	7364	(2772)	7365	(2773)	7365	(2774)	7369
(2775)	7369	(2776)	7369	(2777)	7370	(2778)	7370	(2779)	7370
(2780)	7371	(2781)	7371	(2782)	7371	(2783)	7450	(2784)	7451

(2785) 7451	(2786) 7451	(2787) 7452	(2788) 7452	(2789) 7455
(2790) 7455	(2791) 7456	(2792) 7456	(2793) 7456	(2794) 7457
(2795) 7457	(2796) 7457	(2797) 7458	(2798) 7458	(2799) 7458
(2800) 7459	(2801) 7462	(2802) 7462	(2803) 7462	(2804) 7463
(2805) 7463	(2806) 7463	(2807) 7463	(2808) 7464	(2809) 7464
(2810) 7464	(2811) 7465	(2812) 7465	(2813) 7465	(2814) 7466
(2815) 7466	(2816) 7466	(2817) 7467	(2818) 7467	(2819) 7596
(2820) 7597	(2821) 7597	(2822) 7598	(2823) 7598	(2824) 7603
(2825) 7603	(2826) 7603	(2827) 7604	(2828) 7604	(2829) 7604
(2830) 7604	(2831) 7611	(2832) 7842	(2833) 7842	(2834) 7612
(2835) 7612	(2836) 7656	(2837) 7660	(2838) 7660	(2839) 7663
(2840) 7664	(2841) 7664	(2842) 7664	(2843) 7664	(2844) 7665
(2845) 7665	(2846) 7767	(2847) 7769	(2848) 7769	(2849) 7770
(2850) 7770	(2851) 7770	(2852) 7771	(2853) 7772	(2854) 7772
(2855) 7774	(2856) 7774	(2857) 7774	(2858) 7775	(2859) 7775
(2860) 7775	(2861) 7776	(2862) 7777	(2863) 7778	(2864) 7778
(2865) 7830	(2866) 7830	(2867) 7831	(2868) 7831	(2869) 7832
(2870) 7832	(2871) 7832	(2872) 7832	(2873) 7833	(2874) 7833
(2875) 7833	(2876) 7834	(2877) 7837	(2878) 7837	(2879) 7842
(2880) 7843	(2881) 7843	(2882) 7935	(2883) 7936	(2884) 7936
(2885) 7939	(2886) 7939	(2887) 7940	(2888) 7940	

Planet	MPC	Planet	MPC	Planet	MPC	Planet	MPC
A908 AA	7605	1929 TK	7586	1929 TQ	7586	1929 TD1	7586
1929 UG	7586	1929 VS	7586	1930 YV	7467	1931 AV	7932
1931 AB1	7932	1931 CE	7598	1931 TK	7233	1931 TY1	7468
1931 TS2	7586	1933 QU	7239	1935 QF	7468	1935 TE	7661
1936 XA	7661	1937 GG	7019	1938 DN	7468	1938 GJ	7136
1938 SL	7148	1939 TL	7586	1940 WC	7136	1940 WL	7136
1940 WM	7136	1940 YE	7224	1940 YF	7449	1940 YG	7224
1941 HA	7444	1941 HC	7444	1941 HD	7444	1941 HJ	7444
1941 UG	7444	1942 DB	7586	1942 DC	7586	1942 DM	7586
1942 EB	7239	1942 RH	7586	1942 RN	7767	1942 RT	7586
1943 DL	7656	1943 EM	7665	1943 GB	7586	1944 BA	7661
1949 GK	7605	1949 QC	7834	1950 SJ	7356	1953 NB	7015
1955 QK	7834	1955 QP1	7015	1955 RY	7605	1955 RZ	7768
1957 UK1	7239	1958 TH1	7829	1958 TJ1	7829	1958 TL1	7829
1958 TM1	7829	1962 SR	7765	1964 TH1	7372	1964 VE	7459
1964 VN1	7765	1964 XA	7233	1965 SB	7365	1966 AA	7233
1968 FH	7666	1969 TP1	7666	1969 TD2	7240	1969 TE2	7227
1970 PA	7366	1971 MG	7240	1971 UP	7366	1971 UL1	7765
1972 KE	7661	1972 KG	7835	1972 KM	7613	1972 NW	7372
1972 QM	7372	1972 YX	7613	1973 DP	7468	1973 SM2	7453
1973 SD3	7373	1973 SX3	7366	1973 ST4	7657	1974 MJ	7778
1974 OA1	7152	1974 SP	7227	1974 ST	7838	1974 SO2	7362
1974 SP2	7224	1974 SD5	7598	1974 VQ2	7240	1974 YP	7606
1975 BP1	7586	1975 LQ	7011	1975 PA	7155	1975 QC	7011
1975 QD	7599	1975 SF	7362	1975 TM2	7444	1975 TR2	7586
1975 TR3	7936	1975 UE	7765	1975 VD	7614	1975 VP	7224
1975 VS5	7140	1975 VB9	7227	1975 XY1	7940	1975 XP3	7606
1976 GN8	7152	1976 SN	7765	1976 SN3	7765	1976 SE10	7011
1976 UF1	7469	1976 WC1	7011	1976 YJ3	7606	1977 DA	7356
1977 DF2	7356	1977 DJ2	7356	1977 DL2	7356	1977 DP2	7356
1977 DR2	7356	1977 DS2	7356	1977 DT2	7356	1977 DD3	7356
1977 DG3	7356	1977 DK3	7606	1977 DL3	7356	1977 DQ3	7356
1977 DX3	7356	1977 DY3	7356	1977 DA4	7356	1977 DC4	7356
1977 DH4	7356	1977 DL4	7356	1977 DN4	7356	1977 DO4	7356
1977 DS4	7356	1977 DT4	7228	1977 DX8	7778	1977 DY8	7356
1977 EF1	7356	1977 EK1	7356	1977 EN1	7356	1977 EO1	7228

1977 EQ1	7356	1977 EV2	7356	1977 EG5	7765	1977 EJ5	7765
1977 EK5	7765	1977 EL5	7829	1977 EM5	7765	1977 EN5	7765
1977 EP5	7765	1977 ER5	7765	1977 ES5	7765	1977 EU5	7765
1977 EV5	7765	1977 EW5	7765	1977 EY5	7765	1977 EA6	7765
1977 EC6	7765	1977 ED6	7765	1977 EE6	7765	1977 EF6	7765
1977 EH6	7765	1977 EJ6	7765	1977 EL6	7765	1977 EM6	7765
1977 EN6	7766	1977 EP6	7766	1977 EQ6	7766	1977 ER6	7766
1977 ET6	7766	1977 EU6	7766	1977 EV6	7766	1977 EW6	7766
1977 EY6	7766	1977 EA7	7766	1977 EB7	7766	1977 EC7	7766
1977 ED7	7766	1977 EE7	7766	1977 EG7	7766	1977 EH7	7766
1977 EL7	7766	1977 EM7	7766	1977 EN7	7766	1977 EQ7	7766
1977 ER7	7766	1977 ES7	7766	1977 ET7	7766	1977 EV7	7766
1977 EW7	7766	1977 EX7	7766	1977 EA8	7766	1977 EB8	7766
1977 ED8	7766	1977 EE8	7766	1977 EG8	7766	1977 EJ8	7766
1977 EK8	7766	1977 EL8	7766	1977 EM8	7766	1977 EN8	7766
1977 FB1	7444	1977 NN	7829	1977 QC5	7607	1977 RC	7838
1977 RE7	7607	1977 SS1	7459	1977 TA1	7607	1977 UK1	7011
1977 UL2	7356	1977 UM2	7224	1977 UP2	7356	1978 PC	7599
1978 PS2	7136	1978 PT2	7136	1978 PW2	7136	1978 PX2	7136
1978 PY2	7136	1978 PA3	7136	1978 PB3	7136	1978 PC3	7444
1978 PD3	7136	1978 PH3	7136	1978 PO3	7136	1978 PU3	7773
1978 QC	7136	1978 QJ	7152	1978 QK	7839	1978 QO2	7937
1978 QB3	7367	1978 RO	7469	1978 RY	7152	1978 RS1	7607
1978 RB3	7136	1978 RE3	7136	1978 RP3	7136	1978 RA6	7839
1978 RQ6	7136	1978 RT6	7136	1978 RW6	7136	1978 RY6	7136
1978 RC7	7136	1978 RF7	7136	1978 RJ7	7136	1978 RL7	7136
1978 RM7	7136	1978 RV7	7136	1978 RX7	7136	1978 RA8	7136
1978 RC8	7136	1978 RF8	7136	1978 RG8	7136	1978 RQ8	7136
1978 RR8	7136	1978 RU8	7136	1978 RY8	7136	1978 RZ8	7136
1978 RG9	7136	1978 RK9	7136	1978 RX9	7136	1978 RA10	7136
1978 RB10	7136	1978 RC10	7136	1978 RD10	7136	1978 RL10	7136
1978 RM10	7136	1978 SR	7608	1978 SE1	7367	1978 SP2	7941
1978 SA3	7453	1978 SQ4	7586	1978 SB5	7453	1978 SY7	7666
1978 SZ7	7835	1978 TT2	7657	1978 TR3	7779	1978 TB7	7228
1978 TU7	7608	1978 UC	7367	1978 UH2	7599	1978 VD1	7829
1978 VB5	7140	1978 VG6	7662	1978 XG	7136	1978 XH	7137
1978 XK	7137	1978 XL	7137	1978 XM	7137	1978 XN	7137
1978 XO	7137	1978 XQ	7137	1978 XR	7137	1978 XS	7137
1978 XT	7137	1978 XU	7137	1978 XV	7137	1978 XW	7137
1978 XX	7137	1978 XA1	7137	1978 XB1	7137	1978 XC1	7137
1978 XD1	7137	1978 XE1	7137	1978 XF1	7137	1978 XG1	7137
1979 EE	7662	1979 FH2	7608	1979 OB	7020	1979 QU9	7140
1979 SF2	7240	1979 SD7	7141	1979 SD9	7137	1979 SF9	7230
1979 SG9	7156	1979 SL9	7137	1979 SP9	7137	1979 SR9	7137
1979 SU9	7137	1979 SV9	7137	1979 SX9	7148	1979 SY9	7149
1979 SZ9	7137	1979 SA10	7137	1979 SF11	7600	1979 SJ11	7356
1979 SN11	7356	1979 SO11	7356	1979 SQ11	7356	1979 SS11	7373
1979 SU11	7356	1979 SV11	7373	1979 SW11	7373	1979 SA12	7373
1979 TM	7230	1979 UC	7154	1979 UQ	7356	1979 UT	7356
1979 UD1	7137	1979 UD2	7356	1979 UY3	7137	1979 UC4	7137
1979 VG	7137	1979 VN	7137	1979 WO	7374	1979 WX3	7356
1979 XL	7357	1979 XO	7357	1979 XQ	7137	1979 YB	7600
1979 YP	7773	1979 YR	7137	1980 BQ	7600	1980 DA	7233
1980 DC	7367	1980 DA1	7137	1980 DD1	7137	1980 DE1	7137
1980 FA	7137	1980 FB	7137	1980 FU	7137	1980 FY	7137
1980 FV1	7137	1980 FO3	7137	1980 GD	7600	1980 JG	7137
1980 JH	7137	1980 KG	7608	1980 LA	7154	1980 LE	7839
1980 LC1	7137	1980 MD	7367	1980 RK	7776	1980 RS	7357
1980 RU	7601	1980 RN1	7779	1980 RX1	7357	1980 RJ2	7137

