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

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TWX 710-320-6842 ASTROGRAM CAM ** Brian G. Marsden, Director
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EDITORIAL NOTICE.

From time to time the Minor Planet Center receives from readers suggestions of names for minor planets. As has long been the practice, and as was reaffirmed on MPC 4845, the right to name a numbered minor planet normally rests with the discoverer. If the discoverer is deceased or has allowed ten years to elapse since his discovery was given a permanent number, names can be proposed by other individuals, and such names are judged by a committee of three, consisting of the President and Vice President of IAU Commission 20 and the Director of the Minor Planet Center. In general, such names are proposed by individuals associated in some way with the deceased discoverer or with the particular minor planets concerned, and it is then the task of the committee to judge among the various suggestions that may be made for the same planet. Unsolicited suggestions of names from general readers of the MPCs are nonetheless quite welcome, but it would be helpful if such suggestions were made with respect to specific unnamed objects and that they be accompanied by appropriate citations.

* * * * *

IDENTIFICATION CHANGES.

Continuation to MPC 6348.

Object		Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
A900 SC	*	1900 09	20.89678	22 04 07.77	-09 16 13.5	50		024
A907 GW	*	1907 04	12.32291	13 32.1	-07 28	A907 GM	13	690
A907 VR	*	1907 11	02.01660	03 07 57.64	+18 02 55.0	A907 TB	13.8	024
1926 EH	*	1926 03	08.97967	09 18 40.63	+10 10 18.1	1926 EE	13.6	008
1932 SE	*	1932 09	30.94611	22 28 11.20	-03 13 44.7	1932 RJ	14.5	024
1932 SE		1932 10	04.92431	22 26 14.57	-03 37 05.2	1932 RJ		024
1933 OU	*	1933 07	26.84682	19 06.8	-14 01	1933 OR	13	078
1933 WR	*	1933 11	17.03293	02 34 54.16	+12 27 10.3	1933 UJ		012
1935 KM	*	1935 05	27.87899	14 03 26.03	-27 02 55.8	1935 HF		078
1935 KM		1935 05	27.90115	14 03 25.09	-27 02 46.2	1935 HF		078
1935 NE	*	1935 07	08.9	17 55.8	-22 31	1935 MA	13.8	008
1935 NE		1935 07	12.9	17 53.0	-22 28	1935 MA		008
1937 AY	*	1937 01	07.98134	07 23 17.73	+24 43 58.3	1936 YH	15.0	020
1937 AY		1937 01	09.81576	07 21 27.68	+24 49 34.8	1936 YH		020
1937 AY		1937 01	09.84589	07 21 25.81	+24 49 40.9	1936 YH		020
1937 BH	*	1937 01	17.88729	07 13 41.87	+24 54 37.7	1937 AA	15	029
1937 BH		1937 01	17.91221	07 13 40.31	+24 54 37.8	1937 AA	15	029
1937 KH	*	1937 05	31.84588	16 22.8	-23 16	1937 JK	13.2	078
1947 BN	*	1947 01	17.05504	09 13 57.18	+22 24 42.8	75		012
1947 BN		1947 01	24.04757	09 07 28.45	+22 51 01.3	75		012
1948 EA1	*	1948 03	12.94	10 53.6	+06 07	1948 EC	14.5	020
1948 UK	*	1948 10	28.89479	03 11.8	+19 15	99	14.7	094

1950	TP4	*	1950 10 13.02302	00	32	11.16	+14	26	18.0	1950 TA		012
1950	TP4		1950 10 14.92439	00	30	40.42	+14	18	55.6	1950 TA		012
1951	CZ1	*	1951 02 03.31319	05	33	6	+21	41		1951 AY	16.9	760
1951	DL	*	1951 02 26.80125	09	48	8	+29	55		1951 CJ1	13.7	094
1955	FZ1	*	1955 03 20.08822	09	34	20.80	+08	12	48.0	1955 FJ	16.1	760
1955	FZ1		1955 03 20.13890	09	34	19.75	+08	12	59.2	1955 FJ		760
1957	KR	*	1957 05 25.20345	14	13	15.08	-07	44	49.3	1957 JJ	16.9	760
1957	KR		1957 05 25.24301	14	13	13.39	-07	44	47.0	1957 JJ		760
1957	KS	*	1957 05 25.20345	14	06	19.97	-08	51	47.7	1957 JL		760
1957	KS		1957 05 25.24301	14	06	18.68	-08	51	36.7	1957 JL		760
1958	DL1	*	1958 02 19.57361	09	54	14.39	+20	01	36.2	1524		330
1972	CF	*	1972 02 06.82239	07	53	59.69	+24	00	03.6	1972 BC	16.5	095
1972	XP2	*	1972 12 02.78344	02	26	38.37	+04	48	57.4	1972 TD2	16.5	095
1973	YH4	*	1973 12 20.97224	07	03	22.52	+29	29	23.8	1908		095
1975	VC10	*	1975 11 06.87965	02	58	40.18	+17	29	47.6	1975 TZ5	17.5	095
1975	XE7	*	1975 12 01.77429	01	45	38.24	+06	59	13.1	1602		095
1975	XE7		1975 12 03.76628	01	44	37.23	+07	05	09.7	1602		095
1976	SW10	*	1976 09 24.87933	23	17	24.97	-02	49	35.4	1779		095
1976	SW10		1976 09 25.85575	23	16	38.50	-02	53	13.4	1779		095
1976	SW10		1976 09 28.82845	23	14	24.91	-03	03	36.2	1779		095
1976	YU7	*	1976 12 21.00417	06	28	30.78	+18	25	22.4	1800	17	026
1977	AU2	*	1977 01 13.82264	06	03	47.92	+19	39	21.0	1800		095
1977	AU2		1977 01 20.83936	05	58	11.65	+19	54	57.6	1800		095
1977	RD8	*	1977 09 08.86062	21	59	32.38	-13	23	59.9	1977 QJ	16.5	095

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IDENTIFICATIONS.

The following list of identifications with numbered minor planets continues that on MPC 6348-6349. The identifications are by L. D. Schmadel unless otherwise noted.

				Note						Note					Note
A899	NG	=	(29)		A899	UA	=	(85)			A900	SB	=	(50)	
A900	SC	=	(59)	1	A902	YB	=	(1847)			A903	PA	=	(88)	
A903	SB	=	(1557)		A905	CB	=	(1653)			A905	CG	=	(1721)	
A906	DB	=	(1544)		A906	FA	=	(1732)			A906	XA	=	(1765)	
A907	EB	=	(1638)	2	A907	GC	=	(1735)			A907	GM	=	(1671)	
A907	TB	=	(1590)		A908	EC	=	(1572)			A908	OC	=	(74)	
A909	BJ	=	(1649)	3	A909	DJ	=	(1711)			A911	KF	=	(32)	
A911	QA	=	(1860)	4	A912	HG	=	(1715)		5	A913	AA	=	(1558)	6
A913	CA	=	(17)		A913	MC	=	(1590)			A913	UF	=	(1723)	
A914	DB	=	(1681)		A914	WD	=	(1736)			A915	CD	=	(1723)	
A915	CE	=	(1545)		A915	RO	=	(1561)			A915	TK	=	(1859)	
A915	TM	=	(1654)		A916	AD	=	(1940)			A916	BA	=	(1644)	
A916	FC	=	(1910)		A916	GE	=	(1541)			A916	KB	=	(1723)	
A916	RA	=	(1536)	7	A916	UJ	=	(1962)			A917	BB	=	(1633)	
A917	QC	=	(1645)		A917	XA	=	(1765)			A922	KB	=	(1601)	
A922	SC	=	(1719)		A923	AA	=	(1777)			A924	EN	=	(1639)	
A924	EO	=	(1672)		A924	EQ	=	(1648)			A924	GB	=	(1594)	
A924	NA	=	(1542)		A924	PA	=	(1755)			A924	WC	=	(1589)	
A924	WE	=	(1534)		1925	DC	=	(1605)		8	1925	EA	=	(1609)	
1926	EH	=	(1502)	9	1926	GU	=	(1909)			1926	GW	=	(1830)	
1926	GY	=	(1628)		1926	PG	=	(1689)			1926	YA	=	(1681)	
1927	AE	=	(1621)		1927	CF	=	(1618)			1927	QG	=	(1965)	
1927	SB	=	(1962)		1927	SL	=	(1692)			1927	UM	=	(1961)	
1928	HG	=	(1575)		1928	KD	=	(1817)			1928	XE	=	(58)	
1929	CJ	=	(1572)		1929	CN	=	(1819)			1929	CC1	=	(1617)	
1929	DB	=	(1585)		1929	RZ	=	(1536)			1929	SO	=	(1842)	

1929 TF = (1579)
1929 TU = (1964)
1929 TY = (1581)
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1930 FH = (1679)
1930 FV = (1541)
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1930 KB = (1716)
1930 KE = (1574)
1930 KM = (1909)
1930 QT = (1847)
1930 WE = (1671)
1930 XH = (1501)
1931 RV = (1576) 10
1931 RA1 = (1638)
1931 TQ2 = (1576)
1932 AB = (1657)
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1932 WN = (1690)
1932 YG = (1894)
1932 YJ = (1716)
1933 DD = (1740)
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1933 OU = (1590)
1933 UM = (1540) 11
1933 UX1 = (1911)
1933 WN = (1572)
1933 WR = (1540)
1933 YC = (1660)
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1934 FP = (1637) 12
1934 PX = (1577)
1934 SD = (1792)
1934 VX = (1558)
1935 EN = (1625)
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1935 FB = (1733)
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1935 JN = (1554)
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1935 NC = (1840)
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1935 ST = (1517)
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1935 UQ = (1989)
1936 BA = (1955)
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1936 DG = (1524)
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1936 FQ1 = (1614)
1936 KE = (1569)
1936 QR = (81)
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1937 TJ = (1615)
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1938 DL2 = (1748)
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1940 QJ = (1638)
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1941 FG = (1594)
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1941 MC = (1902) 14
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1941 YE = (1550)
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1942 FE = (1603)
1942 FS = (1810)
1942 RL = (1804)
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1943 DG = (1650)
1943 EC = (1884)
1943 EG1 = (1635)
1943 GQ = (1558)
1943 GS = (1791) 15
1943 GZ = (1791) 15
1943 TC = (1587)
1943 YA = (1576)
1944 DF = (1578) 13
1944 DG = (1585)
1944 OA = (1535)
1945 EC = (1587)
1946 TD = (1975)
1947 BC = (75)
1947 FG = (49)
1947 GC = (1628)
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1947 LQ = (1595)
1947 LS = (1617)
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1950 HK = (1722)
1950 HL = (1907)
1950 LS = (1900)
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1951 GZ = (1579)
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1951 RJ1 = (1641)
1951 XG1 = (1551)
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1952 BB = (82)
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1952 DK2 = (1617)
1952 DV2 = (1628)
1952 FF = (1651)
1952 JG = (1517)
1952 KH1 = (1969)
1952 MT = (1836)
1952 OC1 = (1860)
1952 PD = (1612)
1952 SF1 = (1874)
1952 SL1 = (1650)
1952 UT1 = (1977)
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1953 DK = (1639)
1953 GD1 = (1551)
1953 ND = (1679)
1953 TV1 = (1718)
1953 VE1 = (1848)
1954 EP = (1609)
1954 EZ = (1816) 16
1954 HE = (1609)
1954 JL = (1910)
1954 JS = (1642)
1954 NJ = (1555)
1954 NT = (1584)
1954 SS = (1633)
1954 SO1 = (17)
1954 UF1 = (1825)
1954 UL1 = (1625) 17
1955 EJ = (1789)
1955 FX = (1830)
1955 HD = (1654)
1955 HX = (1726)
1955 OH = (24)
1955 SL1 = (1560)
1955 VA = (1809)
1955 VV = (1545)
1955 XT = (1723)
1956 XB = (1535) 18
1956 YL = (1630)
1957 EA = (1534)
1957 HY = (1545)
1957 JU = (1624)
1957 KO = (1659)
1957 KR = (1551)
1957 KS = (1791)
1957 LA = (1824)
1957 LD = (1780)
1957 MH = (1784)
1957 UG = (1616)
1958 AE = (1681)
1958 BG = (1655)
1958 DJ = (1642)
1958 DH1 = (1524)
1958 FN = (1907)
1958 LB = (1723)
1958 OB = (1607)
1958 RM = (1653)
1958 TP1 = (1902)
1958 UM = (1505)
1959 CE1 = (1990)
1959 EK = (1595)
1959 GW = (1528)
1959 NF = (1548)
1959 RD1 = (1529)
1959 RF1 = (1541)
1959 SG = (1797)
1959 WE = (1510)
1960 FD = (1909)
1960 ME = (1732)
1960 UB = (1534)
1960 WH = (1628)
1961 KB = (1984)
1961 TN1 = (1814) 19
1961 TZ1 = (1719)
1961 XJ = (99)
1962 JF = (1933) 20
1962 JS = (1933) 20
1962 JU = (1780)
1963 MD = (1712)
1963 SS = (1842)
1964 PC = (1614)
1964 VC = (1854)
1964 VV = (1618)
1964 VA1 = (1936)
1964 VH2 = (1618)
1964 WK = (1989)
1965 AQ = (1850)
1965 AV = (1755)
1965 AA1 = (1684)
1965 SF = (1967)
1965 UX = (1687)
1965 UB2 = (1679)
1965 YH = (1904)
1965 YL = (1808)
1966 BP = (1689)
1966 FK = (1674)
1966 FP = (1581)
1966 FR = (1923)
1966 VF = (1666)
1967 GK = (1686)
1968 FM = (1911)
1968 HA1 = (1595)
1968 YC = (1989)
1969 UU1 = (1784)
1970 CD = (1936)
1970 CP = (1907)
1970 EZ1 = (1560)
1970 EU2 = (1823)
1970 GA1 = (1783)
1970 HE = (1561)
1970 QA = (1501)
1970 XA = (1514)
1971 JC = (1730)
1971 QX2 = (1845)
1971 RC = (1671)
1971 TM1 = (1807)
1971 UJ3 = (1835)
1971 VT = (1517)
1972 BO = (1558)
1972 CF = (1610)
1972 EC = (1990)
1972 GO1 = (1973)
1972 GD2 = (1729)
1972 HQ = (1808)
1972 JA = (1902)
1972 JB = (53)
1972 JO = (1860)
1972 JX = (1802)
1972 JE1 = (1946)
1972 NX = (1821)
1972 RX = (1882)
1972 TK = (1527)
1972 TR4 = (1888)
1972 XP2 = (1800)
1972 YJ1 = (1837)
1973 AQ2 = (1556)
1973 CC = (1698)
1973 CE = (1967)
1973 GF = (1812)
1973 GG = (1623)
1973 GH = (1988)
1973 SY3 = (1961)
1973 YN2 = (1908)
1974 CF1 = (1799)
1974 DY = (1819)
1974 DD2 = (1679)
1974 HM3 = (1945)
1974 KK = (1925)
1974 KN = (1923)
1974 KQ = (1952)
1974 KR = (66)
1974 LE = (1923)
1974 YB = (1544)
1975 FV = (1848)
1975 RL2 = (1885)
1975 TZ5 = (1939)
1975 VL6 = (1780)
1975 VQ8 = (1978)
1975 XO = (98)
1975 XR = (1602)
1975 YH = (1581)
1976 CA = (1542)
1976 JF3 = (1929)
1976 SS5 = (1905)

1976 SF8 = (1779) 1976 SJ10= (1569) 1976 YT7 = (33)
1977 AE1 = (1800) 1977 CE = (44) 1977 FK = (1646)
1977 QW3 = (1816) 1977 UH1 = (1575) 1977 UP1 = (1838)
1977 VA2 = (1624) 1978 BB = (86) 1978 BF = (1546)
1978 EW6 = (1517) 1978 GM = (1619) 1979 QP4 = (1621)

Note 1: identification by B. G. Marsden. 2: the identification A907 EB = A912 FA (MPC 1189) is invalid. 3: the double designation A909 BJ = A909 DA or DB (AN 180, 200) is invalid. 4: the identification (1514) = A911 QA (Tokyo Rep. 1, 142) is invalid. 5: independently suggested by O. Kippes. 6: the identification (396) = A913 AA (AN 193, 332) is invalid. 7: the identification (1409) = A916 RA (Veroff. Astron. Rechen-Inst. 9, 29) is invalid. 8: the identifications 1925 DC = 1932 RE, 1925 DC = 1946 OB and 1925 DC = 1958 XE (MPC 2807) are invalid. 9: contrary to AN 229, 301. 10: the double designation 1931 RV = 1931 TP2 (MPC 2324) is invalid. 11: the identification (1540) = 1933 UH (NAZ 1, 6) is invalid. 12: the double designation 1934 FL = 1934 FP is by O. Kippes (MPC 1745), but that involving 1934 HH is invalid. 13: the identifications 1939 TC = 1937 CJ = 1944 DF (NAZ 9, 13) are invalid. 14: the identification (1365) = 1941 MC (RI 2384) is invalid. 15: the double designation 1943 GS = 1943 GZ is by O. Kippes (MPC 383). 16: contrary to MPC 3538. 17: the identification 1948 PK = 1954 UL1 (MPC 3665) is invalid. 18: this identification has not previously been published, but the corresponding accurate observations were given as (1535) on MPC 2130. 19: the double designation 1961 TN1 = 1961 VD (MPC 2324) is invalid. 20: the double designation 1962 JF = 1962 JS is by O. Kippes (MPC 2324).

* * * * *

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

022 Pino Torinese Observatory. Observer W. Ferreri. Reductions by V. Zappala and G. De Sanctis.
323 Perth Observatory, Bickley. Observers M. P. Candy, J. Johnston, P. Jekabsons, V. Flynn and S. Ewing.
372 Geisei. Observer T. Seki. From Orient. Astron. Assoc. Comet Bull. No. 222.
491 Centro Astronomico de Yebes. Observers M. de Pascual, J. Garcia and C. Cabanas.
675 Palomar Mountain Observatory. Observer J. Gibson.
707 Chamberlin Observatory field station. Observers Elizabeth and Edgar Everhart. Measured by Edgar Everhart.
801 Oak Ridge Observatory. Observers R. E. McCrosky, C.-Y. Shao, D. W. E. Green and G. Schwartz (assisted by C. M. Bardwell and B. G. Marsden).
808 Felix Aguilar Observatory, El Leoncito station. Observers M. R. Cesco, H. Mira, G. Sanchez and J. Vicentela. Coordinated by C. U. Cesco and J. G. Sanguin.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N Obs.
		Periodic Comet Schwassmann-Wachmann 1				
/1974 II	1978	11 01.30564	07 32 12.12	+27 00 54.8		801
/1974 II	1980	01 10.67639	09 01 37.01	+17 36 30.9		323
/1974 II	1980	01 17.67847	08 58 31.52	+17 44 26.8		323
/1974 II	1980	01 24.70417	08 55 12.18	+17 52 58.9		323
/1974 II	1980	02 13.58194	08 45 33.56	+18 16 20.3		323
/1974 II	1980	03 07.56146	08 36 28.35	+18 33 31.5		323
/1974 II	1980	03 18.50555	08 33 44.24	+18 35 52.6		323

Comet Cesco (1974 VIII)

/1974 VIII	1974	07	27.14141	18 48 54.43	-35	13	00.0	14.0T	1	808
/1974 VIII	1974	07	28.16499	18 38 09.78	-35	13	40.1		1	808
/1974 VIII	1974	08	07.03105	17 22 45.84	-33	27	49.9		1	808
/1974 VIII	1974	08	07.07768	17 22 30.58	-33	27	06.5		1	808
/1974 VIII	1974	08	08.01262	17 17 38.36	-33	13	08.0		1	808
/1974 VIII	1974	08	08.02508	17 17 34.64	-33	12	55.2		1	808
/1974 VIII	1974	08	16.01617	16 46 38.71	-31	19	56.2		2	808
/1974 VIII	1974	08	16.02933	16 46 36.45	-31	19	43.6		2	808

Comet Lovas (1975 VIII)

/1975 VIII	1975	06	06.99259	12 24 10.72	-70	00	40.9	14.5T	3	808
/1975 VIII	1975	06	07.00921	12 24 09.32	-70	00	38.7		3	808
/1975 VIII	1975	06	11.99068	12 17 30.77	-69	47	08.1			808
/1975 VIII	1975	06	12.00661	12 17 29.66	-69	47	05.0			808

Comet Mori-Sato-Fujikawa (1975 XII)

/1975 XII	1976	07	02.19856	19 00 51.47	-67	21	32.7	9.5T		808
/1975 XII	1976	07	02.22972	19 00 41.02	-67	21	01.0			808

Periodic Comet Gunn

/1976 III	1976	06	06.35335	21 43 37.31	-24	52	42.2	15.0T		808
/1976 III	1976	06	06.38244	21 43 38.24	-24	52	47.0			808
/1976 III	1981	01	06.32492	09 51 36.84	+25	34	20.4		4	801

Comet West (1976 VI)

/1976 VI	1976	04	14.35195	20 33 32.73	+15	31	40.4	9.0T		808
/1976 VI	1976	04	14.35679	20 33 32.48	+15	31	44.2			808

Periodic Comet Klemola

/1976 X	1976	08	30.20507	23 02 28.57	+02	58	51.8	14.0T		808
/1976 X	1976	08	30.22100	23 02 28.59	+02	58	40.3			808
/1976 X	1976	09	17.16457	23 03 55.81	-01	05	30.9			808
/1976 X	1976	09	17.18397	23 03 55.92	-01	05	46.4			808

Periodic Comet Encke

/1977 XI	1980	10	13.00213	05 47 14.86	+55	10	42.2			022
/1977 XI	1980	10	13.01737	05 47 26.70	+55	11	34.2			022
/1977 XI	1980	10	20.02492	07 53 39.87	+60	52	49.8			022
/1977 XI	1980	10	20.04535	07 54 11.46	+60	53	12.5			022

Periodic Comet Sanguin

/1977 XII	1977	10	15.06350	22 28 17.20	-07	14	27.1			808
/1977 XII	1977	10	17.12245	22 30 36.41	-07	42	12.6			808
/1977 XII	1977	10	15.11475	22 28 20.28	-07	15	08.7	16.0T		808
/1977 XII	1977	10	17.05735	22 30 32.18	-07	41	17.9			808
/1977 XII	1977	10	20.02422	22 34 02.86	-08	18	14.0			808
/1977 XII	1977	11	04.04539	22 54 22.45	-10	26	18.8			808
/1977 XII	1977	11	04.09685	22 54 26.71	-10	26	36.9			808
/1977 XII	1977	11	06.04014	22 57 20.50	-10	36	22.8			808
/1977 XII	1977	11	09.05411	23 01 55.39	-10	48	39.4			808
/1977 XII	1977	11	09.10813	23 02 00.32	-10	48	51.2			808

Periodic Comet Schuster

/1978 I	1977	11	11.06232	23 24 37.88	-25	45	02.1	16.5T		808
/1978 I	1977	11	11.12535	23 24 39.35	-25	43	22.5			808

Periodic Comet Tempel 1

/1978 II	1978	09	27.23312	23 51 50.31	-18	08	09.2		5	801

Comet Machholz (1978 XIII)

/1978 XIII 1979 01 27.54792 23 08 42.13 -41 20 29.0 323
/1978 XIII 1979 07 17.72066 22 34 51.61 -44 45 49.2 323
/1978 XIII 1979 08 02.83403 22 02 02.40 -46 27 47.0 323
/1978 XIII 1979 09 25.62083 20 30 19.76 -44 12 02.0 323

Periodic Comet Comas Sola

/1978 XVII 1979 02 01.82708 12 37 48.92 +17 09 14.9 323
/1978 XVII 1979 02 21.72917 12 32 43.69 +18 53 01.8 323
/1978 XVII 1979 03 03.70139 12 25 54.53 +19 40 29.4 323
/1978 XVII 1979 03 22.64878 12 09 20.18 +20 24 15.4 323
/1978 XVII 1979 04 26.51424 11 48 07.95 +18 15 07.9 323

Comet Meier (1978 XXI)

/1978 XXI 1979 03 03.88021 22 13 28.73 -32 55 32.4 323
/1978 XXI 1979 03 06.87743 22 19 21.45 -32 09 38.6 323
/1978 XXI 1979 03 20.88785 22 43 52.19 -28 49 21.3 323
/1978 XXI 1979 04 04.86611 23 05 27.78 -25 43 18.4 323
/1978 XXI 1979 04 26.86597 23 29 58.98 -22 03 45.0 323
/1978 XXI 1979 04 26.88611 23 30 00.12 -22 03 34.6 323
/1978 XXI 1979 05 03.90208 23 36 09.11 -21 07 07.1 323
/1978 XXI 1979 05 14.85972 23 44 09.14 -19 52 04.4 323
/1978 XXI 1979 05 30.90000 23 52 11.44 -18 30 44.5 323
/1978 XXI 1979 06 06.90451 23 54 14.50 -18 05 50.0 323
/1978 XXI 1979 06 18.92847 23 55 33.45 -17 37 31.8 323
/1978 XXI 1979 07 17.79306 23 46 31.68 -17 35 15.1 323
/1978 XXI 1979 07 23.83611 23 42 28.04 -17 43 27.9 323
/1978 XXI 1979 07 31.76354 23 36 08.09 -17 56 30.3 323
/1978 XXI 1979 08 22.67951 23 14 25.36 -18 31 54.4 323
/1978 XXI 1979 08 30.64653 23 05 52.45 -18 39 21.9 323
/1978 XXI 1979 09 26.67292 22 40 05.51 -18 24 58.8 323
/1978 XXI 1979 10 23.56528 22 25 25.39 -17 11 09.1 323
/1978 XXI 1979 12 09.53125 22 27 35.75 -13 38 08.8 323

Periodic Comet Clark

/1978 XXIII1979 07 23.88750 02 12 39.11 +05 06 39.7 323
/1978 XXIII1979 08 03.85046 02 19 18.60 +05 30 27.3 323

Periodic Comet Van Biesbroeck

/1978 XXIV 1978 03 07.39529 15 00 15.64 -09 33 13.5 801
/1978 XXIV 1979 07 17.83750 00 24 30.93 -00 03 17.2 323

Periodic Comet Kowal 2

/1979 II 1979 02 16.54063 03 51 15.10 +09 17 10.4 323
/1979 II 1979 02 22.52917 04 07 10.47 +09 22 10.9 323
/1979 II 1979 02 26.53715 04 17 52.86 +09 26 09.5 323
/1979 II 1979 03 18.51389 05 11 22.00 +09 43 39.3 323

Comet Bradfield (1979 VII)

/1979 VII 1979 06 29.43924 08 39 02.44 +04 28 28.4 323
/1979 VII 1979 06 29.44722 08 39 02.55 +04 29 00.0 323
/1979 VII 1979 06 30.45417 08 39 14.58 +05 35 55.2 323
/1979 VII 1979 07 02.43611 08 39 28.71 +07 45 11.5 323
/1979 VII 1979 07 04.44444 08 39 28.80 +09 53 14.2 323
/1979 VII 1979 07 04.44444 08 39 28.62 +09 53 14.9 323
/1979 VII 1979 07 04.44444 08 39 28.70 +09 53 14.8 323
/1979 VII 1979 07 05.43507 08 39 22.66 +10 55 30.8 323
/1979 VII 1979 07 05.44132 08 39 22.43 +10 55 56.9 323
/1979 VII 1979 07 09.44028 08 38 11.81 +15 02 34.1 323

Periodic Comet Schwassmann-Wachmann 3

/1979 VIII 1979 08 28.46806 13 28 37.77 -11 12 25.5 323
/1979 VIII 1979 08 31.47292 13 40 22.47 -13 03 53.2 323
/1979 VIII 1979 09 03.46111 13 52 31.10 -14 55 36.0 323
/1979 VIII 1979 09 03.46806 13 52 32.58 -14 55 50.7 323
/1979 VIII 1979 09 04.46250 13 56 41.65 -15 33 07.5 323
/1979 VIII 1979 09 04.46944 13 56 43.41 -15 33 23.6 323
/1979 VIII 1979 09 11.46458 14 27 32.77 -19 54 12.3 323
/1979 VIII 1979 09 11.46944 14 27 34.16 -19 54 22.1 323
/1979 VIII 1979 09 14.46285 14 41 42.32 -21 43 37.0 323
/1979 VIII 1979 09 16.47083 14 51 31.67 -22 55 25.9 323
/1979 VIII 1979 09 17.46250 14 56 28.59 -23 30 21.6 323
/1979 VIII 1979 09 17.46736 14 56 30.05 -23 30 31.4 323
/1979 VIII 1979 09 18.46250 15 01 32.44 -24 05 09.7 323
/1979 VIII 1979 09 18.46667 15 01 33.71 -24 05 17.1 323
/1979 VIII 1979 09 25.49896 15 39 07.61 -27 54 21.5 323
/1979 VIII 1979 09 27.49063 15 50 22.65 -28 53 01.8 323
/1979 VIII 1979 09 27.49931 15 50 25.36 -28 53 19.2 323
/1979 VIII 1979 09 28.48889 15 56 07.19 -29 21 16.1 323
/1979 VIII 1979 10 02.47813 16 19 36.35 -31 04 30.9 323
/1979 VIII 1979 10 12.47465 17 21 29.39 -34 06 48.0 323
/1979 VIII 1979 10 12.48229 17 21 31.63 -34 06 55.1 323
/1979 VIII 1979 10 15.47813 17 40 26.13 -34 37 48.4 323
/1979 VIII 1979 10 17.48333 17 53 04.42 -34 52 15.1 323
/1979 VIII 1979 10 17.49722 17 53 09.54 -34 52 20.4 323
/1979 VIII 1979 10 24.49201 18 36 22.04 -35 04 23.1 323
/1979 VIII 1979 11 08.51319 19 59 45.00 -32 47 04.1 323
/1979 VIII 1979 11 14.51985 20 28 22.92 -31 10 13.7 323

Comet Bradfield (1979 X)

