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

IDENTIFICATION CHANGES.

Continuation to MPC 5189.

Object		Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	N Obs.
A924 WK	*	1924 11 29.87453	02 43 45.33	+09 14 30.2	1037		14.1	008
1930 PD	*	1930 08 02.94944	20 37.1	-13 02	1020		14.0	094
1933 BZ	*	1933 01 25.99812	07 17 16.37	+21 09 34.0	1229		14.6	024
1933 BZ		1933 01 26.97243	07 16 31.63	+21 11 17.4	1229		14.6	024
1933 RH	*	1933 09 11.83835	21 58 48.78	-08 03 30.9	1933	QA		012
1933 SN1	*	1933 09 25.82714	21 44 49.58	-09 55 13.7	1933	QA		012
1936 KQ	*	1936 05 24.87672	14 19 54.56	-07 40 18.6	1936	XE		1 020
1936 LJ	*	1936 06 06.87496	14 09 02.14	-06 42 47.9	1936	XE		1 020
1936 LJ		1936 06 13.92808	14 04 20.03	-06 17 17.2	1936	XE		1 020
1936 NG	*	1936 07 14.90	14 14.8	-07 37	1936	HD	13.5	1 020
1936 NG		1936 07 19.88	14 16.7	-08 35	1936	HD		1 020
1942 QB	*	1942 08 18.82	22 02.5	-10 48	1229		14.3	186
1945 WD	*	1945 11 26.93351	03 07 01.88	+12 01 30.8	1020		11.8	012
1945 WD		1945 11 30.83673	03 04 02.36	+11 45 39.2	1020			012
1948 LM	*	1948 06 04.84411	16 20 26.90	-15 09 20.8	1020		13.0	078
1948 RO1	*	1948 09 09.98220	00 30 54.63	+03 47 58.1	1229			012
1949 SR1	*	1949 09 25.22564	23 08 43.38	-03 48 32.5	1020		16.7	760
1949 SR1		1949 09 25.27046	23 08 41.30	-03 48 55.7	1020			760
1952 JN	*	1952 05 02.79676	14 16 04.84	-13 15 19.8	1229		16.5	074
1952 JN		1952 05 20.73861	14 04 15.39	-12 17 37.3	1229			074
1954 TT	*	1954 10 03.03944	01 20 30.37	+06 28 22.1	1020			012
1954 TU	*	1954 10 03.85249	22 48 35.40	+00 23 45.3	1954	SN1		012
1954 UD3	*	1954 10 30.67014	02 26 49	+13 49.3	1229			330
1966 FU	*	1966 03 20.00449	12 16 26.21	-01 32 38.1	1020			020
1966 FU		1966 03 20.02596	12 16 25.48	-01 32 24.3	1020			020
1966 FU		1966 03 22.04612	12 15 05.81	-01 18 56.0	1020			020
1966 FU		1966 03 22.07449	12 15 04.32	-01 18 39.2	1020			020
1966 FU		1966 03 25.03863	12 12 24.80	-01 01 53.9	1020			020
1966 FU		1966 03 25.08088	12 12 22.19	-01 01 34.4	1020			020
1968 UO3	*	1968 10 17.95259	01 41 06.08	+07 28 53.8	1020			020
1968 UO3		1968 10 17.97406	01 41 04.71	+07 28 50.4	1020			020
1968 UO3		1968 10 22.90565	01 36 44.72	+06 58 14.8	1020			020
1968 UO3		1968 10 22.91465	01 36 44.25	+06 58 13.6	1020			020
1969 JQ	*	1969 05 12.91336	13 39 19.35	-10 03 35.1	1229			020
1969 JQ		1969 05 12.92859	13 39 18.47	-10 03 35.6	1229			020
1972 OE	*	1972 07 19.97663	20 45 24.14	-14 41 00.4	1972	OC	16.0	095
1975 JO	*	1975 05 14.94459	16 23 09.11	-15 26 27.6	1975	JA	16.0	095
1979 YK	*	1979 12 16.45069	08 56 32.98	+17 08 50.8	1979	XF	17.0	688

Note 1: the designation 1936 XE shown on MPC 3231 is in error; all the observations here redesignated 1936 KQ, 1936 LJ and 1936 NG have erroneously been attributed to (1651) = 1936 HD.

IDENTIFICATIONS.