1980 RL2	7137	1980 RO2	7357	1980 RS2	7137	1980 RT2	7149
1980 RU2	7137	1980 RV2	7138	1980 RC3	7357	1980 RF4	7357
1980 SD	7779	1980 SG	7357	1980 SH	7020	1980 SJ	7138
1980 SM	7138	1980 SQ	7138	1980 TG	7357	1980 TH	7138
1980 TQ	7932	1980 TV2	7357	1980 TY2	7357	1980 TH3	7357
1980 TS3	7357	1980 TT3	7357	1980 TX3	7357	1980 TY3	7357
1980 TZ3	7357	1980 TE4	7357	1980 TF4	7614	1980 TK4	7586
1980 TS4	7357	1980 TU4	7601	1980 TB5	7941	1980 TK5	7357
1980 TQ5	7357	1980 TW5	7357	1980 TX5	7454	1980 TZ5	7357
1980 TA6	7357	1980 TE7	7932	1980 TK13	7829	1980 TL13	7829
1980 UA	7020	1980 VA	7829	1980 VO	7829	1980 VL1	7829
1980 VM1	7829	1980 VN1	7016	1980 VR1	7829	1980 VU1	7829
1980 VX1	7829	1980 XB	7656	1980 XE	7368	1980 XM	7941
1980 XW	7829	1980 XX	7829	1980 XZ	7829	1980 YB	7829
1980 YL	7449	1981 AA	7154	1981 AE1	7601	1981 CY	7780
1981 DJ	7357	1981 DK	7357	1981 DL	7357	1981 DM	7357
1981 DN	7357	1981 DO	7357	1981 DP	7357	1981 DQ	7357
1981 DR	7357	1981 DS	7357	1981 DT	7357	1981 DU	7357
1981 DV	7357	1981 DW	7357	1981 DX	7357	1981 DY	7357
1981 DZ	7357	1981 DA1	7357	1981 DB1	7357	1981 DC1	7357
1981 DD1	7357	1981 DE1	7614	1981 DF1	7357	1981 DH1	7357
1981 DJ1	7357	1981 DK1	7357	1981 DL1	7357	1981 DM1	7357
1981 DN1	7357	1981 DO1	7357	1981 DP1	7357	1981 DQ1	7358
1981 DR1	7358	1981 DS1	7358	1981 DT1	7358	1981 DU1	7358
1981 DV1	7358	1981 DW1	7358	1981 DX1	7358	1981 DY1	7358
1981 DZ1	7358	1981 DA2	7358	1981 DB2	7358	1981 DC2	7358
1981 DD2	7358	1981 DE2	7358	1981 DF2	7358	1981 DG2	7358
1981 DH2	7358	1981 DJ2	7358	1981 DK2	7358	1981 DL2	7358
1981 DM2	7358	1981 DN2	7358	1981 DP2	7358	1981 DQ2	7358
1981 EO	7932	1981 ET	7932	1981 EU	7932	1981 EZ	7932
1981 ED1	7932	1981 EG1	7766	1981 EG2	7138	1981 EH2	7138
1981 EJ2	7138	1981 EK2	7138	1981 EL2	7138	1981 EM2	7138
1981 EN2	7138	1981 EO2	7138	1981 EP2	7138	1981 EQ2	7138
1981 ER2	7138	1981 ES2	7138	1981 ET2	7138	1981 EU2	7138
1981 EV2	7138	1981 EW2	7138	1981 EY2	7138	1981 EZ2	7138
1981 EA3	7138	1981 EB3	7138	1981 EC3	7138	1981 ED3	7138
1981 EE3	7138	1981 EF3	7138	1981 EG3	7138	1981 EH3	7138
1981 EJ3	7138	1981 EK3	7138	1981 EL3	7138	1981 EM3	7138
1981 EN3	7138	1981 EO3	7138	1981 EP3	7138	1981 EQ3	7138
1981 ES3	7138	1981 ET3	7234	1981 EU3	7138	1981 EV3	7138
1981 EW3	7138	1981 EX3	7138	1981 EY3	7138	1981 EA4	7138
1981 EB4	7138	1981 EC4	7138	1981 ED4	7138	1981 EE4	7138
1981 EF4	7138	1981 EG4	7138	1981 EH4	7138	1981 EJ4	7138
1981 EK4	7138	1981 EL4	7138	1981 EM4	7138	1981 EN4	7139
1981 EO4	7139	1981 EP4	7139	1981 EQ4	7139	1981 ER4	7139
1981 ES4	7139	1981 EU4	7139	1981 EV4	7139	1981 EX4	7139
1981 EY4	7139	1981 EZ4	7139	1981 EA5	7139	1981 EB5	7139
1981 EC5	7139	1981 ED5	7139	1981 EF5	7139	1981 EG5	7139
1981 EH5	7139	1981 EJ5	7139	1981 EK5	7139	1981 EL5	7139
1981 EM5	7139	1981 EN5	7139	1981 EO5	7139	1981 EP5	7139
1981 EQ5	7139	1981 ER5	7139	1981 ES5	7139	1981 ET5	7139
1981 EU5	7139	1981 EV5	7139	1981 EW5	7139	1981 EX5	7139
1981 EY5	7139	1981 EZ5	7139	1981 EA6	7139	1981 EB6	7139
1981 EC6	7139	1981 ED6	7139	1981 EE6	7139	1981 EF6	7139
1981 EG6	7139	1981 EH6	7358	1981 EJ6	7358	1981 EL6	7358
1981 EM6	7358	1981 EN6	7358	1981 EO6	7358	1981 EP6	7358
1981 EQ6	7358	1981 ER6	7358	1981 ES6	7358	1981 ET6	7358
1981 EU6	7358	1981 EV6	7358	1981 EW6	7358	1981 EX6	7358
1981 EY6	7358	1981 EZ6	7358	1981 EA7	7358	1981 EB7	7358

1981 EC7	7358	1981 ED7	7358	1981 EE7	7358	1981 EF7	7358
1981 EG7	7358	1981 EH7	7358	1981 EJ7	7444	1981 EK7	7444
1981 EL7	7444	1981 EM7	7444	1981 EN7	7444	1981 EO7	7444
1981 EP7	7444	1981 EQ7	7444	1981 ER7	7444	1981 ES7	7444
1981 ET7	7444	1981 EU7	7444	1981 EV7	7444	1981 EW7	7444
1981 EX7	7444	1981 EY7	7445	1981 EZ7	7445	1981 EA8	7445
1981 EB8	7445	1981 EC8	7445	1981 ED8	7445	1981 EF8	7445
1981 EG8	7445	1981 EH8	7445	1981 EJ8	7445	1981 EK8	7445
1981 EL8	7445	1981 EM8	7445	1981 EO8	7445	1981 EP8	7445
1981 EQ8	7445	1981 ER8	7445	1981 ES8	7445	1981 ET8	7445
1981 EU8	7445	1981 EV8	7445	1981 EW8	7445	1981 EX8	7445
1981 EY8	7445	1981 EA9	7445	1981 EB9	7445	1981 EC9	7614
1981 ED9	7445	1981 EE9	7445	1981 EF9	7445	1981 EG9	7445
1981 EH9	7445	1981 EJ9	7445	1981 EK9	7445	1981 EL9	7445
1981 EM9	7445	1981 EN9	7445	1981 EO9	7445	1981 EP9	7445
1981 EQ9	7445	1981 ER9	7445	1981 ES9	7445	1981 ET9	7445
1981 EU9	7445	1981 EV9	7445	1981 EW9	7445	1981 EX9	7445
1981 EY9	7445	1981 EZ9	7445	1981 EA10	7445	1981 EB10	7445
1981 EC10	7445	1981 ED10	7445	1981 EE10	7445	1981 EF10	7615
1981 EG10	7445	1981 EH10	7445	1981 EJ10	7615	1981 EK10	7445
1981 EL10	7446	1981 EM10	7446	1981 EN10	7446	1981 EO10	7446
1981 EP10	7446	1981 EQ10	7446	1981 ER10	7446	1981 ES10	7446
1981 ET10	7446	1981 EU10	7446	1981 EV10	7446	1981 EW10	7446
1981 EX10	7446	1981 EY10	7446	1981 EZ10	7446	1981 EA11	7615
1981 EB11	7446	1981 EC11	7446	1981 ED11	7446	1981 EE11	7446
1981 EF11	7446	1981 EG11	7446	1981 EH11	7446	1981 EJ11	7446
1981 EK11	7446	1981 EL11	7446	1981 EM11	7446	1981 EN11	7446
1981 EO11	7932	1981 EP11	7446	1981 EQ11	7446	1981 ER11	7446
1981 ES11	7446	1981 ET11	7446	1981 EU11	7446	1981 EV11	7446
1981 EW11	7446	1981 EX11	7446	1981 EY11	7446	1981 EZ11	7446
1981 EA12	7446	1981 EB12	7586	1981 EC12	7586	1981 ED12	7586
1981 EE12	7586	1981 EF12	7586	1981 EG12	7586	1981 EH12	7586
1981 EJ12	7586	1981 EK12	7586	1981 EL12	7586	1981 EM12	7586
1981 EN12	7586	1981 EO12	7586	1981 EP12	7586	1981 EQ12	7586
1981 ER12	7586	1981 ES12	7586	1981 ET12	7586	1981 EU12	7586
1981 EV12	7586	1981 EW12	7586	1981 EX12	7586	1981 EY12	7586
1981 EZ12	7586	1981 EA13	7586	1981 EC13	7586	1981 ED13	7586
1981 EE13	7586	1981 EF13	7586	1981 EG13	7586	1981 EH13	7587
1981 EJ13	7587	1981 EK13	7587	1981 EL13	7587	1981 EM13	7587
1981 EN13	7587	1981 EO13	7587	1981 EP13	7587	1981 EQ13	7587
1981 ER13	7587	1981 ET13	7587	1981 EU13	7587	1981 EV13	7587
1981 EW13	7587	1981 EX13	7587	1981 EY13	7587	1981 EZ13	7587
1981 EA14	7587	1981 EB14	7587	1981 EC14	7587	1981 ED14	7587
1981 EE14	7587	1981 EF14	7587	1981 EG14	7587	1981 EH14	7587
1981 EJ14	7587	1981 EK14	7587	1981 EL14	7587	1981 EM14	7587
1981 EN14	7587	1981 EO14	7587	1981 EP14	7587	1981 EQ14	7587
1981 ER14	7587	1981 ES14	7587	1981 ET14	7587	1981 EU14	7587
1981 EV14	7587	1981 EW14	7587	1981 EX14	7587	1981 EY14	7587
1981 EZ14	7587	1981 EA15	7587	1981 EB15	7587	1981 EC15	7587
1981 ED15	7587	1981 EE15	7587	1981 EF15	7587	1981 EG15	7587
1981 EH15	7587	1981 EJ15	7587	1981 EK15	7587	1981 EL15	7587
1981 EN15	7587	1981 EO15	7587	1981 EP15	7587	1981 EQ15	7587
1981 ER15	7587	1981 ES15	7587	1981 ET15	7588	1981 EU15	7588
1981 EV15	7588	1981 EW15	7588	1981 EX15	7588	1981 EY15	7609
1981 EZ15	7588	1981 EA16	7588	1981 EB16	7588	1981 EC16	7768
1981 ED16	7588	1981 EE16	7588	1981 EF16	7588	1981 EG16	7588
1981 EH16	7609	1981 EJ16	7588	1981 EK16	7588	1981 EL16	7588
1981 EM16	7588	1981 EN16	7588	1981 EO16	7588	1981 EP16	7588
1981 EQ16	7588	1981 ER16	7588	1981 ES16	7588	1981 ET16	7588

1981 EU16	7588	1981 EV16	7588	1981 EW16	7588	1981 EX16	7771
1981 EY16	7588	1981 EZ16	7588	1981 EA17	7588	1981 EB17	7768
1981 EC17	7588	1981 EE17	7932	1981 EF17	7932	1981 EG17	7932
1981 EH17	7932	1981 EJ17	7932	1981 EK17	7932	1981 EL17	7932
1981 EM17	7932	1981 EN17	7932	1981 EO17	7937	1981 EQ17	7932
1981 ER17	7932	1981 ES17	7932	1981 ET17	7932	1981 EU17	7937
1981 EV17	7932	1981 EW17	7932	1981 EX17	7932	1981 EY17	7932
1981 EZ17	7932	1981 EA18	7932	1981 EB18	7932	1981 EC18	7932
1981 ED18	7932	1981 EE18	7932	1981 EF18	7932	1981 EG18	7932
1981 EH18	7932	1981 EJ18	7932	1981 EK18	7932	1981 EL18	7932
1981 EM18	7932	1981 EN18	7932	1981 EO18	7932	1981 EP18	7932
1981 EQ18	7932	1981 ER18	7932	1981 ES18	7932	1981 ET18	7932
1981 EU18	7932	1981 EV18	7932	1981 EW18	7932	1981 EX18	7941
1981 EY18	7932	1981 EZ18	7933	1981 EA19	7933	1981 EB19	7933
1981 EC19	7933	1981 ED19	7933	1981 EE19	7933	1981 EF19	7933
1981 EG19	7937	1981 EH19	7933	1981 EJ19	7933	1981 EK19	7933
1981 EL19	7933	1981 EM19	7933	1981 EN19	7933	1981 EO19	7933
1981 EP19	7933	1981 EQ19	7933	1981 ES19	7933	1981 ET19	7933
1981 EU19	7933	1981 EV19	7933	1981 EW19	7933	1981 EX19	7933
1981 EY19	7933	1981 EZ19	7933	1981 EB20	7933	1981 EC20	7933
1981 ED20	7933	1981 EE20	7938	1981 EF20	7933	1981 EG20	7933
1981 EH20	7933	1981 EJ20	7933	1981 EK20	7933	1981 EL20	7933
1981 EM20	7933	1981 EN20	7933	1981 EO20	7933	1981 EP20	7933
1981 EQ20	7933	1981 ER20	7933	1981 ES20	7933	1981 ET20	7933
1981 EU20	7933	1981 EV20	7933	1981 EW20	7933	1981 EX20	7933
1981 EY20	7933	1981 EZ20	7933	1981 EA21	7933	1981 EB21	7933
1981 EC21	7933	1981 ED21	7933	1981 EE21	7933	1981 EF21	7933
1981 EG21	7933	1981 EH21	7933	1981 EJ21	7933	1981 EK21	7933
1981 EL21	7933	1981 EM21	7934	1981 EN21	7934	1981 EO21	7934
1981 EP21	7934	1981 EQ21	7934	1981 ER21	7934	1981 ES21	7934
1981 ET21	7934	1981 EV21	7934	1981 EW21	7934	1981 EX21	7934
1981 EY21	7934	1981 EZ21	7934	1981 EA22	7934	1981 EB22	7934
1981 EC22	7934	1981 ED22	7934	1981 EE22	7934	1981 EF22	7934
1981 EG22	7934	1981 EH22	7934	1981 EJ22	7934	1981 EK22	7934
1981 EL22	7934	1981 EM22	7934	1981 EN22	7934	1981 EO22	7934
1981 EQ22	7934	1981 ER22	7934	1981 ET22	7934	1981 EU22	7934
1981 EV22	7934	1981 EW22	7934	1981 EY22	7934	1981 EZ22	7934
1981 EA23	7934	1981 EB23	7934	1981 EC23	7934	1981 ED23	7934
1981 EE23	7934	1981 EF23	7934	1981 EG23	7934	1981 EH23	7934
1981 EJ23	7934	1981 EK23	7934	1981 EL23	7934	1981 EM23	7934
1981 EN23	7934	1981 EO23	7934	1981 EP23	7934	1981 EQ23	7934
1981 ER23	7934	1981 ES23	7934	1981 ET23	7934	1981 EV23	7934
1981 EW23	7934	1981 EX23	7934	1981 EY23	7934	1981 EZ23	7935
1981 EA24	7935	1981 EB24	7935	1981 EC24	7935	1981 ED24	7935
1981 EE24	7935	1981 EF24	7935	1981 EG24	7935	1981 EH24	7935
1981 EJ24	7935	1981 FP	7935	1981 FQ	7935	1981 FR	7935
1981 GX	7460	1981 GD1	7588	1981 GN1	7935	1981 GO1	7935
1981 JG	7011	1981 JH	7011	1981 JM	7016	1981 JR	7154
1981 JS	7155	1981 JX1	7011	1981 JY1	7011	1981 JA2	7011
1981 JB2	7011	1981 JC2	7011	1981 JD2	7613	1981 JE2	7011
1981 JG2	7011	1981 JJ2	7011	1981 JM2	7011	1981 JR2	7011
1981 JS2	7011	1981 JU2	7011	1981 JA3	7016	1981 JB3	7011
1981 JD3	7011	1981 JE3	7011	1981 KE	7460	1981 LA	7662
1981 PL	7610	1981 QG	7766	1981 QJ	7360	1981 QN	7011
1981 QC1	7780	1981 QJ1	7460	1981 QV2	7139	1981 QW2	7139
1981 RF	7368	1981 RS1	7139	1981 RX1	7358	1981 RA2	7358
1981 RB2	7358	1981 RD2	7358	1981 RF2	7358	1981 RK2	7358
1981 RL2	7358	1981 RP2	7358	1981 RU2	7359	1981 SW	7224
1981 SM1	7362	1981 SB3	7829	1981 TM	7780	1981 UV9	7469