/1979 X 1979 12 26.83264 16 16 11.59 -36 09 30.3 323
/1979 X 1979 12 27.81805 16 14 55.21 -36 35 23.9 323
/1979 X 1979 12 27.83229 16 14 54.16 -36 35 46.2 323
/1979 X 1979 12 28.82847 16 13 41.61 -37 02 53.3 323
/1979 X 1979 12 28.83021 16 13 41.38 -37 02 57.9 323
/1979 X 1979 12 31.82569 16 10 34.20 -38 31 36.3 323
/1979 X 1980 01 05.83958 16 07 33.99 -41 37 58.4 323
/1979 X 1980 01 05.84132 16 07 34.04 -41 38 03.5 323
/1979 X 1980 01 05.84271 16 07 34.02 -41 38 06.3 323
/1979 X 1980 01 07.79346 16 07 24.03 -43 11 21.4 323
/1979 X 1980 01 07.83374 16 07 24.07 -43 13 29.9 323
/1979 X 1980 01 07.83652 16 07 24.21 -43 13 37.9 323
/1979 X 1980 01 09.79549 16 08 02.05 -45 05 53.4 323
/1979 X 1980 01 09.79688 16 08 02.30 -45 05 58.5 323
/1979 X 1980 01 10.79479 16 08 44.28 -46 12 22.1 323
/1979 X 1980 01 10.79635 16 08 44.37 -46 12 28.4 323
/1979 X 1980 01 11.77847 16 09 45.20 -47 25 16.8 323
/1979 X 1980 01 11.77969 16 09 45.21 -47 25 24.8 323
/1979 X 1980 01 11.78160 16 09 45.44 -47 25 31.4 323
/1979 X 1980 01 11.78247 16 09 45.55 -47 25 36.1 323
/1979 X 1980 01 11.78316 16 09 45.54 -47 25 39.4 323
/1979 X 1980 01 13.80868 16 13 11.83 -50 26 00.5 323
/1979 X 1980 01 13.80955 16 13 11.91 -50 26 04.8 323
/1979 X 1980 01 13.81024 16 13 11.96 -50 26 08.6 323
/1979 X 1980 01 13.81562 16 13 12.39 -50 26 44.6 323
/1979 X 1980 01 15.80503 16 19 22.35 -54 18 24.6 323
/1979 X 1980 01 16.78229 16 24 06.78 -56 39 32.4 323
/1979 X 1980 01 16.78356 16 24 07.10 -56 39 43.7 323
/1979 X 1980 01 16.78484 16 24 08.12 -56 39 58.0 323

/1979 X	1980	01	16.83507	16	24	24.98	-56	47	52.2		323
/1979 X	1980	01	16.83623	16	24	25.40	-56	48	01.9		323
/1979 X	1980	01	17.83229	16	31	19.95	-59	37	32.8		323
/1979 X	1980	01	17.83487	16	31	20.83	-59	37	58.8		323
/1979 X	1980	01	18.83437	16	41	35.73	-62	58	15.6		323
/1979 X	1980	01	21.52674	18	01	17.22	-74	51	49.2		323
/1979 X	1980	01	23.86076	23	51	30.31	-77	30	17.9		323
/1979 X	1980	01	24.53137	01	05	03.33	-72	29	26.0		323
/1979 X	1980	01	24.84497	01	27	18.77	-69	36	27.6		323
/1979 X	1980	01	24.84566	01	27	20.98	-69	35	57.7		323
/1979 X	1980	01	26.56806	02	28	14.30	-51	35	17.2		323
/1979 X	1980	01	29.54192	03	00	56.16	-24	05	01.9		323
/1979 X	1980	01	30.58712	03	06	26.14	-17	08	55.0		323
/1979 X	1980	01	31.52639	03	10	16.28	-12	00	38.3		323
/1979 X	1980	02	01.52118	03	13	31.94	-07	29	53.9		323
/1979 X	1980	02	01.52847	03	13	33.15	-07	28	07.5		323
/1979 X	1980	02	04.57324	03	20	31.25	+02	10	35.4		323
/1979 X	1980	02	04.57690	03	20	31.57	+02	11	08.5		323
/1979 X	1980	02	05.55715	03	22	10.80	+04	22	57.9		323
/1979 X	1980	02	05.56032	03	22	11.11	+04	23	20.8		323
/1979 X	1980	02	07.55243	03	25	01.63	+07	59	03.8		323
/1979 X	1980	02	07.55590	03	25	01.88	+07	59	25.6		323
/1979 X	1980	02	08.53576	03	26	14.67	+09	25	57.2		323
/1979 X	1980	02	09.04108	03	26	50.28	+10	06	37.1	6.0T	808
/1979 X	1980	02	10.04250	03	27	56.35	+11	20	01.5		808

Periodic Comet Forbes

/1980a	1980	09	03.47847	15	10	49.81	-22	18	21.2		323
/1980a	1980	09	17.49653	15	54	10.79	-24	46	37.4		323

Comet Bowell (1980b)

/1980b	1980	03	20.61875	10	26	19.23	+11	06	45.1		323
/1980b	1980	04	07.58576	10	20	56.40	+11	37	14.2		323
/1980b	1980	05	15.49792	10	17	51.85	+11	51	38.3		323
/1980b	1980	05	19.52222	10	18	18.45	+11	48	45.4		323
/1980b	1980	12	03.80486	12	15	54.06	-00	14	20.0		323
/1980b	1981	04	08.11958	12	18	16.95	+00	13	12.1	12.0T	808
/1980b	1981	04	08.14797	12	18	16.62	+00	13	18.0		808

Periodic Comet Wild 3

/1980d	1980	05	19.57292	13	04	23.53	+10	18	32.1		323
/1980d	1980	06	11.48993	13	03	19.25	+06	33	11.6		323
/1980d	1980	06	17.50486	13	05	14.62	+05	22	33.3		323
/1980d	1980	07	08.47778	13	18	16.85	+00	53	58.6		323
/1980d	1980	08	07.46944	13	50	48.07	-05	59	00.6		323
/1980d	1980	08	11.49236	13	56	10.18	-06	54	52.8		323

Comet Torres (1980e)

/1980e	1980	06	16.70208	19	06	33.34	-31	40	37.5		323
/1980e	1980	06	17.68889	19	04	23.48	-31	16	28.1		323
/1980e	1980	06	18.64722	19	02	17.71	-30	52	47.8		323
/1980e	1980	06	24.90278	18	48	39.06	-28	12	28.3	6	323
/1980e	1980	07	02.60660	18	32	34.60	-24	47	05.5		323
/1980e	1980	07	03.64722	18	30	29.98	-24	19	05.8		323
/1980e	1980	07	04.63403	18	28	33.65	-23	52	38.0		323
/1980e	1980	07	07.65347	18	22	47.99	-22	31	53.9		323
/1980e	1980	07	20.53819	18	01	45.10	-17	04	55.6		323
/1980e	1980	07	21.70243	18	00	09.34	-16	37	28.4		323
/1980e	1980	08	11.70625	17	40	27.09	-09	42	38.7		323

/1980e	1980	09	02.51389	17	35	33.13	-05	00	57.6	323
/1980e	1980	09	03.52569	17	35	37.32	-04	50	41.7	323
/1980e	1980	10	09.51180	17	50	36.88	-00	18	25.5	323

Periodic Comet Brooks 2

/1980f	1980	08	07.71528	22	25	33.92	-04	13	28.3	323
/1980f	1980	08	10.67465	22	24	39.66	-04	25	45.9	323
/1980f	1980	10	10.57569	22	08	58.98	-10	48	06.9	323
/1980f	1980	10	30.56944	22	24	06.90	-10	57	11.4	323
/1980f	1980	11	07.50972	22	33	23.06	-10	34	40.9	323

Periodic Comet Stephan-Oterma

/1980g	1980	06	10.88055	01	23	32.56	-08	42	23.7	323
/1980g	1980	06	18.85833	01	36	32.43	-07	46	57.8	323
/1980g	1980	08	12.89340	03	10	46.32	-02	33	28.2	323
/1980g	1980	09	08.87639	03	57	56.10	-00	36	07.2	323
/1980g	1980	10	07.82917	04	44	27.89	+02	08	47.4	323
/1980g	1980	10	10.79062	04	48	42.97	+02	33	15.6	323
/1980g	1980	10	28.77083	05	11	02.90	+06	04	13.9	323
/1980g	1980	10	30.72778	05	13	03.44	+06	35	12.8	323
/1980g	1980	10	30.94640	05	13	16.49	+06	38	33.0	022
/1980g	1980	10	30.95887	05	13	17.41	+06	38	43.2	022
/1980g	1980	11	06.71458	05	19	26.04	+08	42	00.3	323
/1980g	1980	11	27.64132	05	30	24.88	+17	43	55.8	323
/1980g	1980	11	29.80875	05	30	52.89	+18	52	02.0	022
/1980g	1980	11	29.81291	05	30	52.98	+18	52	10.9	022
/1980g	1980	12	04.91041	05	31	33.40	+21	38	40.4	022
/1980g	1980	12	04.93188	05	31	33.40	+21	39	22.0	022
/1980g	1980	12	04.94374	05	31	33.44	+21	39	45.1	022
/1980g	1980	12	05.67153	05	31	36.63	+22	04	18.5	323
/1980g	1980	12	05.68750	05	31	36.71	+22	04	48.9	323
/1980g	1980	12	06.77128	05	31	41.21	+22	40	37.6	022
/1980g	1980	12	06.77475	05	31	41.34	+22	40	44.0	022
/1980g	1980	12	08.83404	05	31	45.84	+23	49	45.4	022
/1980g	1980	12	08.84858	05	31	45.88	+23	50	13.9	022
/1980g	1980	12	11.67639	05	31	47.23	+25	25	15.4	323
/1980g	1981	01	05.88466	05	34	14.83	+37	28	23.9	022
/1980g	1981	01	05.90959	05	34	15.39	+37	28	56.7	022
/1980g	1981	01	07.80128	05	35	01.05	+38	08	41.2	022
/1980g	1981	01	07.81376	05	35	01.40	+38	08	56.4	022
/1980g	1981	01	07.83315	05	35	01.85	+38	09	18.6	022
/1980g	1981	01	11.91987	05	37	06.05	+39	27	07.1	022
/1980g	1981	01	11.94412	05	37	06.46	+39	27	36.0	022
/1980g	1981	01	13.93796	05	38	20.84	+40	01	40.9	022
/1980g	1981	01	13.95182	05	38	21.61	+40	01	56.0	022
/1980g	1981	01	28.82565	05	52	25.45	+43	02	44.2	491
/1980g	1981	01	29.05972	05	52	41.82	+43	04	37.3	491
/1980g	1981	01	29.84959	05	53	41.15	+43	10	53.3	491
/1980g	1981	01	30.05873	05	53	56.23	+43	12	26.5	491
/1980g	1981	02	01.80021	05	57	31.56	+43	31	32.1	022
/1980g	1981	02	01.82375	05	57	33.58	+43	31	45.4	022
/1980g	1981	02	05.78410	06	03	09.95	+43	53	25.3	022
/1980g	1981	02	05.80764	06	03	12.03	+43	53	33.6	022
/1980g	1981	02	08.82161	06	07	46.65	+44	05	44.4	022
/1980g	1981	02	08.84861	06	07	49.20	+44	05	46.3	022

Periodic Comet Tuttle

/1980h	1980	11	26.83229	10	39	50.63	+00	44	24.1	323
/1980h	1980	11	27.82864	10	41	26.89	-01	43	44.3	323

/1980h	1980	12 02.83264	10 49 40.58	-14 31 51.5		323
/1980h	1980	12 14.76875	11 11 47.31	-42 42 31.6		323
/1980h	1980	12 15.75069	11 13 52.98	-44 38 50.1		323
/1980h	1980	12 17.82292	11 18 25.58	-48 30 49.7		323
/1980h	1980	12 22.80278	11 30 32.43	-56 36 18.1		323
		Periodic Comet Borrelly				
/1980i	1980	09 09.76919	23 25 38.00	-58 47 22.3		323
/1980i	1980	10 29.57187	22 36 19.64	-53 20 25.8		323
/1980i	1980	11 07.54236	22 39 55.35	-50 21 16.1		323
/1980i	1980	11 26.51319	22 58 35.92	-42 39 26.2		323
/1980i	1980	12 12.56875	23 22 44.31	-34 49 18.4		323
/1980i	1981	01 28.79170	00 58 16.13	-06 13 01.1		491
/1980i	1981	01 29.80214	01 00 36.37	-05 33 09.3		491
		Periodic Comet Kohoutek				
/1980j	1981	01 31.99483	00 32 53.95	+07 36 40.4	7	801
		Comet Russell (1980l)				
/1980l	1980	09 08.82257	03 11 37.56	-36 23 37.2		323
/1980l	1980	09 09.81632	03 10 36.45	-37 01 13.8		323
/1980l	1980	09 10.80411	03 09 32.75	-37 38 58.1		323
		Periodic Comet Harrington				
/1980m	1980	10 06.50417	18 17 13.17	-24 47 13.5		323
		Periodic Comet Russell 2				
/1980o	1980	10 06.56111	21 45 46.46	-30 49 30.3		323
/1980o	1980	10 07.52916	21 46 02.15	-30 39 59.9		323
		Comet Meier (1980q)				
/1980q	1980	11 29.72010	17 54 49.53	+30 45 24.2		022
/1980q	1980	11 29.72426	17 54 49.71	+30 45 11.1		022
/1980q	1980	12 06.72245	17 53 59.28	+28 30 50.1		022
/1980q	1980	12 06.72938	17 53 59.04	+28 30 39.3		022
		Periodic Comet West-Kohoutek-Ikemura				
/1980r	1980	10 09.64201	23 19 06.42	-52 45 26.2		323
		Comet Bradfield (1980t)				
/1980t	1980	12 21.83819	16 38 39.10	-34 36 22.0		323
/1980t	1980	12 23.83889	16 52 56.81	-33 09 11.5		323
/1980t	1981	01 16.71958	21 02 25.10	+03 00 37.5		022
/1980t	1981	01 16.72096	21 02 25.28	+03 00 39.2		022
/1980t	1981	01 21.73086	21 17 55.21	+04 31 21.4		022
/1980t	1981	01 21.73363	21 17 55.76	+04 31 24.0		022
		Comet Panther (1980u)				
/1980u	1981	01 07.74520	18 53 52.88	+42 34 39.9		022
/1980u	1981	01 07.75697	18 53 53.44	+42 34 55.5		022
/1980u	1981	01 08.72480	18 54 28.29	+42 55 03.7		022
/1980u	1981	01 08.72896	18 54 28.02	+42 55 09.0		022
/1980u	1981	02 05.74566	19 14 14.85	+57 20 45.7		022
/1980u	1981	02 05.75674	19 14 15.77	+57 21 15.4		022
/1980u	1981	02 08.77797	19 16 46.81	+59 33 34.6		022
/1980u	1981	02 08.78213	19 16 47.50	+59 33 45.9		022
/1980u	1981	03 21.79795	07 36 48.02	+78 33 51.8		022
/1980u	1981	03 21.80141	07 36 49.45	+78 33 36.5		022
/1980u	1981	03 24.86353	07 41 50.20	+75 07 41.4		022

/1980u	1981	03	24.86769	07	41	50.49	+75	07	24.4	022
/1980u	1981	04	21.84663	08	12	17.99	+48	42	37.0	022
/1980u	1981	04	21.86186	08	12	19.36	+48	41	56.7	022
/1980u	1981	04	27.85484	08	18	09.48	+44	24	06.1	022
/1980u	1981	04	27.87977	08	18	11.04	+44	23	04.0	022
/1980u	1981	04	28.84656	08	19	06.97	+43	43	56.9	022
/1980u	1981	04	28.86595	08	19	07.76	+43	43	11.6	022
/1980u	1981	04	29.86808	08	20	06.41	+43	03	21.8	022
/1980u	1981	04	29.88470	08	20	07.05	+43	02	43.8	022
/1980u	1981	05	04.86134	08	24	55.90	+39	54	57.5	022
/1980u	1981	05	04.87659	08	24	56.82	+39	54	27.2	022
			Periodic Comet Longmore							
/1981a	1981	06	06.09318	10	20	49.29	+20	39	30.5	801
			Periodic Comet Bus							
/1981b	1981	03	11.20264	11	48	37.00	+00	35	16.8	801
			Periodic Comet Gehrels 2							
/1981f	1981	09	25.34654	02	07	08.50	+15	36	00.6	801
			Periodic Comet Kearns-Kwee							
/1981h	1981	09	25.37356	05	58	27.83	+33	08	12.9	801
/1981h	1981	11	03.46262	06	46	57.00	+33	58	38.6	707
			Periodic Comet Slaughter-Burnham							
/1981i	1981	09	25.31454	01	08	48.62	+13	54	56.9	801
			Periodic Comet Swift-Gehrels							
/1981j	1981	09	25.20950	22	05	03.25	+03	53	57.4	8 801
/1981j	1981	11	05.22014	22	22	12.27	+10	43	08.5	707
			Periodic Comet Howell							
/1981k	1981	09	27.24740	00	14	05.46	-09	36	30.7	707
/1981k	1981	09	27.57500	00	13	48.37	-09	37	15.7	15.5T 9 372
/1981k	1981	09	29.21800	00	12	22.75	-09	40	47.6	801
/1981k	1981	09	29.68021	00	11	58.91	-09	41	40.3	15.5T 372
/1981k	1981	10	04.25935	00	08	14.92	-09	48	11.0	707
/1981k	1981	10	08.28474	00	05	16.16	-09	50	11.8	675
/1981k	1981	10	09.39516	00	04	30.15	-09	50	09.8	675

Note 1: revision of IAUC 2694. 2: revision of IAUC 2704. 3: revision of IAUC 2851. 4: tail in p.a. 300 . 5: poor sky; faint image; inkdot measured. 6: correction to MPC 5399. 7: inkdot measured. 8: image diffuse with strong condensation. 9: correction to MPC 6350.

* * * * *

OBSERVATIONS MADE AT KLET BY A. MRKOS, Z. VAVROVA, M. MAHROVA AND L. BROZEK.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
268	1981 09	21.88170	23 44 27.62	-04 43 26.3			046
268	1981 09	21.89582	23 44 27.03	-04 43 30.7			046
439	1981 10	06.07016	00 25 57.30	+09 04 47.9			046
439	1981 10	06.08446	00 25 56.77	+09 04 39.5			046
645	1981 09	21.88170	23 41 56.03	-02 51 42.6			046
645	1981 09	21.89582	23 41 55.40	-02 51 44.8			046
1162	1981 09	21.89582	23 47 02.24	-03 18 16.2			046
1576	1981 09	21.88170	23 44 49.54	-01 55 13.7			046

1576		1981	09	21.89582	23	44	48.88	-01	55	17.8			046
1576		1981	09	22.87980	23	44	05.13	-02	00	25.3			046
1576		1981	09	22.89392	23	44	04.49	-02	00	29.9			046
1606		1981	10	05.99834	23	26	57.50	-01	13	11.5			046
1606		1981	10	06.01275	23	26	57.23	-01	13	21.1			046
1832		1981	09	22.81013	00	58	55.29	+29	24	44.6			046
1832		1981	09	22.82251	00	58	54.77	+29	24	46.4			046
1858		1981	09	25.86389	23	34	06.05	+00	06	23.3			046
1858		1981	09	25.87801	23	34	05.11	+00	06	16.3			046
1858		1981	10	06.01275	23	26	38.87	-00	45	12.2			046
1942	CB	1981	09	22.91695	00	47	38.90	+09	25	38.7		16.6	046
1942	CB	1981	09	22.93027	00	47	38.12	+09	25	37.7			046
1942	CB	1981	09	25.97899	00	44	53.16	+09	12	57.5			046
1942	CB	1981	09	25.99462	00	44	52.40	+09	12	53.9			046
1942	CB	1981	10	06.07016	00	35	08.01	+08	23	14.3			046
1942	CB	1981	10	06.08446	00	35	07.27	+08	23	08.1			046
1975	NY	1981	09	21.88170	23	47	39.68	-03	55	54.8		16.8	046
1975	NY	1981	09	21.89582	23	47	39.08	-03	55	56.1			046
1976	QG1	1981	09	25.90197	23	53	34.00	-01	37	01.5		16.6	046
1976	QG1	1981	09	25.91615	23	53	33.44	-01	37	04.7			046
1976	QG1	1981	10	06.03422	23	46	10.20	-02	31	25.9			046
1976	QG1	1981	10	06.04846	23	46	09.52	-02	31	31.4			046
1976	QG1	1981	10	07.93826	23	44	53.37	-02	40	49.7			046
1976	QG1	1981	10	07.95100	23	44	52.89	-02	40	56.0			046
1977	UQ	1981	09	21.88170	23	44	50.79	-03	05	59.5			046
1977	UQ	1981	09	21.89582	23	44	50.09	-03	06	01.9			046
1981	QA	1981	09	18.80234	21	53	31.47	-11	19	55.5			046
1981	QA	1981	09	18.80679	21	53	32.60	-11	20	04.0			046
1981	QA	1981	09	21.81422	22	04	07.14	-12	26	08.8			046
1981	QA	1981	09	21.81874	22	04	07.98	-12	26	15.7			046
1981	QA	1981	09	25.80376	22	17	36.19	-13	38	28.5			046
1981	QA	1981	09	25.80880	22	17	37.16	-13	38	34.0			046
1981	QE	1981	09	22.87980	23	42	07.51	-00	44	19.6		16.8	046
1981	QE	1981	09	22.89392	23	42	06.62	-00	44	26.2			046
1981	QE	1981	09	25.86389	23	39	51.58	-01	02	04.8			046
1981	QE	1981	09	25.87801	23	39	50.89	-01	02	09.5			046
1981	QE	1981	10	05.96385	23	33	03.55	-01	57	23.0			046
1981	QE	1981	10	05.97803	23	33	03.20	-01	57	26.5			046
1981	QH	1981	09	22.87980	23	51	41.12	-02	12	44.1		16.6	046
1981	QH	1981	09	22.89392	23	51	40.48	-02	12	45.4			046
1981	QH	1981	09	25.90197	23	48	58.07	-02	21	50.4			046
1981	QH	1981	09	25.91615	23	48	57.23	-02	21	53.7			046
1981	QH	1981	10	05.96385	23	40	29.63	-02	48	15.9			046
1981	QH	1981	10	05.97803	23	40	28.94	-02	48	16.9			046
1981	QK	1981	09	22.87980	23	54	26.44	-00	40	47.6		17.0	046
1981	QK	1981	09	22.89392	23	54	25.56	-00	40	47.4			046
1981	QK	1981	09	25.90197	23	51	23.77	-00	41	03.7			046
1981	QK	1981	09	25.91615	23	51	22.87	-00	41	04.3			046
1981	QK	1981	10	05.96385	23	42	04.54	-00	39	03.0			046
1981	QB1	1981	09	04.97647	23	06	31.39	-05	17	30.7			046
1981	QB1	1981	09	04.99076	23	06	30.78	-05	17	34.4			046
1981	RE	1981	09	21.88170	23	44	14.4	-00	49	22			1 046
1981	RE	1981	09	21.89582	23	44	13.6	-00	49	30		16.6	1 046
1981	RE	1981	09	22.87980	23	43	28.79	-00	56	35.4			046
1981	RE	1981	09	22.89392	23	43	28.18	-00	56	41.3			046
1981	RE	1981	09	25.86389	23	41	13.56	-01	17	56.3			046
1981	RE	1981	09	25.87801	23	41	12.92	-01	18	02.3			046
1981	RE	1981	10	05.96385	23	34	23.60	-02	25	00.7			046

1981	RE		1981	10	05.97803	23	34	23.14	-02	25	05.3	046
1981	RN		1981	09	21.84640	23	41	27.23	+09	33	23.0	046
1981	RN		1981	09	21.86058	23	41	26.28	+09	33	19.6	046
1981	RN		1981	09	22.84497	23	40	31.24	+09	29	15.5	046
1981	RN		1981	09	22.85914	23	40	30.51	+09	29	13.6	046
1981	RQ		1981	09	21.84640	23	48	22.69	+10	09	25.7	046
1981	RQ		1981	09	22.85914	23	47	16.20	+10	11	22.1	046
1981	RT	*	1981	09	07.01580	00	03	05.90	+08	50	49.0	17.8 046
1981	RT		1981	09	07.02998	00	03	05.10	+08	50	50.3	046
1981	RU		1981	09	22.91615	00	47	04.45	+08	51	11.2	17.0 046
1981	RU		1981	09	22.93027	00	47	03.67	+08	51	08.9	046
1981	RU		1981	09	25.97899	00	44	42.43	+08	35	38.0	046
1981	RU		1981	09	25.99462	00	44	41.77	+08	35	33.6	046
1981	RU		1981	10	06.07016	00	36	30.09	+07	38	45.5	046
1981	RU		1981	10	06.08446	00	36	29.40	+07	38	40.6	046
1981	SB		1981	09	25.90197	23	53	50.08	-01	07	40.7	16.8 046
1981	SB		1981	09	25.91615	23	53	49.42	-01	07	50.3	046
1981	SB		1981	10	06.03422	23	47	15.94	-02	38	30.5	046
1981	SB		1981	10	06.04846	23	47	15.48	-02	38	36.7	046
1981	SB		1981	10	07.93826	23	46	15.30	-02	53	30.2	046
1981	SB		1981	10	07.95100	23	46	14.83	-02	53	36.6	046
1981	SF	*	1981	09	21.84640	23	42	01.40	+09	48	30.2	16.8 046
1981	SF		1981	09	22.84497	23	41	22.54	+09	35	51.7	046
1981	SF		1981	09	22.85914	23	41	22.07	+09	35	41.3	046
1981	SG	*	1981	09	22.81013	01	04	11.42	+29	51	30.3	17.4 046
1981	SG		1981	09	22.82251	01	04	09.88	+29	51	33.6	046
1981	SH	*	1981	09	22.87980	23	44	45.46	+00	57	45.6	17.0 046
1981	SH		1981	09	22.89392	23	44	44.49	+00	57	35.9	046
1981	SH		1981	09	25.86389	23	42	15.17	+00	25	22.4	046
1981	SH		1981	09	25.87801	23	42	14.55	+00	25	18.2	046
1981	SH		1981	10	05.96385	23	34	24.59	-01	21	45.0	046
1981	SH		1981	10	05.97803	23	34	23.94	-01	21	54.9	046
1981	SJ	*	1981	09	22.87980	23	46	54.97	+00	27	40.9	17.2 046
1981	SJ		1981	09	22.89392	23	46	53.65	+00	27	40.3	046
1981	SJ		1981	09	25.86389	23	44	30.17	+00	14	22.6	046
1981	SJ		1981	09	25.87801	23	44	29.40	+00	14	22.2	046
1981	SJ		1981	10	05.96385	23	37	14.26	-00	27	09.9	046
1981	SJ		1981	10	05.97803	23	37	13.64	-00	27	14.2	046
1981	SK	*	1981	09	22.87980	23	49	52.98	-00	42	34.2	17.2 046
1981	SK		1981	09	22.89392	23	49	51.75	-00	42	38.3	046
1981	SK		1981	09	25.90197	23	48	03.94	-00	56	46.8	046
1981	SK		1981	09	25.91615	23	48	03.35	-00	56	52.0	046
1981	SL	*	1981	09	22.91615	00	38	07.4	+07	16	40	16.8 046
1981	SL		1981	09	22.93027	00	38	06.6	+07	16	30	046
1981	SL		1981	09	25.97899	00	36	12.67	+06	41	16.2	046
1981	SL		1981	09	25.99462	00	36	12.02	+06	41	06.1	046
1981	SM	*	1981	09	22.91615	00	38	56.08	+10	15	32.8	16.8 046
1981	SM		1981	09	22.93027	00	38	55.40	+10	15	30.3	046
1981	SM		1981	09	25.97899	00	36	16.68	+10	03	47.2	046
1981	SM		1981	09	25.99462	00	36	16.12	+10	03	45.6	046
1981	SM		1981	10	06.07016	00	27	05.02	+09	16	12.6	046
1981	SM		1981	10	06.08446	00	27	04.24	+09	16	07.3	046
1981	SN	*	1981	09	22.91615	00	42	28.69	+09	44	14.6	16.8 046
1981	SN		1981	09	22.93027	00	42	27.94	+09	44	08.3	046
1981	SN		1981	09	25.97899	00	40	14.57	+09	21	27.2	046
1981	SN		1981	09	25.99462	00	40	13.82	+09	21	21.7	046
1981	SO	*	1981	09	22.91615	00	45	57.15	+08	32	46.6	16.5 046
1981	SO		1981	09	22.93027	00	45	56.42	+08	32	46.2	046

1981 SO		1981 09 25.97899	00 42 55.38	+08 28 50.4						046
1981 SO		1981 09 25.99462	00 42 54.47	+08 28 48.9						046
1981 SO		1981 10 06.07016	00 32 28.56	+08 08 36.0						046
1981 SO		1981 10 06.08446	00 32 27.75	+08 08 33.6						046
1981 SP	*	1981 09 25.86389	23 33 53.90	-02 15 43.3				16.8		046
1981 SP		1981 09 25.87801	23 33 53.44	-02 15 51.7						046
1981 SQ	*	1981 09 25.86389	23 35 02.78	-00 48 38.6				17.0		046
1981 SQ		1981 09 25.87801	23 35 02.08	-00 48 43.6						046
1981 SR	*	1981 09 25.86389	23 36 28.34	+00 30 41.9				16.6		046
1981 SR		1981 09 25.87801	23 36 27.63	+00 30 38.0						046
1981 SR		1981 10 05.99834	23 28 04.71	+00 37 02.0						046
1981 SR		1981 10 06.01275	23 28 04.02	+00 37 06.2						046
1981 SS	*	1981 09 25.86389	23 44 41.36	+00 55 22.3				17.0		046
1981 SS		1981 09 25.87801	23 44 40.58	+00 55 17.2						046
1981 ST	*	1981 09 25.90197	23 54 30.51	-02 25 48.5				16.4		046
1981 ST		1981 09 25.91615	23 54 29.96	-02 25 57.3						046
1981 ST		1981 10 06.03422	23 48 13.78	-04 00 32.7						046
1981 ST		1981 10 06.04846	23 48 13.16	-04 00 41.6						046
1981 ST		1981 10 07.93826	23 47 08.81	-04 17 16.6						046
1981 ST		1981 10 07.95100	23 47 08.48	-04 17 22.0						046
1981 TF	*	1981 10 05.92635	23 29 04.56	+05 46 22.7				17.2		046
1981 TF		1981 10 05.94065	23 29 03.88	+05 46 21.5						046
1981 TG	*	1981 10 05.99834	23 23 08.27	-00 41 30.6						046
1981 TG		1981 10 06.01275	23 23 07.68	-00 41 37.9						046
1981 TH	*	1981 10 06.07016	00 26 25.02	+08 48 07.1				17.0		046
1981 TH		1981 10 06.08446	00 26 24.17	+08 48 07.2						046
1981 TH		1981 10 07.97137	00 24 25.96	+08 51 21.9						046
1981 TH		1981 10 07.98560	00 24 24.97	+08 51 23.3						046
1981 TJ	*	1981 10 06.07016	00 29 46.37	+08 17 50.9						046
1981 TJ		1981 10 06.08446	00 29 45.86	+08 17 46.2						046
1981 TK	*	1981 10 06.07016	00 34 16.39	+07 56 05.2				16.0		046
1981 TK		1981 10 06.08446	00 34 14.80	+07 56 17.2						046
1981 TK		1981 10 07.97137	00 30 50.47	+08 26 37.3						046
1981 TK		1981 10 07.98560	00 30 48.96	+08 26 49.8						046

Note 1: near edge of plate.