The following list of identifications with numbered minor planets continues that on MPC 5067.

	Note		Note		Note
1928 DN = (1689)	1	1950 BM = (494)	1	1950 KC = (1425)	2
1950 LQ = (1425)	3	1950 PA = (1349)	4	1950 QO = (1349)	5
1953 FH = (1635)	6	1953 FJ = (2164)	1	1954 SN1 = (949)	1
1955 GE = (1830)	7	1965 AL = (2172)	1	1965 UE1 = (1698)	1
1965 UG1 = (2032)	1	1965 UT1 = (1745)	1	1965 YJ = (1032)	1
1966 BK = (1829)	1	1966 CJ = (1966)	1	1966 CN = (1749)	1
1971 KD1 = (1940)	1	1972 OC = (1830)	1	1972 OD = (1830)	8
1973 QD = (679)	1	1974 HT1 = (2051)	1	1974 XA = (1824)	8
1975 BJ1 = (1138)	1	1975 EA = (2151)	1	1975 LV = (423)	1
1975 LX = (380)	1	1976 MM = (1062)	1	1976 WH = (35)	1
1977 PC = (263)	1	1978 EJ = (2090)	1	1978 WY = (1761)	1

Note 1: identification by E. Bowell. 2: identification by O. Kippes. 3: double designation 1950 KC = 1950 LQ by B. Potter (MPC 491). 4: identification by C. M. Bardwell. 5: double designation 1950 PA = 1950 QO (MPC 1166). 6: identification by E. Bowell; the double designation 1953 FH = 1953 GD (NAZ 13, 3) is invalid. 7: from MPC 3541 and MPC 4354. 8: identification by B. G. Marsden.

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OBSERVATIONS MADE AT THE HOHER LIST OBSERVATORY BY M. GEFFERT.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
197	1978 02	28.95139	12 03 48.26	+13 26 13.2	017
197	1978 02	28.96944	12 03 47.43	+13 26 20.1	017
197	1978 03	01.01215	12 03 45.57	+13 26 35.4	017
197	1978 03	01.02674	12 03 44.87	+13 26 42.4	017
197	1978 04	06.91806	11 34 20.28	+16 18 01.3	017
197	1978 04	06.96528	11 34 18.21	+16 18 07.0	017
197	1978 04	06.99097	11 34 17.11	+16 18 09.5	017
197	1978 05	03.90729	11 22 10.89	+16 05 00.8	017
197	1978 05	03.94688	11 22 10.50	+16 04 54.4	017

OBSERVATIONS MADE AT NICE BY B. MILET.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
/1979l	1980 02	07.80970	03 25 21.88	+08 22 40.3	020
/1979l	1980 02	07.82459	03 25 22.96	+08 24 00.1	020

OBSERVATIONS MADE AT HEIDELBERG. REMEASUREMENTS BY L. D. SCHMADEL.

Object	Date	UT	R. A. (1950)	Decl.	N Obs.
1370	1935 08	31.94243	23 34 25.84	+04 09 37.3	1 024
1370	1935 09	01.93007	23 33 32.98	+04 08 08.9	1 024
1370	1935 09	09.04076	23 26 49.98	+03 52 06.4	1 024
1370	1935 09	20.91361	23 15 23.85	+03 09 44.1	1 024
1370	1935 09	24.89708	23 11 53.06	+02 53 18.0	1 024
1370	1935 11	01.88772	23 01 10.85	+01 15 20.8	024
1370	1935 11	01.93008	23 01 11.55	+01 15 20.9	024

Note 1: measurement very difficult.

OBSERVATIONS MADE AT BERNE ASTRONOMICAL INSTITUTE, ZIMMERWALD STATION, BY P. WILD (ASSISTED BY ROTHACHER AND BEUTLER).