1981 UW9	7839	1981 UX9	7662	1981 UZ9	7224	1981 UA10	7224
1981 UB10	7224	1981 UC10	7224	1981 VB	7601	1981 WE	7449
1981 WH	7224	1981 WC4	7224	1981 WD4	7450	1981 WE4	7224
1981 XF2	7450	1981 XG2	7224	1981 XH2	7224	1981 XJ2	7224
1981 XK2	7840	1981 YB	7469	1981 YO	7241	1981 YS	7942
1981 YO1	7224	1981 YP1	7224	1981 YR1	7615	1981 YS1	7224
1982 AN	7840	1982 BH	7020	1982 BB1	7840	1982 BG1	7016
1982 DU	7224	1982 DW3	7766	1982 DB4	7829	1982 FK	7028
1982 FN	7359	1982 FT	7461	1982 FM1	7139	1982 FO1	7224
1982 FZ1	7224	1982 FQ2	7780	1982 FS2	7139	1982 FT2	7225
1982 FV2	7225	1982 FC3	7225	1982 FE3	7225	1982 FF3	7225
1982 FG3	7225	1982 FH3	7225	1982 FJ3	7225	1982 FK3	7225
1982 FO3	7225	1982 FP3	7359	1982 FQ3	7225	1982 FS3	7829
1982 FU3	7225	1982 FX3	7225	1982 FB4	7225	1982 GG	7359
1982 HJ	7011	1982 HL	7363	1982 HR	7840	1982 HS	7461
1982 HV	7374	1982 HE1	7017	1982 HF1	7359	1982 HN1	7374
1982 HO1	7359	1982 HQ1	7359	1982 HS1	7011	1982 HB2	7011
1982 JA	7011	1982 JD	7011	1982 JC1	7359	1982 JD1	7359
1982 JF1	7359	1982 JG1	7359	1982 JJ1	7359	1982 JK1	7359
1982 JM1	7359	1982 JN1	7359	1982 JS1	7359	1982 JT1	7359
1982 JV1	7359	1982 JY1	7359	1982 JB2	7359	1982 JD2	7359
1982 JK2	7359	1982 JL2	7359	1982 JU2	7359	1982 JV2	7359
1982 JW2	7359	1982 JA3	7359	1982 JB3	7359	1982 JC3	7359
1982 JD3	7359	1982 JF3	7359	1982 JG3	7359	1982 JJ3	7359
1982 KA	7139	1982 KM	7363	1982 KB1	7359	1982 KC1	7359
1982 KD1	7374	1982 KG1	7359	1982 KH1	7359	1982 KJ1	7359
1982 KK1	7359	1982 KL1	7225	1982 KN1	7225	1982 KO1	7225
1982 KP1	7225	1982 KQ1	7225	1982 KR1	7225	1982 KS1	7225
1982 KT1	7225	1982 KU1	7225	1982 KV1	7225	1982 KW1	7225
1982 KX1	7225	1982 KF2	7359	1982 KJ2	7359	1982 KQ2	7359
1982 KR2	7359	1982 MA	7139	1982 MH	7225	1982 OK	7225
1982 OR	7225	1982 OS	7225	1982 PC	7225	1982 QB	7225
1982 QC	7225	1982 QD	7225	1982 QG	7225	1982 QJ	7225
1982 QO	7446	1982 QP	7225	1982 QQ	7768	1982 QR	7840
1982 QB1	7446	1982 RA	7602	1982 RB	7602	1982 RD	7359
1982 RE	7359	1982 RF	7359	1982 RH	7446	1982 RK	7446
1982 RR	7446	1982 RU	7663	1982 RZ	7359	1982 RA1	7359
1982 RB1	7610	1982 RD1	7610	1982 RE1	7360	1982 RF1	7360
1982 RG1	7360	1982 RH1	7360	1982 RJ1	7360	1982 RK1	7360
1982 RL1	7360	1982 RM1	7360	1982 RN1	7360	1982 RO1	7360
1982 RP1	7360	1982 RQ1	7360	1982 RR1	7360	1982 RS1	7360
1982 RT1	7360	1982 RU1	7360	1982 RV1	7360	1982 RW1	7360
1982 RX1	7360	1982 RY1	7360	1982 RZ1	7360	1982 RA2	7360
1982 RB2	7360	1982 RC2	7446	1982 SA	7841	1982 SC	7360
1982 SD	7766	1982 SF	7446	1982 SK	7470	1982 SL	7470
1982 ST	7656	1982 SU	7829	1982 SV	7935	1982 SW	7829
1982 SE1	7446	1982 SH1	7829	1982 SJ1	7360	1982 SK1	7360
1982 SL1	7360	1982 SM1	7616	1982 SN1	7360	1982 SO1	7360
1982 ST1	7446	1982 SU1	7447	1982 SV1	7447	1982 SC2	7588
1982 SQ2	7656	1982 SX2	7656	1982 TA	7461	1982 TJ	7447
1982 TK	7588	1982 TW	7447	1982 TX	7663	1982 UH	7470
1982 UM	7776	1982 UP	7447	1982 UA1	7447	1982 UB1	7781
1982 UD1	7447	1982 UO1	7447	1982 UR1	7447	1982 US1	7447
1982 UV1	7447	1982 UW1	7447	1982 UC2	7447	1982 UD2	7447
1982 UE2	7447	1982 UF2	7447	1982 UG2	7447	1982 UJ2	7447
1982 UL2	7447	1982 UM2	7588	1982 UQ2	7588	1982 UR2	7588
1982 US2	7588	1982 UT2	7588	1982 UU2	7588	1982 UV2	7588
1982 UW2	7588	1982 UX2	7588	1982 UY2	7588	1982 UZ2	7588
1982 UA3	7588	1982 UB3	7588	1982 UC3	7588	1982 UD3	7588

1982 UE3	7588	1982 UF3	7588	1982 UG3	7589	1982 VF	7589
1982 VL	7589	1982 VM	7589	1982 VN	7589	1982 VK1	7589
1982 VL1	7589	1982 WA	7841	1982 WB	7656	1982 WD	7766
1982 WE	7656	1982 XA	7829	1982 XB	7841	1982 XC	7611
1982 YC1	7942	1983 AA	7656	1983 AB	7829	1983 AD	7766
1983 AJ	7766	1983 AK	7766	1983 AM	7781	1983 AN	7829
1983 AO	7781	1983 AQ	7766	1983 AR	7766	1983 AS	7656
1983 AV	7938	1983 AW	7656	1983 AC1	7766	1983 AH1	7935
1983 AE2	7935	1983 AF2	7935	1983 AG2	7935	1983 AM2	7829
1983 AN2	7829	1983 AO2	7829	1983 AP2	7829	1983 AR2	7829
1983 AS2	7829	1983 AT2	7829	1983 AU2	7935	1983 AW2	7935
1983 AX2	7942	1983 BA	7769	1983 BC	7935	1983 BD	7935
1983 BE	7935	1983 BF	7935	1983 BH	7935	1983 BM	7829
1983 BN	7829	1983 CB	7835	1983 CC	7766	1983 CE	7829
1983 CF	7781	1983 CH	7766	1983 CM	7766	1983 CN	7829
1983 CO	7829	1983 CM1	7835	1983 CW1	7782	1983 CX2	7836
1983 CY2	7829	1983 CZ2	7829	1983 CA3	7935	1983 CB3	7935
1983 CE3	7935	1983 DC	7829	1983 DE	7829	1983 DG	7935
1983 DJ	7836	1983 EA	7829	1983 ED	7829	1983 EE	7830
1983 EG	7830	2011 P-L	7938	2017 P-L	7461	3042 P-L	7155
4006 P-L	7938	4120 P-L	7602	4260 P-L	7020	4583 P-L	7939
4805 P-L	7943	5550 P-L	7841	6073 P-L	7943	6081 P-L	7776
6091 P-L	7777	6547 P-L	7602	6548 P-L	7663	6550 P-L	7777
6560 P-L	7943	6562 P-L	7943	6611 P-L	7944	7633 P-L	7374

* * * * *

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

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
87	1983 05	14.94676	15 30 37.45	-13 43 27.0		046
87	1983 05	14.97436	15 30 36.09	-13 43 25.3		046
382	1983 05	02.89705	12 52 39.71	-17 56 15.5		046
382	1983 05	02.91117	12 52 39.16	-17 56 12.0		046
449	1983 05	14.94676	15 27 08.63	-16 00 48.0		046
449	1983 05	14.97436	15 27 06.84	-16 00 44.7		046
492	1983 05	02.93247	14 12 53.48	-12 58 08.7		046
492	1983 05	02.94624	14 12 52.73	-12 58 07.4		046
518	1983 05	14.94676	15 33 24.01	-13 10 26.3		046
518	1983 05	14.97436	15 33 23.53	-13 10 15.2		046
521	1983 05	06.95903	15 46 40.76	-10 59 19.7		046
521	1983 05	06.97326	15 46 40.01	-10 59 18.5		046
992	1983 05	02.93247	14 16 00.20	-11 49 14.2		046
992	1983 05	02.94624	14 15 59.55	-11 49 08.6		046
1076	1983 05	14.99149	15 39 56.86	-14 11 48.2		046
1076	1983 05	15.00561	15 39 56.22	-14 11 45.8		046
1201	1983 05	14.99149	15 43 20.60	-13 39 43.3		046
1201	1983 05	15.00561	15 43 19.89	-13 39 38.0		046
1408	1983 05	14.99149	15 39 11.37	-12 46 45.7	16.6	046
1408	1983 05	15.00561	15 39 10.35	-12 46 40.5		046
1542	1983 05	02.96678	14 40 32.03	-14 54 23.8		046
1542	1983 05	02.98096	14 40 31.43	-14 54 22.8		046
1589	1983 05	14.99149	15 42 55.72	-14 41 29.1		046
1589	1983 05	15.00561	15 42 54.70	-14 41 27.6		046
1680	1983 05	09.97118	15 17 01.20	-13 43 26.1		046
1680	1983 05	09.98553	15 17 00.50	-13 43 25.6		046
1680	1983 05	14.91181	15 12 39.29	-13 37 05.4		046
1680	1983 05	14.92604	15 12 38.48	-13 37 04.2		046
1907	1983 05	14.94676	15 26 56.94	-13 12 39.6		046
1907	1983 05	14.97436	15 26 55.28	-13 12 25.2		046

2024		1983	05	14.91181	15	12	57.99	-13	58	49.6	17.0	046
2024		1983	05	14.92604	15	12	56.89	-13	58	40.5		046
2224		1983	05	02.96678	14	32	10.81	-14	10	39.0		046
2224		1983	05	02.98096	14	32	09.97	-14	10	38.5		046
2535		1983	05	09.97118	15	15	23.60	-12	45	47.6		046
2535		1983	05	09.98553	15	15	22.82	-12	45	43.4		046
2535		1983	05	14.91181	15	10	24.29	-12	21	12.4		046
2535		1983	05	14.92604	15	10	23.55	-12	21	08.4		046
1983 JC	*	1983	05	02.89705	12	57	00.84	-17	17	28.3	16.9	046
1983 JC		1983	05	02.91117	12	56	59.83	-17	17	25.9		046
1983 JD	*	1983	05	02.96678	14	36	38.59	-12	09	38.5	16.8	046
1983 JD		1983	05	02.98096	14	36	37.56	-12	09	41.1		046
1983 JE	*	1983	05	09.97118	15	07	25.54	-14	32	01.0	17.0	046
1983 JE		1983	05	09.98553	15	07	24.82	-14	31	58.6		046
1983 JF	*	1983	05	09.97118	15	15	20.44	-15	06	26.5	16.8	046
1983 JF		1983	05	09.98553	15	15	19.64	-15	06	27.7		046
1983 JG	*	1983	05	14.94676	15	30	46.04	-15	13	00.8	16.5	046
1983 JG		1983	05	14.97436	15	30	44.77	-15	12	53.5		046
1983 JH	*	1983	05	14.99149	15	39	13.40	-12	56	04.5	16.6	046
1983 JH		1983	05	15.00561	15	39	12.70	-12	55	58.7		046

OBSERVATIONS MADE AT TURKU. MEASURED BY L. OTERMA.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
244	1945 12	07.87932	02 59 36.99	+14 04 12.4			062
244	1945 12	07.91288	02 59 35.97	+14 04 06.4			062
373	1948 09	01.00052	00 30 13.26	-00 16 30.4	13.9		062
373	1948 09	01.04346	00 30 11.44	-00 16 26.6			062
373	1948 10	09.82682	23 56 07.14	+00 05 04.9	13.9		062
373	1948 10	09.85529	23 56 06.08	+00 05 08.9			062
417	1945 12	07.87932	02 59 12.50	+11 20 54.1		1	062
417	1945 12	07.91288	02 59 11.26	+11 20 47.8			062
578	1939 01	19.87771	08 48 54.60	+26 55 43.6			062
578	1939 01	19.91116	08 48 52.67	+26 55 51.0			062
578	1939 01	20.81732	08 48 01.86	+26 59 23.9			062
995	1945 12	07.85582	02 49 02.66	+11 07 13.4			062
1012	1940 04	03.86809	11 26 42.75	+10 34 48.4			062
1012	1940 04	03.89587	11 26 41.78	+10 34 51.7			062
1012	1940 04	04.81830	11 26 04.37	+10 36 51.5			062
1012	1940 04	12.85329	11 21 28.35	+10 46 42.6		2	062
1162	1942 09	08.01358	00 51 15.21	+03 56 58.9			062
1162	1942 09	11.97278	00 49 18.74	+03 45 09.0			062
1162	1942 09	11.99986	00 49 17.71	+03 45 05.3			062
1162	1950 09	12.99181	01 06 17.25	+05 43 52.0			062
1162	1950 09	13.02676	01 06 16.26	+05 43 45.5			062
1227	1948 09	01.00052	00 24 37.21	-00 44 02.0			062
1227	1948 09	01.04346	00 24 35.52	-00 44 02.5			062
1227	1948 10	09.82682	23 49 48.08	-00 33 02.4			062
1227	1948 10	09.85529	23 49 46.98	-00 33 02.6			062
1278	1939 01	18.84769	08 38 14.72	+27 29 32.5		3	062
1278	1939 01	19.8872	08 37 08.45	+27 36 26.5		3	062
1278	1939 01	20.81732	08 36 08.93	+27 42 28.8			062
1337	1942 03	12.09071	12 59 00.81	+05 27 25.5			062
1337	1942 03	13.01027	12 58 30.43	+05 36 04.3			062
1337	1942 03	13.04001	12 58 29.42	+05 36 19.4			062
1337	1942 03	14.99391	12 57 22.09	+05 54 46.9		4	062
1350	1939 11	11.87648	03 27 25.81	+14 00 56.8		5	062
1350	1939 11	20.91081	03 19 25.85	+13 32 14.2		6	062
1350	1939 11	20.93859	03 19 24.38	+13 32 09.6			062
1393	1939 01	19.87771	08 49 01.52	+26 57 10.3			062