OBSERVATIONS MADE AT THE CRIMEAN ASTROPHYSICAL OBSERVATORY UNDER THE DIRECTION OF N. S. CHERNYKH.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
1976 HH	1976 05 03.81933	13 09 41.92	+06 02 40.5		17.0		095
1976 JC11	1976 04 23.87670	13 12 11.10	+04 19 52.9				095
1976 JC11	1976 05 03.81933	13 03 57.72	+04 47 25.4			1	095

Note 1: remeasurement of position on MPC 6222.

OBSERVATIONS MADE AT GEISEI BY T. SEKI. IN PART FROM NIHONDAIRA OBS. CIRC. NO. 1228.

Object		Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1981 PU	*	1981 08 05.55716	17 20 28.21	-29 24 02.1		16.5	372
1981 PU		1981 08 05.57396	17 20 28.47	-29 24 01.3			372
1981 SA		1981 09 26.80052	04 05 34.22	+17 04 05.6			372
1981 SA		1981 10 03.74826	04 04 29.52	+17 22 09.3			372
1981 SA		1981 10 09.83715	04 02 36.31	+17 36 53.8		17	372
1981 SA		1981 10 10.76736	04 02 14.61	+17 39 04.7			372
1981 UC	*	1981 10 23.67917	03 43 58.1	+17 31 54		16.2	372
1981 UC		1981 10 24.75313	03 43 07.0	+17 30 58			372
1981 UC		1981 10 26.69810	03 41 29.4	+17 28 58			372
1981 UD	*	1981 10 29.72187	03 49 25.87	+13 24 42.2		18	372
1981 UE	*	1981 10 29.75243	09 08 50.54	+24 44 17.0		17	372

OBSERVATIONS MADE AT THE UPPSALA SOUTHERN STATION BY V. ZAPPALA, C.-I. LAGERKVIST AND G. DE SANCTIS.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
107	1978 08	23.65983	23 35 05.63	-00 57 22.4	414
107	1978 08	23.67299	23 35 05.26	-00 57 26.0	414
107	1978 08	24.73189	23 34 33.38	-01 02 55.0	414
107	1978 08	24.74367	23 34 32.94	-01 02 58.5	414
107	1978 08	26.64367	23 33 34.08	-01 13 03.9	414
107	1978 08	26.65579	23 33 33.70	-01 13 07.7	414
123	1978 08	24.56499	20 15 30.16	-19 07 38.4	414
123	1978 08	24.58022	20 15 29.44	-19 07 38.5	414
138	1978 08	23.71142	00 26 18.32	-02 46 51.2	414
138	1978 08	23.72701	00 26 17.89	-02 46 54.9	414
195	1978 07	25.63859	21 51 47.33	-21 30 00.7	414
195	1978 07	25.65036	21 51 46.81	-21 30 03.2	414
222	1978 07	10.68310	21 47 30.36	-15 57 21.0	414
222	1978 07	10.69825	21 47 29.99	-15 57 25.4	414
222	1978 07	27.64075	21 38 14.89	-16 59 53.3	414
222	1978 07	27.65252	21 38 14.41	-16 59 55.9	414
222	1978 07	30.67757	21 36 05.95	-17 12 39.8	414
222	1978 07	30.68935	21 36 05.41	-17 12 43.5	414
222	1978 08	24.59096	21 16 58.60	-18 50 52.8	414
222	1978 08	24.60308	21 16 58.00	-18 50 55.7	414
280	1978 07	10.70863	21 52 40.66	-22 10 57.7	414
280	1978 07	10.72387	21 52 40.25	-22 11 00.7	414
280	1978 07	28.66641	21 41 26.81	-23 14 08.5	414
280	1978 07	28.67819	21 41 26.31	-23 14 11.6	414
280	1978 07	30.69961	21 39 51.13	-23 21 18.2	414
280	1978 07	30.71152	21 39 50.56	-23 21 20.9	414
298	1978 07	07.63856	20 28 23.32	-29 25 35.1	414
298	1978 07	07.65034	20 28 22.56	-29 25 37.7	414
298	1978 07	09.58117	20 26 25.38	-29 33 05.4	414
298	1978 07	09.59294	20 26 24.67	-29 33 08.0	414
298	1978 07	13.65127	20 22 04.80	-29 47 47.6	414
298	1978 07	13.66374	20 22 03.91	-29 47 50.8	414
298	1978 08	01.56650	20 00 22.72	-30 28 19.2	414
298	1978 08	01.58000	20 00 21.78	-30 28 19.9	414
298	1978 08	22.55117	19 41 46.59	-30 08 01.3	414
298	1978 08	22.56628	19 41 46.03	-30 07 58.8	414
298	1978 08	26.55330	19 39 38.46	-29 57 30.2	414
298	1978 08	26.56853	19 39 37.97	-29 57 27.9	414
340	1978 07	28.66641	21 33 36.76	-21 46 25.2	414
340	1978 07	28.67819	21 33 36.16	-21 46 28.8	414
342	1978 08	23.61412	23 00 21.86	+05 24 49.2	414
342	1978 08	23.62589	23 00 21.29	+05 24 46.1	414
342	1978 08	24.68711	22 59 32.75	+05 20 33.0	414
342	1978 08	24.69934	22 59 32.16	+05 20 30.0	414
342	1978 08	26.60039	22 58 03.53	+05 12 26.5	414
342	1978 08	26.61216	22 58 02.94	+05 12 22.0	414
351	1978 07	28.66641	21 34 12.18	-22 36 20.1	414
351	1978 07	28.67819	21 34 11.60	-22 36 25.0	414
351	1978 07	30.69961	21 32 37.37	-22 49 00.3	414
351	1978 07	30.71152	21 32 36.83	-22 49 04.8	414
358	1978 07	09.62549	20 51 17.14	-13 37 01.8	414
358	1978 07	09.64084	20 51 16.58	-13 37 04.9	414
358	1978 07	30.60763	20 35 22.83	-14 45 55.1	414
358	1978 07	30.62009	20 35 22.15	-14 45 58.1	414
358	1978 08	24.56499	20 16 18.25	-16 20 06.7	414
358	1978 08	24.58022	20 16 17.66	-16 20 13.9	414

384	1978	07	10.70863	21	47	59.95	-21	51	53.7	414
384	1978	07	10.72387	21	47	59.47	-21	51	57.7	414
384	1978	07	28.66641	21	36	18.39	-23	20	33.8	414
384	1978	07	28.67819	21	36	17.79	-23	20	37.9	414
384	1978	07	30.69961	21	34	36.47	-23	30	47.1	414
384	1978	07	30.71152	21	34	35.87	-23	30	50.5	414
390	1978	08	23.61412	22	57	40.27	+05	09	07.4	414
390	1978	08	23.62589	22	57	39.69	+05	09	07.2	414
390	1978	08	24.68711	22	56	45.19	+05	08	05.9	414
390	1978	08	24.69934	22	56	44.57	+05	08	05.5	414
390	1978	08	26.60039	22	55	05.59	+05	05	51.3	414
390	1978	08	26.61216	22	55	04.94	+05	05	51.1	414
414	1978	07	28.61932	21	29	14.63	-20	20	09.3	414
414	1978	07	28.63109	21	29	14.16	-20	20	13.3	414
414	1978	07	30.63059	21	27	57.25	-20	30	45.3	414
414	1978	07	30.64295	21	27	56.72	-20	30	49.5	414
414	1978	08	02.63164	21	25	58.20	-20	46	32.5	414
414	1978	08	02.64376	21	25	57.69	-20	46	36.8	414
451	1978	07	30.58616	20	35	28.80	-32	04	57.9	414
451	1978	07	30.59793	20	35	28.22	-32	05	02.3	414
451	1978	07	31.57581	20	34	37.56	-32	10	46.2	414
451	1978	07	31.60767	20	34	35.82	-32	10	57.9	414
567	1978	07	10.65877	21	44	32.89	-26	34	08.3	414
567	1978	07	10.67400	21	44	32.44	-26	34	14.4	414
567	1978	07	30.65438	21	31	38.79	-28	20	20.8	414
567	1978	07	30.66649	21	31	38.22	-28	20	24.1	414
567	1978	08	02.65692	21	29	15.18	-28	34	38.7	414
567	1978	08	02.66869	21	29	14.57	-28	34	42.0	414
581	1978	07	09.58117	20	27	16.66	-27	52	27.9	414
581	1978	07	09.59294	20	27	16.13	-27	52	34.9	414
581	1978	07	13.65127	20	24	15.48	-28	26	44.9	414
581	1978	07	13.66374	20	24	14.86	-28	26	51.4	414
627	1978	07	30.60763	20	37	03.51	-15	45	41.1	414
627	1978	07	30.62009	20	37	02.89	-15	45	44.6	414
627	1978	08	24.56499	20	19	07.90	-17	55	06.3	414
627	1978	08	24.58022	20	19	07.43	-17	55	10.0	414
661	1978	07	07.70990	21	46	42.61	-19	10	27.0	414
661	1978	07	07.72514	21	46	42.19	-19	10	28.5	414
661	1978	07	09.65111	21	45	48.28	-19	13	00.6	414
661	1978	07	09.66635	21	45	47.87	-19	13	03.0	414
661	1978	07	10.63453	21	45	18.99	-19	14	24.6	414
661	1978	07	10.64977	21	45	18.48	-19	14	26.0	414
661	1978	07	13.71499	21	43	39.36	-19	19	04.0	414
661	1978	07	13.72745	21	43	38.87	-19	19	05.4	414
661	1978	07	28.61932	21	33	17.50	-19	45	46.3	414
661	1978	07	28.63109	21	33	16.87	-19	45	47.4	414
661	1978	07	30.63059	21	31	39.26	-19	49	31.7	414
661	1978	07	30.64295	21	31	38.61	-19	49	33.0	414
661	1978	08	02.63164	21	29	08.49	-19	55	01.0	414
661	1978	08	02.64376	21	29	07.88	-19	55	03.0	414
671	1978	07	30.58616	20	29	54.51	-29	03	48.3	414
671	1978	07	30.59793	20	29	53.91	-29	03	49.3	414
671	1978	07	31.57581	20	29	01.85	-29	05	17.0	414
671	1978	07	31.60767	20	29	00.16	-29	05	19.4	414
671	1978	08	01.61186	20	28	06.70	-29	06	44.6	414
671	1978	08	01.62502	20	28	05.96	-29	06	45.3	414
708	1978	07	10.68310	21	47	28.07	-17	09	28.9	414
708	1978	07	10.69825	21	47	27.60	-17	09	31.8	414
708	1978	07	27.64075	21	36	10.20	-18	01	51.2	414

708	1978	07	27.65252	21	36	09.57	-18	01	54.0	414
708	1978	07	28.61932	21	35	21.81	-18	05	15.5	414
708	1978	07	28.63109	21	35	21.18	-18	05	17.4	414
708	1978	07	30.63059	21	33	39.94	-18	12	15.2	414
708	1978	07	30.64295	21	33	39.36	-18	12	18.1	414
708	1978	07	30.67757	21	33	37.46	-18	12	24.6	414
708	1978	07	30.68935	21	33	36.85	-18	12	26.9	414
708	1978	08	02.63164	21	31	03.03	-18	22	43.4	414
708	1978	08	02.64376	21	31	02.35	-18	22	45.8	414
708	1978	08	24.59096	21	11	20.33	-19	28	08.2	414
708	1978	08	24.60308	21	11	19.77	-19	28	09.7	414
709	1978	07	28.69065	22	36	56.31	-08	13	34.9	414
709	1978	07	28.70589	22	36	55.64	-08	13	32.6	414
709	1978	08	02.68185	22	33	29.30	-07	58	02.7	414
709	1978	08	02.69362	22	33	28.78	-07	58	00.8	414
709	1978	08	22.61270	22	15	25.06	-07	13	16.3	414
709	1978	08	22.62447	22	15	24.32	-07	13	14.3	414
744	1978	08	23.71142	00	32	10.92	-02	47	04.6	414
744	1978	08	23.72701	00	32	10.57	-02	47	09.1	414
747	1978	07	09.62549	20	58	07.97	-13	57	35.7	414
747	1978	07	09.64084	20	58	07.42	-13	57	43.2	414
747	1978	07	30.60763	20	42	57.35	-16	58	22.8	414
747	1978	07	30.62009	20	42	56.73	-16	58	29.7	414
829	1978	07	10.70863	21	58	00.85	-21	36	42.4	414
829	1978	07	10.72387	21	58	00.44	-21	36	44.7	414
829	1978	07	25.63859	21	48	55.36	-22	13	16.0	414
829	1978	07	25.65036	21	48	54.79	-22	13	17.5	414
829	1978	07	28.66641	21	46	25.26	-22	21	08.5	414
829	1978	07	28.67819	21	46	24.60	-22	21	10.9	414
829	1978	07	30.69961	21	44	38.38	-22	26	20.1	414
829	1978	07	30.71152	21	44	37.73	-22	26	21.7	414
932	1978	08	23.71142	00	38	40.36	-01	13	18.4	414
932	1978	08	23.72701	00	38	39.98	-01	13	18.1	414
947	1978	07	30.58616	20	29	54.47	-30	14	27.8	414
947	1978	07	30.59793	20	29	53.74	-30	14	30.3	414
947	1978	07	31.57581	20	28	55.01	-30	18	23.9	414
947	1978	07	31.60767	20	28	53.03	-30	18	31.2	414
947	1978	08	01.61186	20	27	52.42	-30	22	22.1	414
947	1978	08	01.62502	20	27	51.67	-30	22	25.0	414
990	1978	07	30.58616	20	34	56.71	-31	04	11.1	414
990	1978	07	30.59793	20	34	55.94	-31	04	10.8	414
990	1978	07	31.57581	20	33	53.04	-31	04	24.3	414
990	1978	07	31.60767	20	33	50.84	-31	04	24.3	414
990	1978	08	01.61186	20	32	46.11	-31	04	26.2	414
990	1978	08	01.62502	20	32	45.24	-31	04	26.4	414
1028	1978	07	30.58616	20	26	03.39	-30	48	18.5	414
1028	1978	07	30.59793	20	26	02.83	-30	48	20.6	414
1028	1978	07	31.57581	20	25	15.93	-30	51	28.5	414
1028	1978	07	31.60767	20	25	14.38	-30	51	33.7	414
1028	1978	08	01.61186	20	24	26.24	-30	54	40.9	414
1028	1978	08	01.62502	20	24	25.56	-30	54	42.6	414
1040	1978	08	23.59127	22	58	48.70	+17	18	43.9	414
1040	1978	08	23.60304	22	58	48.24	+17	18	44.4	414
1040	1978	08	24.66541	22	58	00.35	+17	19	41.4	414
1040	1978	08	24.67718	22	57	59.80	+17	19	41.1	414
1040	1978	08	26.57961	22	56	32.24	+17	20	46.1	414
1040	1978	08	26.59139	22	56	31.79	+17	20	46.6	414
1045	1978	08	23.65983	23	34	15.58	-02	18	42.1	414
1045	1978	08	23.67299	23	34	15.12	-02	18	44.2	414

1045	1978	08	24.73189	23	33	31.79	-02	23	12.4	414
1045	1978	08	24.74367	23	33	31.23	-02	23	16.2	414
1045	1978	08	26.64367	23	32	10.23	-02	31	43.2	414
1045	1978	08	26.65579	23	32	09.68	-02	31	47.1	414
1066	1978	07	28.61932	21	39	21.40	-19	21	32.2	414
1066	1978	07	28.63109	21	39	20.83	-19	21	33.3	414
1066	1978	07	30.63059	21	37	42.96	-19	25	05.2	414
1066	1978	07	30.64295	21	37	42.33	-19	25	05.6	414
1066	1978	08	02.63164	21	35	06.50	-19	30	16.5	414
1066	1978	08	02.64376	21	35	05.79	-19	30	19.7	414
1066	1978	08	24.59096	21	13	47.64	-19	50	51.7	414
1066	1978	08	24.60308	21	13	47.00	-19	50	51.6	414
1124	1978	08	23.71142	00	29	48.81	-02	35	54.2	414
1124	1978	08	23.72701	00	29	48.41	-02	35	55.4	414
1136	1978	08	23.68407	23	39	28.77	+11	19	37.0	414
1136	1978	08	23.69931	23	39	28.47	+11	19	33.1	414
1136	1978	08	24.75498	23	39	11.37	+11	15	43.7	414
1136	1978	08	24.77726	23	39	10.92	+11	15	38.6	414
1136	1978	08	26.66618	23	38	36.70	+11	07	46.8	414
1136	1978	08	26.68211	23	38	36.34	+11	07	43.1	414
1176	1978	07	28.71697	22	47	49.05	+01	18	37.1	414
1176	1978	07	28.73220	22	47	48.69	+01	18	38.3	414
1176	1978	08	02.70400	22	45	28.93	+01	22	48.8	414
1176	1978	08	02.72028	22	45	28.41	+01	22	49.8	414
1176	1978	08	22.63416	22	31	31.03	+00	58	32.6	414
1176	1978	08	22.64594	22	31	30.33	+00	58	30.0	414
1450	1978	08	02.73310	22	56	20.98	-14	23	27.1	414
1450	1978	08	02.75041	22	56	20.51	-14	23	32.3	414
1450	1978	08	22.65667	22	42	31.18	-16	18	38.3	414
1450	1978	08	22.66878	22	42	30.49	-16	18	40.9	414
1450	1978	08	23.56356	22	41	45.11	-16	23	58.6	414
1450	1978	08	23.57534	22	41	44.51	-16	24	02.8	414
1471	1978	07	28.69065	22	37	30.44	-06	58	55.2	414
1471	1978	07	28.70589	22	37	29.85	-06	58	53.0	414
1471	1978	08	02.68185	22	34	12.30	-06	50	02.3	414
1471	1978	08	02.69362	22	34	11.79	-06	50	01.3	414
1471	1978	08	22.61270	22	16	36.21	-06	35	17.0	414
1471	1978	08	22.62447	22	16	35.46	-06	35	16.5	414
1549	1978	07	30.69961	21	41	49.13	-21	35	34.0	414
1549	1978	07	30.71152	21	41	48.42	-21	35	38.9	414
1588	1978	07	25.63859	21	52	25.56	-23	47	45.4	414
1588	1978	07	25.65036	21	52	25.10	-23	47	50.4	414
1642	1978	07	10.70863	21	51	14.47	-20	45	30.6	414
1642	1978	07	10.72387	21	51	14.00	-20	45	32.3	414
1684	1978	07	10.68310	21	51	12.00	-15	33	40.6	414
1684	1978	07	10.69825	21	51	11.58	-15	33	43.7	414
1684	1978	07	27.64075	21	42	18.36	-16	46	41.0	414
1684	1978	07	27.65252	21	42	17.87	-16	46	44.7	414
1684	1978	07	30.67757	21	40	12.64	-17	01	33.2	414
1684	1978	07	30.68935	21	40	12.04	-17	01	36.8	414
1684	1978	08	24.59096	21	21	13.93	-18	57	42.5	414
1684	1978	08	24.60308	21	21	13.43	-18	57	45.2	414
1692	1978	08	23.65983	23	29	37.49	-00	44	01.0	414
1692	1978	08	24.73189	23	28	57.85	-00	48	52.0	414
1692	1978	08	24.74367	23	28	57.34	-00	48	54.5	414
1692	1978	08	26.64367	23	27	43.96	-00	57	58.2	414
1692	1978	08	26.65579	23	27	43.44	-00	58	03.1	414
1704	1978	07	28.69065	22	41	04.23	-06	47	13.0	414
1704	1978	07	28.70589	22	41	03.64	-06	47	15.3	414

1704	1978 08 02.68185	22 37 57.15	-07 02 58.5	414
1704	1978 08 02.69362	22 37 56.61	-07 03 01.1	414
1704	1978 08 22.61270	22 20 36.12	-08 36 54.2	414
1704	1978 08 22.62447	22 20 35.46	-08 36 58.7	414
1790	1978 07 28.61932	21 39 58.26	-20 41 18.9	414
1790	1978 07 28.63109	21 39 57.50	-20 41 21.9	414
1790	1978 07 30.63059	21 37 59.33	-20 49 24.2	414
1790	1978 07 30.64295	21 37 58.56	-20 49 27.3	414
1790	1978 08 02.63164	21 34 55.01	-21 01 16.2	414
1790	1978 08 02.64376	21 34 54.21	-21 01 19.8	414
1801	1978 08 23.63628	23 03 41.96	-23 10 36.8	414
1801	1978 08 23.64806	23 03 41.44	-23 10 40.5	414
1801	1978 08 24.70973	23 02 54.23	-23 17 04.1	414
1801	1978 08 24.72220	23 02 53.56	-23 17 08.3	414
1801	1978 08 26.62220	23 01 27.68	-23 28 20.5	414
1801	1978 08 26.63432	23 01 27.16	-23 28 24.5	414
1930	1978 07 07.63856	20 20 21.93	-29 41 31.3	414
1930	1978 07 07.65034	20 20 21.22	-29 41 29.8	414
1930	1978 07 09.58117	20 18 30.59	-29 37 41.3	414
1930	1978 07 09.59294	20 18 29.87	-29 37 39.9	414
1930	1978 07 13.65127	20 14 25.91	-29 28 23.1	414
1930	1978 07 13.66374	20 14 25.16	-29 28 22.0	414
2118	1978 07 10.68310	21 45 54.92	-16 58 59.5	414
2118	1978 07 10.69825	21 45 54.47	-16 59 02.2	414
2118	1978 07 27.64075	21 34 08.17	-17 33 54.7	414
2118	1978 07 27.65252	21 34 07.50	-17 33 57.1	414
2118	1978 07 30.67757	21 31 25.26	-17 41 31.8	414
2118	1978 07 30.68935	21 31 24.61	-17 41 33.4	414
2356	1978 08 23.61412	23 05 37.85	+04 40 18.5	414
2356	1978 08 23.62589	23 05 37.40	+04 40 13.3	414
2356	1978 08 24.68711	23 04 59.86	+04 33 38.2	414
2356	1978 08 24.69934	23 04 59.37	+04 33 33.3	414
2356	1978 08 26.60039	23 03 50.94	+04 21 19.6	414
2356	1978 08 26.61216	23 03 50.53	+04 21 15.7	414

OBSERVATIONS MADE AT KAMBAH BY D. HERALD.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
14	1981 09 11.48819	22 52 46.13	-21 20 55.6		415
46	1981 06 30.57594	16 01 01.89	-17 05 51.2		415
88	1981 09 05.42847	18 02 52.61	-21 18 41.5		415
92	1981 09 05.44549	18 45 35.23	-26 27 47.8		415
135	1981 08 30.46969	20 23 09.22	-21 12 09.5		415
219	1981 09 11.53750	22 34 23.51	+05 50 20.8		415
266	1981 06 30.57594	16 11 23.46	-14 45 12.8		415
512	1981 09 11.51042	23 05 44.32	-26 01 47.5		415
776	1981 06 30.57594	16 02 18.97	-17 34 05.7		415

OBSERVATIONS MADE AT KVISTABERG (CODE 049), BYURAKAN (CODE 123) AND UPPSALA (CODE 549) BY B. PETTERSSON, G. HAHN AND C.-I. LAGERKVIST.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
3	1979 12 10.04618	07 45 51.37	+00 39 01.3		549
3	1979 12 10.05868	07 45 51.07	+00 38 59.2		549
3	1979 12 10.07049	07 45 50.84	+00 38 57.0		549
4	1979 10 26.01354	02 52 15.55	+05 23 31.0		549
4	1979 10 26.02048	02 52 15.10	+05 23 29.3		549
4	1979 10 26.02743	02 52 14.72	+05 23 27.1		549
4	1979 12 08.84826	02 15 18.40	+04 26 40.1		549
4	1979 12 08.85521	02 15 18.08	+04 26 41.1		549
4	1979 12 08.86215	02 15 17.94	+04 26 42.8		549

8	1979	01	06.04271	09	43	31.69	+16	30	19.0	549
8	1979	01	06.05382	09	43	31.49	+16	30	23.5	549
8	1979	01	06.06424	09	43	31.09	+16	30	28.8	549
8	1979	02	24.89306	08	57	49.86	+22	34	07.4	549
8	1979	02	24.90034	08	57	49.70	+22	34	10.4	549
8	1979	02	24.90730	08	57	49.43	+22	34	11.9	549
8	1979	02	27.90173	08	55	32.16	+22	46	53.7	549
8	1979	02	27.90868	08	55	31.75	+22	46	55.4	549
8	1979	02	27.91563	08	55	31.52	+22	46	56.4	549
11	1978	10	26.11111	04	37	06.42	+15	20	21.0	549
11	1978	10	26.12639	04	37	05.96	+15	20	18.9	549
11	1978	10	26.14037	04	37	05.47	+15	20	17.3	549
11	1978	11	02.04097	04	32	52.48	+15	04	19.5	549
11	1978	11	02.05347	04	32	51.89	+15	04	19.2	549
11	1978	11	02.06597	04	32	51.49	+15	04	16.1	549
11	1978	11	05.01543	04	30	40.29	+14	57	21.5	549
11	1978	11	05.02778	04	30	39.63	+14	57	18.3	549
11	1978	11	05.04028	04	30	39.08	+14	57	16.7	549
11	1978	11	24.93333	04	11	46.87	+14	13	59.2	549
11	1978	11	24.94236	04	11	46.41	+14	13	57.2	549
11	1978	11	24.95139	04	11	45.69	+14	13	57.7	549
11	1978	12	21.86979	03	47	24.97	+13	54	17.6	549
11	1978	12	21.88021	03	47	24.73	+13	54	21.1	549
11	1978	12	30.85035	03	42	46.61	+14	04	04.0	549
11	1978	12	30.86024	03	42	46.49	+14	04	05.1	549
11	1978	12	30.86979	03	42	46.20	+14	04	07.3	549
14	1978	11	05.05903	05	29	54.47	+19	15	04.3	549
14	1978	11	05.08681	05	29	53.72	+19	15	06.4	549
14	1978	11	24.97569	05	16	15.01	+19	45	50.8	549
14	1978	11	24.98619	05	16	14.45	+19	45	51.5	549
14	1978	11	24.99653	05	16	13.80	+19	45	54.1	549
14	1978	12	30.89201	04	39	36.45	+20	52	25.0	549
14	1978	12	30.90173	04	39	36.03	+20	52	25.0	549
14	1978	12	30.91146	04	39	35.57	+20	52	28.9	549
18	1978	11	02.13056	06	47	26.70	+08	10	53.2	549
18	1978	11	05.10556	06	48	30.66	+07	56	24.0	549
18	1978	11	05.11806	06	48	30.94	+07	56	20.1	549
18	1978	11	05.13056	06	48	31.10	+07	56	17.2	549
18	1978	11	25.04132	06	47	00.64	+06	46	26.9	549
18	1978	11	25.05312	06	47	00.29	+06	46	25.5	549
18	1978	11	25.06493	06	47	00.07	+06	46	24.2	549
18	1978	12	30.94549	06	14	25.48	+08	00	16.5	549
18	1978	12	30.95243	06	14	25.01	+08	00	20.4	549
18	1978	12	30.95937	06	14	24.59	+08	00	21.0	549
18	1979	01	05.91215	06	08	19.13	+08	38	34.0	549
18	1979	01	05.92257	06	08	18.65	+08	38	40.8	549
18	1979	01	05.93299	06	08	17.85	+08	38	44.5	549
18	1979	02	27.76354	05	59	29.31	+15	27	32.0	549
27	1979	12	09.96320	05	37	25.39	+22	35	41.3	549
27	1979	12	09.97222	05	37	24.77	+22	35	42.2	549
27	1979	12	19.00035	05	27	49.65	+22	40	53.8	549
27	1979	12	19.00868	05	27	49.07	+22	40	54.0	549
31	1978	12	31.02812	07	55	26.83	+62	01	47.2	549
31	1978	12	31.03854	07	55	25.81	+62	01	55.2	549
31	1978	12	31.04826	07	55	25.00	+62	01	58.8	549
31	1979	01	05.99722	07	46	52.73	+62	43	21.6	549
31	1979	01	06.00799	07	46	50.43	+62	43	28.8	549
31	1979	01	06.01875	07	46	49.87	+62	43	30.4	549
31	1979	02	27.85434	06	58	58.59	+58	26	23.3	549