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N Obs.
24	1978 11	19.75556	00 13 07.26	+01 05 24.4	13.2	026
24	1978 11	24.75417	00 12 38.19	+01 03 29.3		026
93	1977 10	12.94378	01 19 43.71	+12 45 26.8	12.5	026

93		1977	10	13.89792	01	18	49.37	+12	42	53.7			026
93		1977	10	18.91701	01	14	05.85	+12	28	49.1			026
93		1977	10	19.98750	01	13	06.19	+12	25	41.6			026
102		1978	01	06.85833	05	40	12.86	+16	10	31.8	13.5		026
102		1978	01	08.88194	05	38	36.81	+16	10	58.8			026
721		1980	01	19.00104	06	19	02.22	+33	33	58.6	15.2		026
795		1978	10	28.85597	00	19	35.81	+00	30	49.6	15.0		026
1271		1978	03	12.13125	11	28	16.18	+10	17	28.6	16.5		026
1421		1977	11	09.06667	03	41	57.79	+22	35	55.3	16.2		026
1421		1977	11	11.14792	03	40	07.49	+22	35	19.5			026
1494		1977	10	13.92257	01	46	25.70	+10	06	02.6	15.0		026
1638		1977	10	13.92257	01	49	13.84	+11	13	00.4	17.0		026
1652		1977	10	12.94378	01	36	37.81	+14	23	17.9			026
1652		1977	10	13.89792	01	35	39.95	+14	16	56.2	16.8		026
1652		1977	10	18.91701	01	30	34.23	+13	42	21.2			026
1652		1977	10	19.98750	01	29	29.15	+13	34	47.0			026
1655		1977	02	13.90486	11	23	01.46	+15	53	16.7	15.5		026
1655		1977	02	13.92951	11	23	00.64	+15	53	31.3			026
1908		1977	10	18.91701	01	28	07.19	+10	35	35.4	17.2		026
1908		1977	10	19.98750	01	27	12.38	+10	31	50.1			026
1908		1977	11	03.76227	01	15	24.34	+09	41	26.4	17.2		026
1908		1977	11	03.80347	01	15	22.38	+09	41	17.2			026
1908		1977	11	11.01111	01	10	35.98	+09	20	29.3	17.2		026
1980		1977	12	17.09688	07	01	07.84	-10	31	35.4	16	1	026
1980		1977	12	17.13056	07	01	03.11	-10	32	25.6			026
2034		1978	10	28.85597	00	28	29.33	+03	42	56.4	16.0		026
2072		1977	11	03.76227	01	19	15.68	+09	06	58.5	16.8		026
2072		1977	11	03.80347	01	19	13.65	+09	06	55.3			026
2072		1977	11	08.86076	01	15	19.03	+08	59	47.0			026
2072		1977	11	08.98681	01	15	13.30	+08	59	37.8	16.5		026
2072		1977	11	11.01111	01	13	50.97	+08	57	35.4			026
1977 VR2	*	1977	11	09.06667	03	53	48.63	+21	42	05.3	17.0		026
1977 VR2		1977	11	11.14792	03	52	00.56	+21	33	59.6			026
1978 RC		1978	10	28.85597	00	19	58.77	+00	25	13.0	17.0		026
1978 RC		1978	11	07.96215	00	15	04.79	+00	33	37.0			026
1978 RC		1978	11	19.75556	00	12	15.08	+00	58	27.8	17.2		026
1978 RC		1978	11	24.75417	00	12	01.27	+01	13	54.4			026
1978 RC		1980	01	18.91389	06	16	26.11	+38	26	29.9	16.8		026
1978 RC		1980	01	19.00104	06	16	21.70	+38	26	22.0			026
1979 QH	*	1979	08	28.99444	23	20	37.57	-07	06	59.7	16.8		026
1979 QH		1979	08	30.99444	23	19	08.83	-07	08	48.8			026
1979 QJ	*	1979	08	29.11944	02	41	53.90	+00	28	08.5	16.5		026
1979 QJ		1979	09	19.09115	02	44	19.05	-01	10	29.7	16.2		026
1979 QJ		1979	09	27.91875	02	42	08.67	-02	01	02.3			026
1979 QJ		1979	10	02.11042	02	40	28.53	-02	25	27.8			026
1979 QJ		1979	10	18.97500	02	30	25.20	-03	56	49.2	16.2		026
1979 QJ		1979	10	19.04583	02	30	21.99	-03	57	09.5			026
1979 QJ		1979	11	23.99271	02	04	53.48	-04	54	40.7		1	026
1979 QJ		1979	11	29.06782	02	02	32.24	-04	42	05.3	17.0	2	026
1979 SA1	*	1979	09	16.91389	23	06	48.48	-07	14	35.9			026
1979 SA1		1979	09	18.89792	23	05	15.10	-07	16	27.7	17.2		026
1979 SA1		1979	09	18.94031	23	05	12.64	-07	16	21.2		2	026

Note 1: time uncertain. 2: image weak.