1393		1939	01	19.91116	08	48	59.47	+26	57	20.5		062
1393		1939	01	20.81732	08	48	03.56	+27	02	28.3	7	062
1421		1939	11	20.70572	03	44	25.79	+23	38	30.6	6	062
1421		1939	11	20.84484	03	44	18.15	+23	38	27.1	6	062
1421		1939	11	20.91081	03	44	14.68	+23	38	25.8	6	062
1421		1939	11	20.93859	03	44	13.00	+23	38	27.6		062
1424		1949	03	01.98583	11	26	07.46	+15	47	36.5		062
1424		1949	03	02.01390	11	26	06.05	+15	47	41.3		062
1590		1940	09	08.95274	00	18	06.74	+08	33	54.1		062
1590		1940	09	11.98064	00	15	33.90	+08	14	23.4		062
1590		1940	09	12.01536	00	15	32.05	+08	14	09.3		062
1590		1940	09	30.96037	23	58	10.07	+05	42	52.6	8	062
1596		1939	11	20.70572	03	49	32.30	+24	07	50.4	6	062
1596		1939	11	20.84484	03	49	24.64	+24	06	39.1	14.6 6	062
1596		1939	11	20.91081	03	49	21.33	+24	06	09.3	6	062
1596		1939	11	20.93859	03	49	19.75	+24	05	52.4		062
1629		1949	03	30.02898	14	10	01.67	+05	24	38.1	15.8	062
1629		1949	03	30.06637	14	10	00.44	+05	25	01.3		062
1768		1942	09	08.01358	00	53	20.88	+04	15	00.8		062
1768		1942	09	11.97278	00	51	12.70	+04	09	46.8		062
1768		1942	09	11.99986	00	51	11.66	+04	09	43.7		062
1768		1942	10	03.82570	00	33	34.83	+03	12	06.4		062
1826		1940	11	29.76010	03	51	57.96	+27	50	02.9		062
1826		1940	11	29.80113	03	51	55.66	+27	49	50.4		062
1975		1946	10	04.02594	02	20	08.72	+07	51	37.2	9	062
1975		1946	10	04.05209	02	20	07.60	+07	51	25.7	9	062
1975		1946	10	23.92601	02	05	53.99	+05	37	56.0		062
1975		1946	10	23.95321	02	05	52.77	+05	37	45.2		062
1975		1946	10	26.87350	02	03	32.15	+05	18	56.0		062
2199		1941	04	19.94600	14	06	00.86	+02	05	06.8		062
2199		1941	04	19.97701	14	05	59.12	+02	05	23.2		062
2199		1941	04	21.97875	14	04	09.19	+02	22	41.2	A	062
1944	RL	1944	09	13.93968	00	24	38.98	+06	12	40.0		062
1944	RL	1944	09	13.97509	00	24	35.69	+06	13	10.4		062
1944	RL	1944	09	20.87211	00	13	19.07	+07	50	52.5		062
1944	RL	1944	09	20.94039	00	13	12.09	+07	51	49.6		062
1945	AC	1945	01	15.92252	07	47	14.66	+12	08	15.2		062
1945	AC	1945	01	15.95273	07	47	12.81	+12	08	20.0		062
1950	RL1	1950	09	12.99181	01	00	31.34	+05	12	51.8		062
1950	RL1	1950	09	13.02676	01	00	30.12	+05	12	53.5		062

Note 1: close to edge of plate; not transferred. 2: approximate position (RI 2137) inferior. 3: close to edge of plate; transferred. 4: approximate position (RI 2356) inferior. 5: approximate position (RI 2058) inferior. 6: black plate; half moon; measurement difficult. 7: very faint. 8: approximate position (RI 2203) inferior. 9: approximate position (MPC 223) inferior. A: approximate position (RI 2257) inferior.

OBSERVATIONS MADE AT THE CRIMEAN ASTROPHYSICAL OBSERVATORY BY T. M. SMIRNOVA AND L. G. KHARACHKINA.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
1982 YC1	1973 08	29.85814	21 03 33.63	-08 58 03.8	095
1982 YC1	1973 09	02.84314	21 00 13.10	-09 01 12.4	095

OBSERVATIONS MADE AT GEISEI BY T. SEKI. FROM NIHONDAIRA OBS. CIRC. NOS. 1431 AND 1434.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
531	1983 04	12.66319	13 05 48.03	-04 58 48.6	16	372
531	1983 04	12.67431	13 05 47.45	-04 58 34.5		372
531	1983 04	17.75764	13 02 09.31	-03 08 56.7	16	372

531	1983 04	17.76771	13 02 08.80	-03 08 42.8			372
2167	1983 04	12.70764	14 49 05.26	-22 57 39.3		17	372
2167	1983 04	12.73056	14 49 04.28	-22 57 32.9			372
2167	1983 04	17.72049	14 45 25.35	-22 33 05.7		16.5	372
2167	1983 04	17.73021	14 45 25.00	-22 33 04.3			372
1983 JA	1983 05	14.73333	16 15 19.91	-14 11 59.7		16.5	372
1983 JA	1983 05	14.75260	16 15 19.04	-14 11 58.0			372
1983 JA	1983 05	16.71181	16 13 42.74	-14 11 45.3		16	372
1983 JA	1983 05	17.67908	16 12 54.47	-14 11 40.9		16	372

OBSERVATIONS MADE AT KAMBAH BY D. HERALD.

Object	Date	UT	R. A. (1950)	Decl.		Obs.
1620	1983 03	11.49384	09 22 47.46	-19 08 54.6		415
1620	1983 03	11.54896	09 22 08.19	-19 17 31.1		415
1620	1983 03	18.48100	07 44 01.08	-36 55 33.3		415
1620	1983 03	18.49118	07 43 50.33	-36 56 52.0		415

OBSERVATIONS MADE AT MT. JOHN OBSERVATORY BY A. C. GILMORE. MEASURED BY P. M. KILMARTIN (ASSISTED BY R. McINTOSH).

Object	Date	UT	R. A. (1950)	Decl.		Obs.
1982 TA	1983 04	16.67373	19 40 32.21	-35 53 27.5		474
1982 TA	1983 04	16.69931	19 40 32.46	-35 53 41.4		474

OBSERVATIONS MADE AT THE CENTRO ASTRONOMICO DE YEBES BY M. DE PASCUAL, J. GARCIA, C. CABANAS AND F. SANCHEZ.

Object	Date	UT	R. A. (1950)	Decl.		Obs.
3	1982 09	11.85678	17 41 47.39	-10 17 58.3		491
3	1982 09	11.86093	17 41 47.46	-10 17 59.5		491
3	1982 09	11.86508	17 41 47.63	-10 18 00.3		491
3	1982 09	14.88840	17 43 23.43	-10 33 52.7		491
3	1982 09	14.89117	17 43 23.49	-10 33 53.9		491
3	1982 09	14.89394	17 43 23.62	-10 33 54.8		491
4	1982 08	13.02508	21 24 59.63	-22 54 06.5		491
4	1982 08	13.02855	21 24 59.41	-22 54 08.1		491
4	1982 08	13.03201	21 24 59.27	-22 54 09.3		491
4	1982 08	14.04168	21 24 02.05	-23 01 27.1		491
4	1982 08	14.04445	21 24 01.89	-23 01 28.8		491
4	1982 08	14.04722	21 24 01.70	-23 01 29.6		491
4	1982 09	11.88944	21 03 13.13	-25 08 16.7		491
4	1982 09	11.89290	21 03 13.04	-25 08 16.0		491
4	1982 09	11.89637	21 03 12.97	-25 08 16.6		491
4	1982 09	14.98311	21 02 13.21	-25 11 37.5		491
4	1982 09	14.98588	21 02 13.15	-25 11 37.8		491
4	1982 10	15.93413	21 08 30.10	-24 14 30.3		491
4	1982 10	15.93829	21 08 30.27	-24 14 29.4		491
4	1982 10	15.94244	21 08 30.44	-24 14 29.0		491
20	1982 08	13.87744	17 52 45.93	-22 29 29.7		491
24	1982 08	13.87744	18 01 11.76	-24 20 43.1		491
39	1982 08	13.00621	20 13 41.10	-11 53 51.3		491
39	1982 08	13.01037	20 13 40.92	-11 53 53.0		491
39	1982 08	13.01452	20 13 40.74	-11 53 54.7		491
39	1982 08	14.01005	20 12 58.52	-12 01 10.4		491
39	1982 08	14.01352	20 12 58.34	-12 01 12.0		491
39	1982 08	14.01698	20 12 58.24	-12 01 13.2		491
39	1982 10	15.91838	20 16 11.41	-17 13 28.8		491
39	1982 10	15.92253	20 16 11.69	-17 13 28.8		491
39	1982 10	15.92669	20 16 11.85	-17 13 29.4		491
328	1982 09	13.95762	22 43 47.81	-12 50 22.9		491
328	1982 09	14.96043	22 42 56.13	-12 50 50.1		491

330	1982	09	14.96043	22	46	12.46	-14	34	06.8	491
482	1982	10	15.88791	01	21	10.36	+00	20	48.9	491
482	1982	10	16.94751	01	20	25.14	+00	12	23.7	491
729	1982	08	13.96712	19	23	12.51	-20	09	44.7	491
729	1982	08	14.03152	19	23	10.30	-20	10	14.3	491
1186	1982	10	15.84774	23	39	45.60	-13	54	15.3	491
1186	1982	10	16.86544	23	39	09.84	-13	52	05.3	491
1264	1982	08	12.95254	19	01	42.01	+13	25	57.0	491
1264	1982	08	12.96639	19	01	41.63	+13	25	52.6	491
1264	1982	08	13.94114	19	01	17.08	+13	20	53.3	491
1264	1982	08	13.95291	19	01	16.77	+13	20	49.7	491
1336	1982	09	13.95762	22	39	42.20	-13	22	07.4	491
1336	1982	09	14.96043	22	38	57.87	-13	26	25.1	491
1413	1982	10	15.88791	01	20	10.76	+02	24	17.9	491
1413	1982	10	16.94751	01	19	24.97	+02	16	38.9	491
1527	1982	09	13.95762	22	55	37.10	-13	06	47.7	491
1527	1982	09	14.96043	22	54	42.01	-13	06	16.3	491
1648	1982	10	15.88791	01	27	30.13	+01	08	59.0	491
1648	1982	10	16.94751	01	26	25.50	+01	02	20.6	491
1776	1982	10	15.88791	01	20	57.73	+02	27	31.4	491
1776	1982	10	16.94751	01	20	12.83	+02	20	22.9	491
1833	1982	10	16.00183	23	44	09.13	-09	29	02.2	491
1833	1982	10	16.90682	23	43	44.33	-09	33	41.9	491
2193	1982	10	16.00183	23	50	23.19	-11	21	22.9	491
2193	1982	10	16.90682	23	49	48.72	-11	20	54.4	491
2378	1982	10	15.88791	01	22	30.78	+00	30	27.2	491
2378	1982	10	16.94751	01	21	44.76	+00	20	03.5	491
2434	1982	10	15.84774	23	34	31.54	-14	36	20.1	491
2434	1982	10	16.86544	23	33	51.10	-14	30	29.0	491
2768	1982	10	16.00183	23	46	37.70	-11	10	07.3	491
2768	1982	10	16.90682	23	46	04.21	-11	07	14.6	491

OBSERVATIONS MADE AT GOTTINGEN BY W. LANDGRAF.

Object	Date	UT	R. A. (1950)			Decl.			Obs.
2	1983	05 10.10941	19	18	43.81	+18	51	13.3	528
2	1983	05 10.11115	19	18	43.86	+18	51	13.9	528
2	1983	05 10.11271	19	18	43.76	+18	51	15.2	528
2	1983	05 12.01095	19	18	36.47	+19	07	50.8	528
2	1983	05 12.02978	19	18	36.35	+19	08	00.7	528
2	1983	05 12.03561	19	18	36.30	+19	08	04.5	528
2	1983	05 12.03962	19	18	36.29	+19	08	05.8	528

OBSERVATIONS MADE AT REINTAL BY F. SEILER. COMMUNICATED BY F. FREVERT.