31	1979	02	27.86827	06	58	58.79	+58	26	15.7	549
115	1978	10	26.12222	04	51	37.73	+42	10	18.2	549
115	1978	10	26.14306	04	51	37.70	+42	10	23.6	549
115	1978	11	01.99028	04	49	50.53	+42	37	10.9	549
115	1978	11	02.00417	04	49	49.93	+42	37	11.6	549
115	1978	11	02.01597	04	49	49.98	+42	37	16.1	549
115	1978	11	24.89236	04	29	41.55	+42	21	45.3	549
115	1978	11	24.90278	04	29	40.96	+42	21	43.9	549
115	1978	11	24.91319	04	29	40.19	+42	21	42.1	549
135	1976	03	21.86016	09	49	38.64	+13	34	04.8	049
135	1976	03	21.87125	09	49	38.31	+13	34	05.4	049
192	1978	12	30.98021	07	13	51.88	+32	54	32.8	549
192	1978	12	30.98993	07	13	51.03	+32	54	32.5	549
192	1978	12	30.99965	07	13	50.31	+32	54	33.2	549
192	1979	01	05.95528	07	06	03.27	+32	54	06.2	549
192	1979	01	05.96362	07	06	02.65	+32	54	05.9	549
192	1979	01	05.97187	07	06	01.92	+32	54	04.5	549
192	1979	02	27.80695	06	34	41.41	+29	44	36.4	549
192	1979	02	27.81875	06	34	41.32	+29	44	34.2	549
192	1979	02	27.83061	06	34	41.62	+29	44	29.3	549
215	1976	03	21.86016	09	42	00.39	+15	44	54.8	049
215	1976	03	21.87125	09	42	00.09	+15	44	55.9	049
225	1977	12	06.87153	02	56	05.63	+00	16	21.9	123
225	1977	12	06.90694	02	56	04.60	+00	16	18.5	123
230	1978	10	25.97916	02	53	41.54	+22	17	37.2	549
230	1978	10	25.99306	02	53	41.10	+22	17	30.3	549
230	1978	10	27.01527	02	52	42.46	+22	09	45.3	549
230	1978	11	24.84375	02	27	20.46	+17	36	39.8	549
230	1978	11	24.85764	02	27	19.78	+17	36	33.2	549
230	1978	11	24.87153	02	27	19.31	+17	36	26.0	549
324	1978	11	01.97188	02	38	26.03	+39	13	38.1	549
324	1978	11	01.97951	02	38	25.50	+39	13	37.8	549
324	1978	11	01.98021	02	38	25.10	+39	13	37.9	549
324	1978	11	26.00313	02	17	56.77	+37	11	47.5	549
324	1978	11	26.01979	02	17	56.15	+37	11	38.0	549
324	1978	12	29.86088	02	24	05.55	+32	49	53.7	549
324	1978	12	29.87674	02	24	06.07	+32	49	45.4	549
324	1978	12	29.88513	02	24	06.69	+32	49	43.8	549
349	1979	01	06.08403	11	24	07.68	+13	43	18.7	549
349	1979	01	06.10382	11	24	07.93	+13	43	21.8	549
349	1979	02	25.01250	11	02	13.44	+16	43	25.1	549
349	1979	02	25.01667	11	02	12.82	+16	43	27.6	549
349	1979	02	25.02708	11	02	12.34	+16	43	29.7	549
511	1979	12	08.88229	03	35	50.82	+00	51	51.5	549
511	1979	12	08.89583	03	35	50.28	+00	51	55.1	549
511	1979	12	08.90972	03	35	49.58	+00	51	58.6	549
511	1979	12	12.87014	03	33	01.08	+01	11	40.3	549
511	1979	12	12.88403	03	33	00.65	+01	11	45.0	549
511	1979	12	12.89792	03	33	00.14	+01	11	48.1	549
511	1979	12	18.85434	03	29	20.52	+01	46	37.7	549
511	1979	12	18.86806	03	29	20.40	+01	46	43.2	549
573	1979	12	11.82421	04	57	09.41	+37	39	47.4	049
573	1979	12	11.83736	04	57	08.48	+37	39	45.6	049
632	1976	03	21.86016	09	43	07.32	+14	55	20.5	049
632	1976	03	21.87125	09	43	07.01	+14	55	20.9	049
657	1980	03	20.87701	09	48	44.45	+00	40	59.4	049
657	1980	03	20.88878	09	48	43.99	+00	41	01.3	049
828	1976	03	21.86016	09	41	41.74	+14	36	18.7	049
828	1976	03	21.87125	09	41	41.53	+14	36	20.2	049

858		1979	12	11.76188	04	01	45.57	+20	48	34.6	049
858		1979	12	11.77642	04	01	44.70	+20	48	35.2	049
873		1976	03	21.86016	09	40	03.75	+14	48	20.6	049
873		1976	03	21.87125	09	40	03.49	+14	48	22.4	049
1004		1976	03	21.86016	09	46	04.54	+13	27	40.3	049
1004		1976	03	21.87125	09	46	04.41	+13	27	40.8	049
1014		1979	12	11.73625	03	33	56.45	+19	40	17.1	049
1014		1979	12	11.75010	03	33	55.79	+19	40	14.3	049
1079		1979	12	11.71063	03	06	11.01	+19	18	32.4	049
1079		1979	12	11.72379	03	06	10.34	+19	18	29.5	049
1362		1978	01	12.83074	06	15	36.95	+09	32	52.8	049
1362		1978	01	12.83766	06	15	36.09	+09	32	58.8	049
1454		1976	03	21.86016	09	50	22.53	+14	54	52.9	049
1454		1976	03	21.87125	09	50	22.27	+14	54	49.1	049
1695		1978	09	25.84992	00	04	58.95	+20	33	25.9	049
1695		1978	09	25.86654	00	04	58.24	+20	33	22.8	049
1765		1979	12	11.76188	04	04	52.68	+19	09	32.9	049
1765		1979	12	11.77642	04	04	51.87	+19	09	35.2	049
1801		1979	12	11.76188	04	13	50.21	+18	49	53.3	049
1801		1979	12	11.77642	04	13	49.30	+18	49	56.4	049
1972		1979	12	11.73625	03	29	55.77	+21	44	23.1	049
1972		1979	12	11.75010	03	29	55.05	+21	44	23.2	049
1976		1979	12	11.76188	04	02	43.23	+18	52	19.7	049
1976		1979	12	11.77642	04	02	42.35	+18	52	13.4	049
2274		1976	03	21.86016	09	46	21.59	+13	51	13.4	049
2274		1976	03	21.87125	09	46	21.49	+13	51	12.1	049
1979 XQ	*	1979	12	11.73625	03	32	58.18	+22	39	24.0	049
1979 XQ		1979	12	11.75010	03	32	57.56	+22	39	21.9	049
1979 XR	*	1979	12	11.76188	04	08	57.21	+18	02	11.9	049
1979 XR		1979	12	11.77642	04	08	56.38	+18	02	06.1	049

OBSERVATIONS MADE AT THE OSSERVATORIO S. VITTORE.

Object		Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1981 UB	*	1981	10 31.90000	02 06 00.38	+17 21 39.7	16	552
1981 UB		1981	10 31.91736	02 05 59.39	+17 21 36.8		552
1981 UB		1981	11 01.91875	02 05 02.50	+17 17 52.7		552
1981 UB		1981	11 01.94583	02 05 00.86	+17 17 51.9		552

OBSERVATIONS MADE AT REINTAL BY F. SEILER.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
1520	1981	08 05.89583	22 00 00.65	+11 15 00.7	556
1520	1981	08 05.90278	22 00 00.44	+11 15 01.9	556
1520	1981	08 05.90972	22 00 00.12	+11 15 01.3	556
1520	1981	08 05.91667	21 59 59.81	+11 15 03.5	556
1520	1981	08 05.92361	21 59 59.49	+11 15 03.5	556
1520	1981	08 05.93056	21 59 59.26	+11 15 03.0	556
1520	1981	09 05.87500	21 36 55.77	+10 06 22.8	556
1520	1981	09 05.88194	21 36 55.42	+10 06 21.4	556
1520	1981	09 05.88889	21 36 55.13	+10 06 19.7	556
1520	1981	09 05.89583	21 36 54.94	+10 06 17.4	556
1520	1981	09 05.90972	21 36 54.34	+10 06 14.6	556
1520	1981	09 05.91667	21 36 54.09	+10 06 12.6	556
1520	1981	09 06.88889	21 36 15.61	+10 01 09.6	556
1520	1981	09 06.90278	21 36 14.99	+10 01 04.6	556
1520	1981	09 06.90972	21 36 14.67	+10 01 02.9	556
1520	1981	09 06.91667	21 36 14.53	+10 01 01.5	556
1565	1981	08 05.85417	19 59 24.17	+15 16 31.6	556
1565	1981	08 05.86111	19 59 23.64	+15 16 34.8	556
1565	1981	08 05.86806	19 59 23.01	+15 16 39.0	556

1565	1981 08 05.87500	19 59 22.58	+15 16 42.9			556
1565	1981 08 05.88194	19 59 22.02	+15 16 47.0			556
1565	1981 08 05.88889	19 59 21.57	+15 16 52.2			556
2100	1981 09 06.83333	20 36 11.53	+00 43 45.4			556
2100	1981 09 06.84028	20 36 10.55	+00 43 09.5			556
2100	1981 09 06.84722	20 36 09.62	+00 42 31.1			556

OBSERVATIONS MADE WITH THE 1.2-M SCHMIDT TELESCOPE AT PALOMAR.

Object		Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
1981 QA		1981 10 08.29342		22 55 19.43	-15 38 53.7		1	675
1981 QA		1981 10 08.36807		22 55 31.16	-15 39 09.8		1	675
1981 QA		1981 10 19.26738		23 23 10.18	-15 39 24.3		1	675
1981 QA		1981 10 22.18194		23 29 51.71	-15 27 24.5		2	675
1981 QM		1981 10 25.22639		22 03 22.48	-10 33 05.0	17	3	675
1981 QM		1981 10 25.24722		22 03 23.95	-10 32 59.8		3	675
1981 RV	*	1981 09 03.27222		22 07 31.88	-03 16 09.8	19.0	3	675
1981 RV		1981 09 04.31528		22 07 13.94	-03 21 07.5	19.0	3	675
1981 RV		1981 09 04.36736		22 07 12.97	-03 21 18.9		3	675
1981 UA	*	1981 10 21.30764		03 34 12.32	+47 27 42.0	17	2	675
1981 UA		1981 10 23.40625		03 31 13.77	+48 49 34.5		2	675
1981 UA		1981 10 25.52639		03 27 48.34	+50 09 44.8		3	675
1981 UA		1981 11 04.32674		03 06 49.08	+55 36 29.5		4	675
1981 UA		1981 11 05.40104		03 04 02.14	+56 06 51.8		4	675
1981 UA		1981 11 05.48438		03 03 48.46	+56 09 08.0		4	675
1981 VA	*	1981 11 04.31979		02 55 05.36	+56 36 03.1	16.5	9	675
1981 VA		1981 11 04.33368		02 55 01.79	+56 34 17.4		9	675
1981 VA		1981 11 05.39583		02 51 12.01	+54 18 45.1		9	675
1981 VA		1981 11 05.40625		02 51 09.76	+54 17 26.8		9	675
1981 VA		1981 11 05.47917		02 50 54.35	+54 08 11.3		9	675
1981 VA		1981 11 05.48958		02 50 52.32	+54 06 55.6		9	675

Note 1: observer J. Gibson. 2: observer R. S. Dunbar. 3: observer C. Kowal. 4: observers E. Helin and Dunbar; measured by Dunbar and S. J. Bus. 5: beginnings and ends of trails. 9 = 4 + 5.

OBSERVATIONS MADE WITH THE 0.46-M SCHMIDT AT PALOMAR BY E. HELIN AND S. J. BUS. SCANNED AND MEASURED BY C. SHOEMAKER.

Object		Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1981 RW	*	1981 09 01.15833		20 05 38.66	-20 59 35.1	17.5	675
1981 RW		1981 09 01.17361		20 05 40.72	-20 59 32.7	17.5	675
1981 SY	*	1981 09 24.29375		00 31 34.33	+16 55 30.1	16.5	675
1981 SY		1981 09 24.31250		00 31 33.54	+16 55 21.2	16.5	675

OBSERVATIONS MADE AT THE LOWELL OBSERVATORY'S ANDERSON MESA STATION BY E. BOWELL AND B. A. SKIFF. MEASURED BY BOWELL.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
28	1981 08 30.30278		23 11 34.18	-09 55 07.5			688
28	1981 08 30.33889		23 11 32.53	-09 55 23.5			688
35	1981 08 30.35903		23 19 53.54	-06 18 30.1			688
35	1981 08 30.42361		23 19 50.45	-06 18 43.2			688
76	1981 09 26.31944		01 12 14.03	+08 12 00.9			688
76	1981 09 26.35417		01 12 12.54	+08 11 51.1			688
76	1981 10 04.36042		01 06 55.18	+07 35 23.8			688
76	1981 10 04.39514		01 06 53.60	+07 35 13.1			688
212	1981 07 25.18819		19 30 36.71	-23 53 20.2			688
212	1981 07 25.21736		19 30 35.25	-23 53 21.6			688
317	1981 08 30.35903		23 18 20.77	-05 13 39.3			688
317	1981 08 30.42361		23 18 17.41	-05 14 05.3			688
395	1981 07 25.18819		19 26 22.52	-18 44 32.2			688
395	1981 07 25.21736		19 26 20.89	-18 44 35.3		1	688

479		1981	07	25.18819	19	22	47.13	-16	58	44.9	688
479		1981	07	25.21736	19	22	45.72	-16	58	50.8	3 688
561		1981	09	26.31944	01	03	03.37	+05	27	33.1	688
561		1981	09	26.35417	01	03	01.57	+05	27	21.4	688
561		1981	10	04.36042	00	57	20.98	+04	48	22.5	688
561		1981	10	04.39514	00	57	19.30	+04	48	13.0	688
657		1981	07	25.18819	19	20	35.03	-23	24	09.3	688
657		1981	07	25.21736	19	20	33.25	-23	24	07.4	688
697		1981	09	26.31944	01	15	35.73	+06	53	16.4	688
697		1981	09	26.35417	01	15	33.46	+06	53	19.8	688
697		1981	10	04.36042	01	07	36.32	+07	06	02.8	688
697		1981	10	04.39514	01	07	34.01	+07	06	05.1	688
761		1981	09	26.31944	01	10	06.78	+06	45	35.8	688
761		1981	09	26.35417	01	10	04.94	+06	45	27.9	688
761		1981	10	04.36042	01	03	44.10	+06	12	49.2	688
761		1981	10	04.39514	01	03	42.38	+06	12	41.4	688
769		1981	08	30.30278	23	12	28.62	-15	41	26.4	688
769		1981	08	30.33889	23	12	26.86	-15	41	34.4	688
848		1981	09	26.31944	01	12	55.82	+08	09	45.9	688
848		1981	09	26.35417	01	12	54.19	+08	09	36.2	688
848		1981	10	04.36042	01	07	07.45	+07	31	04.4	688
848		1981	10	04.39514	01	07	05.75	+07	30	53.5	688
861		1981	08	30.30278	23	00	21.95	-15	41	51.8	688
861		1981	08	30.33889	23	00	20.34	-15	42	06.3	688
975		1981	08	30.30278	23	08	38.16	-09	05	21.0	688
975		1981	08	30.33889	23	08	36.38	-09	05	30.5	688
975		1981	09	26.17507	22	47	41.92	-10	54	13.1	688
975		1981	09	26.24097	22	47	39.21	-10	54	24.6	688
975		1981	10	04.24375	22	42	52.47	-11	13	31.7	688
975		1981	10	04.31667	22	42	50.03	-11	13	39.8	688
1030		1981	09	26.31944	01	16	01.59	+05	22	32.5	688
1030		1981	09	26.35417	01	16	00.10	+05	22	15.1	688
1030		1981	10	04.36042	01	10	53.62	+04	23	16.7	688
1030		1981	10	04.39514	01	10	52.13	+04	23	03.2	688
1043		1981	08	30.35903	23	26	26.04	-05	14	58.6	688
1043		1981	08	30.42361	23	26	23.46	-05	15	26.8	688
1090		1981	10	05.38889	04	46	53.36	-08	47	27.1	688
1090		1981	10	05.42569	04	46	54.44	-08	47	55.2	688
1260		1981	07	25.21736	19	35	00.77	-23	44	34.3	688
1267		1981	08	30.30278	23	03	33.92	-13	00	38.8	688
1267		1981	08	30.33889	23	03	31.74	-13	00	46.0	688
1267		1981	09	26.17507	22	40	22.60	-13	48	50.0	688
1267		1981	09	26.24097	22	40	20.05	-13	48	49.0	688
1267		1981	10	04.24375	22	36	12.54	-13	40	09.2	688
1267		1981	10	04.31667	22	36	10.68	-13	40	01.4	688
1289		1981	07	25.18819	19	37	05.12	-19	02	44.7	688
1289		1981	07	25.21736	19	37	03.65	-19	02	48.5	688
1305		1981	08	30.35903	23	32	10.81	-06	34	49.7	688
1305		1981	08	30.42361	23	32	08.02	-06	35	07.2	688
1335		1981	10	04.36042	00	49	53.11	+03	24	05.1	688
1335		1981	10	04.39514	00	49	51.28	+03	23	48.7	688
1487		1981	08	30.30278	23	07	58.65	-08	59	25.6	688
1487		1981	08	30.33889	23	07	57.11	-08	59	35.9	688
1487		1981	09	26.17507	22	49	23.84	-10	54	38.1	688
1487		1981	09	26.24097	22	49	21.45	-10	54	51.0	688
1487		1981	10	04.24375	22	44	58.33	-11	18	13.6	688
1487		1981	10	04.31667	22	44	56.32	-11	18	25.9	688
1704		1981	07	25.18819	19	13	52.01	-21	23	12.3	688
1704		1981	07	25.21736	19	13	50.16	-21	23	15.8	688

1812		1981	09	26.31944	01	14	05.97	+03	38	00.9			688
1812		1981	10	04.36042	01	08	46.53	+02	34	29.2			688
1812		1981	10	04.39514	01	08	45.11	+02	34	13.5			688
1877		1981	08	30.35903	23	16	56.60	-09	09	13.7			688
1877		1981	08	30.42361	23	16	53.46	-09	09	15.2			688
1928		1981	09	26.31944	01	01	55.86	+05	04	04.4			688
1928		1981	09	26.35417	01	01	53.94	+05	03	43.4			688
1928		1981	10	04.36042	00	55	48.50	+03	56	23.7			688
1928		1981	10	04.39514	00	55	46.64	+03	56	06.5			688
1999		1981	08	30.35903	23	24	14.05	-09	21	15.9			688
1999		1981	08	30.42361	23	24	11.59	-09	21	44.5			688
2087		1981	08	30.35903	23	17	10.02	-08	01	01.5			688
2087		1981	08	30.42361	23	17	06.46	-08	01	21.0			688
2096		1981	10	04.36042	00	49	54.63	+07	24	56.3			688
2096		1981	10	04.39514	00	49	52.81	+07	24	48.0			688
2160		1981	09	26.31944	00	58	05.24	+02	06	08.6			688
2160		1981	09	26.35417	00	58	03.39	+02	05	55.5		1	688
2160		1981	10	04.36042	00	51	57.92	+01	20	49.6			688
2160		1981	10	04.39514	00	51	56.16	+01	20	38.8			688
2162		1981	09	26.31944	01	20	46.52	+02	47	24.9			688
2162		1981	09	26.35417	01	20	44.75	+02	47	08.6			688
2291		1981	10	05.38889	04	36	23.86	-06	05	04.2			688
2291		1981	10	05.42569	04	36	24.00	-06	05	29.8			688
2471		1981	09	26.31944	01	16	39.10	+07	39	50.8	16.5		688
2471		1981	09	26.35417	01	16	37.21	+07	39	48.8			688
2471		1981	10	04.36042	01	09	53.45	+07	26	25.5	16.8		688
2471		1981	10	04.39514	01	09	51.59	+07	26	22.6		3	688
1942	TJ	1981	07	25.18819	19	18	49.45	-21	52	58.0	16.8	3	688
1942	TJ	1981	07	25.21736	19	18	47.83	-21	52	56.4		2	688
1943	EO	1981	09	26.31944	00	59	11.97	+04	37	53.6	17.0		688
1943	EO	1981	09	26.35417	00	59	09.96	+04	37	50.0		1	688
1943	EO	1981	10	04.36042	00	51	56.99	+04	26	47.7	17.0		688
1943	EO	1981	10	04.39514	00	51	54.83	+04	26	44.6			688
1964	TA1	1981	08	30.30278	22	53	24.29	-08	30	51.2	16.8	1	688
1964	TA1	1981	08	30.33889	22	53	22.29	-08	31	00.3			688
1964	TA1	1981	10	04.24375	22	27	49.99	-10	17	39.1	17.0		688
1964	TA1	1981	10	04.31667	22	27	47.99	-10	17	44.1			688
1964	VY	1981	09	26.31944	01	12	18.99	+05	34	42.6	16.8		688
1964	VY	1981	09	26.35417	01	12	16.89	+05	34	31.9		2	688
1964	VY	1981	10	04.36042	01	05	26.94	+04	47	41.8	16.8		688
1964	VY	1981	10	04.39514	01	05	24.85	+04	47	31.0			688
1976	YX1	1981	09	26.31944	01	04	39.24	+06	54	25.6	16.5		688
1976	YX1	1981	09	26.35417	01	04	37.70	+06	54	15.6			688
1976	YX1	1981	10	04.36042	00	58	50.65	+06	20	55.6	16.5		688
1976	YX1	1981	10	04.39514	00	58	49.12	+06	20	47.6			688
1981	LF	1981	07	25.18819	19	34	01.23	-18	05	34.9	16.2		688
1981	LF	1981	07	25.21736	19	33	59.73	-18	05	34.4			688
1981	QA	1981	10	04.24375	22	43	50.40	-15	16	02.5	15.5		688
1981	QA	1981	10	04.31667	22	44	02.44	-15	16	34.9			688
1981	QP1	1981	08	30.30278	22	56	40.65	-13	32	45.6	16.5		688
1981	QP1	1981	08	30.33889	22	56	38.00	-13	32	38.2			688
1981	QP1	1981	09	26.17507	22	29	15.68	-11	39	41.1	16.8		688
1981	QP1	1981	09	26.24097	22	29	12.46	-11	39	16.8			688
1981	QP1	1981	10	04.24375	22	24	12.76	-10	49	48.3	17.0		688
1981	QP1	1981	10	04.31667	22	24	10.20	-10	49	19.2		2	688
1981	QS1 *	1981	08	30.30278	22	48	37.93	-11	29	24.7	16.8	4	688
1981	QT1 *	1981	08	30.30278	22	50	59.68	-13	52	01.0	16.8	4	688
1981	QT1	1981	08	30.33889	22	50	57.53	-13	52	13.0		1	688
1981	QU1 *	1981	08	30.30278	22	51	02.53	-08	57	20.4	16.8	4	688

1981	QU1		1981	08	30.33889	22	51	00.63	-08	57	35.1		688
1981	QU1		1981	09	26.17507	22	26	43.52	-11	19	34.1	17.2	1 688
1981	QU1		1981	09	26.24097	22	26	41.11	-11	19	54.9		688
1981	QV1	*	1981	08	30.30278	22	51	22.06	-09	46	18.4	16.8	4 688
1981	QV1		1981	08	30.33889	22	51	19.94	-09	46	27.8		688
1981	QW1	*	1981	08	30.30278	22	53	20.13	-08	10	45.3	16.8	4 688
1981	QW1		1981	08	30.33889	22	53	18.42	-08	10	50.9		688
1981	QX1	*	1981	08	30.30278	22	53	32.29	-09	04	16.0	17.0	4 688
1981	QX1		1981	08	30.33889	22	53	30.77	-09	04	22.2		688
1981	QY1	*	1981	08	30.30278	22	54	32.33	-08	46	22.1	17.0	4 688
1981	QY1		1981	08	30.33889	22	54	30.66	-08	46	34.4		688
1981	QZ1	*	1981	08	30.30278	22	54	39.86	-09	24	53.0	16.5	6 688
1981	QZ1		1981	08	30.33889	22	54	38.13	-09	25	14.9		688
1981	QA2	*	1981	08	30.30278	22	56	44.21	-10	21	38.8	17.0	4 688
1981	QA2		1981	08	30.33889	22	56	41.97	-10	21	27.4		2 688
1981	QB2	*	1981	08	30.30278	23	05	40.36	-10	25	25.1	16.8	4 688
1981	QB2		1981	08	30.33889	23	05	38.84	-10	25	43.2		688
1981	QB2		1981	09	26.17507	22	47	58.99	-13	25	30.5	17.0	688
1981	QB2		1981	09	26.24097	22	47	56.88	-13	25	48.8		688
1981	QC2	*	1981	08	30.30278	23	05	52.65	-15	31	06.3	15.5	4 688
1981	QC2		1981	08	30.33889	23	05	50.46	-15	31	13.2		3 688
1981	QC2		1981	09	26.17507	22	40	51.84	-15	57	43.3	15.5	688
1981	QC2		1981	09	26.24097	22	40	49.00	-15	57	36.3		688
1981	QC2		1981	10	04.24375	22	36	13.77	-15	35	28.0	15.8	688
1981	QC2		1981	10	04.31667	22	36	11.71	-15	35	11.5		688
1981	QD2	*	1981	08	30.35903	23	17	10.05	-12	00	55.2	16.2	4 688
1981	QD2		1981	08	30.42361	23	17	06.61	-12	01	13.3		688
1981	QE2	*	1981	08	30.35903	23	17	15.27	-07	39	33.1	16.5	4 688
1981	QE2		1981	08	30.42361	23	17	12.81	-07	40	22.9		688
1981	QF2	*	1981	08	30.35903	23	17	15.45	-07	11	38.3	16.0	4 688
1981	QF2		1981	08	30.42361	23	17	12.30	-07	12	02.8		688
1981	QG2	*	1981	08	30.35903	23	22	04.57	-06	30	10.9	16.5	4 688
1981	QG2		1981	08	30.42361	23	22	01.81	-06	30	30.9		688
1981	QH2	*	1981	08	30.35903	23	22	43.40	-05	24	26.5	16.5	4 688
1981	QH2		1981	08	30.42361	23	22	40.80	-05	25	02.1		688
1981	QJ2	*	1981	08	30.35903	23	31	14.95	-05	45	01.9	16.8	4 688
1981	QJ2		1981	08	30.42361	23	31	12.48	-05	45	40.2		688
1981	RE		1981	08	30.37917	23	59	37.42	+01	35	09.7	16.0	688
1981	RE		1981	08	30.44514	23	59	35.29	+01	34	51.5		688
1981	RF		1981	08	30.37917	00	08	25.21	-04	44	21.8	16.8	688
1981	RF		1981	08	30.44514	00	08	23.36	-04	44	44.7		688
1981	SZ	*	1981	09	26.17507	22	26	15.86	-12	30	59.7	17.0	7 688
1981	SZ		1981	09	26.24097	22	26	13.79	-12	31	11.1		3 688
1981	SZ		1981	10	04.24375	22	23	07.77	-12	49	58.9	17.2	1 688
1981	SZ		1981	10	04.31667	22	23	06.35	-12	50	07.4		688
1981	SA1	*	1981	09	26.17507	22	27	02.17	-10	06	28.1	16.8	9 688
1981	SA1		1981	09	26.24097	22	27	00.09	-10	06	41.7		688
1981	SA1		1981	10	04.24375	22	23	29.21	-10	31	51.0	17.0	688
1981	SA1		1981	10	04.31667	22	23	27.33	-10	32	04.2		688
1981	SB1	*	1981	09	26.17507	22	29	36.96	-12	54	11.3	15.5	9 688
1981	SB1		1981	09	26.24097	22	29	36.17	-12	54	47.2		688
1981	SB1		1981	10	04.24375	22	29	10.24	-13	57	08.9	16.2	688
1981	SB1		1981	10	04.31667	22	29	10.30	-13	57	36.2		688
1981	SC1	*	1981	09	26.17507	22	46	37.90	-15	00	45.7	16.5	7 688
1981	SC1		1981	09	26.24097	22	46	36.06	-15	00	48.8		688
1981	SC1		1981	10	04.24375	22	44	29.66	-14	56	06.5	16.8	688
1981	SC1		1981	10	04.31667	22	44	28.83	-14	55	59.1		688
1981	SD1	*	1981	09	26.31944	00	58	23.61	+06	17	51.2	16.8	9 688
1981	SD1		1981	09	26.35417	00	58	21.58	+06	17	49.3		688

1981	SD1		1981	10	04.36042	00	51	03.35	+06	13	56.8	16.8	688
1981	SD1		1981	10	04.39514	00	51	01.23	+06	13	54.6		688
1981	SE1	*	1981	09	26.31944	00	58	41.86	+02	08	35.6	16.5	9 688
1981	SE1		1981	09	26.35417	00	58	39.75	+02	08	13.5		688
1981	SE1		1981	10	04.36042	00	51	16.70	+01	01	10.5	16.8	688
1981	SE1		1981	10	04.39514	00	51	14.44	+01	00	53.4		688
1981	SF1	*	1981	09	26.31944	01	01	26.71	+07	04	13.7	17.0	0 688
1981	SF1		1981	09	26.35417	01	01	24.99	+07	03	53.6		688
1981	SF1		1981	10	04.36042	00	55	14.50	+05	56	47.5	17.0	688
1981	SF1		1981	10	04.39514	00	55	12.82	+05	56	29.6		1 688
1981	SG1	*	1981	09	26.31944	01	04	02.85	+05	39	59.2	16.5	9 688
1981	SG1		1981	09	26.35417	01	04	00.65	+05	39	50.0		688
1981	SG1		1981	10	04.36042	00	56	06.51	+05	11	25.9	16.5	688
1981	SG1		1981	10	04.39514	00	56	04.31	+05	11	19.7		688
1981	SH1	*	1981	09	26.31944	01	08	21.01	+07	14	07.5	16.5	9 688
1981	SH1		1981	09	26.35417	01	08	19.40	+07	14	12.5		688
1981	SH1		1981	10	04.36042	01	02	19.27	+07	30	29.0	16.5	688
1981	SH1		1981	10	04.39514	01	02	17.47	+07	30	33.2		688
1981	SJ1	*	1981	09	26.31944	01	09	20.91	+03	18	15.6	16.8	9 688
1981	SJ1		1981	09	26.35417	01	09	19.41	+03	17	59.7		1 688
1981	SJ1		1981	10	04.36042	01	03	35.44	+02	14	40.2	16.8	688
1981	SJ1		1981	10	04.39514	01	03	33.78	+02	14	24.7		688
1981	SK1	*	1981	09	26.31944	01	10	34.63	+07	53	31.1	16.0	9 688
1981	SK1		1981	09	26.35417	01	10	32.94	+07	53	20.5		688
1981	SK1		1981	10	04.36042	01	04	55.46	+07	13	56.0	16.2	688
1981	SK1		1981	10	04.39514	01	04	53.81	+07	13	44.4		688
1981	SL1	*	1981	09	26.31944	01	14	10.66	+07	05	23.7	15.2	9 688
1981	SL1		1981	09	26.35417	01	14	09.06	+07	05	02.4		688
1981	SL1		1981	10	04.36042	01	08	33.22	+05	48	30.2	15.0	688
1981	SL1		1981	10	04.39514	01	08	31.50	+05	48	12.0		688
1981	SM1	*	1981	09	26.31944	01	14	41.61	+04	54	16.7	16.5	9 688
1981	SM1		1981	09	26.35417	01	14	40.05	+04	54	06.2		688
1981	SM1		1981	10	04.36042	01	09	09.61	+04	15	20.2	16.5	688
1981	SM1		1981	10	04.39514	01	09	08.06	+04	15	12.5		688
1981	SN1	*	1981	09	26.31944	01	18	36.89	+04	49	46.6	16.8	7 688
1981	SN1		1981	09	26.35417	01	18	35.71	+04	49	35.4		688
1981	SO1	*	1981	09	26.31944	01	18	45.37	+04	39	49.0	16.8	7 688
1981	SO1		1981	09	26.35417	01	18	43.61	+04	39	38.7		1 688
1981	SP1	*	1981	09	26.31944	01	20	11.63	+01	59	52.5	16.8	7 688
1981	SP1		1981	09	26.35417	01	20	09.50	+01	59	44.9		688
1981	SP1		1981	10	04.36042	01	12	14.23	+01	37	44.5		688
1981	SP1		1981	10	04.39514	01	12	12.04	+01	37	41.0		688
1981	SQ1	*	1981	09	26.31944	01	20	35.88	+06	55	26.3	16.8	7 688
1981	SQ1		1981	09	26.35417	01	20	34.34	+06	55	14.5		688
1981	SR1	*	1981	09	26.31944	01	23	18.61	+03	15	50.7	17.0	8 688
1981	SR1		1981	09	26.35417	01	23	16.61	+03	15	47.3		688
1981	SS1	*	1981	09	26.35417	01	03	12.17	+08	49	52.5	17.2	9 688
1981	SS1		1981	10	04.36042	00	56	39.87	+07	27	41.9	17.0	688
1981	SS1		1981	10	04.39514	00	56	37.70	+07	27	21.1		1 688
1981	TL		1981	09	26.31944	01	08	18.20	+03	04	33.7	17.2	3 688
1981	TL		1981	09	26.35417	01	08	16.27	+03	04	20.0		688
1981	TL	*	1981	10	04.36042	01	02	33.95	+02	27	22.7	17.2	5 688
1981	TL		1981	10	04.39514	01	02	32.48	+02	27	16.4		1 688
1981	TM	*	1981	10	05.38889	04	22	49.02	-02	44	50.8	17.0	7 688
1981	TM		1981	10	05.42569	04	22	49.10	-02	45	13.0		688

Note 1: right ascension uncertain. 2: declination uncertain. 3 = 1 + 2. 4: discoverer Bowell. 5: discoverer Skiff. 6 = 2 + 4. 7: discoverer N. G. Thomas. 8 = 1 + 7. 9: discoverers Skiff and Thomas. 0 = 1 + 9.