OBSERVATIONS MADE AT THE KARL SCHWARZSCHILD OBSERVATORY, TAUTENBURG, BY F. BORNGEN AND K. KIRSCH. COMMUNICATED BY R. M. WEST AND S. MARX.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1118	1979 11	16.94375	01 29 51.29	+30 16 56.1	15.1	033
1118	1979 11	16.96146	01 29 50.58	+30 16 49.4		033

1977 HD		1980 01 14.97917	08	23	46.08	+54	25	52.9		18.5	033
1977 HD		1980 01 15.01736	08	23	42.56	+54	25	59.5			033
1978 WL	*	1978 11 24.7958	02	10	15.18	+23	16	00.2		17.5	033
1978 WL		1978 11 24.8264	02	10	13.87	+23	15	54.2			033
1978 WM	*	1978 11 24.7958	02	03	22.80	+22	11	12.9		18.0	033
1978 WM		1978 11 24.8264	02	03	21.45	+22	11	05.2			033
1978 WN	*	1978 11 24.7958	02	07	24.82	+21	42	43.1		16.0	033
1978 WN		1978 11 24.8264	02	07	23.44	+21	42	41.1			033
1978 WO	*	1978 11 24.7958	02	13	35.43	+22	18	45.7		17.0	033
1978 WO		1978 11 24.8264	02	13	34.44	+22	18	38.0			033
1978 WP	*	1978 11 24.7958	02	05	06.75	+21	05	40.8			033
1978 WP		1978 11 24.8264	02	05	05.60	+21	05	27.3			033
1978 WQ	*	1978 11 24.7958	02	10	53.81	+21	11	11.9		18.5	033
1978 WQ		1978 11 24.8264	02	10	52.40	+21	11	01.6			033
1979 UD1	*	1979 10 24.92222	01	19	30.35	+03	13	11.3			033
1979 UD1		1979 10 24.97153	01	19	28.03	+03	12	56.9			033
1979 UD1		1979 10 25.01667	01	19	26.06	+03	12	46.9			033
1979 UE1	*	1979 10 26.89201	01	20	10.04	+02	59	37.7			033
1979 UE1		1979 10 26.93368	01	20	08.03	+02	59	17.1			033
1979 UE1		1979 10 26.97535	01	20	05.97	+02	58	57.3			033
1979 UF1	*	1979 10 26.89201	01	21	57.13	+04	11	28.6			033
1979 UF1		1979 10 26.93368	01	21	55.49	+04	11	17.5			033
1979 UF1		1979 10 26.97535	01	21	52.87	+04	11	03.6			033
1980 AC	*	1980 01 14.97917	08	16	18.01	+54	28	33.5		18.8	033
1980 AC		1980 01 15.01736	08	16	15.15	+54	28	49.9			033