Object	Date	UT	R. A. (1950)			Decl.			Obs.
115	1983	03 04.77153	08	26	39.02	+15	17	58.9	556
115	1983	03 04.77847	08	26	38.82	+15	17	57.8	556
115	1983	03 04.78542	08	26	38.62	+15	17	57.2	556
115	1983	03 04.79236	08	26	38.39	+15	17	56.3	556
115	1983	03 04.79931	08	26	38.15	+15	17	54.6	556
115	1983	03 04.80625	08	26	37.98	+15	17	53.9	556
115	1983	03 13.78125	08	23	34.56	+14	56	47.8	556
115	1983	03 13.78819	08	23	34.39	+14	56	47.8	556
115	1983	03 13.79514	08	23	34.36	+14	56	45.6	556
115	1983	03 13.80208	08	23	34.31	+14	56	45.2	556
115	1983	03 13.80903	08	23	34.24	+14	56	43.5	556
115	1983	03 13.81597	08	23	34.11	+14	56	42.9	556
115	1983	04 16.81875	08	34	06.78	+13	05	39.5	556
115	1983	04 16.82569	08	34	07.07	+13	05	36.8	556

115	1983	04	16.83264	08	34	07.32	+13	05	35.5	556
115	1983	04	16.83958	08	34	07.69	+13	05	33.3	556
115	1983	04	16.84653	08	34	07.98	+13	05	31.1	556
115	1983	04	16.85347	08	34	08.29	+13	05	29.5	556
635	1983	03	04.86736	08	26	40.67	+08	00	55.9	556
635	1983	03	04.87431	08	26	40.44	+08	00	59.2	556
635	1983	03	04.88125	08	26	40.24	+08	01	00.5	556
635	1983	03	04.88819	08	26	40.05	+08	01	04.7	556
635	1983	03	04.89514	08	26	39.92	+08	01	06.1	556
635	1983	03	04.90208	08	26	39.77	+08	01	07.4	556
652	1983	04	16.94444	14	11	37.65	+08	53	51.3	556
652	1983	04	16.95833	14	11	36.90	+08	53	52.3	556
652	1983	04	16.96528	14	11	36.29	+08	53	55.1	556
652	1983	04	16.97222	14	11	35.93	+08	53	56.0	556
652	1983	04	16.97917	14	11	35.72	+08	53	56.5	556
745	1983	02	18.90625	09	35	03.70	+20	24	00.5	556
745	1983	02	18.91319	09	35	03.45	+20	24	01.7	556
745	1983	02	18.92708	09	35	02.72	+20	24	10.2	556
745	1983	02	18.93403	09	35	02.53	+20	24	11.8	556
745	1983	02	19.90139	09	34	19.95	+20	30	49.9	556
745	1983	02	19.91528	09	34	19.32	+20	30	55.2	556
745	1983	02	19.92222	09	34	19.00	+20	31	00.9	556
745	1983	02	19.92917	09	34	18.66	+20	31	02.7	556
745	1983	03	04.90903	09	25	36.93	+21	49	37.8	556
745	1983	03	04.91597	09	25	36.78	+21	49	39.0	556
745	1983	03	04.92292	09	25	36.56	+21	49	42.6	556
745	1983	03	04.92986	09	25	36.24	+21	49	43.3	556
745	1983	03	04.93681	09	25	35.91	+21	49	44.6	556
745	1983	03	04.94375	09	25	35.70	+21	49	46.7	556
745	1983	03	13.82153	09	21	03.13	+22	29	55.7	556
745	1983	03	13.82847	09	21	02.88	+22	29	56.4	556
745	1983	03	13.83542	09	21	02.74	+22	29	58.3	556
745	1983	03	13.84236	09	21	02.63	+22	29	59.5	556
745	1983	03	13.84931	09	21	02.33	+22	30	02.2	556
745	1983	03	13.85625	09	21	02.24	+22	30	02.4	556
1477	1983	02	18.85417	08	25	50.90	+22	41	53.7	556
1477	1983	02	18.86111	08	25	50.66	+22	41	53.4	556
1477	1983	02	18.86806	08	25	50.39	+22	41	51.2	556
1477	1983	02	18.87500	08	25	49.88	+22	41	49.4	556
1477	1983	02	18.88194	08	25	49.56	+22	41	47.1	556
1477	1983	02	18.88889	08	25	49.23	+22	41	47.2	556
1477	1983	03	04.81875	08	17	40.06	+21	34	07.0	556
1477	1983	03	04.83264	08	17	39.75	+21	34	01.5	556
1477	1983	03	04.83958	08	17	39.59	+21	34	01.1	556
1477	1983	03	04.84653	08	17	39.28	+21	34	00.4	556
1477	1983	03	05.81597	08	17	18.06	+21	28	58.8	556
1477	1983	03	05.82292	08	17	17.85	+21	28	57.6	556
1477	1983	03	05.82986	08	17	17.76	+21	28	53.2	556
1727	1983	04	16.86597	13	14	01.47	+34	53	01.9	556
1727	1983	04	16.87986	13	14	00.58	+34	53	04.0	556
1727	1983	04	16.88681	13	14	00.26	+34	53	04.6	556
1727	1983	04	16.89375	13	13	59.75	+34	53	07.8	556
2364	1983	03	05.87847	09	56	49.09	+28	28	07.6	556
2364	1983	03	05.88542	09	56	48.87	+28	28	08.2	556
2364	1983	03	13.86319	09	50	54.54	+28	28	32.5	556
2364	1983	03	13.87014	09	50	54.35	+28	28	31.2	556
2364	1983	03	13.87708	09	50	54.10	+28	28	30.7	556
2364	1983	03	13.89097	09	50	53.42	+28	28	32.2	556

OBSERVATIONS MADE AT SEEWALCHEN BY M. BRESSLER. COMMUNICATED BY F. FREVERT.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
635	1983 03	03.83681	08 27 04.22	+07 54 51.4	563
635	1983 03	03.84097	08 27 04.17	+07 54 53.4	563
635	1983 03	03.85000	08 27 03.95	+07 54 56.6	563
635	1983 03	03.85764	08 27 03.77	+07 55 01.2	563
635	1983 03	03.86181	08 27 03.65	+07 55 01.7	563
635	1983 03	03.87014	08 27 03.52	+07 55 04.2	563
635	1983 03	03.87708	08 27 03.38	+07 55 06.7	563
635	1983 03	03.88125	08 27 03.23	+07 55 07.0	563
745	1983 02	17.94271	09 35 46.40	+20 17 14.0	563
745	1983 02	17.95243	09 35 45.75	+20 17 19.2	563
745	1983 02	17.96250	09 35 45.41	+20 17 25.0	563
745	1983 02	18.95278	09 35 01.62	+20 24 17.6	563
745	1983 02	18.96354	09 35 01.27	+20 24 21.6	563
745	1983 02	18.97083	09 35 00.82	+20 24 25.5	563
745	1983 02	18.98125	09 35 00.47	+20 24 29.5	563
745	1983 02	18.98750	09 35 00.04	+20 24 32.1	563
745	1983 02	18.99722	09 34 59.63	+20 24 37.5	563
745	1983 03	05.85000	09 25 04.28	+21 54 24.9	563
745	1983 03	05.85625	09 25 04.11	+21 54 27.8	563
745	1983 03	05.86042	09 25 03.83	+21 54 28.6	563
745	1983 03	05.87778	09 25 03.32	+21 54 34.7	563
745	1983 03	05.88611	09 25 02.91	+21 54 36.7	563
1266	1983 03	08.80000	09 03 41.01	+16 04 48.2	563
1266	1983 03	08.80972	09 03 40.75	+16 04 46.3	563
1266	1983 03	08.84861	09 03 39.14	+16 04 45.4	563
1266	1983 03	08.86319	09 03 38.64	+16 04 43.5	563
1266	1983 03	08.86944	09 03 38.57	+16 04 41.5	563

OBSERVATIONS MADE AT THE LICK OBSERVATORY BY E. A. HARLAN. MEASURED BY A. R. KLEMOLA.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
452	1983 03	15.08542	13 20 04.71	-03 19 10.2	662
452	1983 03	16.04861	13 19 31.12	-03 14 58.7	662

OBSERVATIONS MADE WITH THE 0.46-M SCHMIDT AT PALOMAR BY C. SHOEMAKER AND E. SHOEMAKER.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
539	1983 02	10.34722	06 48 33.20	+19 36 56.8	16.5	675
539	1983 02	11.11805	06 48 13.83	+19 36 30.9		675
539	1983 02	15.21250	06 46 46.63	+19 34 19.7		675
870	1983 02	10.34722	07 10 28.70	+21 59 18.0	17.5	675
870	1983 02	11.11805	07 09 57.76	+22 01 30.7		675
870	1983 02	15.21250	07 07 26.94	+22 12 37.5		675
1084	1983 02	10.34722	07 06 28.40	+17 25 29.0	17	675
2534	1983 02	10.34722	06 58 15.34	+21 53 08.1	17.5	675
2534	1983 02	11.11805	06 57 54.54	+21 53 50.7		675
2534	1983 02	15.21250	06 56 16.68	+21 57 25.8		675
1978 SY7	1983 01	10.50902	10 31 13.59	+16 51 19.4	17.5	675
1978 SY7	1983 01	10.52916	10 31 13.07	+16 51 20.4		675
1978 SY7	1983 01	12.44513	10 30 29.31	+16 55 17.3		675
1978 SY7	1983 01	12.46944	10 30 28.56	+16 55 18.7		675
1978 SY7	1983 01	13.45208	10 30 02.87	+16 57 29.3		675
1978 SY7	1983 01	13.48541	10 30 01.91	+16 57 33.8		675
1978 SY7	1983 01	14.40138	10 29 36.15	+16 59 42.2		675
1978 SY7	1983 01	14.42500	10 29 35.29	+16 59 45.9		675
1982 XB	1983 01	10.50138	10 45 55.71	+44 52 47.3		675
1982 XB	1983 01	12.46139	10 53 24.26	+43 20 06.2		675

1983	AR2		1983	02	15.25138	07	49	53.93	+32	55	54.8	17	675
1983	AS2		1983	02	15.25138	07	53	35.40	+34	56	42.3	17.5	675
1983	AT2		1983	02	15.25138	07	55	01.29	+30	50	35.7	17.5	675
1983	AU2		1983	02	10.34722	06	54	05.27	+23	33	57.8	17.5	675
1983	AU2		1983	02	11.11805	06	53	48.91	+23	32	37.7		675
1983	AU2		1983	02	15.21250	06	52	41.93	+23	25	53.3		675
1983	BF		1983	02	10.34722	07	07	18.44	+22	07	32.2	17.5	675
1983	BF		1983	02	11.11805	07	06	58.04	+22	08	33.3		675
1983	BF		1983	02	15.21250	07	05	22.65	+22	13	28.5		675
1983	CF3	*	1983	02	11.11805	07	11	39.54	+20	07	43.3	17	675
1983	CF3		1983	02	15.21250	07	10	06.01	+20	14	13.5		675
1983	EZ		1983	03	11.31111	12	10	37.45	+24	35	15.1		675
1983	EZ		1983	03	13.27083	12	09	12.51	+24	46	25.4		675
1983	EZ		1983	03	15.35763	12	07	40.07	+24	57	35.3		675
1983	EZ		1983	03	15.38125	12	07	39.01	+24	57	42.3		675
1983	EA1	*	1983	03	13.26597	12	11	40.70	+50	55	32.3	17.5	675
1983	EA1		1983	03	13.28541	12	11	38.85	+50	55	37.0		675
1983	EA1		1983	03	15.33194	12	08	38.76	+51	01	06.9		675
1983	EA1		1983	03	15.35208	12	08	36.94	+51	01	10.3		675

OBSERVATIONS MADE WITH THE 1.2-M SCHMIDT AT PALOMAR.

Object			Date	UT	R. A. (1950)			Decl.			Mag.	N	Obs.
2201			1983	06 13.18681	09	38	44.52	+15	24	23.3		1	675
2201			1983	06 13.19514	09	38	50.86	+15	23	46.3		1	675
1983	LB	*	1983	06 13.24722	16	31	48.98	-16	37	22.2	16	3	675
1983	LB		1983	06 13.27500	16	31	44.65	-16	39	36.6		1	675
1983	LB		1983	06 13.28542	16	31	43.66	-16	40	24.7		1	675
1983	LB		1983	06 13.29236	16	31	42.74	-16	40	53.0		1	675
1983	LC	*	1983	06 13.24722	16	26	18.61	-13	24	05.2	17	1	675
1983	LC		1983	06 13.27500	16	26	13.66	-13	23	31.2		1	675
1983	LD	*	1983	06 13.29444	17	26	56.83	-06	37	40.2	16	1	675
1983	LD		1983	06 13.32222	17	26	54.88	-06	37	14.0		1	675
2578	P-L	*	1960	09 24.46184	00	53	08.14	+04	59	52.7	18.0	4	675
2578	P-L		1960	09 26.37988	00	51	38.91	+04	47	44.4		4	675
2578	P-L		1960	09 28.43822	00	50	00.63	+04	34	27.7		4	675
2578	P-L		1960	09 29.39514	00	49	14.44	+04	28	13.3		4	675
2578	P-L		1960	10 17.31529	00	34	28.42	+02	29	23.1		4	675
2578	P-L		1960	10 22.26809	00	30	42.94	+01	59	03.3		4	675
2578	P-L		1960	10 25.30351	00	28	34.75	+01	41	43.7		4	675
2578	P-L		1960	10 26.35766	00	27	52.11	+01	35	56.6		4	675

Note 1: observers E. Helin and R. S. Dunbar; measured by S. R. Swanson.
2: discoverers Swanson and Helin. 3 = 1 + 2. 4: observer T. Gehrels, scanned and measured by C. J. van Houten and I. van Houten-Groeneveld.

OBSERVATIONS MADE AT THE LOWELL OBSERVATORY. MEASURED BY E. BOWELL.

Object			Date	UT	R. A. (1950)			Decl.			N	Obs.
739			1931	01 13.44097	09	18	29.81	+10	22	28.7		690
739			1931	01 16.33958	09	16	48.02	+10	54	12.4		690
739			1931	01 17.32986	09	16	10.63	+11	05	28.0		690
1254			1931	01 13.44097	09	17	41.27	+12	00	17.6	1	690
1254			1931	01 16.33958	09	15	41.20	+12	02	10.6		690
1254			1931	01 17.32986	09	14	57.97	+12	02	56.3		690
1931	BC		1931	01 13.44097	09	11	19.95	+10	00	52.6		690
1931	BC		1931	01 16.33958	09	09	32.32	+10	09	16.8		690
1931	BC		1931	01 17.32986	09	08	52.67	+10	12	29.1	1	690
1931	BG		1931	01 16.33958	09	23	47.42	+10	42	45.6	1	690
1931	BG		1931	01 17.32986	09	23	03.66	+10	42	42.5		690

Note 1: right ascension uncertain.