OBSERVATIONS MADE AT STEWARD OBSERVATORY, KITT PEAK STATION, BY D. THOLEN.

Object		Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1981 VB	*	1981 11	03.333	02 22 06.4	+05 49 34	17.5	691
1981 VB		1981 11	03.358	02 22 05.1	+05 49 29		691
1981 VB		1981 11	04.183	02 21 23.8	+05 45 17		691
1981 VB		1981 11	04.280	02 21 18.9	+05 44 49		691
1981 VB		1981 11	04.358	02 21 15.0	+05 44 26		691
1981 VB		1981 11	04.454	02 21 09.9	+05 43 54		691
1981 VB		1981 11	05.297	02 20 28.5	+05 39 47		691
1981 VB		1981 11	05.328	02 20 26.8	+05 39 34		691

OBSERVATIONS MADE AT THE LINCOLN LABORATORY ETS, NEW MEXICO, BY L. G. TAFF.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
18	1981 08	30.34696	21 56 47.53	-13 14 04.7	704
28	1981 08	29.33422	23 12 16.13	-09 47 54.7	704
28	1981 08	29.40647	23 12 12.96	-09 48 26.7	704
73	1981 08	30.27830	22 23 52.86	-12 13 33.3	704
108	1981 09	29.40858	00 29 54.77	+05 12 39.7	704
114	1981 09	27.40260	00 03 23.30	-02 01 41.0	704
119	1981 09	01.33943	21 48 40.79	-05 06 01.0	704
125	1981 09	27.32192	23 18 59.90	-05 09 22.0	704
125	1981 09	27.33338	23 18 59.40	-05 09 25.0	704
147	1981 08	25.36024	22 28 27.03	-06 30 02.7	704
147	1981 08	25.39312	22 28 25.46	-06 30 10.3	704
158	1981 09	29.40271	00 42 20.90	+06 15 46.0	704
169	1981 09	25.34630	00 09 03.97	+02 35 03.3	704
169	1981 09	25.36796	00 09 02.52	+02 34 59.8	704
254	1981 09	27.41041	23 47 05.57	-05 48 03.3	704
268	1981 09	27.40837	23 40 33.53	-05 09 28.0	704
299	1981 09	29.41326	00 34 04.43	+06 08 15.3	704
317	1981 09	01.39236	23 16 38.90	-05 27 10.0	704
338	1981 08	31.35005	21 39 37.00	-07 32 27.7	704
374	1981 09	29.34942	23 44 48.83	+07 29 45.7	704
377	1981 09	02.27897	23 00 09.76	+02 07 10.0	704
421	1981 09	29.40478	00 37 06.63	+03 50 32.7	704
447	1981 08	25.29092	22 25 50.00	-17 35 51.0	704
447	1981 08	25.37870	22 25 45.73	-17 36 13.7	704
645	1981 09	27.31895	23 37 36.85	-03 07 32.0	704
645	1981 09	27.33250	23 37 36.40	-03 07 34.0	704
746	1981 09	29.28412	00 14 21.53	+03 29 19.7	704
761	1981 09	30.31787	01 07 00.40	+06 30 16.5	704
936	1981 08	25.28674	22 07 25.52	-15 41 10.5	704
936	1981 08	25.37479	22 07 21.26	-15 41 27.7	704
1111	1981 09	27.41319	23 53 59.57	-05 34 00.3	704
1135	1981 08	29.28187	23 05 20.73	-07 19 31.7	704
1135	1981 08	29.35977	23 05 16.46	-07 19 44.3	704
1152	1981 09	29.26666	00 09 01.70	+05 58 58.3	704
1165	1981 09	29.34746	23 42 42.10	+06 33 31.0	704
1167	1981 09	29.27961	23 59 27.80	+05 53 47.5	704
1225	1981 08	25.29476	22 17 59.06	-14 21 03.0	704
1267	1981 08	29.33257	23 04 28.63	-12 57 13.7	704
1267	1981 08	29.40022	23 04 24.57	-12 57 27.0	704
1335	1981 09	30.31574	00 53 14.43	+03 54 58.7	704
1419	1981 09	25.27741	23 16 35.47	+02 09 11.0	704
1419	1981 09	25.36564	23 16 30.77	+02 08 24.3	704
1576	1981 09	27.40491	23 40 45.17	-02 23 34.7	704
1606	1981 09	25.26376	23 30 47.47	+00 42 24.7	704
1606	1981 09	25.35689	23 30 44.70	+00 41 20.7	704
1611	1981 09	02.27332	23 04 30.49	+00 58 12.0	704

1777		1981	08	25.36410	22	28	41.86	-09	36	33.0	704
1777		1981	08	25.39855	22	28	40.10	-09	36	59.7	704
1777		1981	08	30.28076	22	24	19.03	-09	55	39.0	704
1807		1981	09	29.34508	23	41	54.20	+04	45	14.0	704
1823		1981	09	29.27726	00	00	00.88	+04	26	08.0	704
1858		1981	09	25.27369	23	34	34.17	+00	09	30.3	704
1858		1981	09	25.36272	23	34	29.77	+00	09	02.0	704
1878		1981	08	30.28358	22	15	19.13	-09	12	12.3	704
1878		1981	09	03.21866	22	12	15.33	-09	31	58.7	704
1878		1981	09	03.30403	22	12	11.39	-09	32	25.7	704
1887		1981	08	29.28380	23	12	03.63	-07	00	44.0	704
1887		1981	08	29.36199	23	11	59.27	-07	00	52.0	704
2011		1981	09	29.37462	23	44	50.23	+03	35	05.3	704
2032		1981	08	29.28586	23	12	02.00	-07	06	18.0	704
2032		1981	08	29.36469	23	11	58.33	-07	06	38.0	704
2087		1981	09	02.35102	23	14	26.26	-08	20	28.3	704
2087		1981	09	02.40106	23	14	23.45	-08	20	46.5	704
2087		1981	09	03.23131	23	13	37.27	-08	26	14.8	704
2087		1981	09	03.29254	23	13	33.56	-08	26	41.0	704
2447		1981	08	30.34986	21	43	08.03	-14	56	34.3	704
2447		1981	09	02.23189	21	41	31.00	-15	28	11.5	704
2447		1981	09	03.24518	21	40	58.80	-15	39	03.7	704
1977	QL2	1981	08	30.41584	23	07	17.97	+00	12	53.0	704
1977	QL2	1981	08	31.39636	23	06	32.09	+00	06	37.0	704
1977	QL2	1981	09	01.32940	23	05	47.95	+00	00	34.5	704
1978	RO1	1981	09	02.36160	22	11	49.47	-10	07	23.3	704
1978	RO1	1981	09	03.22729	22	11	00.46	-10	12	23.3	704
1978	RO1	1981	09	03.28961	22	10	56.69	-10	12	45.7	704
1981	QJ	1981	09	25.34861	23	57	33.60	-01	09	23.0	704
1981	QJ	1981	09	25.37086	23	57	32.55	-01	09	27.5	704
1981	QJ	1981	09	27.31324	23	56	04.78	-01	17	59.8	704
1981	QJ	1981	09	29.26405	23	54	37.90	-01	26	34.2	704
1981	QO	1981	09	02.39184	22	34	22.83	-01	44	40.0	704
1981	QO	1981	09	03.22135	22	33	41.13	-01	48	34.3	704
1981	QQ	1981	09	02.29719	22	12	11.36	-09	55	47.3	704
1981	QQ	1981	09	02.29863	22	12	11.20	-09	55	49.0	704
1981	QQ	1981	09	03.25918	22	11	31.73	-10	03	52.3	704
1981	QR	1981	08	30.26847	22	14	11.53	-10	26	38.7	704
1981	QR	1981	09	02.24281	22	11	19.60	-10	30	20.3	704
1981	QS	1981	09	03.25089	22	13	08.17	-10	06	27.3	704
1981	QS	1981	09	03.30143	22	13	05.56	-10	06	51.0	704
1981	QU	1981	08	30.27309	22	20	28.36	-10	56	19.3	704
1981	QU	1981	09	01.30945	22	18	24.93	-11	08	39.0	704
1981	QU	1981	09	02.23983	22	17	29.03	-11	14	11.0	704
1981	QU	1981	09	03.26135	22	16	27.83	-11	20	15.0	704
1981	QB1	1981	08	29.28921	23	11	26.80	-04	47	00.3	704
1981	QB1	1981	08	29.36701	23	11	23.20	-04	47	21.0	704
1981	QB1	1981	08	30.21944	23	10	46.57	-04	51	07.3	704
1981	QB1	1981	08	31.36297	23	09	56.53	-04	56	15.3	704
1981	QB1	1981	09	01.29441	23	09	15.63	-05	00	29.3	704
1981	QB1	1981	09	03.27857	23	07	47.52	-05	09	36.5	704
1981	QC1	1981	08	30.41320	23	12	11.63	-02	39	24.3	704
1981	QC1	1981	08	31.40011	23	11	36.50	-02	51	27.3	704
1981	QC1	1981	09	01.31787	23	11	03.56	-03	02	48.3	704
1981	QC1	1981	09	02.22917	23	10	30.43	-03	14	05.0	704
1981	QC1	1981	09	03.24233	23	09	52.93	-03	26	50.0	704
1981	QM1 *	1981	08	25.35732	22	33	07.63	-09	13	26.7	704
1981	QM1	1981	08	25.38795	22	33	06.10	-09	13	33.0	704
1981	QM1	1981	08	27.21715	22	31	43.43	-09	21	00.3	704

1981	QM1		1981	08	29.22004	22	30	11.43	-09 29 16.0	704
1981	QM1		1981	08	29.29127	22	30	08.06	-09 29 34.3	704
1981	QM1		1981	08	29.34960	22	30	05.33	-09 29 46.0	704
1981	QM1		1981	08	30.21409	22	29	25.87	-09 33 20.3	704
1981	QM1		1981	08	31.35591	22	28	32.86	-09 37 57.3	704
1981	QM1		1981	09	01.28589	22	27	49.96	-09 41 49.7	704
1981	QM1		1981	09	02.26120	22	27	05.26	-09 45 47.7	704
1981	QM1		1981	09	03.28308	22	26	18.37	-09 49 54.7	704
1981	QN1	*	1981	08	29.24066	22	35	24.49	-11 48 55.3	704
1981	QN1		1981	08	29.29358	22	35	22.10	-11 49 10.7	704
1981	QN1		1981	08	29.35260	22	35	19.33	-11 49 29.7	704
1981	QN1		1981	08	30.21657	22	34	41.26	-11 53 43.7	704
1981	QN1		1981	08	31.35810	22	33	50.20	-11 59 21.7	704
1981	QN1		1981	09	01.28984	22	33	08.73	-12 03 57.7	704
1981	QN1		1981	09	02.25933	22	32	25.70	-12 08 40.7	704
1981	QN1		1981	09	03.31080	22	31	38.86	-12 13 39.0	704
1981	QO1	*	1981	08	29.27938	23	02	32.26	-06 38 08.3	704
1981	QO1		1981	08	29.35709	23	02	28.09	-06 38 14.3	704
1981	QO1		1981	08	30.22995	23	01	44.30	-06 39 49.3	704
1981	QO1		1981	08	31.36109	23	00	46.36	-06 41 52.0	704
1981	QO1		1981	09	01.29228	22	59	58.60	-06 43 36.0	704
1981	QO1		1981	09	02.25604	22	59	08.99	-06 45 17.7	704
1981	QP1	*	1981	08	29.33691	22	57	44.67	-13 35 17.3	704
1981	QP1		1981	08	29.41071	22	57	39.60	-13 35 08.7	704
1981	QP1		1981	08	30.22197	22	56	46.03	-13 32 55.0	704
1981	QP1		1981	08	31.36564	22	55	28.87	-13 29 44.0	704
1981	QP1		1981	09	01.29660	22	54	26.23	-13 27 02.3	704
1981	QP1		1981	09	03.26960	22	52	12.53	-13 21 03.7	704
1981	QQ1	*	1981	08	29.40370	23	04	52.09	-13 09 01.7	704
1981	QQ1		1981	08	30.22789	23	04	17.46	-13 14 13.7	704
1981	QQ1		1981	08	31.36924	23	03	27.43	-13 21 30.3	704
1981	QQ1		1981	09	01.30150	23	02	46.53	-13 27 20.3	704
1981	QQ1		1981	09	02.26336	23	02	03.73	-13 33 13.7	704
1981	QQ1		1981	09	03.26690	23	01	18.77	-13 39 18.5	704
1981	QR1	*	1981	08	30.22479	22	21	43.70	-07 24 01.0	704
1981	QR1		1981	09	01.29936	22	20	11.53	-07 35 31.0	704
1981	QR1		1981	09	02.24941	22	19	29.72	-07 40 48.3	704
1981	RR	*	1981	09	01.34281	21	49	00.67	-01 37 38.3	704
1981	RR		1981	09	01.39609	21	48	58.30	-01 38 04.3	704
1981	RR		1981	09	02.22417	21	48	24.26	-01 45 18.3	704
1981	RR		1981	09	03.23665	21	47	43.03	-01 54 17.3	704
1981	RR		1981	09	03.29852	21	47	40.33	-01 54 50.7	704
1981	RS	*	1981	09	02.34710	23	15	31.46	-08 16 57.0	704
1981	RS		1981	09	02.39750	23	15	29.47	-08 17 33.0	704
1981	RS		1981	09	03.23403	23	14	59.77	-08 27 59.7	704
1981	RS		1981	09	03.29539	23	14	57.40	-08 28 46.3	704
1981	SW	*	1981	09	25.27030	23	23	25.17	+00 26 25.0	704
1981	SW		1981	09	25.36010	23	23	20.97	+00 25 40.0	704
1981	SW		1981	09	27.23136	23	22	00.93	+00 10 06.7	704
1981	SW		1981	09	29.22061	23	20	39.27	-00 06 09.7	704
1981	SX	*	1981	09	29.27262	00	03	36.10	+07 00 35.0	704
1981	SX		1981	09	29.35219	00	03	30.47	+07 00 29.3	704
1981	SX		1981	09	30.33042	00	02	27.27	+06 59 13.3	704

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

Object	Date	UT	R. A. (1950)	Decl.	Obs.
1315	1951	11 29.21494	02 39 57.79	+16 53 00.9	760
1315	1951	11 29.25728	02 39 56.07	+16 52 45.2	760

1315		1951	12	05.19859	02	36	37.36	+16	26	19.7	760
2196		1953	03	20.24065	10	42	58.32	-03	14	08.4	760
2196		1953	03	20.27641	10	42	56.99	-03	13	53.5	760
2203		1957	10	20.24877	01	41	12.20	+09	18	38.2	760
2203		1957	10	20.30449	01	41	09.50	+09	18	24.4	760
2274		1957	02	21.03472	05	43	30.58	+26	04	43.2	760
2434		1955	11	07.04447	00	19	22.96	-02	49	04.1	760
2434		1955	11	07.08336	00	19	21.78	-02	48	51.0	760
2434		1959	04	16.34255	13	53	16.25	-11	59	51.4	760
2434		1959	04	16.38630	13	53	13.73	-11	59	49.9	760
2451		1953	08	12.26561	22	46	13.10	-08	06	38.5	760
2451		1953	09	16.15748	22	15	03.99	-08	32	00.7	760
2451		1953	09	16.20625	22	15	01.77	-08	32	01.0	760
2452		1964	03	16.23268	10	47	42.93	+14	01	39.2	760
2452		1964	03	16.27851	10	47	40.54	+14	01	39.0	760
2460		1960	12	14.21137	04	01	30.64	+13	53	19.7	760
2460		1960	12	14.25512	04	01	29.46	+13	53	15.8	760
1950	PM	1950	08	12.27088	21	23	35.66	-12	36	55.6	760
1951	KJ	1951	05	25.18816	15	47	43.65	-20	57	35.3	760
1951	KJ	1951	05	25.21802	15	47	41.90	-20	57	28.1	760
1951	UG	1951	10	29.35627	03	11	34.05	+16	35	48.4	760
1951	UG	1951	10	29.40071	03	11	31.35	+16	35	51.0	760
1951	WH	1951	11	29.21494	02	40	20.74	+16	56	39.1	760
1951	WH	1951	11	29.25728	02	40	18.77	+16	56	41.6	760
1953	EA1	1953	03	10.11148	08	32	28.52	+21	02	50.5	760
1953	EA1	1953	03	10.15454	08	32	27.63	+21	02	54.5	760
1953	EF1	1953	03	14.10350	09	36	21.77	+09	42	48.9	760
1953	FE1	1953	03	20.24065	10	46	54.80	-01	31	20.4	760
1953	FE1	1953	03	20.27641	10	46	52.87	-01	31	01.9	760
1953	GG1	1953	04	14.15523	13	01	26.31	+10	36	20.0	760
1953	GG1	1953	04	14.19690	13	01	24.55	+10	36	30.1	760
1953	JH	1953	05	09.34797	17	20	48.18	-19	03	08.3	760
1953	ND	1953	07	14.19860	18	59	07.24	+04	07	04.4	760
1953	ND	1953	07	14.24582	18	59	04.84	+04	06	49.9	760
1953	UU	1953	10	31.14721	01	11	37.58	+02	43	38.0	760
1953	UU	1953	10	31.19235	01	11	35.76	+02	43	26.0	760
1953	VQ	1953	11	02.18052	01	10	22.05	+02	34	42.5	760
1953	VQ	1953	11	02.22633	01	10	20.25	+02	34	32.6	760
1954	JD	1954	05	06.11575	12	20	17.18	+13	28	55.3	760
1954	JD	1954	05	06.15741	12	20	17.13	+13	29	16.0	760
1954	UC2	1954	10	25.15703	00	49	52.57	+03	24	55.0	760
1954	UC2	1954	10	25.20565	00	49	50.27	+03	24	46.4	760
1957	HU	1957	04	30.80585	14	31	13.67	-18	45	44.8	760
1957	HU	1957	04	30.86580	14	31	10.47	-18	45	18.5	760
1958	DX	1958	02	24.33679	10	14	28.53	+10	45	00.5	760
1958	DX	1958	02	24.37917	10	14	26.53	+10	45	13.2	760
1958	RK	1958	09	14.29163	23	40	28.67	-06	16	35.6	760
1958	RK	1958	09	14.33399	23	40	26.41	-06	16	50.3	760
1960	YA	1960	12	17.10166	04	03	15.04	+21	19	50.9	760
1961	TZ	1961	10	10.14583	00	05	02.68	+03	01	11.1	760
1961	TZ	1961	10	10.19340	00	04	59.67	+03	01	08.2	760
1961	TG1	1961	10	10.34583	02	05	44.72	-04	01	46.3	760
1961	TY1	1961	10	15.24235	02	01	04.44	-04	05	04.2	760
1961	TY1	1961	10	15.28575	02	01	01.95	-04	05	05.4	760
1962	GG	1962	04	04.18421	12	51	48.93	-04	53	19.5	760
1962	GG	1962	04	04.23142	12	51	45.85	-04	52	55.8	760
1962	WN2	1962	11	30.32770	06	00	46.46	+07	04	35.4	760
1963	VL	1963	11	11.16080	03	05	42.68	+12	04	57.1	760
1963	VL	1963	11	11.20594	03	05	39.81	+12	04	53.9	760

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

Object		Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
574		1978	04 09.26742	13 10 03.66	-14 16 33.4		1	801
682		1981	01 31.15561	07 44 27.13	+05 27 17.9			801
682		1981	03 04.08711	07 26 55.69	+08 17 17.9		1	801
1737		1981	09 21.18681	22 50 07.31	-02 16 10.6			801
1758		1978	04 07.07005	07 54 51.64	+25 23 36.7			801
1824		1981	04 01.15139	11 33 05.98	+03 48 01.9			801
1911		1981	09 29.35088	03 05 33.24	+19 26 13.0			801
1971		1981	09 25.26448	00 36 27.29	+17 27 28.9			801
2047		1978	04 10.35161	15 56 57.34	-24 50 48.1			801
2115		1978	04 15.29436	14 14 26.25	-20 21 04.0			801
2274		1978	09 28.31733	02 50 53.99	+18 43 10.5			801
2314		1977	11 12.12332	03 01 33.32	+19 53 41.6			801
2347		1981	02 06.12397	05 51 58.12	+25 48 31.0			801
2394		1981	03 12.24079	10 24 45.67	+11 15 26.9			801
2400		1981	04 07.16322	09 22 22.18	+11 15 54.5			801
2426		1981	06 27.16848	15 28 23.06	-16 12 14.2			801
2426		1981	06 28.16069	15 28 11.11	-16 08 57.8			801
2430		1977	11 12.12332	03 01 36.39	+20 10 57.2			801
2436		1981	06 30.22359	17 38 35.22	-19 55 10.5			801
2447		1981	07 09.21656	22 02 28.60	-07 12 43.2			801
2447		1981	09 21.14102	21 35 50.19	-18 13 21.5			801
2459		1981	09 29.12567	21 38 13.43	-02 04 59.2			801
2470		1981	09 29.31601	02 35 34.30	+11 36 07.9			801
1928	TK	1981	06 30.09416	13 54 19.29	-10 56 31.8			801
1928	TK	1981	07 01.09090	13 54 32.80	-10 57 47.0		2	801
1932	BH	1981	09 30.29635	00 51 03.24	+00 48 21.0			801
1943	EO	1981	09 29.26904	00 56 35.38	+04 34 02.9			801
1950	DL	1981	10 06.14380	01 23 18.77	+09 00 34.8			801
1950	FC	1981	09 25.26448	00 38 37.46	+17 55 16.8			801
1950	FC	1981	09 29.24147	00 35 01.06	+17 42 59.2			801
1952	UT	1981	01 31.39477	10 37 55.36	+20 05 56.9		3	801
1964	TA1	1981	09 30.19208	22 29 42.36	-10 12 13.6			801
1964	TX1	1981	10 06.19060	02 14 32.14	+10 04 55.8			801
1964	VY	1981	10 04.14582	01 05 38.70	+04 49 04.7			801
1966	PD	1981	02 04.29931	08 33 19.22	+13 03 48.8		4	801
1973	SO2	1981	01 09.14317	05 01 09.72	+26 53 19.6			801
1975	EE3	1981	09 25.09809	20 14 14.98	+00 10 39.7			801
1975	NY	1981	09 30.21946	23 41 30.40	-04 31 08.2			801
1976	UP20	1981	09 29.08740	20 13 09.02	-15 34 47.6		4	801
1976	YX1	1981	09 29.29105	01 02 34.41	+06 42 30.2			801
1977	NR	1981	09 29.35088	03 06 38.87	+19 23 09.4			801
1977	PZ1	1981	09 30.11883	21 29 15.59	-08 57 02.9			801
1977	PZ1	1981	10 01.03473	21 29 21.62	-08 55 59.5			801
1977	QL2	1981	09 21.18681	22 50 17.55	-02 19 50.9			801
1977	UQ	1981	09 25.23124	23 42 11.26	-03 15 33.3			801
1978	NC3	1981	03 11.09564	08 44 20.44	+06 29 02.5			801
1978	XC	1981	06 24.14378	15 12 19.54	-10 14 35.5			801
1979	DE	1981	09 30.15444	21 50 33.57	-23 45 09.3			801
1979	DK	1981	09 30.27400	23 42 00.54	+10 26 40.9			801
1979	QE	1981	02 10.04321	05 02 20.02	+23 39 52.0			801
1980	CO	1981	06 27.19404	15 42 40.57	-17 12 46.7			801
1980	CO	1981	07 01.18407	15 41 04.67	-17 12 34.2			801
1980	KJ	1981	10 04.19418	01 08 52.62	+13 11 50.8			801
1980	KN	1981	10 01.08289	21 51 58.66	-16 11 20.3			801
1980	LD	1981	10 04.16863	01 23 05.31	-08 47 52.5			801

1980	OH		1981	11	01.20251	03	36	15.01	+17 06 52.7		801
1980	PV		1981	10	06.22287	02	21	53.54	+26 35 44.7		801
1980	UA		1981	01	31.04821	02	06	13.41	+11 23 02.2		801
1981	FQ		1981	04	01.15139	11	33	31.54	+03 08 12.0	17.5	801
1981	GM1	*	1981	04	01.15139	11	34	08.49	+03 40 42.4	17	801
1981	GN1	*	1981	04	01.15139	11	34	35.21	+03 31 03.2	18	801
1981	GO1	*	1981	04	01.15139	11	33	49.87	+03 47 20.3	18	801
1981	LM	*	1981	06	03.22119	15	45	49.33	-20 48 38.7	18.5	801
1981	PA		1981	09	25.14815	21	33	40.42	+00 51 40.7		801
1981	QA		1981	09	21.16608	22	01	50.85	-12 12 43.0		801
1981	RU	*	1981	09	05.26603	00	58	04.50	+09 57 34.8	17.5	801
1981	SU	*	1981	09	25.26448	00	38	48.68	+17 46 41.1	18.0	801
1981	SU		1981	09	29.24147	00	35	27.80	+17 37 15.7		801
1981	SV	*	1981	09	30.29635	00	51	39.61	+00 51 56.1	17	801
1981	TC	*	1981	10	04.14582	01	04	06.67	+04 58 47.3	17	801
1981	TD	*	1981	10	04.14582	01	04	41.53	+04 47 41.1	17.5	801
1981	TE	*	1981	10	04.14582	01	05	20.24	+04 46 46.8	18	801
1981	UC		1981	11	01.20251	03	36	18.00	+17 21 47.4		801
1981	VA		1981	11	07.08154	02	46	17.07	+50 54 11.3		801
4579	P-L		1981	09	30.32431	00	59	48.33	+03 34 30.4		801
7071	P-L		1981	09	30.02184	19	17	17.65	+02 59 26.0		801

Note 1: trailed image. 2: inkdot measured; weak image; dark plate. 3: involved with star trail. 4: very weak image.