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

Object	Date	UT	R. A. (1950)			Decl.			Mag.	N Obs.
/1974 II	1980 02	14.86624	08	44	57.75	+18	17	35.9	14.0T	046
/1974 II	1980 02	14.88076	08	44	57.47	+18	17	37.0		046
/1974 II	1980 02	15.80483	08	44	32.14	+18	18	32.1		046
/1974 II	1980 02	15.81910	08	44	31.81	+18	18	36.6		046
/1974 II	1980 02	19.91142	08	42	42.17	+18	22	26.8		046
/1974 II	1980 02	19.92768	08	42	41.72	+18	22	28.0		046
/1974 II	1980 02	20.96650	08	42	14.78	+18	23	21.7	13.6T	046
/1974 II	1980 02	20.98086	08	42	14.46	+18	23	24.7		046
/1979l	1980 02	08.78947	03	26	32.94	+09	46	20.0	8.6T	046
/1979l	1980 02	08.79097	03	26	33.05	+09	46	27.6		046
/1979l	1980 02	14.84731	03	32	28.12	+15	40	45.9		046
/1979l	1980 02	14.84998	03	32	28.44	+15	40	54.6		046
/1979l	1980 02	15.78150	03	33	15.73	+16	19	03.7		046
/1979l	1980 02	15.78399	03	33	15.95	+16	19	14.4		046
637	1980 02	14.95449	10	11	37.02	+11	23	30.3		046
637	1980 02	14.96888	10	11	36.44	+11	23	33.6		046
637	1980 02	19.95147	10	07	39.61	+11	44	54.0		046
637	1980 02	19.96565	10	07	38.88	+11	44	57.3		046
637	1980 02	21.00400	10	06	49.02	+11	49	24.7		046
637	1980 02	21.01813	10	06	48.35	+11	49	28.1		046
1978 SQ	1980 02	19.98862	12	10	47.65	+09	29	23.7		046
1978 SQ	1980 02	20.00286	12	10	47.14	+09	29	27.8		046
1978 SQ	1980 02	21.04185	12	10	04.57	+09	35	27.0		046
1978 SQ	1980 02	21.05632	12	10	04.00	+09	35	31.5		046
1978 UT1	1980 02	15.90245	10	11	46.77	+10	50	38.0		046
1978 UT1	1980 02	15.91681	10	11	45.89	+10	50	44.7		046
1978 UT1	1980 02	19.95147	10	08	26.07	+11	12	42.4		046
1978 UT1	1980 02	19.96565	10	08	25.45	+11	12	47.4		046
1978 UT1	1980 02	21.00400	10	07	33.62	+11	18	26.6		046
1978 UT1	1980 02	21.01813	10	07	32.92	+11	18	30.6		046
1980 AA	1980 02	14.99020	09	28	28.21	-00	34	07.0	16.5	046