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

Object	Date	UT	R. A. (1950)	Decl.	N	Obs.
2888	1965 10	28.16041	01 12 06.05	+17 26 18.4		760
2888	1965 10	28.28611	01 11 57.40	+17 26 05.0		760
1950 AE	1950 01	15.23539	09 32 55.59	+11 06 34.3		760
1954 RK	1954 09	06.25483	23 51 00.00	+15 15 07.3		760
1954 RL	1954 09	06.21596	23 56 42.65	+13 46 42.3		760
1954 RL	1954 09	06.25483	23 56 41.13	+13 46 36.3		760
1954 RN	1954 09	06.30136	00 43 33.28	+03 10 11.4		760
1954 RN	1954 09	06.34928	00 43 31.42	+03 10 18.7		760
1954 SC	1954 09	19.13266	23 09 20.65	+00 50 17.5		760
1954 SC	1954 09	19.17292	23 09 18.39	+00 50 13.5		760
1954 SJ	1954 09	23.23643	23 48 38.22	+02 45 13.1		760
1954 SJ	1954 09	23.28642	23 48 35.19	+02 45 06.2		760
1954 SK	1954 09	23.23643	23 49 04.41	+00 42 41.2		760
1954 SK	1954 09	23.28642	23 49 01.73	+00 42 28.2		760
1954 SW	1954 09	27.15346	00 08 23.68	-07 56 09.3		760
1954 SW	1954 09	27.20346	00 08 21.05	-07 56 13.4		760
1954 SY	1954 09	27.15346	00 03 48.47	-03 21 19.2		760
1954 SY	1954 09	27.20346	00 03 45.13	-03 21 24.9		760
1954 SA1	1954 09	27.15346	00 10 44.58	-09 02 48.6		760
1954 SA1	1954 09	27.20346	00 10 42.45	-09 03 03.2		760
1954 SB1	1954 09	27.15346	00 00 40.11	-06 40 02.5		760
1954 SB1	1954 09	27.20346	00 00 37.82	-06 40 27.1		760
1954 SD1	1954 09	27.15346	23 51 35.76	-03 32 30.4		760
1954 SD1	1954 09	27.20346	23 51 33.65	-03 32 43.1		760
1954 UX	1954 10	22.17160	01 14 10.53	+06 01 42.2	1	760
1954 UX	1954 10	22.21534	01 14 08.49	+06 01 19.8	1	760
1954 UY	1954 10	22.17160	01 09 15.14	+05 21 44.6		760
1954 UY	1954 10	22.21534	01 09 12.79	+05 21 31.0		760
1954 UL2	1954 10	28.27298	02 46 35.56	+19 57 18.1		760
1954 UL2	1954 10	28.31951	02 46 33.00	+19 57 07.0		760
1954 WB	1954 11	16.07352	02 28 25.61	+18 32 06.9		760
1954 WB	1954 11	16.12074	02 28 23.08	+18 31 54.8		760
1954 WM	1954 11	27.04791	00 58 30.39	+02 18 28.0		760
1954 WM	1954 11	27.09444	00 58 29.74	+02 18 43.3		760
1954 WO	1954 11	27.14655	02 33 54.46	+18 53 44.6		760
1954 WO	1954 11	27.18960	02 33 50.94	+18 53 49.0		760
1954 XH	1954 12	04.32707	04 17 40.47	+25 10 13.1		760
1954 XH	1954 12	04.37359	04 17 37.52	+25 10 05.2		760
1955 DB	1955 02	23.22852	08 37 07.82	+26 56 07.8		760
1955 DB	1955 02	23.26879	08 37 05.85	+26 56 45.0		760
1955 DO	1955 02	18.08791	07 59 13.27	+29 22 08.3		760
1955 DO	1955 02	18.12749	07 59 11.70	+29 21 54.3		760
1955 TQ	1955 10	12.18649	23 47 23.99	+15 17 27.4		760
1955 TQ	1955 10	12.22606	23 47 22.66	+15 17 03.0		760
1957 KP	1957 05	22.89900	16 09 53.94	-43 52 36.7		760
1957 KP	1957 05	22.96000	16 09 50.38	-43 52 30.3		760
1959 EE	1959 03	04.23750	09 41 57.28	+05 48 02.8		760
1959 EE	1959 03	04.28821	09 41 55.21	+05 49 04.9		760
1961 UN	1961 10	18.25762	01 45 20.93	+09 22 13.9		760
1961 UN	1961 10	18.29998	01 45 19.64	+09 22 03.0		760
1961 XB	1961 12	03.08543	02 31 47.37	+12 01 12.3		760
1961 XB	1961 12	03.15835	02 31 45.30	+12 00 58.1		760
1964 LA	1964 06	11.27295	18 40 36.24	-24 30 44.8		760
1964 LA	1964 06	11.33719	18 40 33.14	-24 31 18.5		760
1964 PA	1964 08	06.22590	22 24 07.36	-09 38 21.6		760
1964 PA	1964 08	06.27278	22 24 05.04	-09 38 21.3		760

1966 FB		1966 03 17.31191	11 41 58.11	-02 05 33.7			760
1966 FB		1966 03 17.35566	11 41 55.39	-02 05 33.0			760

Note 1: approximate position (MPC 1196) in error.

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.
2860		1983 03	15.03235	08 35 03.10	+25 27 30.3		801
1932 CK		1983 04	14.30275	15 38 31.70	-18 23 02.6		801
1932 CK		1983 05	13.21234	15 10 44.63	-18 20 57.5		801
1938 DN		1983 04	14.10138	10 38 40.53	+25 53 46.5		801
1938 DN		1983 05	13.11806	10 43 49.63	+23 57 49.4		801
1938 SL		1983 04	18.27789	12 55 41.02	-00 22 46.8		801
1964 TR2		1983 05	15.06241	09 33 53.43	+16 36 18.3		801
1973 DP		1983 04	18.21507	12 16 11.62	+02 34 50.4		801
1975 QD		1983 04	14.06072	10 34 12.81	+23 17 45.8		801
1980 RR		1983 04	12.17237	12 01 04.04	-07 17 17.6		801
1980 UA		1983 04	18.32593	14 57 41.93	-13 52 07.9		801
1981 AE1		1983 04	14.25167	13 36 42.31	+21 57 21.1		801
1981 UV9		1983 04	12.10378	09 52 45.55	-06 47 25.1		801
1981 XF2		1983 04	12.19786	12 08 07.98	+05 26 13.7		801
1981 YB		1983 04	18.25580	12 25 07.08	+20 43 43.1		801
1983 GP	*	1983 04	12.06125	09 36 59.34	+13 58 12.1	17.5	801
1983 HX	*	1983 04	18.27789	12 55 13.59	-00 21 48.3	18.2	801

OBSERVATIONS MADE AT JCPM OI STATION BY T. URATA AND K. SUZUKI. MEASURED BY URATA.

Object		Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1983 JB	*	1983 05	02.52569	13 38 03.72	-07 44 02.6	15.5	882
1983 JB		1983 05	02.57986	13 38 01.79	-07 44 09.8		882
1983 LA	*	1983 06	01.54444	16 31 18.9	-21 51 03	16	882
1983 LA		1983 06	01.58611	16 31 16.7	-21 50 52		882

* * * * *

ORBITAL ELEMENTS OF ONE-OPPOSITION MINOR PLANETS.

The orbit computers and authors of double designations are I = H. Oishi, M = B. G. Marsden. For further information see MPC 7828.

Planet	B(1,0)	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1977 RA6	14.3	770914	319.18	67.00	347.50	3.62	0.1046	2.2280	27	3	1	I
1983 AR2	13.5	830126	52.36	21.79	34.12	7.72	0.1200	2.7584	36	7		M
1983 AS2	13.5	830126	74.58	342.94	56.27	10.35	0.0592	2.9148	36	7		M
1983 AT2	15.0	830126	49.56	44.14	18.29	6.30	0.1013	2.4051	36	7		M
1983 AU2	15.0	830126	38.81	120.04	307.37	2.96	0.1009	2.2248	36	8		M
1983 BF	13.0	830126	350.69	357.67	128.96	1.43	0.1512	3.2327	36	0		M
1983 EZ	12.0	830307	13.95	65.11	88.76	16.24	0.0936	3.3865	4	6		M

Note 1: double designation 1977 RA6 = 1977 TG4 (I, JAM 1423).

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ORBITAL ELEMENTS BY T. URATA, SHIMIZU, JAPAN.

The following orbital elements are from NOC 1432 and 1438. The identifications are by T. Urata unless otherwise stated.

(2889)* 1981 WT1 = 1953 JE = 1958 GE = 1970 SF1 = 1976 UO4 = 1983 AB1

Discovered 1981 Nov. 17 by A. Mrkos at Klet.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M 178.40703		(1950.0)	P	Q
n 0.18795216	Peri.	121.51537	+0.94310895	+0.31487721
a 3.0183609	Node	220.41032	-0.33236499	+0.90143252
e 0.1212370	Incl.	9.47916	+0.00888940	+0.29710564
P 5.24	B(1,0)	12.7		

Residuals in seconds of arc

530507 760	0.8+	0.6+	811117 046	0.3-	0.4-	830112 688	0.3+	0.2+
530507 760	0.1-	0.8+	811117 046	0.9+	0.7+	830112 688	0.4-	0.0
530509 760	0.1-	1.0-	811123 046	0.3-	0.9+	830122 688	0.3+	0.6-
580415 024	0.9-	0.3-	811123 046	0.9+	1.2+	830122 688	0.3-	1.2-
700930 095	0.6+	1.7-	811128 046	0.7-	0.2+			
761028 095	0.1+	0.2+	811128 046	0.9-	1.4-			

1983 JA = 1957 LG = 1969 VV2 = 1972 JN = 1974 UH

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

M 267.32829		(1950.0)	P	Q
n 0.18728581	Peri.	282.98542	+0.97005325	-0.14089760
a 3.0255221	Node	85.37238	+0.21174707	+0.88961588
e 0.1123370	Incl.	11.44908	-0.11899523	+0.43443234
P 5.26	B(1,0)	12.0		

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

570605 081(0.04+	0.05-)X		741115 095	0.5-	1.5+	830514 372	0.1-	2.9-
691115 095	0.2-	0.5+	830509 383	0.6+	0.4+ Y	830514 372	1.2+	1.3-
720512 095	0.0	0.1-	830509 383	0.2-	1.4+ Y	830516 372	0.1-	0.6+
741024 095	0.4+	1.3-	830509 383	0.5+	0.4+ Y	830517 372	1.6-	2.1+

* * * * *

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

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

(2890)* 1978 SY7 = 1944 SC = 1956 EL = 1961 TR1 = 1983 BP

Discovered 1978 Sept. 26 by L. Zhuravleva at the Crimean Astrophysical Observatory. The key identifications 1978 SY7 = 1956 EL = 1961 TR1 are by L. D. Schmadel (MPC 7666). The identification 1978 SY7 = 1983 BP is by E. Bowell.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M 144.01541		(1950.0)	P	Q
n 0.29014426	Peri.	50.10733	+0.68650682	-0.72708950
a 2.2597483	Node	356.51389	+0.62689968	+0.59674294
e 0.1611110	Incl.	6.62634	+0.36838183	+0.33946827
P 3.40	B(1,0)	14.0		

Residuals in seconds of arc

440920 062	2.0+	0.0	781101 095	1.8+	0.5+	830114 675	1.3-	0.4-
440921 062	1.8+	1.3-	830110 675	0.5+	0.8+	830122 688	1.3+	1.3-
560309 024	0.6+	1.0+	830110 675	0.3-	0.4-	830122 688	0.7-	1.7-
611013 760	3.3-	0.8+	830112 675	1.1+	2.9+	830210 801	0.4-	0.8+
611013 760	2.8-	0.4+	830112 675	0.1-	1.1+	830211 688	0.6-	1.0-
780926 095	0.3+	0.0	830113 675	0.1+	0.3+	830211 688	0.5-	1.2-
781002 095	1.3+	0.2+	830113 675	0.5+	0.3+	830219 688	0.3+	0.6-
781008 095	0.7-	0.2-	830114 675	0.3+	0.6-			

1981 EL1 = 1959 EX = 1975 WA
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M 211.29252		(1950.0)	P	Q
n 0.22398990	Peri.	167.85438	-0.91381818	-0.40322570
a 2.6852494	Node	348.01466	+0.35034054	-0.72235975
e 0.2433339	Incl.	13.48623	+0.20542113	-0.56178769
P 4.40	B(1,0)	14.5		

Residuals in seconds of arc

590306	690	2.1+	0.8-	Y	810308	809	0.2+	0.2-	810310	809	0.8-	0.1+
590307	690	0.6-	2.8+	Y	810308	809	0.6+	0.1+	810310	809	0.6-	0.1-
751127	095	0.5-	0.4+		810309	809	0.4-	0.1-	810310	809	0.7-	0.2-
751128	095	0.5+	0.3-		810309	809	0.1-	0.4-	810312	809	0.2-	0.4+
810306	809	0.5+	0.3+		810309	809	0.2-	0.5-	810312	809	0.3-	0.6+
810306	809	0.9+	0.3+		810309	809	0.6+	0.1+	810312	809	0.2-	0.5+
810306	809	1.4+	0.1-		810309	809	0.6+	0.1+	810313	809	0.7-	0.4-
810307	809	0.2-	0.4-		810309	809	0.0	0.1+	810313	809	0.2-	0.6-
810307	809	0.1+	0.6-		810310	809	0.3-	0.6-	810314	809	0.3+	0.2+
810307	809	0.3+	0.3-		810310	809	0.2-	0.3-	810314	809	0.4-	0.3+
810308	809	0.2-	0.0		810310	809	0.3-	0.3-	810314	809	1.3-	0.3+

1981 EF23 = 1950 AE = 1979 SN3
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M 3.79258		(1950.0)	P	Q
n 0.28853239	Peri.	241.18792	+0.46561257	-0.88498833
a 2.2681609	Node	181.06310	+0.82560661	+0.43468118
e 0.1299801	Incl.	2.36084	+0.31871405	+0.16687697
P 3.42	B(1,0)	15.0		