OBSERVATIONS MADE WITH THE GAUTIER ASTROGRAPH AT THE UNIVERSITY OF CHILE'S CERRO CALAN STATION BY H. WROBLEWSKI, C. TORRES, S. BARROS AND M. WISCHNJEWSKY.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
1	1978 09	27.00035	18 54 22.83	-30 49 23.8	806
1	1978 09	27.00729	18 54 23.10	-30 49 23.6	806
1	1978 09	27.01424	18 54 23.40	-30 49 22.5	806
3	1978 09	27.06007	19 34 39.31	-12 02 31.2	806
3	1978 09	27.06701	19 34 39.43	-12 02 33.2	806
3	1978 09	27.07396	19 34 39.69	-12 02 36.0	806
3	1980 03	12.03438	07 08 06.15	+10 59 44.5	806
3	1980 03	12.04132	07 08 06.33	+10 59 47.2	806
3	1980 03	12.04826	07 08 06.55	+10 59 50.6	806
3	1980 03	20.00521	07 13 42.42	+11 55 58.9	806
3	1980 03	20.01736	07 13 42.81	+11 56 01.6	806
3	1980 03	20.01910	07 13 43.12	+11 56 04.7	806
4	1978 04	14.31424	17 17 04.36	-15 12 04.0	806
4	1978 04	14.32118	17 17 04.44	-15 12 03.8	806
4	1978 04	14.32812	17 17 04.59	-15 12 04.8	806
4	1978 05	27.25799	17 00 58.76	-15 27 20.8	806
4	1978 05	27.26354	17 00 58.43	-15 27 20.7	806
4	1978 05	27.26910	17 00 58.08	-15 27 22.0	806
4	1978 08	02.04479	16 26 50.10	-19 40 14.2	806
4	1978 08	02.05174	16 26 50.29	-19 40 17.6	806
4	1978 08	02.05868	16 26 50.44	-19 40 19.4	806
6	1978 02	02.29618	11 05 21.93	+11 41 36.9	806
6	1978 02	02.30382	11 05 21.63	+11 41 41.5	806
6	1978 02	02.31146	11 05 21.34	+11 41 46.0	806
6	1978 03	06.16633	10 39 46.23	+17 04 55.1	806
6	1978 03	06.17675	10 39 45.66	+17 05 00.6	806
6	1978 03	06.18716	10 39 45.12	+17 05 06.0	806
6	1978 03	15.16424	10 32 13.04	+18 19 35.7	806
6	1978 03	15.17118	10 32 12.72	+18 19 38.6	806
6	1978 03	15.17812	10 32 12.37	+18 19 41.7	806
6	1978 04	05.09479	10 19 59.72	+20 08 49.2	806

6	1978	04	05.10174	10	19	59.58	+20	08	50.2	806
6	1978	04	05.10868	10	19	59.42	+20	08	51.3	806
6	1978	04	12.07465	10	18	09.82	+20	24	32.6	806
6	1978	04	12.08160	10	18	09.74	+20	24	33.1	806
6	1978	04	12.08854	10	18	09.70	+20	24	33.9	806
6	1978	04	19.04340	10	17	33.13	+20	30	50.7	806
6	1978	04	19.05035	10	17	33.09	+20	30	51.4	806
6	1978	04	19.05729	10	17	33.07	+20	30	51.2	806
6	1978	04	26.01562	10	18	06.90	+20	28	41.9	806
6	1978	04	26.02257	10	18	06.93	+20	28	41.8	806
6	1978	04	26.02951	10	18	06.99	+20	28	41.8	806
7	1978	02	02.22743	10	06	00.08	+02	47	56.2	806
7	1978	02	02.23437	10	05	59.72	+02	47	57.2	806
7	1978	02	02.24132	10	05	59.31	+02	47	58.6	806
7	1978	03	06.11286	09	35	08.44	+05	15	27.4	806
7	1978	03	06.12675	09	35	07.74	+05	15	31.3	806
7	1978	03	06.14062	09	35	07.07	+05	15	35.4	806
7	1978	03	15.13924	09	29	07.71	+06	00	04.9	806
7	1978	03	15.14618	09	29	07.49	+06	00	07.3	806
7	1978	03	15.15312	09	29	07.23	+06	00	09.0	806
7	1978	03	29.12187	09	24	19.19	+06	55	13.1	806
7	1978	03	29.12882	09	24	19.15	+06	55	14.2	806
7	1978	03	29.13576	09	24	19.06	+06	55	15.8	806
7	1978	04	05.02743	09	24	01.19	+07	14	15.8	806
7	1978	04	05.03437	09	24	01.18	+07	14	16.2	806
7	1978	04	05.04132	09	24	01.19	+07	14	17.9	806
7	1978	04	12.05382	09	25	03.12	+07	27	29.3	806
7	1978	04	12.06076	09	25	03.23	+07	27	29.5	806
7	1978	04	12.06771	09	25	03.31	+07	27	30.3	806
7	1978	04	19.02257	09	27	19.02	+07	34	23.2	806
7	1978	04	19.02951	09	27	19.15	+07	34	23.4	806
7	1978	04	19.03646	09	27	19.30	+07	34	24.2	806
7	1978	04	25.99271	09	30	41.23	+07	35	12.0	806
7	1978	04	25.99965	09	30	41.47	+07	35	12.2	806
7	1978	04	26.00660	09	30	41.69	+07	35	12.3	806
7	1980	09	11.17951	23	48	51.53	+10	49	02.0	806
7	1980	09	11.18646	23	48	51.17	+10	49	00.5	806
7	1980	09	11.19340	23	48	50.83	+10	48	59.3	806
7	1980	10	08.16493	23	27	26.28	+08	08	30.4	806
7	1980	10	08.17188	23	27	25.94	+08	08	27.8	806
7	1980	10	08.17882	23	27	25.65	+08	08	24.2	806
18	1979	03	24.01632	06	22	17.76	+17	41	55.9	806
18	1979	03	24.02326	06	22	18.24	+17	41	57.3	806
18	1979	03	24.03021	06	22	18.72	+17	41	59.4	806
18	1980	06	19.00694	13	07	34.67	+04	44	26.3	806
18	1980	06	19.02118	13	07	34.79	+04	44	24.3	806
18	1980	06	19.02812	13	07	34.89	+04	44	22.6	806
18	1980	07	08.98715	13	16	25.50	+02	54	22.2	806
18	1980	07	08.99410	13	16	25.72	+02	54	19.1	806
18	1980	07	09.00104	13	16	25.98	+02	54	16.2	806
25	1978	01	04.16146	05	51	08.71	-04	13	17.3	806
25	1978	01	04.16840	05	51	08.31	-04	13	17.4	806
25	1978	01	04.17535	05	51	07.98	-04	13	17.8	806
25	1978	01	06.14062	05	49	20.65	-04	12	11.5	806
25	1978	01	06.14757	05	49	20.25	-04	12	12.0	806
25	1978	01	06.15451	05	49	19.88	-04	12	11.3	806
25	1978	01	11.13368	05	45	04.26	-04	05	34.4	806
25	1978	01	11.14062	05	45	03.88	-04	05	33.4	806
25	1978	01	11.14757	05	45	03.61	-04	05	32.9	806

25		1978	02	02.11007	05	32	35.96	-02 44 01.8	806
25		1978	02	02.11701	05	32	35.84	-02 44 00.1	806
25		1978	02	02.12396	05	32	35.70	-02 43 58.2	806
25		1979	03	21.12986	10	41	44.03	-16 10 39.6	806
25		1979	03	21.14375	10	41	43.38	-16 10 30.6	806
25		1979	03	21.15764	10	41	42.64	-16 10 20.1	806
25		1979	03	24.07465	10	39	25.40	-15 34 54.9	806
25		1979	03	24.08160	10	39	25.08	-15 34 49.9	806
25		1979	03	24.08854	10	39	24.76	-15 34 44.5	806
25		1980	10	31.12326	23	51	02.90	+10 31 11.2	806
25		1980	10	31.13021	23	51	02.94	+10 31 03.6	806
25		1980	10	31.13715	23	51	02.98	+10 30 56.4	806
40		1978	01	04.10243	04	11	47.01	+19 29 25.6	806
40		1978	01	04.10937	04	11	46.83	+19 29 25.2	806
40		1978	01	04.11632	04	11	46.60	+19 29 26.1	806
40		1978	01	06.11007	04	10	55.57	+19 32 29.5	806
40		1978	01	06.11701	04	10	55.40	+19 32 30.3	806
40		1978	01	06.12396	04	10	55.13	+19 32 31.1	806
40		1978	01	11.07049	04	09	25.26	+19 41 20.1	806
40		1978	01	11.07743	04	09	25.14	+19 41 21.3	806
40		1978	01	11.08437	04	09	25.10	+19 41 21.9	806
40		1980	09	11.21285	00	35	48.96	-04 32 53.9	806
40		1980	09	11.21979	00	35	48.63	-04 32 56.6	806
40		1980	09	11.22674	00	35	48.31	-04 32 59.2	806
40		1980	10	08.18993	00	11	39.65	-07 12 29.9	806
40		1980	10	08.19688	00	11	39.24	-07 12 31.6	806
51		1978	03	06.19897	10	41	39.62	+03 47 05.3	806
51		1978	03	06.20939	10	41	39.05	+03 47 12.7	806
51		1978	03	06.21980	10	41	38.49	+03 47 19.7	806
51		1978	03	15.18854	10	34	37.91	+05 27 07.3	806
51		1978	03	15.19549	10	34	37.59	+05 27 12.2	806
51		1978	03	15.20243	10	34	37.30	+05 27 16.2	806
51		1978	03	29.15868	10	26	35.28	+07 46 00.2	806
51		1978	04	05.11562	10	24	27.85	+08 41 45.2	806
51		1978	04	05.12257	10	24	27.74	+08 41 48.5	806
51		1978	04	05.12951	10	24	27.65	+08 41 51.9	806
51		1978	04	12.09549	10	23	46.80	+09 26 37.9	806
51		1978	04	12.10243	10	23	46.80	+09 26 39.7	806
51		1978	04	12.10937	10	23	46.79	+09 26 42.8	806
51		1978	04	19.06424	10	24	34.22	+09 59 51.4	806
51		1978	04	19.07118	10	24	34.27	+09 59 53.3	806
51		1978	04	19.07812	10	24	34.40	+09 59 55.0	806
51		1978	04	26.03785	10	26	46.51	+10 21 45.2	806
51		1978	04	26.04479	10	26	46.69	+10 21 46.4	806
51		1978	04	26.05174	10	26	46.85	+10 21 47.3	806
133		1979	03	21.18924	13	52	49.63	-21 41 18.7	806
133		1979	03	21.19965	13	52	49.30	-21 41 19.9	806
133		1979	03	21.21007	13	52	48.91	-21 41 20.9	806
148		1978	01	04.07882	03	34	15.84	-16 33 48.2	806
148		1978	01	04.08576	03	34	15.80	-16 33 42.3	806
148		1978	01	04.09271	03	34	15.78	-16 33 36.8	806
148		1978	01	11.09340	03	34	58.70	-14 45 58.8	806
148		1978	01	11.10035	03	34	58.75	-14 45 53.0	806
148		1978	01	11.10729	03	34	58.85	-14 45 45.7	806
148		1980	07	09.03229	15	31	31.85	+12 56 33.1	806
148		1980	07	09.03924	15	31	31.82	+12 56 28.3	806
148		1980	07	09.04618	15	31	31.72	+12 56 24.2	806
185		1978	03	06.23439	12	36	03.67	+11 40 57.3	806
185		1978	03	06.24480	12	36	03.24	+11 41 03.6	806

185		1978	03	06.25522	12	36	02.92	+11 41 11.5	806
185		1978	03	15.22396	12	30	16.25	+13 25 05.8	806
185		1978	03	15.23090	12	30	15.99	+13 25 10.3	806
185		1978	03	15.23785	12	30	15.60	+13 25 15.0	806
185		1978	03	29.17812	12	20	00.92	+15 52 01.8	806
185		1978	03	29.18507	12	20	00.59	+15 52 06.6	806
185		1978	03	29.19201	12	20	00.29	+15 52 09.9	806
185		1978	04	12.12257	12	10	06.24	+17 44 01.0	806
185		1978	04	12.12951	12	10	05.97	+17 44 03.5	806
185		1978	04	12.13646	12	10	05.70	+17 44 06.2	806
185		1978	04	26.06424	12	02	31.26	+18 50 45.0	806
185		1978	04	26.07118	12	02	31.08	+18 50 45.7	806
185		1978	04	26.07812	12	02	30.91	+18 50 47.2	806
185		1978	04	29.11493	12	01	18.47	+18 59 13.3	806
185		1978	04	29.12187	12	01	18.25	+18 59 13.9	806
185		1980	10	08.21007	02	06	55.29	-17 37 20.0	806
185		1980	10	08.21701	02	06	55.01	-17 37 26.0	806
185		1980	10	08.22396	02	06	54.73	-17 37 31.6	806
185		1980	10	31.14688	01	50	40.60	-21 21 53.1	806
185		1980	10	31.15382	01	50	40.24	-21 21 55.3	806
185		1980	10	31.16076	01	50	39.96	-21 21 57.4	806
349		1979	03	21.09201	10	42	12.40	+17 53 01.5	806
349		1979	03	21.10243	10	42	11.90	+17 53 02.0	806
349		1979	03	21.11285	10	42	11.44	+17 53 03.4	806
389		1978	01	04.23715	08	04	37.98	+17 45 05.3	806
389		1978	01	04.24410	08	04	37.58	+17 45 04.0	806
389		1978	01	04.25104	08	04	37.22	+17 45 04.2	806
389		1978	01	06.22118	08	02	44.34	+17 43 22.4	806
389		1978	01	06.22812	08	02	43.87	+17 43 22.6	806
389		1978	01	06.23507	08	02	43.45	+17 43 22.5	806
389		1978	01	11.21146	07	57	44.12	+17 39 44.9	806
389		1978	01	11.21840	07	57	43.71	+17 39 44.6	806
389		1978	01	11.22535	07	57	43.20	+17 39 44.6	806
389		1978	02	02.14408	07	35	29.48	+17 28 34.1	806
389		1978	02	02.15104	07	35	29.08	+17 28 34.1	806
389		1978	02	02.15799	07	35	28.68	+17 28 34.2	806
389		1980	09	11.14549	23	18	07.90	+08 29 06.0	806
389		1980	09	11.15243	23	18	07.54	+08 29 03.8	806
389		1980	09	11.15938	23	18	07.16	+08 29 02.6	806
389		1980	10	08.14062	22	57	15.05	+06 07 03.7	806
389		1980	10	08.14757	22	57	14.90	+06 07 01.5	806
389		1980	10	08.15451	22	57	14.57	+06 06 58.7	806
389		1980	10	31.10035	22	50	21.36	+04 20 39.2	806
389		1980	10	31.10729	22	50	21.32	+04 20 37.7	806
389		1980	10	31.11424	22	50	21.28	+04 20 36.5	806
480		1978	04	14.21285	14	24	10.99	-27 31 41.1	806
480		1978	04	14.22326	14	24	10.47	-27 31 35.3	806
480		1978	04	14.23368	14	24	09.96	-27 31 29.7	806
480		1978	05	27.15035	13	52	44.10	-19 19 27.9	806
480		1978	05	27.15729	13	52	43.90	-19 19 23.6	806
480		1978	05	27.16424	13	52	43.74	-19 19 18.8	806
532		1978	03	06.35661	15	37	02.60	+02 46 34.1	806
532		1978	03	06.36703	15	37	02.93	+02 46 37.5	806
532		1978	03	06.37744	15	37	03.30	+02 46 39.7	806
532		1978	03	29.29340	15	43	36.12	+04 48 07.5	806
532		1978	03	29.30035	15	43	36.06	+04 48 09.8	806
532		1978	03	29.30729	15	43	36.03	+04 48 12.1	806
532		1978	04	14.28299	15	38	48.70	+06 11 27.5	806
532		1978	04	14.28993	15	38	48.47	+06 11 28.9	806

532		1978	04	14.29687	15	38	48.24	+06	11	31.0	806
532		1978	05	27.23299	15	04	09.93	+06	03	58.8	806
532		1978	05	27.23993	15	04	09.54	+06	03	56.1	806
532		1978	05	27.24687	15	04	09.20	+06	03	54.1	806
582		1978	03	06.29307	12	51	25.49	+15	52	19.2	806
582		1978	03	06.30557	12	51	25.06	+15	52	35.2	806
582		1978	03	06.31807	12	51	24.70	+15	52	51.2	806
582		1980	09	04.17604	23	16	58.94	-12	41	24.4	806
582		1980	09	04.18299	23	16	58.60	-12	41	30.0	806
582		1980	09	04.18993	23	16	58.22	-12	41	37.3	806
582		1980	09	11.11354	23	11	28.97	-14	26	12.0	806
582		1980	09	11.12049	23	11	28.57	-14	26	18.1	806
582		1980	09	11.12743	23	11	28.25	-14	26	25.1	806
582		1980	10	08.11910	22	52	18.57	-20	03	26.4	806
582		1980	10	08.12604	22	52	18.38	-20	03	29.9	806
582		1980	10	08.13299	22	52	18.21	-20	03	33.1	806
704		1978	04	14.24757	15	28	55.57	-37	43	11.7	806
704		1978	04	14.25451	15	28	55.31	-37	43	11.4	806
704		1978	04	14.26146	15	28	55.05	-37	43	11.5	806
704		1978	04	29.22049	15	17	56.61	-37	19	48.7	806
704		1978	04	29.22743	15	17	56.30	-37	19	47.7	806
704		1978	04	29.23437	15	17	55.95	-37	19	46.7	806
704		1978	05	06.20243	15	11	52.06	-36	54	58.3	806
704		1978	05	06.20937	15	11	51.69	-36	54	56.1	806
704		1978	05	06.21632	15	11	51.31	-36	54	54.5	806
704		1978	05	27.20521	14	53	35.95	-34	52	30.8	806
704		1978	05	27.21215	14	53	35.67	-34	52	27.7	806
704		1978	05	27.21910	14	53	35.22	-34	52	24.9	806

OBSERVATIONS MADE AT SIDING SPRING (CODE 413) AND AT THE EUROPEAN SOUTHERN OBSERVATORY (CODE 809). MEASURED BY R. M. WEST.

Object			Date	UT	R. A. (1950)			Decl.			Mag.	N	Obs.
620			1981	05 28.03924	15	03	37.10	-28	47	15.5	15.5	1	809
2412			1981	05 28.03924	15	05	15.34	-28	56	03.2	16.5	1	809
2428			1981	05 28.03924	15	12	34.03	-28	19	57.7	16.5	1	809
2434			1981	05 28.03924	15	05	52.33	-30	02	07.5	16.5	1	809
1974	OR1		1974	07 24.55154	19	02	06.09	-37	42	43.8	15.0	2	413
1974	OU1		1974	07 24.55154	19	10	34.99	-37	04	35.5	17.0	2	413
1974	OX1	*	1974	07 24.55154	18	53	43.84	-37	33	06.7	16.0	2	413
1974	OY1	*	1974	07 24.55154	18	55	31.30	-37	59	30.1	19.0	2	413
1974	OZ1	*	1974	07 24.55154	18	57	36.68	-37	31	19.0	18.0	2	413
1974	OA2	*	1974	07 24.55154	18	58	11.71	-37	28	44.0	16.5	2	413
1974	OB2	*	1974	07 24.55154	19	00	31.97	-37	38	09.2	17.5	2	413
1974	OC2	*	1974	07 24.55154	19	00	44.10	-37	41	13.4	18.0	2	413
1974	OD2	*	1974	07 24.55154	19	09	46.08	-37	45	12.5	18.5	2	413
1974	OE2	*	1974	07 24.55154	19	10	49.41	-37	26	40.7	18.0	2	413
1974	OF2	*	1974	07 24.55154	19	14	24.61	-37	08	27.3	18.0	2	413
1974	OG2	*	1974	07 24.55154	19	18	54.00	-37	27	21.6	18.5	2	413
1978	LT	*	1978	06 08.10445	15	24	15.05	-33	04	37.0	17.5	1	809
1978	LU	*	1978	06 08.10445	15	29	27.75	-33	21	10.1	17.0	1	809
1978	LV	*	1978	06 08.10445	15	37	26.49	-34	17	36.7	17.0	1	809
1981	KB		1981	05 28.03924	15	15	35.94	-30	37	35.5	17.5	1	809
1981	KC		1981	05 28.03924	15	12	37.99	-29	21	19.5	18.0	1	809
1981	KD		1981	05 28.03924	15	17	31.72	-28	34	23.4	16.5	1	809
1981	KK	*	1981	05 28.03924	14	56	42.12	-28	39	34.9	18.0	1	809
1981	KL	*	1981	05 28.03924	14	56	52.54	-27	51	35.8	19.0	1	809
1981	KM	*	1981	05 28.03924	14	58	50.02	-31	23	08.4	18.5	1	809
1981	KN	*	1981	05 28.03924	14	59	31.87	-31	52	42.2	18.0	1	809
1981	KO	*	1981	05 28.03924	15	00	13.69	-30	52	02.5	17.5	4	809

1981 KP	*	1981	05	28.03924	15	01	09.99	-32	35	35.5	18.5	1	809
1981 KQ	*	1981	05	28.03924	15	01	23.59	-28	50	33.1	18.0	1	809
1981 KR	*	1981	05	28.03924	15	03	19.92	-31	11	45.2	18.5	1	809
1981 KS	*	1981	05	28.03924	15	04	19.10	-32	25	48.1	18.5	1	809
1981 KT	*	1981	05	28.03924	15	04	24.51	-32	15	45.3	18.0	1	809
1981 KU	*	1981	05	28.03924	15	04	42.08	-30	01	14.7	18.5	1	809
1981 KV	*	1981	05	28.03924	15	05	14.70	-28	05	27.3	17.5	1	809
1981 KW	*	1981	05	28.03924	15	05	47.34	-28	51	32.1	17.5	1	809
1981 KX	*	1981	05	28.03924	15	06	05.58	-31	05	46.9	18.0	1	809
1981 KY	*	1981	05	28.03924	15	07	45.94	-29	01	06.0	18.5	1	809
1981 KZ	*	1981	05	28.03924	15	08	06.01	-29	54	47.2	18.5	1	809
1981 KA1	*	1981	05	28.03924	15	09	46.18	-28	54	35.2	19.0	1	809
1981 KB1	*	1981	05	28.03924	15	10	24.27	-27	57	30.3	19.0	1	809
1981 KC1	*	1981	05	28.03924	15	10	38.63	-29	43	41.2	18.5	1	809
1981 KD1	*	1981	05	28.03924	15	12	01.58	-29	05	03.9	18.0	1	809
1981 KE1	*	1981	05	28.03924	15	12	32.89	-31	16	15.8	18.5	1	809
1981 KF1	*	1981	05	28.03924	15	12	34.30	-31	49	18.8	18.0	1	809
1981 KG1	*	1981	05	28.03924	15	12	34.31	-31	49	19.1	18.0	1	809
1981 KH1	*	1981	05	28.03924	15	12	43.04	-32	06	39.6	19.0	1	809
1981 KJ1	*	1981	05	28.03924	15	12	43.06	-32	06	39.6	18.5	1	809
1981 KK1	*	1981	05	28.03924	15	12	48.02	-28	23	38.6	18.5	1	809
1981 KL1	*	1981	05	28.03924	15	13	06.04	-33	01	20.0	17.0	1	809
1981 KM1	*	1981	05	28.03924	15	13	30.31	-29	14	12.7	17.5	1	809
1981 KN1	*	1981	05	28.03924	15	13	40.82	-29	47	06.0	18.0	1	809
1981 KO1	*	1981	05	28.03924	15	16	47.08	-31	24	00.6	18.5	1	809
1981 KP1	*	1981	05	28.03924	15	17	31.72	-28	34	23.4	16.5	1	809
1981 KQ1	*	1981	05	28.03924	15	17	35.02	-28	27	03.3	18.5	1	809
1981 KR1	*	1981	05	28.03924	15	18	01.45	-29	27	53.7	18.0	1	809
1981 KS1	*	1981	05	28.03924	15	19	03.75	-32	16	55.2	18.0	1	809

Note 1: observer H.-E. Schuster. 2: measured on a film copy of SRC plate 763 of field 337 the the ESO/SRC atlas of the southern sky. 3: discoverer L. K. Kristensen. 4 = 1 + 3.

OBSERVATIONS MADE AT TOKAI BY T. FURUTA.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1980 KJ	1981 10	23.59028	00 53 14.00	+10 11 22.6	15	879
1980 KJ	1981 10	24.65978	00 52 28.53	+10 01 15.4	15	879
1981 UF *	1981 10	29.60451	02 42 27.38	+18 25 33.9	16.5	879

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ORBITAL ELEMENTS OF ONE-OPPOSITION MINOR PLANETS.

The orbit computers and authors of double designations are B = C. M. Bardwell, H = P. Herget, M = B. G. Marsden, U = T. Urata. See also MPC 5833.

Planet	B(1,0)	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1948 PK	12.0	480906	18.33	337.78	324.74	14.08	0.1923	3.0719	27	5		M
1976 QC1	16.0	760919	30.09	336.74	332.77	1.94	0.1919	2.1980	33	4	3	B
1976 QZ1	15.0	760830	354.58	268.14	62.01	6.76	0.0636	2.2489	30	0	1	U
1980 UA	14.0	801028	350.07	324.08	79.84	3.10	0.0837	2.8466	92	5		M
1981 FQ	14.5	810317	314.62	205.83	30.15	0.32	0.1583	3.1154	31	0		M
1981 PA	14.5	810824	305.01	107.86	322.33	21.77	0.3593	2.3693	56	6		M
1981 QE	15.5	810913	349.02	164.72	206.21	1.08	0.2187	2.4139	37	0		B
1981 QJ	13.5	810824	331.77	5.42	27.75	1.08	0.1907	3.1449	30	6		M
1981 QK	15.5	810913	0.95	353.98	359.23	5.85	0.1868	2.2393	37	7		B
1981 QM	15.0	811003	16.90	120.08	194.11	3.08	0.3297	2.3891	58	7		B
1981 QQ	14.0	810824	334.61	203.81	157.61	12.05	0.0725	2.9963	8	6		M
1981 QS	16.0	810824	326.74	218.24	161.40	4.53	0.1851	2.3516	9	6		M

1981 QU	14.0	810824	228.05	347.71	129.55	0.78	0.1676	2.2023	12 0		M
1981 QB1	13.0	810913	24.16	28.54	275.76	0.25	0.2712	3.1093	8 0		M
1981 QC1	13.5	810824	354.16	181.13	168.08	13.72	0.1793	2.7459	8 0		M
1981 QM1		810824	334.57	34.83	338.99	0.75	0.2202	3.1092	9 0		M
1981 QN1		810824	339.79	270.01	98.49	1.86	0.2538	3.0912	5 8		M
1981 QO1		810824	358.16	358.86	342.91	7.02	0.1451	2.9431	4 6	2	M
1981 QQ1		810824	355.55	250.37	92.96	3.27	0.2259	2.3392	5 6		M
1981 QR1		810824	172.07	342.03	179.66	4.22	0.0098	2.9942	3 3	2	M
1981 RE	14.5	810913	353.49	177.31	186.17	2.61	0.1853	2.4642	37 0		B
1981 RN	15.0	810913	24.37	23.52	298.72	6.29	0.1625	2.3942	16 8		M
1981 RQ	14.5	810913	357.95	24.96	335.48	13.10	0.1848	2.5827	16 6		M
1981 RR		810824	356.93	126.30	208.41	6.32	0.1635	2.2603	2 5	2	M
1981 RU	13.5	810913	262.53	236.82	241.38	2.88	0.1250	2.7423	31 7		B
1981 SA	12.0	811003	87.94	255.22	56.30	17.96	0.0715	3.2034	14 8		U
1981 SH	15.5	811003	312.17	236.18	187.97	7.14	0.1539	2.2442	13 6		B
1981 SJ	16.0	811003	13.53	22.88	318.22	1.27	0.2167	2.4208	13 6		B
1981 SM	14.5	811003	327.79	112.62	299.59	3.30	0.1400	2.4328	13 6		B
1981 SO	14.5	811003	17.86	357.45	350.34	6.04	0.1182	2.3015	13 6		B
1981 ST	13.0	811003	332.94	217.40	175.41	15.71	0.0837	3.1268	12 6		B
1981 SW		811003	21.14	127.18	204.06	4.54	0.1380	2.3803	4 4		M
1981 UA	16.5	811023	3.05	20.84	17.00	26.95	0.3280	2.3146	15 6		M
1981 UC	15.5	811023	24.89	276.24	71.06	2.05	0.3756	2.4451	9 4		M
1981 VB	14.0	811112	1.45	238.50	159.19	5.88	0.0197	2.7445	2 8	2	M

Note 1: double designations 1976 QC1 = 1976 SW10 (B); 1976 QZ1 = 1976 SN10 (U, NOC 1227; H). 2: e assumed. 3 = 1 + 2.

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ORBITAL ELEMENTS BY G. SITARSKI, POLISH ACADEMY OF SCIENCES, WARSAW.

(2) Pallas
Epoch 1981 July 15.0 ET = JDE 2444800.5

M	352.77649		(1950.0)	P	Q
n	0.21351881	Peri.	309.98731	-0.55778318	-0.82683328
a	2.7723323	Node	172.72519	+0.82118185	-0.53711772
e	0.2321987	Incl.	34.80723	-0.12057480	+0.16688702

From 2234 observations 1961-1979.

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ORBITAL ELEMENTS BY K. ZIOLKOWSKI, POLISH ACADEMY OF SCIENCES, WARSAW.

(457) Alleghenia
Epoch 1977 Oct. 24.0 ET = JDE 2443440.5

M	49.70703		(1950.0)	P	Q
n	0.18128739	Peri.	131.04401	+0.91840712	-0.33532551
a	3.0918920	Node	249.50307	+0.26089899	+0.91226944
e	0.1811221	Incl.	12.95324	+0.29742240	+0.23520474
P	5.44	B(1,0)	13.0		

From 50 observations at 6 oppositions 1900-1980, mean residual 1".6.

(649) Josefa
Epoch 1977 Oct. 24.0 ET = JDE 2443440.5

M	84.79613		(1950.0)	P	Q
n	0.24178008	Peri.	348.56836	+0.96876810	+0.24770747
a	2.5518533	Node	357.01680	-0.20676159	+0.78160745
e	0.2721045	Incl.	12.62454	-0.13688688	+0.57247777
P	4.08	B(1,0)	14.2		

From 25 observations at 9 oppositions 1907-1976, mean residual 2".1.

(1038) Tuckia
Epoch 1977 Oct. 24.0 ET = JDE 2443440.5

M	314.23354	(1950.0)	P	Q
n	0.12629471	Peri. 308.18848	+0.98513477	-0.10407782
a	3.9344069	Node 58.17971	+0.15700774	+0.86831797
e	0.2396954	Incl. 9.25553	-0.06969970	+0.48496567
P	7.80	B(1,0) 11.7		

From 25 observations at 7 oppositions 1924-1978, mean residual 0".9.

(1161) Thessalia
Epoch 1977 Oct. 24.0 ET = JDE 2443440.5

M	199.38327	(1950.0)	P	Q
n	0.17524044	Peri. 299.04043	+0.96768046	-0.19838310
a	3.1626162	Node 72.76473	+0.24757533	+0.86478370
e	0.1039234	Incl. 9.38150	-0.04796855	+0.46129524
P	5.62	B(1,0) 12.8		

From 20 observations at 7 oppositions 1929-1978, mean residual 1".8.