1980	AA		1980	02	14.99888	09	28	29.01	-00	34	16.9	046
1980	AA		1980	02	15.86108	09	30	03.75	-00	50	17.9	046
1980	AA		1980	02	15.87514	09	30	05.02	-00	50	32.7	046
1980	AA		1980	02	19.88394	09	36	33.43	-01	50	59.3	046
1980	AA		1980	02	19.89267	09	36	34.10	-01	51	05.6	046
1980	AA		1980	02	20.93554	09	38	05.10	-02	03	29.1	046
1980	AA		1980	02	20.94579	09	38	05.83	-02	03	36.0	046
1980	AA		1980	02	21.96101	09	39	31.70	-02	14	30.6	046
1980	AA		1980	02	21.96963	09	39	32.36	-02	14	34.8	046
1980	CQ	*	1980	02	14.86624	08	49	02.84	+19	10	25.2	17.4 046
1980	CQ		1980	02	14.88076	08	49	02.07	+19	10	29.3	046
1980	CQ		1980	02	15.80483	08	48	19.94	+19	13	35.2	046
1980	CQ		1980	02	15.81910	08	48	19.38	+19	13	38.6	046
1980	CR	*	1980	02	14.95449	10	14	04.11	+12	24	37.6	16.0 046
1980	CR		1980	02	14.96888	10	14	03.53	+12	24	44.5	046
1980	CR		1980	02	15.90245	10	13	17.21	+12	32	53.3	046
1980	CR		1980	02	15.91681	10	13	16.44	+12	33	01.4	046
1980	CR		1980	02	19.95147	10	09	52.13	+13	08	23.0	046
1980	CR		1980	02	19.96565	10	09	51.34	+13	08	30.7	046
1980	CR		1980	02	21.00400	10	08	57.94	+13	17	38.3	046
1980	CR		1980	02	21.01813	10	08	57.22	+13	17	47.5	046
1980	DF	*	1980	02	19.88394	09	38	56.55	-00	46	44.3	17.5 046
1980	DF		1980	02	19.89267	09	38	56.02	-00	46	44.1	046
1980	DF		1980	02	20.93554	09	37	54.04	-00	46	23.4	046
1980	DF		1980	02	20.94579	09	37	53.54	-00	46	21.9	046
1980	DF		1980	02	21.96101	09	36	53.59	-00	45	56.4	046
1980	DG	*	1980	02	19.88394	09	40	58.92	-01	54	00.9	17.4 046
1980	DG		1980	02	19.89267	09	40	58.35	-01	53	57.8	046
1980	DG		1980	02	20.93554	09	39	59.34	-01	51	09.8	046
1980	DG		1980	02	20.94579	09	39	58.76	-01	51	07.9	046
1980	DG		1980	02	21.96101	09	39	01.59	-01	48	37.6	046
1980	DG		1980	02	21.96963	09	39	00.88	-01	48	34.3	046
1980	DH	*	1980	02	19.88394	09	43	56.21	-01	44	02.2	17.6 046
1980	DH		1980	02	19.89267	09	43	55.73	-01	43	59.9	046
1980	DH		1980	02	20.93554	09	43	10.40	-01	38	07.6	046
1980	DH		1980	02	20.94579	09	43	09.99	-01	38	06.0	046
1980	DH		1980	02	21.96101	09	42	25.47	-01	32	55.7	046
1980	DH		1980	02	21.96963	09	42	24.64	-01	32	40.2	046
1980	DJ	*	1980	02	19.91142	08	42	23.82	+20	54	27.1	17.0 046
1980	DJ		1980	02	19.92768	08	42	22.88	+20	54	30.9	046
1980	DJ		1980	02	20.96650	08	41	34.12	+20	57	42.0	046
1980	DJ		1980	02	20.98086	08	41	33.45	+20	57	44.5	046
1980	DK	*	1980	02	19.91142	08	44	48.77	+19	43	57.2	17.2 046
1980	DK		1980	02	19.92768	08	44	47.58	+19	43	56.0	046
1980	DK		1980	02	20.96650	08	43	47.00	+19	43	15.6	046
1980	DK		1980	02	20.98086	08	43	46.16	+19	43	14.6	046
1980	DL	*	1980	02	19.91142	08	45	15.57	+19	47	12.6	17.0 046
1980	DL		1980	02	19.92768	08	45	14.92	+19	47	09.4	046
1980	DL		1980	02	20.96650	08	44	34.31	+19	45	42.6	046
1980	DL		1980	02	20.98086	08	44	33.90	+19	45	43.0	046
1980	DM	*	1980	02	19.91142	08	45	21.14	+19	26	36.8	16.8 046
1980	DM		1980	02	19.92768	08	45	20.60	+19	26	39.6	046
1980	DM		1980	02	20.96650	08	44	37.92	+19	29	43.5	046
1980	DM		1980	02	20.98086	08	44	37.33	+19	29	45.4	046
1980	DN	*	1980	02	19.91142	08	46	10.32	+19	21	54.5	16.8 046
1980	DN		1980	02	19.92768	08	46	09.67	+19	21	59.9	046
1980	DN		1980	02	20.96650	08	45	26.86	+19	27	13.6	046
1980	DN		1980	02	20.98086	08	45	26.31	+19	27	19.2	046
1980	DO	*	1980	02	19.91142	08	46	55.82	+20	00	38.8	17.2 046