Residuals in seconds of arc

500115	760	0.1+	0.1-		810307	413	0.7+	0.3-	810407	413	0.7-	1.1+
500116	760(97.2- | 42.4-)X			810311	413	0.8-	0.4+	810407	413	0.6+	0.3-
790924	095	0.4+	1.3-		810311	413	0.5+	0.9-	810408	413	0.7-	1.1+
810303	413	1.2-	0.0		810316	413	1.1-	0.8+	810408	413	0.7+	1.0-
810303	413	0.5+	0.6-		810316	413	2.1+	0.6-	810411	413	1.4-	0.5+
810307	413	0.4-	0.6+		810329	413	0.2-	0.2-	810411	413	0.6+	1.4-

2578 P-L = 1931 BC
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M 352.82100		(1950.0)	P	Q
n 0.22429308	Peri.	299.79424	-0.54151542	-0.84068325
a 2.6828290	Node	182.99981	+0.79290127	-0.50931811
e 0.2201456	Incl.	3.90774	+0.27940764	-0.18397479
P 4.39	B(1,0)	14.5		

Residuals in seconds of arc

310113	690	1.3-	0.9-		600926	675	0.6-	0.5-	601022	675	0.5-	0.7-
310116	690	1.5+	0.8+		600928	675	0.7-	0.1+	601025	675	1.1+	0.6+
310117	690	0.3+	0.3+		600929	675	0.7+	1.1+	601026	675	0.6-	0.4-
600924	675	0.4+	0.0		601017	675	0.0	0.0				

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

(1702) Kalahari
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M 58.47317		(1950.0)	P	Q
n 0.20385166	Peri.	241.99224	+0.95623731	+0.23962890
a 2.8593011	Node	103.73762	-0.16832256	+0.91988235
e 0.1407094	Incl.	9.95285	-0.23932763	+0.31047455
P 4.83	B(1,0)	12.3		

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

240707	078	(5.9-	0.9+)Y	530716	760	0.3-	0.6-	750213	049	0.2+	0.7+
240708	078	(1.6-	40.9+)Y	530719	760	1.8-	0.9+	750213	049	1.8-	1.2+
240725	078	(15.7-	10.3+)Y	530719	760	1.4-	1.2+	750214	049	1.5-	1.2+
240729	078	(0.04+	0.01-)Y	620505	760	1.8-	0.3-	750214	049	1.5-	0.3+
240730	078	(0.07+	0.01-)Y	620505	760	0.3+	0.5-	760423	095	0.5-	0.1+
480705	078	0.6+	1.5-	641231	330	0.2-	0.9+	770717	095	0.3-	0.0
480713	078	1.2-	1.2+	650108	330	2.6-	1.3+	770719	095	1.7+	3.1+
480725	078	4.8+	1.4-	650112	330	0.3+	0.5+	781205	330	1.6+	0.1-
480730	078	2.7+	0.1+	670609	095	1.1-	1.6+	800123	095	2.6+	0.4-
530716	760	1.6-	1.7-	720614	076	1.6-	0.9+	800220	095	4.5+	2.4-

(1719) Jens

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	20.19492		(1950.0)	P	Q
n	0.22755591	Peri.	57.53801	+0.91903608	-0.36558141
a	2.6571167	Node	323.29676	+0.22435482	+0.79258899
e	0.2226032	Incl.	14.27655	+0.32409505	+0.48800914
P	4.33	B(1,0)	12.6		

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

220924	094	(14.0-	30.4-)X	500216	012	(8.1+	1.0+)	650726	760	0.1+	0.5+
390817	078	(42.1-	37.0-)X	500217	024	2.1-	1.5-	650726	760	1.9-	0.8-
391012	012	(0.01+	0.08-)X	500223	024	3.2-	0.5-	650902	760	1.4+	1.6-
410121	062	(74.5-	15.9+)X	500307	024	0.0	1.1-	650902	760	0.7+	1.3-
480911	062	2.5-	1.2-	500315	024	0.4+	0.6-	740912	026	0.0	1.0-
480928	062	0.3-	0.0	500322	024	1.8-	1.7-	780827	688	1.0+	1.8-
481005	062	1.1+	3.7+	540201	024	2.6+	1.6-	780827	095	2.1+	0.8+
481006	094	(14.3+	25.2+)X	571220	024	1.0-	1.1-	780830	688	0.8+	2.2-
481124	062	1.6+	1.4-	611013	690	(9.3-	3.5-)Y	780902	688	0.1-	2.0-
481124	062	0.1+	0.1-	611013	690	(5.8-	1.6-)Y				

(1730) Marceline

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	36.66460		(1950.0)	P	Q
n	0.21222882	Peri.	224.71758	+0.80742133	-0.58944294
a	2.7835550	Node	171.29472	+0.57695714	+0.78002016
e	0.2255990	Incl.	9.52924	+0.12325282	+0.21006089
P	4.64	B(1,0)	12.8		

Residuals in seconds of arc

310914	012	(4.1+	14.9+)	361123	020	0.1-	1.6+	700209	805	0.4-	0.4+
310915	012	(3.0-	4.5-)	361123	020	4.1+	3.3-	700209	805	0.1-	0.9+
361016	020	1.2+	2.8+	501116	711	4.2-	4.6- Y	710514	095	0.4+	1.8-
361017	020	1.6+	2.0+	501210	711	1.5-	1.7- Y	720517	095	2.4-	1.7-
361021	020	4.7-	2.6-	520226	711	1.9-	5.3- Y	720606	095	0.5+	0.3-
361021	020	1.2-	1.3+	540822	760	2.5-	0.4-	720610	095	1.1+	1.4+
361024	020	1.7-	0.6+	540822	760	2.2-	0.5-	730828	095	0.8+	1.5-
361024	020	1.5-	2.4+	591001	024	0.3+	3.4-	730902	095	1.5+	2.7-
361024	094	(62.4-	11.0+)X	680825	095	1.1+	0.2+	730906	095	1.9+	0.6+
361025	020	0.5+	6.0+	680831	095	1.3+	0.7-	731029	095	0.2+	5.5-
361025	020	4.4+	6.2+	700207	805	0.4-	0.4+	750304	095	2.3+	7.3+
361108	020	(0.9-	14.5-)	700207	805	0.7+	1.3-	750317	095	2.9-	3.1-
361108	020	(0.8+	9.2+)	700207	805	1.6-	1.0+	770805	095	0.2-	5.7+
361110	020	1.2-	3.6-	700207	693	1.5+	0.6+	770806	095	0.4+	1.3+
361110	020	1.8+	0.5+	700207	693	1.7+	0.4+	800221	095	1.6+	1.7-
361116	020	(61.1-	6.5+)X	700209	805	1.5-	0.8+	800316	095	1.4+	1.3-

(1752) van Herk
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M 295.31902		(1950.0)	P	Q
n 0.29426378	Peri.	98.05797	+0.90216338	+0.42837155
a 2.2386087	Node	236.59162	-0.41592940	+0.83236746
e 0.2008637	Incl.	3.50135	-0.11447259	+0.35165640
P 3.35	B(1,0)	14.7		

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

300722	078	0.1+	0.9-	471018	012	(0.04-	0.02-)X	770918	095	2.3+	0.2-
300722	078	0.4-	0.1-	641130	330	0.6-	0.2+	771009	095	0.9-	0.3-
300729	078	1.1+	0.2+	670906	095	1.1-	2.9-	800611	675	0.4+	0.4-
300729	078	0.1+	0.7+	670912	095	0.9+	5.1+	800612	675	0.7+	0.8+
300817	078	0.1+	1.6-	671003	095	2.5-	0.4-	800618	675	0.7-	0.0
300817	078	0.1-	0.1+	741112	095	1.1+	0.4-	800619	675	(19.9-	6.2-)
371026	094	(0.03+	0.00+)X	741117	095	0.1+	0.6-	800620	675	0.7-	0.6+

(1753) Mieke
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M 114.26136		(1950.0)	P	Q
n 0.18805020	Peri.	230.57200	+0.31097689	+0.93545610
a 3.0173118	Node	58.32744	-0.79999914	+0.35305825
e 0.0756214	Incl.	11.38319	-0.51312253	+0.01648520
P 5.24	B(1,0)	12.3		

Residuals in seconds of arc

340510	078	1.7+	0.5-	710623	323	1.6-	0.5-	760628	808	0.2-	1.5+
340522	078	1.8+	0.7+	710623	323	0.1-	0.0	771009	095	0.1+	0.3-
340602	078	1.4-	0.0	750312	049	0.5-	1.2-	771018	095	0.1+	0.6-
340613	078	0.8-	2.2+	750312	049	0.9-	0.1+	810505	688	0.4-	1.7-
350930	078	0.2-	0.1-	750312	049	0.6-	0.2-	810505	688	0.4+	1.0-
510930	760	0.4+	1.2-	750312	049	1.3-	0.0	810604	688	0.2+	1.8-
510930	760	0.1+	0.8-	750314	049	1.0-	0.2-	810604	688	0.6-	2.1-
511104	839	1.5-	1.0+	750314	049	0.8-	0.9-	810609	688	0.3+	2.3-
511104	839	1.3+	1.4+	760529	808	0.0	1.2+	810609	688	0.5+	0.7-
671031	095	1.9+	0.4-	760529	808	0.3-	0.1-				
700308	095	4.1+	4.2+	760628	808	0.6-	1.4+				

(1757) Porvoo
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M 115.64251		(1950.0)	P	Q
n 0.27339737	Peri.	148.13981	-0.99120500	+0.12489769
a 2.3511111	Node	39.10951	-0.13123626	-0.88521539
e 0.1262213	Incl.	3.97611	-0.01702039	-0.44810074
P 3.61	B(1,0)	14.1		

Residuals in seconds of arc

390317	062	2.0-	0.9-	731103	033	0.1-	0.6+	790425	809	1.2-	0.2+
390318	062	6.6+	6.8+	750304	095	0.5+	3.7+	790425	809	0.4+	0.3-
390322	062	1.7-	0.3+	750314	095	2.9-	0.5-	790425	809	0.2+	0.8-
390410	062	0.5+	0.7-	760822	809	1.0-	0.6+	790426	809	0.3+	0.5+
640121	760	0.1+	1.2-	760822	809	1.0-	0.2+	790426	809	0.9+	0.0
640121	760	0.9-	0.4-	760822	809	0.8-	0.4+	790426	809	1.3+	0.2+
680328	095	1.0-	2.0-	760923	801	0.6-	0.9+	790429	809	1.1-	0.7+
680424	095	2.4-	3.4-	760925	801	1.9-	1.1+	790429	809	0.9-	1.0+
680430	095	0.1+	3.1-	761024	801	2.1-	0.6-	790429	809	0.4-	1.6+
730930	693	0.1-	1.1+	790421	809	2.0+	0.5+	790430	809	0.1-	0.2+
730930	693	0.1-	1.2+	790421	809	2.2+	0.6+	790430	809	0.8-	0.4-
731027	693	4.9+	0.5-	790421	809	2.4+	0.3+	790430	809	0.3-	0.3-
731027	693	0.8-	0.8-	790422	809	0.1+	0.8+	800907	095	1.8+	2.2+
731101	033	4.5-	0.3-	790422	809	0.2+	0.7+	820126	491	0.1+	3.7+
731102	033	1.4+	1.1+	790422	809	0.5-	1.2+	820126	491	2.2+	0.3-

(1802) Zhang Heng
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	276.74758		(1950.0)		P		Q				
n	0.20566996	Peri.	301.21606		+0.11191168		-0.99330623				
a	2.8424236	Node	142.32538		+0.92686216		+0.09395737				
e	0.0363093	Incl.	2.68303		+0.35833268		+0.06719184				
P	4.79	B(1,0)	13.1								

Residuals in seconds of arc

330324	029 (8.5+	22.4+)Y	810301	809	0.1+	0.0	810307	413	0.2+	0.7+
330325	029(16.9+	18.9+)Y	810302	809	0.6-	0.2-	810308	809	0.9-	0.8+
361214	020(19.8+	37.7-)X	810302	809	0.2-	0.3-	810308	809	0.7-	0.4+
361220	020(39.0+	12.9+)X	810302	809	0.5-	0.5-	810308	809	0.5-	0.0
380308	024(29.3+	0.6+)	810302	413	0.8-	1.3+	810309	809	0.2-	0.5-
480503	094(69.0+	19.3-)X	810302	413	0.4+	0.2+	810309	809	0.7-	0.2-
490728	024	0.8+	2.5-	810303	809	0.3-	0.3-	810309	809	1.1-	0.3-
490730	024	0.4+	2.9-	810303	809	0.0	0.5-	810309	809	1.1-	0.2+
551219	024	1.2+	0.4+	810303	809	0.0	0.1+	810310	809	1.7-	1.1-
641009	330	2.0-	0.3+	810303	413	1.1-	1.1+	810310	809	1.3-	1.2-
641101	330	1.1-	0.1-	810303	413	0.6+	0.3+	810310	809	1.4-	1.4-
641110	330	0.1+	0.9-	810304	809	0.8-	0.0	810311	413	0.1+	0.5+
720512	095	1.4+	0.6-	810304	809	0.5-	0.1-	810315	809	0.3+	0.6-
741118	095	2.3+	4.1-	810304	809	0.1-	0.1-	810315	809	0.4+	0.5-
780808	095	1.5-	0.4-	810305	809	0.2+	0.2-	810315	809	0.8+	1.0-
780902	809	1.2+	0.6+	810305	809	0.0	0.3-	810316	413	1.4+	0.3-
780902	809	1.2+	0.4+	810305	809	0.5+	0.0	810317	809	1.6+	0.2-
780902	809	1.2+	0.5-	810306	809	0.2+	0.0	810317	809	2.5+	0.2-
780902	809	1.2+	0.1+	810306	809	0.0	0.3-	810329	413	0.2+	0.1-
780902	809	0.4+	0.5-	810306	809	0.2-	0.5-	810329	413	0.9+	0.1+
780903	095	0.2-	0.8+	810307	809	1.5+	0.1+	810407	413	0.7-	0.7+
780928	095	2.8-	1.0+	810307	809	1.5+	0.0	810408	413	0.1+	0.0
810301	809	0.9-	0.2+	810307	809	1.7+	0.0	810411	413	0.7-	0.2-
810301	809	1.3-	0.3+	810307	413	0.5-	1.3+	810411	413	0.1+	0.6-