(1162) Larissa
Epoch 1977 Oct. 24.0 ET = JDE 2443440.5

M	266.47203	(1950.0)	P	Q
n	0.12638872	Peri. 216.87742	-0.23362132	+0.97209753
a	3.9324558	Node 39.62462	-0.88394275	-0.20327198
e	0.1117062	Incl. 1.90076	-0.40505097	-0.11707642
P	7.80	B(1,0) 10.6		

From 40 observations at 15 oppositions 1930-1980, mean residual 2".1.

(1297) Quadea
Epoch 1977 Oct. 24.0 ET = JDE 2443440.5

M	177.01161	(1950.0)	P	Q
n	0.18756418	Peri. 123.58036	+0.49509572	-0.85743536
a	3.0225218	Node 296.13568	+0.73629932	+0.49979013
e	0.0680091	Incl. 8.99115	+0.46124128	+0.12253336
P	5.25	B(1,0) 12.5		

From 43 observations at 13 oppositions 1927-1981, mean residual 1".8.

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ORBITAL ELMENTS BY S. NAKANO, SUMOTO, AND T. URATA, SHIMIZU, JAPAN.

The following orbital elements are from NOC 1224-1226, 1230-1232 and 1234-1236. The identifications are by T. Urata unless otherwise stated.

(2475)* 1972 TF2 = 1972 TK4 = 1961 TC1 = 1977 RW4 = 1977 TF4
Discovered 1972 Oct. 8 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.
Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	314.76401	(1950.0)	P	Q
n	0.18622308	Peri. 180.64851	+0.86099389	-0.50246497
a	3.0370157	Node 209.93113	+0.46733130	+0.84272931
e	0.1074395	Incl. 9.09336	+0.20072610	+0.19322592
P	5.29	B(1,0) 12.3		

Residuals in seconds of arc

611010	760	0.7-	1.0+	721202	095	0.8+	1.5+	810624 801	0.4+ 0.2-
611010	760	0.5-	3.1+	721206	095	0.5+	1.0+	810628 801	0.5- 1.5-
721005	095	1.3+	7.8-	770909	095	0.4-	2.2-		
721008	095	2.0-	1.1+	771006	095	0.5+	1.1+		

(2476)* 1976 JF2 = 1939 HD = 1973 YC3

Discovered 1976 May 2 by N. S. Chernykh at the Crimean Astrophysical Observatory. The identification 1976 JF2 = 1939 HD is by C. M. Bardwell (MPC 5356).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

		(1950.0)	P	Q
M	316.30027			
n	0.18736153	Peri. 267.58885	+0.96622799	+0.17816319
a	3.0247009	Node 82.10511	-0.08717255	+0.90587588
e	0.1125492	Incl. 10.83359	-0.24249621	+0.38424831
P	5.26	B(1,0) 12.2		

Residuals in seconds of arc

390420	024	0.8-	1.2-	760426	808	0.0	1.2+	810402 879	1.0+ 0.5-
731225	095	0.5-	1.7+	760502	095	1.9-	1.2+	810504 801	0.2+ 2.6+
760406	808	0.3+	0.9+	760525	095	1.1-	0.2+	810508 801	2.8+ 0.6-
760406	808	0.6-	0.8+	760530	095	1.8+	0.1+	810623 688	2.3- 1.4-
760422	808	0.4+	1.1+	810330	688	2.3-	2.6-	810623 688	0.6- 3.0-
760422	808	0.3+	1.4+	810330	688	0.8-	1.0-		
760426	808	0.6+	1.5+	810402	879	0.9-	1.2+		

(2477)* 1977 PY1 = 1961 UJ = 1969 TW3 = 1973 TH

Discovered 1977 Aug. 14 by N. S. Chernykh at the Crimean Astrophysical Observatory. The identification 1977 PY1 = 1969 TW3 was independently found by E. Bowell (MPC 5598).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

		(1950.0)	P	Q
M	108.87732			
n	0.24089893	Peri. 87.05416	+0.42028133	+0.90603579
a	2.5580722	Node 207.96437	-0.86886254	+0.38606424
e	0.1531502	Incl. 6.07500	-0.26161325	+0.17335963
P	4.09	B(1,0) 13.5		

Residuals in seconds of arc

611018	760	3.8-	1.4+	800323	809	0.4-	1.4-	810804 046	0.1- 0.5-
611018	760	1.1+	2.5+	810629	801	0.4+	0.2-	810804 046	1.7- 2.2-
691011	095	0.9+	3.3-	810630	801	1.5-	2.9+	810805 372	1.7+ 0.1+
691014	095	5.3+	4.4-	810731	046	0.4+	0.3+	810805 372	2.4+ 2.6+
731001	095	1.1-	1.4+	810731	046	0.2-	0.1-	810806 046	0.0 2.4-
770814	095	0.3-	0.4+	810803	801	0.4-	0.8+	810806 046	0.2+ 2.7-
770821	095	1.8-	0.3+	810803	688	0.8+	0.2-	810905 801	1.9- 0.8+
770909	095	0.9-	2.5+	810803	688	0.8+	0.4-		

(2478)* 1981 JC = 1981 JT = 1931 HH = 1932 SE = 1934 ED = 1939 VH = 1951 JP = 1955 OE = 1955 QV = 1957 BD = 1972 RS = 1978 NU2

Discovered 1981 May 4 by T. Furuta at Tokai. The identifications 1981 JC = 1932 SE = 1934 ED = 1939 VH are by S. Nakano (NOC 1230). The double designations 1955 OE = 1955 QV and 1981 JC = 1981 JT are by A. Patry (MPC 2564) and independently by F. N. Bowman (MPC 6287), respectively.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

		(1950.0)	P	Q
M	264.80362			
n	0.29685343	Peri. 232.57475	-0.18949469	-0.98039476
a	2.2255704	Node 228.43903	+0.92208857	-0.15878086
e	0.0686012	Incl. 4.13988	+0.33740840	-0.11668228
P	3.32	B(1,0) 13.8		

Residuals in seconds of arc

310418	690(65.7-	55.3-)X	391120	062	1.6+	0.5+	810504	879	2.5+	1.0-
310419	690(46.2+	21.4-)X	510502	711	1.7-	6.7+ Y	810505	688	0.8+	1.4-
320930	024	0.6- 0.0	550728	760(17.4+	22.7-)X		810505	688	1.7+	2.0-
321004	024	4.2+ 0.6+	550824	760(63.2-	64.9+)X		810604	688	1.8+	2.5-
340312	094(15.0+	2.1+)X	570128	024	0.0	0.9-	810604	688	0.2+	1.1-
391107	012(22.4+	4.6-)X	720907	095	0.6-	1.2-	810609	688	1.4-	3.2-
391111	062	1.5- 0.1+	780709	095	2.5-	2.0+	810609	688	0.5+	0.8-
391111	062	0.1+ 1.0-	780711	095	2.2-	1.4+				
391120	062	1.0- 0.1+	810504	879	1.7-	0.9+				

1966 BW = 1978 GD3
Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

			(1950.0)	P	Q
M	284.29541				
n	0.17870462	Peri.	11.80876	-0.80744120	+0.58987033
a	3.1216179	Node	204.34678	-0.54311385	-0.74958091
e	0.1201673	Incl.	1.33095	-0.23036070	-0.30030226
P	5.52	B(1,0)	12.0		

Residuals in seconds of arc

660130	330	0.2+ 0.6+	660224	330	1.4+	1.9-	780509	095	0.5+	0.7-
660216	330	1.6- 1.1+	780408	095	0.5-	0.8+				

1971 TZ = 1978 GZ3
Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

			(1950.0)	P	Q
M	117.00704				
n	0.22671679	Peri.	239.53722	+0.07391614	-0.99583882
a	2.6636744	Node	206.38272	+0.95113674	+0.08646472
e	0.0520442	Incl.	6.88970	+0.29979209	-0.02879064
P	4.35	B(1,0)	13.0		

Residuals in seconds of arc

711011	095	1.6- 0.4+	711020	805	2.2+	0.4-	780411	095	0.5-	0.6-
711020	805	0.3+ 0.3+	711021	095	0.7-	0.6-	780505	095	0.5+	0.2+

1978 RC6 = 1970 EB1 = 1976 JO3
Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

			(1950.0)	P	Q
M	198.12003				
n	0.18801284	Peri.	63.74489	-0.06237178	-0.99395126
a	3.0177175	Node	30.25207	+0.83965012	-0.10121685
e	0.0628749	Incl.	10.33585	+0.53953447	+0.04261495
P	5.24	B(1,0)	13.0		

Residuals in seconds of arc

700307	095	0.0 0.0	780927	095	0.3-	0.2-	781102	095	0.0	0.4+
760503	809	0.0 0.0	781003	095	0.1+	0.6-				
780913	095	0.4+ 0.5+	781007	095	0.2-	0.1-				

1981 CN = 1976 UJ20
Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

			(1950.0)	P	Q
M	127.18743				
n	0.29273192	Peri.	251.33413	-0.99538852	-0.08977362
a	2.2464161	Node	283.50447	+0.09575986	-0.90924908
e	0.0832814	Incl.	1.99202	+0.00563422	-0.40645641
P	3.37	B(1,0)	14.7		

Residuals in seconds of arc

761024	381	0.0 0.2-	810103	688	0.1-	1.0-	810208	688	0.8-	0.5+
761024	381	0.1- 0.3+	810205	688	1.2+	0.7-				
810103	688	0.2- 0.8+	810208	688	0.2-	0.5+				

1981 LK = 1975 VA1 = 1975 XQ2
Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	153.56990	(1950.0)	P	Q
n	0.08301559	Peri. 44.01158	-0.35094488	-0.86630642
a	5.2043178	Node 69.54243	+0.71946214	-0.49242488
e	0.0921780	Incl. 22.29566	+0.59934291	+0.08385059
P	11.87	B(1,0) 9.5		

Residuals in seconds of arc

751101 095	0.3+	2.5+	810604 688	0.5+	0.4-	810724 688	0.3+	0.2-
751107 095	0.4+	2.7-	810609 688	0.1-	0.2+	810724 688	2.0+	0.3+
751202 095	0.5-	0.1-	810609 688	0.5-	0.1+			
810604 688	0.7-	0.8+	810625 688	1.6-	1.1-			

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

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

(2479)* 1942 CB = 1931 DD = 1931 EQ = 1968 DK

Discovered 1942 Feb. 6 by Y. Vaisala at Turku. The double designation 1931 DD = 1931 EQ is by O. Kippes (MPC 6053).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	8.06149	(1950.0)	P	Q
n	0.26685291	Peri. 156.15881	-0.35399991	-0.93454573
a	2.3893958	Node 314.55061	+0.84965931	-0.30520125
e	0.1946600	Incl. 2.90940	+0.39084921	-0.18296575
P	3.69	B(1,0) 14.0		

Residuals in seconds of arc

310225 024	(48.6-	31.4+)X	420221 062	0.6-	0.1-	810922 046	1.3+	0.2-
310314 024	1.3+	3.6+	420306 062	0.8-	1.0-	810922 046	0.5+	1.9+
310315 024	1.3+	1.5+	420313 062	1.1+	0.2-	810925 046	1.7+	1.0+
310319 024	(1.7+	60.5+)	680225 095	0.9-	1.4-	810925 046	3.6+	1.5+
420206 062	0.8+	0.1-	790323 095	1.9-	0.2-	811006 046	4.4-	1.3-
420217 062	0.9-	0.3+	790323 095	1.0+	2.6-	811006 046	2.6-	2.8-

(2480)* 1976 YS1 = 1959 TA = 1969 UV1 = 1979 TJ

Discovered 1976 Dec. 16 by L. Chernykh at the Crimean Astrophysical Observatory. The identification 1976 YS1 = 1969 UV1 is by T. Urata (NOC 1053).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	283.19939	(1950.0)	P	Q
n	0.29690024	Peri. 13.26893	+0.66789819	-0.74368349
a	2.2253364	Node 34.83913	+0.67806857	+0.59191941
e	0.1205553	Incl. 2.91996	+0.30681431	+0.31075115
P	3.32	B(1,0) 15.0		

Residuals in seconds of arc

591001 024	0.5+	1.6-	810313 809	0.7-	1.0+	810327 046	4.1-	2.2+
691017 095	1.4+	1.8-	810313 809	1.0-	0.9+	810329 046	1.4+	2.3-
761216 095	0.5+	0.7+	810313 809	1.4-	0.9+	810329 046	1.6+	1.7-
761218 095	0.3-	0.1-	810315 809	1.4-	0.2+	810403 801	1.2+	2.8-
761220 095	0.9+	0.1+	810315 809	1.2-	0.2+	810405 688	0.2-	2.7-
770113 095	1.2-	0.4-	810315 809	0.7-	0.2+	810407 688	3.4+	1.7-
791012 330	0.5+	0.8-	810317 809	0.5-	1.1+	810407 688	3.0-	1.3-
791016 330	1.8-	0.2-	810317 809	0.3-	0.9+	810409 688	1.5-	2.9-
791021 330	0.4-	2.1-	810317 809	0.2-	0.5+	810409 688	2.8+	0.9-
791026 330	3.8+	1.6-	810327 046	1.1+	1.0-			

(2481)* 1977 UQ = 1977 TJ4 = 1948 RM = 1948 RF1 = 1956 LF

Discovered 1977 Oct. 18 by P. Wild at Zimmerwald. The key identification 1977 UQ = 1948 RM is by E. Bowell (MPC 5899). The double designations 1977 UQ = 1977 TJ4 and 1948 RM = 1948 RF1 are by O. Kippes (MPC 5899, 702).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	94.33611		(1950.0)		P		Q	
n	0.23956535	Peri.	317.09150		+0.86971773		+0.49346531	
a	2.5675568	Node	13.34858		-0.44143569		+0.78601036	
e	0.2654217	Incl.	2.26227		-0.22073874		+0.37239724	
P	4.11	B(1,0)	14.5					

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

480905	094(0.05+ 0.02-)X		771017	095	1.6-	0.8-	771110	026	0.3-	1.8+
480907	690	0.5+ 0.5+	771018	026	0.2-	2.2-	771110	026	1.2-	1.0+
480908	690	2.2- 1.2+	771019	026	2.1+	0.6-	810827	801	0.2+	1.4+
480909	690	1.6+ 0.3+	771020	026	0.5+	1.4-	810830	688	1.3+	2.0-
480911	094(17.7- 22.1+)X		771103	026	0.4+	0.6-	810830	688	1.3+	1.2-
560611	839	0.1+ 0.9+	771103	026	1.9+	0.8-	810903	688	1.6+	1.3-
770919	095	0.2+ 0.7+	771105	026	1.0+	1.5+	810903	688	1.8+	2.0-
770922	095	0.1+ 0.1+	771109	026	1.0-	0.1-	810921	046	2.0-	1.4+
771007	095	0.2- 1.6-	771109	026	2.4-	1.5+	810921	046	1.8-	1.5+
771013	095	0.7- 1.3+	771110	026	0.5+	1.7+	810925	801	0.1-	0.8+

(2482)* 1980 CO = 1953 VO2

Discovered 1980 Feb. 13 at the Harvard College Observatory’s Agassiz Station. The identification is by C. M. Bardwell (MPC 5319).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	221.78467		(1950.0)		P		Q	
n	0.19683205	Peri.	2.04454		-0.25654896		-0.96506022	
a	2.9268839	Node	102.82394		+0.88595365		-0.25684858	
e	0.0653635	Incl.	3.13383		+0.38635314		-0.05184183	
P	5.01	B(1,0)	12.5					

Residuals in seconds of arc

531109	024	0.5- 0.9-	800218	801	1.7+	0.5-	810509	801	1.9-	0.9+
531208	024	0.7+ 0.1-	800312	801	0.9-	1.9+	810525	801	2.9+	1.3-
800213	801	0.5- 1.0-	800314	688	2.1+	0.1-	810627	801	0.9-	0.1+
800214	801	3.3- 0.3-	800417	801	(4.7+	9.6+)	810701	801	0.6-	0.8-
800216	801	1.3+ 0.0	800418	801	0.4-	0.2-				

1976 GZ2 = 1953 EA1 = 1981 AS

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	88.50559		(1950.0)		P		Q	
n	0.17726842	Peri.	52.27752		-0.89988165		-0.43400016	
a	3.1384556	Node	101.96384		+0.38498402		-0.83688382	
e	0.1310274	Incl.	2.52460		+0.20493979		-0.33357056	
P	5.56	B(1,0)	12.5					

Residuals in seconds of arc

530310	760	1.1+ 0.1-	760404	095	(10.0+	0.9+)	810110	688	0.5+	1.0-
530310	760	1.0- 1.3+	760404	095	5.1-	2.7-	810114	688	0.1+	0.7-
760401	095	5.0+ 1.9+	760502	095	2.9+	2.8+	810114	688	1.0+	0.4+
760402	095	2.7- 2.3-	810110	688	1.4-	1.1+				

1977 QY2 = 1981 QP1

The identification was found independently by E. Bowell.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	77.91564		(1950.0)		P		Q	
n	0.24033868	Peri.	356.08381		+0.98011216		+0.19613609	
a	2.5620511	Node	352.40157		-0.17529557		+0.78442873	
e	0.1857083	Incl.	13.19311		-0.09301404		+0.58838949	
P	4.10	B(1,0)	14.5					

Residuals in seconds of arc

770822	095	0.7-	0.2+		810830	704	0.4-	1.2+		810903	704	0.1+	1.8-
770824	095	0.3+	1.0+		810830	688	2.6+	2.4-		810926	688	0.7+	1.4-
770919	095	0.7+	1.2-		810830	688	0.8+	1.0-		810926	688	0.3-	0.3+
810829	704	1.5-	3.7+		810831	704	0.1+	0.4-		811004	688	0.9+	0.9+
810829	704	1.0-	0.2+		810901	704	0.2+	0.6-		811004	688	2.8-	0.9+

1978 GB
Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

			(1950.0)	P	Q
M	37.32021				
n	0.35404400	Peri.	208.68660	+0.97331849	-0.10032945
a	1.9789375	Node	154.42379	+0.09275355	+0.99462180
e	0.0463678	Incl.	28.55541	-0.20987590	-0.02571900
P	2.78	B(1,0)	15.0		

Residuals in seconds of arc

780411	675	1.7+	0.8-		780428	675	1.0+	1.0-		780706	801	0.0	1.4-
780412	675	0.9+	0.4+		780429	675	1.0+	1.8-		780905	801	1.2-	1.4-
780413	801	5.1-	4.3+		780501	801	0.3+	1.4-		810508	801	0.2-	0.2+
780413	801	0.1-	1.0-		780512	801	1.5-	3.3+		810602	801	0.6-	0.3-
780415	801	0.5+	0.5-		780612	801	1.5+	2.0+		810630	801	0.7+	1.2+

1981 QA
Epoch 1981 Sept. 13.0 ET = JDE 2444860.5

			(1950.0)	P	Q
M	6.46406				
n	0.31236522	Peri.	154.24834	+0.83018823	+0.55709284
a	2.1512668	Node	171.80131	-0.53340656	+0.80465472
e	0.4484580	Incl.	8.41059	-0.16206464	+0.20537364
P	3.16	B(1,0)	17.0		

From 52 observations 1981 Aug. 21-Oct. 22.

1981 QB
Epoch 1981 Sept. 13.0 ET = JDE 2444860.5

			(1950.0)	P	Q
M	341.39779				
n	0.29337921	Peri.	248.04953	+0.65945003	-0.70361287
a	2.2431061	Node	154.04156	+0.68240084	+0.70798843
e	0.5188915	Incl.	37.20553	-0.31536447	+0.06067382
P	3.36	B(1,0)	17.0		

From 29 observations 1981 Aug. 28-Sept. 23.

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

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

(2483)* 1928 QB = 1955 FZ1 = 1961 VM = 1961 XR = 1971 BM = 1971 FN
Discovered 1928 Aug. 17 by M. Wolf at Heidelberg. The key identification 1928 QB = 1961 VM is by E. Bowell (MPC 5648). The double designation 1961 VM = 1961 XR is by O. Kippes (MPC 2324).
Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

			(1950.0)	P	Q
M	211.47231				
n	0.12441903	Peri.	183.85123	+0.24998330	-0.96538290
a	3.9738505	Node	251.68387	+0.89039137	+0.25941412
e	0.2726372	Incl.	4.49851	+0.38040972	+0.02720623
P	7.92	B(1,0)	11.5		

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

280817	024	(0.07-	0.01+)X	280915	024	1.8+	5.2-	
280819	024	0.4-	3.6-	550320	760	1.2-	2.8-	
280823	024	4.5+	1.2+	550320	760	0.1-	0.3-	
280905	024	1.0-	1.2-	611109	760	0.9-	1.4+	
280907	024	(7.4-	26.7+)X	611109	760	0.6-	1.7-	
280908	024	0.9-	4.3-	611111	760	2.4+	0.3-	
280911	024	(47.8-	37.7-)X	611111	760	1.1-	0.9+	
611208	760	0.7+	0.5-					
611208	760	0.0	0.2-					
710122	095	0.1+	4.1-					
710319	095	2.9-	6.3-					
790329	095	1.0-	1.1+					

(2484)* 1928 TK = 1935 QB1 = 1964 XC = 1971 SJ1 = 1975 XL5

Discovered 1928 Oct. 7 by G. Neujmin at Simeis. The key identification 1928 TK = 1964 XC is by E. Bowell (MPC 5417).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	22.58215	(1950.0)	P	Q
n	0.27479834	Peri. 147.41275	+0.98940078	+0.14495814
a	2.3431134	Node 204.25675	-0.13728725	+0.91458748
e	0.2541695	Incl. 1.19363	-0.04731080	+0.37751407
P	3.59	B(1,0) 14.5		

Residuals in seconds of arc

281007	094	0.5-	1.6-	350824	078	(22.8-	41.2-)X	
281021	094	2.4+	1.4-	641205	095	0.7+	2.6+	
281107	094	0.4+	0.4-	641210	095	0.9-	1.7+	
281108	094	0.0	1.1+	710916	095	0.3+	2.7+	
350820	078	(39.1+	46.7-)X	751204	095	0.4-	2.6-	
810509	801	0.5-	0.8-					
810630	801	(5.3+	1.2+)					
810701	801	1.3-	2.1-					

(2485)* 1932 BH = 1953 VL1 = 1966 CP = 1977 BT

Discovered 1932 Jan. 29 by K. Reinmuth at Heidelberg. The key identification 1932 BH = 1966 CP is by E. Bowell (MPC 5275).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	4.29514	(1950.0)	P	Q
n	0.17304166	Peri. 348.48463	+0.06016915	-0.99701492
a	3.1893507	Node 98.05229	+0.91961230	+0.03651743
e	0.2343924	Incl. 2.80086	+0.38819181	+0.06802736
P	5.70	B(1,0) 13.0		

Residuals in seconds of arc

320129	024	6.3+	1.8-	531107	760	4.9-	3.5+	
320206	024	(2.6-	10.0+)	531114	760	0.4+	0.4-	
320212	024	3.9-	3.1-	531114	760	0.4+	2.7-	
320302	024	0.0	2.6+	660214	330	1.0-	0.8-	
531107	760	1.0+	0.0	660225	330	2.5-	1.6+	
770120	095	2.2+	0.5+					
800709	801	1.8+	0.4+					
810829	801	1.1+	1.1-					
810930	801	0.9+	0.4-					

(2486)* 1939 FY = 1961 TZ = 1970 FE = 1970 GN = 1975 WC = 1978 SW2

Discovered 1939 Mar. 22 by Y. Vaisala at Turku. The identifications 1939 FY = 1961 TZ = 1970 FE are by P. Herget.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	315.46648	(1950.0)	P	Q
n	0.28844414	Peri. 100.20735	-0.17155367	-0.98517441
a	2.2686190	Node 359.66724	+0.83690779	-0.14528048
e	0.0800847	Incl. 8.40529	+0.51976406	-0.09124125
P	3.42	B(1,0) 13.5		

390216	062	0.6-	0.7-	700331	095	0.4+	0.6+	
390314	062	1.0+	0.0	700407	805	0.6-	0.3+	
390322	062	0.1-	0.2-	700407	805	0.2-	1.1+	
611010	760	1.0-	0.5-	700407	805	0.1+	0.9+	
611010	760	1.0-	2.6+	751127	095	1.9+	1.7-	
780926	095	0.1-	1.1-					
781005	095	2.1-	0.4+					
781008	095	0.7-	0.8+					
810804	688	1.2+	0.2+					
810804	688	2.5+	2.5-					

(2487)* 1940 RL = 1929 TD = 1976 GT8 = 1977 RD8 = 1979 BG = 1979 FG1 = 1981 UB

Discovered 1940 Sept. 8 by H. Alikoski at Turku. The identification 1940 RL = 1955 UX (MPC 2807) is invalid.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	86.17658		(1950.0)		P		Q				
n	0.26570127		Peri.	36.21543	+0.91592220		-0.40121309				
a	2.3962951		Node	347.42532	+0.35569452		+0.82378617				
e	0.1852914		Incl.	2.81829	+0.18592455		+0.40050517				
P	3.71		B(1,0)	14.0							

Residuals in seconds of arc

291009	690	(21.0-	3.1-)X	401022	062	0.9-	0.4+	790323	095	0.6-	0.1-
400906	062	2.1+	0.3-	760405	808	0.2+	0.7+	811031	552	0.3-	1.3+
400908	062	0.4-	0.6-	760405	808	0.8-	0.0	811031	552	0.4+	2.1+
400911	062	0.2+	0.1+	770908	095	0.1+	1.1+	811101	552	0.2+	4.7-
400930	062	1.6-	1.2+	790123	801	1.8+	1.0+	811101	552	0.3-	0.4+

(2488)* 1952 UT = 1969 TN3 = 1976 YW4

Discovered 1952 Oct. 23 at the Goethe Link Observatory, Indiana University. The key identification 1952 UT = 1976 YW4 is by E. Bowell (MPC 4642).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	288.13443		(1950.0)		P		Q				
n	0.28934861		Peri.	300.44829	+0.99355512		-0.04020271				
a	2.2638890		Node	62.04121	+0.08368482		+0.89080374				
e	0.2238115		Incl.	6.89124	-0.07645307		+0.45260626				
P	3.41		B(1,0)	15.0							

Residuals in seconds of arc

521023	760	0.5-	0.6+	521114	760	0.7+	0.0	761220	095	0.6+	1.0-
521023	760	1.6-	0.4+	521116	760	0.1+	3.3+	810131	801	1.0-	0.2-
521112	760	0.4+	0.9-	521116	760	(0.1-	7.6-)	810304	801	0.9+	0.4-
521112	760	0.2+	0.3-	691009	095	1.8+	2.8-				
521114	760	1.1-	0.5+	761218	095	0.7-	0.0				

(2489)* 1975 NY = 1954 WD

Discovered 1975 July 11 by L. Chernykh at the Crimean Astrophysical Observatory. The identification is by E. Bowell (MPC 5356).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	107.46746		(1950.0)		P		Q				
n	0.17933037		Peri.	237.97760	+0.40873211		+0.91228612				
a	3.1143457		Node	56.16916	-0.82642281		+0.38201702				
e	0.1487864		Incl.	1.78844	-0.38725107		+0.14763818				
P	5.50		B(1,0)	13.0							

Residuals in seconds of arc

541116	760	1.3-	2.4+	750830	808	1.4+	0.5+	810830	688	1.9+	2.8-
541116	760	1.3-	0.2+	750831	808	0.6-	2.5+	810903	688	1.3+	2.7-
541117	760	0.1+	1.6+	750902	808	0.2-	1.0+	810903	688	1.1+	1.8-
541117	760	0.6+	0.8+	750902	808	0.7+	0.1+	810921	046	2.1-	0.6-
750711	095	1.4-	0.0	750905	808	0.1-	0.6+	810921	046	1.2-	1.9+
750713	095	0.8-	0.3+	810827	801	0.6+	1.6+	810930	801	0.3+	0.1-
750830	808	0.3+	0.8+	810830	688	1.6+	2.3-				

(2490)* 1976 AG = 1962 WN2 = 1977 KK = 1978 NT3 = 1978 QH

Discovered 1976 Jan. 3 at the El Leoncito Station of the Felix Aquilar Observatory, University of Cuyo. The identification 1976 AG = 1962 WN2 is by P. Herget.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	257.53617		(1950.0)	P	Q
n	0.23387069	Peri.	210.25211	+0.46950791	-0.87478580
a	2.6090687	Node	212.18948	+0.84836922	+0.48450806
e	0.1317709	Incl.	12.97761	+0.24460575	-0.00131997
P	4.21	B(1,0)	13.0		

Residuals in seconds of arc

621130	760	0.3-	1.8-	760223	808	1.2-	0.3+	810405	474	1.4-	2.1+
760103	808	0.2-	1.3+	770523	095	0.8+	0.9+	810405	474	1.4-	2.4+
760103	808	0.3+	0.5+	780712	095	0.5+	0.5-	810425	879	0.4-	1.8-
760106	808	0.6+	0.1+	780831	095	1.2-	0.2+	810425	879	0.8+	1.6-
760106	808	1.1+	0.3+	780903	095	0.5+	0.0	810503	688	1.3+	1.4-
760223	808	0.2-	0.6-	780907	095	0.1+	0.9+	810503	688	0.0	1.1-

(2491)* 1977 CB

Discovered 1977 Feb. 15 by W. Sebok at Palomar.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	91.03874		(1950.0)	P	Q
n	0.38301016	Peri.	357.60744	-0.53881753	-0.77966943
a	1.8778570	Node	124.81272	+0.77918078	-0.60521295
e	0.0542788	Incl.	22.86727	+0.32023892	+0.16072607
P	2.57	B(1,0)	13.5		

Residuals in seconds of arc

770215	675	0.3+	0.8+	770317	801	0.7-	0.4+	781225	474	0.2-	1.3+
770215	675	1.0+	3.4-	770412	801	2.6+	0.6-	781225	474	0.7-	0.6+
770216	675	0.4-	0.6+	770415	675	1.4-	0.5-	800606	801	1.1+	0.1+
770216	675	0.9-	0.4+	770415	675	1.6-	0.2+	800609	801	0.3+	0.4+
770218	801	2.0+	3.2+	770516	801	0.6-	2.3+	800813	801	1.0-	0.6+
770220	801	0.7+	1.1-	770616	801	0.7-	0.1+				