1980	DO		1980	02	19.92768	08	46	55.12	+20	00	42.0		046
1980	DO		1980	02	20.96650	08	46	07.94	+20	05	54.0		046
1980	DO		1980	02	20.98086	08	46	07.20	+20	05	58.9		046
1980	DP	*	1980	02	19.91142	08	47	42.47	+17	07	14.1	17.4	046
1980	DP		1980	02	19.92768	08	47	41.62	+17	07	19.8		046
1980	DP		1980	02	20.96650	08	46	56.66	+17	14	30.4		046
1980	DP		1980	02	20.98086	08	46	56.18	+17	14	38.6		046
1980	DQ	*	1980	02	19.91142	08	48	38.28	+20	23	18.9	16.6	046
1980	DQ		1980	02	19.92768	08	48	37.16	+20	23	15.0		046
1980	DQ		1980	02	20.96650	08	47	40.05	+20	20	29.6		046
1980	DQ		1980	02	20.98086	08	47	39.18	+20	20	26.6		046
1980	DR	*	1980	02	19.95147	10	05	31.51	+11	15	45.1	17.4	046
1980	DR		1980	02	19.96565	10	05	30.76	+11	15	48.0		046
1980	DR		1980	02	21.00400	10	04	32.50	+11	20	00.4		046
1980	DR		1980	02	21.01813	10	04	31.77	+11	20	02.6		046
1980	DS	*	1980	02	19.95147	10	05	41.38	+12	34	07.3	17.6	046
1980	DS		1980	02	19.96565	10	05	40.67	+12	34	14.8		046
1980	DS		1980	02	21.00400	10	04	40.26	+12	42	34.6		046
1980	DS		1980	02	21.01813	10	04	39.22	+12	42	43.5		046
1980	DT	*	1980	02	19.95147	10	07	38.95	+12	39	54.4	17.8	046
1980	DT		1980	02	19.96565	10	07	38.08	+12	40	02.3		046
1980	DT		1980	02	21.00400	10	06	51.03	+12	44	43.8		046
1980	DT		1980	02	21.01813	10	06	50.28	+12	44	47.8		046
1980	DU	*	1980	02	19.95147	10	10	43.01	+10	45	03.7	17.6	046
1980	DU		1980	02	19.96565	10	10	42.28	+10	45	09.0		046
1980	DU		1980	02	21.00400	10	09	53.92	+10	52	25.5		046
1980	DU		1980	02	21.01813	10	09	53.30	+10	52	30.2		046
1980	DV	*	1980	02	19.95147	10	13	03.42	+10	39	53.4	17.5	046
1980	DV		1980	02	19.96565	10	13	02.95	+10	39	59.3		046
1980	DV		1980	02	21.00400	10	12	15.11	+10	49	14.3		046
1980	DV		1980	02	21.01813	10	12	14.34	+10	49	21.7		046
1980	DW	*	1980	02	19.95147	10	13	56.40	+13	17	37.6	17.6	046
1980	DW		1980	02	19.96565	10	13	55.62	+13	17	39.6		046
1980	DW		1980	02	21.00400	10	13	04.47	+13	20	59.1		046
1980	DW		1980	02	21.01813	10	13	03.82	+13	21	04.8		046
1980	DX	*	1980	02	19.95147	10	16	59.38	+09	35	57.1	17.6	046
1980	DX		1980	02	19.96565	10	16	58.76	+09	35	04.0		046
1980	DX		1980	02	21.00400	10	16	06.64	+09	44	27.5		046
1980	DX		1980	02	21.01813	10	16	05.93	+09	44	35.4		046
1980	DY	*	1980	02	19.95147	10	17	57.66	+12	53	44.7	18.0	046
1980	DY		1980	02	19.96565	10	17	56.99	+12	53	49.5		046
1980	DY		1980	02	21.00400	10	17	07.9	+12	58.8		1	046
1980	DY		1980	02	21.01813	10	17	07.4	+12	58.8		1	046
1980	DZ	*	1980	02	19.98862	12	03	42.01	+10	33	10.1	16	046
1980	DZ		1980	02	20.00286	12	03	41.51	+10	33	13.3		046
1980	DZ		1980	02	21.04185	12	03	02.59	+10	37	06.9		046
1980	DZ		1980	02	21.05632	12	03	02.03	+10	37	09.8		046
1980	DA1	*	1980	02	19.98862	12	04	19.55	+10	32	59.8	16	046
1980	DA1		1980	02	20.00286	12	04	19.22	+10	33	02.5		046
1980	DA1		1980	02	21.04185	12	03	48.13	+10	36	26.6		046
1980	DA1		1980	02	21.05632	12	03	47.73	+10	36	29.0		046
1980	DB1	*	1980	02	19.98862	12	07	17.00	+09	15	45.1	17.0	046
1980	DB1		1980	02	20.00286	12	07	16.48	+09	15	48.1		046
1980	DB1		1980	02	21.04185	12	06	41.12	+09	20	12.7		046
1980	DB1		1980	02	21.05632	12	06	40.49	+09	20	18.2		046
1980	DC1	*	1980	02	21.00400	10	17	08.33	+09	42	16.3	17.2	046
1980	DC1		1980	02	21.01813	10	17	07.66	+09	42	21.8		046
1980	DD1	*	1980	02	21.04185	12	00	23.3	+11	03	04	16.8	1 046
1980	DD1		1980	02	21.05632	12	00	22.5	+11	03	07		1 046