(1823) Gliese
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	318.32847		(1950.0)		P		Q				
n	0.29686771	Peri.	295.80000		-0.41226913		+0.91023936				
a	2.2254990	Node	309.79728		-0.81675715		-0.38808638				
e	0.1354388	Incl.	2.88796		-0.40366065		-0.14440660				
P	3.32	B(1,0)	14.2								

Residuals in seconds of arc

440623	078(95.6-	36.6-)X	511003	024	1.5-	1.4+	730101	095	0.1-	3.1+
481105	012	3.6-	1.6-	540709	760	1.8+	0.4+	730102	095	1.9+	2.9-
500124	024	0.7+	1.8+	540709	760	2.6-	2.6-	730104	095	2.0+	3.5-
500216	012	2.4-	2.7+	700306	805	2.1-	0.7+	751107	095	1.0-	0.2+
500308	024	0.6-	1.6-	700306	805	1.5-	0.4+	770519	076	2.9-	0.6-
500322	024	0.2-	0.2-	700306	805	1.7-	0.2+	781008	095	0.1-	1.2+
510904	024	3.6+	1.1+	710916	095	0.5+	4.0-	800221	330	7.5+	4.7-
510905	024	1.8+	2.2+	710927	095	2.3+	0.4-	810929	704	3.2-	1.5-
510906	024	2.9+	2.4+	711011	095	2.4-	3.3-				

(1840) Hus
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	122.66480		(1950.0)		P		Q				
n	0.19789975	Peri.	14.75789		+0.57135107		-0.82025094				
a	2.9163472	Node	40.40786		+0.74860980		+0.50722831				
e	0.0191441	Incl.	2.41544		+0.33636484		+0.26440089				
P	4.98	B(1,0)	12.9								

Residuals in seconds of arc

311012	690(16.6+	46.8-)X	730128	029	0.0	0.3-		811124	688	1.0-	2.2-
311014	690 (7.1-	40.0+)X	730203	095	1.3+	1.5+		811124	688	0.9+	1.0-
350703	078(16.8+	14.3-)X	730227	029	1.1+	0.6+		811202	688	0.2-	0.4-
530214	760	1.0- 0.4-	730309	029	0.3-	0.3-		811202	688	0.7+	2.6-
530214	760	1.6- 1.5+	740318	693	2.1-	0.7+	Y	811218	688	1.7+	2.4-
711026	029	0.1- 1.2+	740420	693	2.5+	3.4-	Y	811218	688	1.1-	4.8-
711027	029	0.9+ 0.6-	740420	693	0.3-	4.8-	Y	811230	688	0.4+	1.0-
711027	095	2.1+ 1.6+	740521	693	3.5-	0.5+		811230	688	1.6+	0.1-
711030	029	0.7- 1.8+	780202	330	0.6+	0.8-		830109	688	3.3-	0.1+
711110	029	0.2- 0.9+	780305	095	0.6+	1.8+		830109	688	3.6-	2.2-
711110	029	1.0- 1.7+	811102	688	0.7+	2.3-		830219	688	2.6+	0.8-
711119	029	0.1- 2.4+	811102	688	1.7+	0.8-		830219	688	2.1+	0.9+
730103	095	1.5+ 0.3-	811105	688	2.3-	0.7+					
730128	029	0.9+ 0.8+	811105	688	1.1-	0.2-					

(1869) Philoctetes
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	319.55945		(1950.0)	P	Q
n	0.08062304	Peri.	320.71004	+0.99607660	-0.07456295
a	5.3067660	Node	43.63935	+0.08798229	+0.89229980
e	0.0631860	Incl.	3.96030	-0.00951430	+0.44524310
P	12.32	B(1,0)	12.3		

Residuals in seconds of arc

600924	675	0.0 1.0+	720915	675	0.7-	0.2+		731022	691	1.4+	0.2- Y
600926	675	0.1+ 0.1+	720916	675	0.1-	0.3+		731121	691	0.1-	1.8- Y
600927	675	0.3- 0.1+	720916	675	0.0	0.6+		731121	691	3.3+	0.8- Y
600928	675	1.3+ 0.2+	730922	691	4.1-	2.0-	Y	750107	691	2.4-	1.2+
601017	675	0.0 0.5+	730922	691	0.4-	1.1-	Y	750107	691	1.9-	1.4+
601022	675	0.5- 0.3-	730923	691	0.1+	1.6+		751204	691	1.1+	0.0
601025	675	0.3- 0.5-	730923	691	0.0	1.5+		751204	691	1.1+	0.1-
601026	675	1.2- 0.4+	731022	691	3.7+	2.0-	Y	790519	809	0.7-	0.5-

(1879) Broederstroom
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	54.75590		(1950.0)	P	Q
n	0.29292864	Peri.	173.39422	+0.45391847	-0.89059699
a	2.2454057	Node	249.60728	+0.81609294	+0.42823210
e	0.1493791	Incl.	1.72381	+0.35770146	+0.15314789
P	3.36	B(1,0)	14.2		

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

351016	078	0.7+ 1.6-	500220	760	1.0+	1.0-		791214	095	1.6-	0.4-
351018	078	1.7+ 1.1-	720911	095	2.5+	0.6-		810503	688	1.8-	1.5-
351027	078	3.0- 0.0	721003	095	2.2+	0.7+		810503	688	0.4-	1.9-
351030	078	1.0+ 1.4-	721005	095	0.9+	0.3+		810604	688	2.0+	1.2-
500115	760	0.8- 0.2+	721013	095	0.9+	2.8+		810604	688	1.0-	1.2-
500116	760	1.2- 0.3+	721028	095	3.3-	0.8-		820922	704	0.2+	1.9+
500116	760	1.5+ 0.7-	721108	095	0.5+	1.1-		821009	688	0.2+	1.5-
500208	020(0.09+	0.00-)X	750903	095	0.8-	1.3+		821009	688	1.0-	2.6-
500220	760(14.3-	4.8+)	750906	801	1.0-	0.8+					

(2891)* 1980 MD = 1933 XC = 1951 WS1 = 1965 AR

Discovered 1980 June 18 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory. The 1982 recovery was made by J. Gibson on the basis of a prediction by J. G. Williams. The identifications are by B. G. Marsden.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	94.52524	(1950.0)	P	Q
n	0.15895971	Peri. 247.20426	+0.98832569	-0.04199421
a	3.3750329	Node 114.93804	+0.08885661	+0.93972645
e	0.1076059	Incl. 9.29472	-0.12376120	+0.33933859
P	6.20	B(1,0) 12.5		

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

331215	024	0.4+	2.2+	800618	675	2.5+	0.5-	821114 801	0.1- 0.5+
511129	711	1.8-	3.6+ Y	800619	675	1.0-	2.9+	821212 688	0.0 1.6-
650108	330	0.2+	1.5-	800619	675	0.1+	3.6-	821212 688	1.4- 0.5-
800517	095	0.0	2.1+	800620	675	1.4-	2.8+	830110 675	1.6+ 0.5-
800610	675	1.5+	0.6-	820912	675	0.6+	0.4-	830110 675	0.1- 1.0-
800611	675	0.5-	0.8-	820914	675	0.7+	0.6-		
800618	675	0.9-	0.8-	821020	801	0.3+	0.7+		

(2892)* 1983 AX2 = 1936 QK1 = 1953 SB = 1955 DO = 1957 KP = 1964 PA

Discovered 1983 Jan. 13 by L. G. Karachkina at the Crimean Astrophysical Observatory. The identifications are by B. G. Marsden.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	86.19019	(1950.0)	P	Q
n	0.17616035	Peri. 91.45594	+0.50588952	-0.84747896
a	3.1515965	Node 326.54839	+0.62876234	+0.48990358
e	0.2240437	Incl. 16.95987	+0.59053680	+0.20438659
P	5.59	B(1,0) 11.5		

Residuals in seconds of arc

360816	094(32.8+	4.9+)X	550218	760	1.0+	0.6+	830113 095	0.4+	0.8-
530916	062	0.4-	0.7-	570522	760	0.1-	0.2-	830115 095	1.7- 0.6+
530916	062	0.0	0.2-	570522	760	0.1+	0.8+	830210 095	1.6- 1.0+
530916	062	0.3+	1.0+	640806	760	0.2-	1.5+	830305 095	3.6+ 0.1-
550218	760	0.4-	0.7+	640806	760	0.9-	0.1-		

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EPHEMERIDES.

1981 EL1 a,e,i = 2.69, 0.24, 13 Elements MPC 8018

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	07 05	00 08.49	-00 08.2	2.995	3.327	100.1	17.5	19.9
1983	07 15	00 10.47	+00 26.8					
1983	07 25	00 10.62	+00 52.2	2.714	3.318	118.3	15.6	19.6
1983	08 04	00 08.80	+01 07.4					
1983	08 14	00 04.94	+01 11.9	2.478	3.307	138.6	11.7	19.3
1983	08 24	23 59.14	+01 05.8					
1983	09 03	23 51.69	+00 50.3	2.322	3.293	161.0	5.7	19.0
1983	09 13	23 43.08	+00 27.5					
1983	09 23	23 34.02	+00 00.7	2.276	3.276	174.5	1.7	18.7
1983	10 03	23 25.28	-00 26.2					
1983	10 13	23 17.61	-00 49.5	2.347	3.257	151.1	8.5	19.1
1983	10 23	23 11.60	-01 05.8					
1983	11 02	23 07.61	-01 12.9	2.519	3.235	128.8	13.8	19.4
1983	11 12	23 05.80	-01 09.5					
1983	11 22	23 06.15	-00 55.1	2.757	3.211	108.6	17.0	19.6
1983	12 02	23 08.52	-00 30.0					
1983	12 12	23 12.73	+00 05.4	3.024	3.184	90.3	18.0	19.8

1980 SH a,e,i = 1.93, 0.10, 24 Elements MPC 7020

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	10 13	06 50.40	-05 24.4	1.349	1.731	93.8	35.1	17.6
1983	10 23	07 04.39	-08 32.9					
1983	11 02	07 15.74	-11 46.5	1.210	1.733	103.3	33.9	17.4
1983	11 12	07 24.00	-14 58.7					
1983	11 22	07 28.76	-18 00.6	1.091	1.739	113.4	31.4	17.1
1983	12 02	07 29.66	-20 41.3					
1983	12 12	07 26.57	-22 47.2	0.999	1.749	123.7	27.9	16.9
1983	12 22	07 19.87	-24 03.7					
1984	01 01	07 10.51	-24 18.0	0.946	1.763	132.0	24.5	16.7
1984	01 11	07 00.10	-23 22.4					
1984	01 21	06 50.59	-21 19.2	0.946	1.780	134.4	23.3	16.7
1984	01 31	06 43.60	-18 20.7					
1984	02 10	06 40.24	-14 45.2	1.009	1.799	128.8	25.3	16.9
1984	02 20	06 40.91	-10 53.6					
1984	03 01	06 45.45	-07 03.1	1.131	1.821	118.1	28.7	17.2
1984	03 11	06 53.49	-03 26.5					
1984	03 21	07 04.52	-00 12.0	1.301	1.845	106.0	31.3	17.6

1981 EV a,e,i = 2.23, 0.09, 6 Elements MPC 6883

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	10 13	07 11.88	+17 29.7	2.094	2.342	91.4	25.2	18.7
1983	10 23	07 21.61	+17 08.3					
1983	11 02	07 29.19	+16 50.1	1.832	2.326	107.1	24.1	18.4
1983	11 12	07 34.21	+16 37.9					
1983	11 22	07 36.32	+16 34.4	1.593	2.310	125.4	20.4	18.0
1983	12 02	07 35.18	+16 42.0					
1983	12 12	07 30.64	+17 02.3	1.403	2.292	146.9	13.6	17.5
1983	12 22	07 22.93	+17 35.1					
1984	01 01	07 12.76	+18 17.9	1.297	2.274	171.0	3.9	17.1
1984	01 11	07 01.36	+19 06.8					
1984	01 21	06 50.37	+19 57.0	1.298	2.255	161.9	7.8	17.2
1984	01 31	06 41.29	+20 44.7					
1984	02 10	06 35.25	+21 27.6	1.401	2.235	138.2	17.1	17.6
1984	02 20	06 32.83	+22 04.8					
1984	03 01	06 34.09	+22 35.9	1.573	2.215	117.7	23.3	17.9
1984	03 11	06 38.82	+23 00.5					
1984	03 21	06 46.61	+23 17.9	1.782	2.196	100.6	26.5	18.3

1981 EF23 a,e,i = 2.27, 0.13, 2 Elements MPC 8018

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	10 13	07 03.75	+19 53.9	1.647	1.979	93.6	30.2	18.3
1983	10 23	07 16.74	+19 17.4					
1983	11 02	07 27.21	+18 41.3	1.444	1.987	107.9	28.4	17.9
1983	11 12	07 34.70	+18 08.7					
1983	11 22	07 38.77	+17 42.8	1.261	1.999	125.1	23.9	17.6
1983	12 02	07 39.09	+17 26.5					
1983	12 12	07 35.50	+17 21.7	1.122	2.015	145.9	15.9	17.1
1983	12 22	07 28.33	+17 28.7					
1984	01 01	07 18.51	+17 45.8	1.058	2.033	169.6	5.0	16.7
1984	01 11	07 07.54	+18 09.5					
1984	01 21	06 57.29	+18 36.2	1.092	2.054	163.4	7.9	16.9
1984	01 31	06 49.34	+19 02.8					
1984	02 10	06 44.75	+19 27.3	1.220	2.078	140.5	17.6	17.4
1984	02 20	06 43.94	+19 48.4					
1984	03 01	06 46.77	+20 05.2	1.416	2.104	120.8	23.9	17.9
1984	03 11	06 52.90	+20 16.4					
1984	03 21	07 01.82	+20 21.1	1.653	2.131	104.4	26.9	18.4