(2492)* 1977 NT = 1977 TS = 1937 JK = 1937 KE = 1948 JF = 1955 RT = 1955 SC1 = 1959 GD = 1970 FA

Discovered 1977 July 14 by N. S. Chernykh at the Crimean Astrophysical Observatory. The double designation 1955 RT = 1955 SC1 was published on MPC 1339. The double designation 1977 NT = 1977 TS is by B. G. Marsden (MPC 4926).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M	347.69717		(1950.0)	P	Q
n	0.17432816	Peri.	259.02889	+0.17528408	+0.98450378
a	3.1736401	Node	21.06851	-0.89740785	+0.16197498
e	0.1580700	Incl.	0.84033	-0.40488843	+0.06720425
P	5.65	B(1,0)	13.0		

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

370514	078	(25.6-	8.6+)X	550920	024	4.1-	5.3-	770812	414	0.5+	0.6+
370531	078	(59.1+	55.0+)X	590403	024	0.4+	2.7+	770818	095	0.3+	0.8-
370609	078	(51.4-	52.1-)X	700331	095	2.4-	4.7-	770906	095	1.3-	1.4-
480511	690	(0.03-	0.00+)X	770714	095	0.3+	0.1-	771009	809	0.1-	0.9-
480512	690	(16.2-	26.3-)X	770722	095	2.6-	1.7+	780928	095	0.2-	0.6-
550913	760	2.9+	1.4+	770806	414	0.5+	0.0	781005	095	0.2-	2.1+
550913	760	0.5+	0.6+	770806	414	0.9+	0.5+	781008	095	1.8-	1.6+
550916	760	1.0-	0.9-	770806	414	0.3-	0.2-	810201	801	0.5+	0.9+
550916	760	0.2-	1.0+	770806	414	0.3+	0.2-	810228	801	1.5+	1.1+
550918	760	1.0+	1.6+	770809	414	0.2+	1.0+	810308	809	(5.6-	31.7+)
550918	760	0.4-	0.8+	770809	414	0.4+	0.5+	810308	809	(4.7-	34.7+)
550919	024	3.9+	2.7-	770812	414	0.4+	0.6+				

(2493)* 1978 XC = 1954 QG = 1968 QY

Discovered 1978 Dec. 1 at the Harvard College Observatory's Agassiz Station. The key identification 1978 XC = 1954 QG is by E. Bowell (MPC 5277).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M 357.73544		(1950.0)	P	Q
n 0.21163199	Peri.	147.74097	+0.99077822	+0.11846652
a 2.7887859	Node	205.70005	-0.13189546	+0.95436873
e 0.1710984	Incl.	8.72178	+0.03101786	+0.27412770
P 4.66	B(1,0)	14.0		

Residuals in seconds of arc

540831	024	5.3-	1.7+	781202	801	0.4+	0.4+	790120	801	0.2+	0.3-
540901	024	4.4+	2.2+	781206	801	0.4+	0.1+	790324	801	0.4+	0.7-
680827	095	1.3+	4.3-	781207	801	0.2+	0.1-	810503	801	1.2+	0.2-
680831	095	0.1-	0.2+	781228	801	0.3-	0.4+	810525	801	2.2+	1.3-
781201	801	0.0	0.6+	790104	801	1.1-	0.0	810624	801	3.9-	2.0+

(2494)* 1981 LF = 1935 HG = 1935 JC = 1935 KM = 1954 UO1 = 1955 YE = 1971 SR2 = 1977 XG

Discovered 1981 June 4 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory. The double designation 1935 HG = 1935 JC is by C. Jackson (UOC 4, 214).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M 337.92489		(1950.0)	P	Q
n 0.17553734	Peri.	110.54487	+0.81196737	-0.55034385
a 3.1590490	Node	283.31993	+0.43276456	+0.79120452
e 0.0684250	Incl.	11.52982	+0.39169353	+0.26667780
P 5.61	B(1,0)	12.0		

Residuals in seconds of arc

350429	078	2.7+	2.6+	710927	095	0.5-	5.5+	810609	688	1.3-	1.4-
350501	078	1.1+	0.9-	771210	069	0.4+	1.1-	810703	688	0.2-	0.1+
350501	078	1.7+	0.0	810604	688	0.9-	0.1+	810703	688	0.7+	0.4-
350527	078	0.4-	1.1+	810604	688	1.2-	1.9+	810725	688	0.4-	1.6+
350527	078	3.5-	2.2+	810606	688	1.5+	0.3+	810725	688	0.4-	0.6+
541024	760(21.6-	80.3-)X		810606	688	2.0+	0.4+				
551220	024	0.7+	4.7+	810609	688	1.4-	0.5-				

(2495)* 7071 P-L = 1976 UG13

Discovered 1960 Oct. 17 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels. The identification is by K. Hurukawa (MPC 5603).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5

M 111.69328		(1950.0)	P	Q
n 0.37116709	Peri.	136.22815	+0.89449845	+0.43098764
a 1.9175929	Node	199.25334	-0.43965821	+0.89622505
e 0.1027624	Incl.	21.12409	+0.08107508	+0.10502529
P 2.66	B(1,0)	16.5		

Residuals in seconds of arc

600924	675	1.5+	1.2+	600927	675	0.8-	1.1-	601024	675	1.6+	1.5-
600924	675	0.3-	0.6+	600927	675	0.5-	0.6-	601026	675	0.1+	1.5+
600924	675	0.1+	0.5+	600928	675	0.5-	0.9+	761022	381	0.8-	0.4-
600925	675	0.4+	0.1+	600928	675	1.0+	0.6+	761022	381	0.1+	0.8+
600925	675	1.0-	0.6-	600928	675	0.3+	0.8+	761024	381	0.7-	1.1+
600925	675	0.3-	0.1-	600929	675	0.9-	0.0	761024	381	0.5+	1.3+
600926	675	0.0	0.9+	600929	675	1.9-	0.6+	761031	381	0.2-	1.0+
600926	675	0.5-	0.7+	601017	675	0.2+	1.2-	810827	801	0.4-	0.7+
600926	675	0.3+	1.6+	601022	675	0.0	0.5+	810930	801	1.4-	0.8+

1964 TR2 = 1981 SG1

The identification is by E. Bowell.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M 129.59821		(1950.0)	P	Q
n 0.28969949	Peri.	303.35283	+0.79599364	+0.60501506
a 2.2620651	Node	19.43812	-0.53494357	+0.71761082
e 0.1558248	Incl.	3.22683	-0.28324811	+0.34495143
P 3.40	B(1,0)	14.0		

Residuals in seconds of arc

641008	330	0.1+	0.3+	641109	330	1.3+	1.0+	811004	688	0.3+	1.0-
641030	330	0.4+	0.5-	810926	688	0.4+	0.5+	811004	688	0.4+	0.5+
641101	330	1.0+	0.1-	810926	688	1.6-	1.8-				

1980 FN3 = 1968 UF2 = 1981 SB

The identification 1980 FN3 = 1981 SB was independently found by E. Bowell.

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M 114.53278		(1950.0)	P	Q
n 0.30143024	Peri.	158.33607	+0.91618771	+0.40074085
a 2.2029892	Node	178.03362	-0.37795611	+0.86623050
e 0.1987684	Incl.	4.37403	-0.13322633	+0.29841495
P 3.27	B(1,0)	15.5		

Residuals in seconds of arc

681023	095	0.3-	1.1+	800317	809	0.2-	0.6-	811001	801	0.6-	0.4+
800316	809	0.4-	0.0	800317	809	0.0	0.8-	811006	046	0.6+	0.5+
800316	809	0.2-	0.4-	800323	809	0.7-	1.0-	811006	046	1.2+	1.2+
800316	809	0.3-	0.7-	810925	046	0.5+	0.6-	811006	801	0.4-	0.3+
800316	809	0.1+	0.8-	810925	046	0.4+	2.0-	811007	046	0.2-	1.1-
800317	809	0.2-	0.6-	810929	801	0.3+	1.9-	811007	046	0.9-	1.6-
800317	809	0.1+	0.4-	810930	801	0.9+	0.1+				

1981 LD = 1959 RY = 1963 UP = 1963 VL

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M 53.75793		(1950.0)	P	Q
n 0.26645325	Peri.	279.58362	+0.99330271	-0.09010668
a 2.3917892	Node	85.61129	+0.11170822	+0.90883290
e 0.2117454	Incl.	4.15960	-0.02951269	+0.40731259
P 3.70	B(1,0)	14.0		

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

590903	024	0.6-	0.7+	810604	688	0.2+	0.3-	810609	688	0.7-	1.2-
631022	760(0.01+	0.16-)X		810604	688	0.6+	1.3-	810609	688	0.2-	1.1-
631111	760	0.0	0.4-	810606	688	0.7-	0.7-	810703	688	2.3+	0.8+
631111	760	0.3+	0.4-	810606	688	0.3-	0.8-	810703	688	0.4+	0.5-

1981 QH = 1935 FQ = 1935 HC = 1963 SP = 1972 TJ5 = 1975 EM1

The double designation 1935 FQ = 1935 HC is by C. Jackson (UOC 4, 213).

Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M 139.17705		(1950.0)	P	Q
n 0.21957809	Peri.	272.21528	+0.11834665	+0.99293143
a 2.7210984	Node	4.61064	-0.86059084	+0.10709288
e 0.1299883	Incl.	6.43804	-0.49535590	+0.05116919
P 4.49	B(1,0)	13.0		

350331	078(11.6-	44.8-)X		750306	095	0.4-	0.7-	810922	046	0.4+	2.0+
350408	078(21.5+	32.9-)X		750312	095	1.3+	1.3-	810925	046	0.1+	0.8-
350423	078(27.3-	23.8-)X		750315	095	1.1-	3.4+	810925	046	0.8-	1.5-
350504	078(31.0+	37.3-)X		810830	688	0.8-	0.3+	811005	046	1.5+	0.2+
630922	760(55.8-	19.2-)X		810830	688	0.7-	0.3-	811005	046	1.4+	1.1+
721006	095	0.4+	1.3-	810922	046	1.8-	0.7+				

1981 QC2 = 1954 UD2 = 1961 XS = 1971 SD2 = 1971 TB3
Epoch 1982 Aug. 19.0 ET = JDE 2445200.5 (J-P)

M	84.60901	(1950.0)	P	Q
n	0.29048747	Peri. 334.80117	+0.99778169	-0.04687367
a	2.2579725	Node 28.00928	+0.06378709	+0.87637203
e	0.1396792	Incl. 5.77713	-0.01904987	+0.47934843
P	3.39	B(1,0) 14.0		

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

541025	760(0.06-	0.00+)X	711010 095	0.5-	0.7-	810926 688	0.8-	0.6-
611208	760	0.2- 0.4-	711011 095	0.9-	1.2+	810926 688	1.1+	0.8-
611208	760	0.5+ 0.1-	810830 688	0.4-	0.2-	811004 688	0.2-	0.5+
710923	095	0.9+ 0.1+	810830 688	0.1+	0.0	811004 688	0.6+	0.7+

1981 VA
Epoch 1981 Nov. 12.0 ET = JDE 2444920.5

M	19.33885	(1950.0)	P	Q
n	0.27364779	Peri. 58.73363	+0.52707619	+0.78375339
a	2.3496766	Node 246.64904	-0.84910242	+0.46983118
e	0.7311214	Incl. 20.96646	-0.03486792	+0.40618872
P	3.60	B(1,0) 18.0		

From 7 observations 1981 Nov. 4-7.

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EPHEMERIDES.

1981 VA Elements MPC 6476

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1981	10 23	07 45.95	+82 18.2	0.243	1.068	101.1	66.0	16.6
1981	10 28	03 57.88	+73 43.8					
1981	11 02	03 06.09	+61 48.0	0.268	1.188	132.2	38.2	16.4
1981	11 07	02 46.48	+51 03.8					
1981	11 12	02 36.74	+42 14.5	0.342	1.307	154.5	19.1	16.7
1981	11 17	02 31.43	+35 16.8					
1981	11 22	02 28.61	+29 52.7	0.455	1.423	159.5	14.0	17.4
1981	11 27	02 27.46	+25 42.6					
1981	12 02	02 27.53	+22 30.0	0.594	1.535	151.6	17.8	18.2
1981	12 07	02 28.55	+20 01.7					
1981	12 12	02 30.35	+18 07.7	0.755	1.644	141.5	21.9	19.0
1981	12 17	02 32.77	+16 40.3					
1981	12 22	02 35.74	+15 33.8	0.932	1.749	131.9	24.8	19.6
1981	12 27	02 39.18	+14 43.8					
1982	01 01	02 43.04	+14 07.0	1.122	1.850	122.9	26.5	20.2

(2487) 1940 RL Elements MPC 6472

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1981	10 23	02 14.57	+17 50.5	0.968	1.957	170.7	4.7	15.4
1981	11 02	02 04.98	+17 17.9					
1981	11 12	01 56.32	+16 40.6	0.998	1.966	163.2	8.4	15.6
1981	11 22	01 50.06	+16 07.3					
1981	12 02	01 47.09	+15 45.4	1.116	1.981	141.0	18.3	16.1
1981	12 12	01 47.72	+15 39.0					
1981	12 22	01 51.79	+15 49.1	1.300	2.002	121.9	24.7	16.6
1982	01 01	01 58.94	+16 14.4					
1982	01 11	02 08.77	+16 52.6	1.525	2.026	105.7	27.8	17.1
1982	01 21	02 20.82	+17 40.5					
1982	01 31	02 34.76	+18 35.2	1.773	2.055	91.8	28.6	17.5
1982	02 10	02 50.28	+19 33.7					
1982	02 20	03 07.12	+20 33.3	2.028	2.088	79.5	27.8	17.8

1980 TG5 Elements MPC 6286

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1981 10 23	06 04.25 +17 09.3	2.982	3.557	-0.61	+1.6	18.5
1981 11 02	06 02.53 +16 34.9					
1981 11 12	05 58.73 +16 00.8	2.782	3.587	-0.67	+1.5	18.2
1981 11 22	05 53.06 +15 27.8					
1981 12 02	05 45.87 +14 57.2	2.669	3.615	-0.71	+1.4	18.0
1981 12 12	05 37.78 +14 30.0					
1981 12 22	05 29.47 +14 07.5	2.672	3.641	-0.72	+1.2	17.9
1982 01 01	05 21.68 +13 50.8					
1982 01 11	05 15.07 +13 40.4	2.797	3.666	-0.69	+1.0	18.2
1982 01 21	05 10.08 +13 36.5					
1982 01 31	05 07.02 +13 38.7	3.022	3.689	-0.63	+0.9	18.5
1982 02 10	05 05.97 +13 46.2					
1982 02 20	05 06.88 +13 57.7	3.311	3.710	-0.57	+0.8	18.8
1982 03 02	05 09.64 +14 12.0					
1982 03 12	05 14.06 +14 27.8	3.628	3.730	-0.51	+0.8	19.0
1982 03 22	05 19.95 +14 43.9					
1982 04 01	05 27.12 +14 59.1	3.940	3.748	-0.47	+0.8	19.2

1966 BW Elements MPC 6467

Date ET	R. A. (1950) Decl.	Delta	r	Elong.	Phase	Mag.
1981 10 23	06 10.31 +22 09.1	2.818	3.383	116.7	15.2	17.2
1981 11 02	06 09.87 +22 04.1					
1981 11 12	06 07.15 +21 59.7	2.572	3.367	137.4	11.5	17.0
1981 11 22	06 02.22 +21 55.5					
1981 12 02	05 55.38 +21 51.3	2.406	3.351	160.3	5.7	16.6
1981 12 12	05 47.19 +21 46.6					
1981 12 22	05 38.40 +21 41.3	2.352	3.333	175.1	1.5	16.3
1982 01 01	05 29.89 +21 35.6					
1982 01 11	05 22.50 +21 30.5	2.418	3.314	151.2	8.2	16.7
1982 01 21	05 16.88 +21 27.1					
1982 01 31	05 13.43 +21 26.1	2.587	3.295	128.8	13.5	17.0
1982 02 10	05 12.36 +21 28.1					
1982 02 20	05 13.61 +21 32.9	2.822	3.275	108.6	16.6	17.2
1982 03 02	05 17.08 +21 40.0					
1982 03 12	05 22.55 +21 48.6	3.088	3.254	90.7	17.8	17.4
1982 03 22	05 29.80 +21 57.6					
1982 04 01	05 38.60 +22 05.9	3.353	3.233	74.5	17.3	17.6

1980 TB5 Elements MPC 6286

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1981 10 23	06 48.70 +40 47.5	2.530	2.998	-1.04	+2.0	17.8
1981 11 02	06 50.90 +41 41.6					
1981 11 12	06 49.92 +42 38.0	2.289	2.987	-1.21	+2.3	17.5
1981 11 22	06 45.52 +43 33.2					
1981 12 02	06 37.67 +44 21.5	2.109	2.975	-1.38	+1.9	17.2
1981 12 12	06 26.86 +44 56.0					
1981 12 22	06 14.08 +45 10.4	2.025	2.960	-1.47	+0.7	17.0
1982 01 01	06 00.79 +45 00.9					
1982 01 11	05 48.61 +44 28.4	2.051	2.943	-1.40	-0.5	17.1
1982 01 21	05 38.87 +43 37.7					
1982 01 31	05 32.37 +42 35.5	2.179	2.924	-1.24	-1.1	17.4
1982 02 10	05 29.44 +41 28.7					
1982 02 20	05 29.93 +40 22.0	2.379	2.903	-1.07	-0.9	17.6
1982 03 02	05 33.54 +39 18.4					
1982 03 12	05 39.87 +38 19.0	2.617	2.880	-0.93	-0.3	17.8
1982 03 22	05 48.47 +37 23.5					
1982 04 01	05 59.00 +36 31.1	2.862	2.855	-0.84	+0.4	18.0

1980 TQ5 Elements MPC 6286

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1981 10 23	06 42.84	+24 39.0	2.913	3.375	-0.71	+1.5	18.3
1981 11 02	06 43.56	+24 35.2					
1981 11 12	06 41.96	+24 33.1	2.686	3.402	-0.78	+1.6	18.1
1981 11 22	06 38.04	+24 32.1					
1981 12 02	06 32.00	+24 31.3	2.527	3.429	-0.85	+1.4	17.9
1981 12 12	06 24.28	+24 29.6					
1981 12 22	06 15.56	+24 25.8	2.472	3.454	-0.89	+1.1	17.4
1982 01 01	06 06.66	+24 19.4					
1982 01 11	05 58.44	+24 10.8	2.539	3.478	-0.86	+0.7	17.8
1982 01 21	05 51.63	+24 00.7					
1982 01 31	05 46.74	+23 50.5	2.719	3.501	-0.80	+0.4	18.1
1982 02 10	05 44.05	+23 41.1					
1982 02 20	05 43.62	+23 33.1	2.979	3.522	-0.72	+0.4	18.4
1982 03 02	05 45.34	+23 26.6					
1982 03 12	05 49.06	+23 21.2	3.284	3.543	-0.64	+0.4	18.7
1982 03 22	05 54.53	+23 16.4					
1982 04 01	06 01.53	+23 11.4	3.599	3.562	-0.58	+0.6	18.9

1980 TW5 Elements MPC 6286

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1981 10 23	06 45.80	+23 34.2	2.701	3.162	-0.83	+1.7	18.1
1981 11 02	06 47.58	+23 25.1					
1981 11 12	06 46.93	+23 17.9	2.456	3.166	-0.93	+1.9	17.8
1981 11 22	06 43.82	+23 12.4					
1981 12 02	06 38.36	+23 08.2	2.276	3.171	-1.02	+1.8	17.5
1981 12 12	06 30.95	+23 04.2					
1981 12 22	06 22.27	+22 59.3	2.194	3.175	-1.07	+1.5	17.1
1982 01 01	06 13.18	+22 53.0					
1982 01 11	06 04.65	+22 45.3	2.232	3.179	-1.05	+1.0	17.4
1982 01 21	05 57.54	+22 36.9					
1982 01 31	05 52.45	+22 28.7	2.382	3.182	-0.96	+0.7	17.7
1982 02 10	05 49.75	+22 21.8					
1982 02 20	05 49.50	+22 16.3	2.612	3.185	-0.86	+0.6	18.0
1982 03 02	05 51.63	+22 12.2					
1982 03 12	05 55.95	+22 09.0	2.886	3.187	-0.77	+0.7	18.2
1982 03 22	06 02.18	+22 05.7					
1982 04 01	06 10.10	+22 01.5	3.174	3.189	-0.70	+0.8	18.4

1972 LD1 Elements MPC 4782

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1981 10 23	07 20.51	+12 52.5	2.593	2.920	99.1	19.7	18.8
1981 11 02	07 24.08	+12 40.8					
1981 11 12	07 25.34	+12 35.6	2.313	2.907	117.6	17.6	18.5
1981 11 22	07 24.09	+12 39.1					
1981 12 02	07 20.18	+12 53.1	2.077	2.891	138.6	13.0	18.2
1981 12 12	07 13.70	+13 18.6					
1981 12 22	07 05.02	+13 55.7	1.922	2.872	161.6	6.2	17.8
1982 01 01	06 54.84	+14 42.6					
1982 01 11	06 44.19	+15 36.6	1.880	2.850	168.1	4.1	17.7
1982 01 21	06 34.17	+16 34.3					
1982 01 31	06 25.80	+17 32.6	1.958	2.825	145.4	11.4	18.0
1982 02 10	06 19.84	+18 29.1					
1982 02 20	06 16.68	+19 22.2	2.129	2.797	123.3	17.2	18.3
1982 03 02	06 16.40	+20 11.1					
1982 03 12	06 18.90	+20 55.0	2.355	2.766	103.8	20.4	18.5
1982 03 22	06 23.92	+21 33.4					
1982 04 01	06 31.20	+22 06.0	2.600	2.732	86.7	21.4	18.7

1978 TB Elements MPC 4664

Date ET	R. A. (1950) Decl.	Delta	r	Elong.	Phase	Mag.
1981 10 23	07 33.15 +27 20.9	5.374	5.606	98.4	10.1	20.1
1981 11 02	07 34.53 +27 26.9					
1981 11 12	07 34.55 +27 35.6	5.071	5.604	118.0	9.0	20.0
1981 11 22	07 33.20 +27 46.9					
1981 12 02	07 30.50 +27 59.8	4.821	5.602	138.9	6.6	19.8
1981 12 12	07 26.58 +28 13.5					
1981 12 22	07 21.66 +28 26.6	4.663	5.600	160.6	3.3	19.6
1982 01 01	07 16.05 +28 38.0					
1982 01 11	07 10.15 +28 46.4	4.622	5.598	172.2	1.4	19.4
1982 01 21	07 04.37 +28 51.2					
1982 01 31	06 59.14 +28 52.2	4.706	5.595	152.0	4.7	19.7
1982 02 10	06 54.80 +28 49.4					
1982 02 20	06 51.62 +28 43.4	4.898	5.592	130.5	7.7	19.9
1982 03 02	06 49.76 +28 34.8					
1982 03 12	06 49.30 +28 24.1	5.168	5.588	110.1	9.6	20.0
1982 03 22	06 50.21 +28 11.8					
1982 04 01	06 52.44 +27 58.3	5.475	5.584	91.1	10.3	20.2

1980 TO5 Elements MPC 6286

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1981 10 23	08 05.08 +11 52.4	2.640	2.792	-0.84	+3.2	18.3
1981 11 02	08 12.21 +10 48.0					
1981 11 12	08 17.33 +09 46.0	2.391	2.808	-0.92	+3.6	18.1
1981 11 22	08 20.24 +08 48.6					
1981 12 02	08 20.73 +07 58.2	2.165	2.825	-1.03	+3.9	17.8
1981 12 12	08 18.72 +07 17.3					
1981 12 22	08 14.30 +06 48.2	1.992	2.843	-1.15	+4.2	17.5
1982 01 01	08 07.80 +06 32.8					
1982 01 11	07 59.83 +06 31.6	1.908	2.862	-1.22	+4.3	17.3
1982 01 21	07 51.26 +06 43.9					
1982 01 31	07 43.04 +07 07.7	1.934	2.881	-1.21	+4.2	17.4
1982 02 10	07 36.11 +07 39.5					
1982 02 20	07 31.12 +08 15.6	2.067	2.900	-1.11	+3.8	17.7
1982 03 02	07 28.47 +08 52.5					
1982 03 12	07 28.31 +09 27.3	2.283	2.920	-0.99	+3.4	18.0
1982 03 22	07 30.53 +09 57.7					
1982 04 01	07 34.95 +10 22.2	2.549	2.941	-0.88	+3.0	18.3

1980 TC5 Elements MPC 6286

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1981 11 12	08 57.86 +08 30.7	2.611	2.866	-0.75	+3.4	18.8
1981 11 22	09 02.21 +07 34.7					
1981 12 02	09 04.36 +06 46.3	2.377	2.900	-0.83	+3.6	18.6
1981 12 12	09 04.15 +06 07.7					
1981 12 22	09 01.53 +05 41.0	2.178	2.934	-0.93	+3.9	18.4
1982 01 01	08 56.58 +05 28.1					
1982 01 11	08 49.66 +05 29.8	2.051	2.966	-1.02	+4.2	18.1
1982 01 21	08 41.36 +05 45.5					
1982 01 31	08 32.52 +06 13.4	2.028	2.998	-1.05	+4.2	17.9
1982 02 10	08 24.07 +06 50.1					
1982 02 20	08 16.86 +07 31.3	2.121	3.028	-1.00	+4.0	18.2
1982 03 02	08 11.53 +08 13.1					
1982 03 12	08 08.47 +08 52.2	2.314	3.057	-0.91	+3.6	18.6
1982 03 22	08 07.75 +09 26.0					
1982 04 01	08 09.33 +09 53.0	2.575	3.084	-0.80	+3.2	18.9
1982 04 11	08 13.00 +10 12.1					
1982 04 21	08 18.50 +10 23.0	2.870	3.110	-0.71	+2.9	19.2

1980 UA Elements MPC 6463

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1981 12	02	09 54.63	+15 28.1	2.388	2.792	-0.90	+4.3	18.6
1981 12	12	09 58.66	+15 22.6					
1981 12	22	10 00.34	+15 30.1	2.152	2.809	-1.02	+5.0	18.3
1982 01	01	09 59.47	+15 51.3					
1982 01	11	09 56.06	+16 25.2	1.969	2.826	-1.15	+5.5	18.0
1982 01	21	09 50.30	+17 09.2					
1982 01	31	09 42.69	+17 58.8	1.873	2.844	-1.25	+5.6	17.7
1982 02	10	09 34.04	+18 48.2					
1982 02	20	09 25.34	+19 31.8	1.890	2.861	-1.26	+5.1	17.7
1982 03	02	09 17.61	+20 05.5					
1982 03	12	09 11.67	+20 26.6	2.018	2.877	-1.17	+4.3	18.1
1982 03	22	09 08.02	+20 34.8					
1982 04	01	09 06.87	+20 30.8	2.231	2.894	-1.04	+3.7	18.4
1982 04	11	09 08.19	+20 15.6					
1982 04	21	09 11.75	+19 50.5	2.495	2.910	-0.91	+3.4	18.8
1982 05	01	09 17.30	+19 16.6					
1982 05	11	09 24.54	+18 34.8	2.780	2.926	-0.80	+3.2	19.0

(2491) 1977 CB Elements MPC 6473

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1981 12	02	09 46.92	+06 35.8	1.280	1.777	102.5	32.8	16.0
1981 12	12	09 58.67	+07 35.0					
1981 12	22	10 07.98	+09 12.1	1.078	1.776	118.9	29.0	15.6
1982 01	01	10 14.31	+11 35.7					
1982 01	11	10 17.12	+14 50.9	0.913	1.777	139.0	21.3	15.0
1982 01	21	10 15.98	+18 55.5					
1982 01	31	10 10.82	+23 34.7	0.820	1.780	160.5	10.7	14.6
1982 02	10	10 02.37	+28 19.2					
1982 02	20	09 52.18	+32 34.5	0.828	1.784	158.3	11.8	14.6
1982 03	02	09 42.45	+35 54.2					
1982 03	12	09 35.40	+38 08.3	0.929	1.791	137.4	22.1	15.1
1982 03	22	09 32.36	+39 21.7					
1982 04	01	09 33.81	+39 44.5	1.088	1.799	119.0	29.1	15.6
1982 04	11	09 39.50	+39 28.0					
1982 04	21	09 48.74	+38 40.7	1.275	1.809	104.4	32.6	16.1
1982 05	01	10 00.84	+37 28.9					
1982 05	11	10 15.12	+35 57.2	1.470	1.820	92.5	33.7	16.4

1968 SB Elements MPC 5037

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1981 12	02	10 55.46	+09 41.3	3.486	3.587	87.9	15.9	18.9
1981 12	12	10 59.99	+09 22.3					
1981 12	22	11 02.92	+09 13.4	3.208	3.610	106.3	15.2	18.7
1982 01	01	11 04.10	+09 15.8					
1982 01	11	11 03.41	+09 29.6	2.958	3.631	126.6	12.6	18.4
1982 01	21	11 00.84	+09 54.5					
1982 01	31	10 56.48	+10 29.1	2.773	3.652	148.8	8.0	18.2
1982 02	10	10 50.61	+11 10.8					
1982 02	20	10 43.69	+11 56.0	2.689	3.670	171.9	2.2	17.9
1982 03	02	10 36.28	+12 40.6					
1982 03	12	10 29.08	+13 20.5	2.726	3.687	163.0	4.5	18.1
1982 03	22	10 22.69	+13 52.6					
1982 04	01	10 17.62	+14 14.9	2.877	3.703	140.5	9.9	18.4
1982 04	11	10 14.21	+14 26.3					
1982 04	21	10 12.58	+14 26.9	3.115	3.717	119.7	13.6	18.6
1982 05	01	10 12.77	+14 17.4					
1982 05	11	10 14.66	+13 58.6	3.403	3.730	101.0	15.4	18.9