1980 DE1 *	1980 02 21.04185	12 01 09.9	+10 48 38					16.6		046
1980 DE1	1980 02 21.05632	12 01 09.1	+10 48 40							046

Note 1: near edge of plate.

OBSERVATIONS MADE AT BELGRADE BY Z. KNEZEVIC.

Object	Date	UT	R. A. (1950)	Decl.	O - C			Obs.
6	1979 06	05.84618	16 01 23.71	+02 03 41.5				057
6	1979 06	05.85576	16 01 23.04	+02 03 42.0				057
6	1979 06	05.86563	16 01 22.58	+02 03 40.8				057
6	1979 06	05.89031	16 01 21.19	+02 03 40.3				057
6	1979 06	05.90110	16 01 20.64	+02 03 40.7				057
8	1979 02	21.84575	09 00 24.78	+22 19 21.7	0.0	0		057
8	1979 02	21.85289	09 00 24.30	+22 19 22.8	0.0	0		057
10	1979 10	09.81415	23 17 34.60	+01 03 59.6	0.0	0		057
10	1979 10	09.82361	23 17 34.25	+01 03 57.2	0.0	0		057
20	1979 09	12.86285	23 20 10.21	-03 31 13.2	0.0	0		057
20	1979 09	12.87176	23 20 09.84	-03 31 16.8	0.0	0		057
20	1979 09	12.87951	23 20 09.38	-03 31 18.9	0.0	0		057
20	1979 10	09.77908	22 58 25.72	-05 57 29.4	0.0	0		057
20	1979 10	09.78710	22 58 25.51	-05 57 32.8	0.0	0		057
24	1979 12	13.84060	05 52 59.85	+24 19 18.2	0.0	0		057
27	1979 12	25.88206	05 20 43.11	+22 44 08.0	0.0	0		057
27	1979 12	25.89031	05 20 42.67	+22 44 08.7	0.0	0		057
27	1979 12	25.89855	05 20 42.25	+22 44 08.9	0.0	0		057
43	1979 11	13.91954	03 18 36.94	+21 34 18.7	0.0	0		057
44	1979 12	13.73848	00 01 39.50	-04 19 15.0	0.0	0		057
44	1979 12	13.75165	00 01 39.42	-04 19 11.6	0.0	0		057
69	1979 02	21.80833	07 27 27.10	+10 47 51.6	0.0	0		057
69	1979 02	21.82228	07 27 27.04	+10 47 57.2	0.0	0		057
69	1979 02	23.78032	07 27 04.97	+10 59 01.3	0.0	0		057
511	1979 12	13.79514	03 32 24.22	+01 16 45.6	0.0	0		057
511	1979 12	13.80582	03 32 24.08	+01 16 46.7	0.0	0		057
511	1979 12	13.81618	03 32 23.64	+01 16 49.2	0.0	0		057
511	1979 12	25.84028	03 26 03.61	+02 34 31.9	0.0	0		057
511	1979 12	25.85012	03 26 03.69	+02 34 36.7	0.0	0		057
511	1979 12	25.86071	03 26 03.46	+02 34 41.6	0.0	0		057
704	1979 09	12.81768	20 14 14.78	-03 29 18.6				057
704	1979 09	12.82862	20 14 14.62	-03 29 17.8				057
704	1979 09	12.83995	20 14 14.49	-03 29 17.6				057
704	1979 09	13.78125	20 14 00.18	-03 30 09.9				057
704	1979 09	13.79089	20 13 59.89	-03 30 10.9				057
704	1979 09	13.80124	20 13 59.87	-03 30 11.1				057
704	1979 09	18.84887	20 13 07.02	-03 34 49.3				057
704	1979 09	18.86528	20 13 06.89	-03 34 49.0				057

OBSERVATIONS MADE AT GISSAR BY N. NARIZHNAYA, F. TUPIEVA AND O. CHEKANIKHINA (ASSISTED BY R. KRYLOVA, N. MATVEEV AND O. NECHAEVA). FROM KIEV KOMET. TSIRK. NO. 257.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
/1978 XXI	1979 07	21.93508	23 43 49.08	-17 40 45.2	190
/1978 XXI	1979 07	23.93472	23 42 23.60	-17 43 41.8	190
/1978 XXI	1979 07	30.91217	23 36 52.07	-17 55 05.9	190
/1978 XXI	1979 07	31.92778	23 35 59.53	-17 56 52.2	190
/1978 XXI	1979 08	18.85965	23 18 29.13	-18 26 59.3	190
/1978 XXI	1979 08	26.86602	23 09 55.47	-18 36 28.9	190
/1978 XXI	1979 08	30.80293	23 05 42.41	-18 39 31.5	190
/1978 XXI	1979 09	01.83882	23 03 32.56	-18 40 39.0	190
/1978 XXI	1979 09	18.75158	22 46 45.90	-18 36 02.2	190

OBSERVATIONS MADE AT LAS CAMPANAS BY A. BOYCE AND R. CROWE. MEASURED BY K. KAMPER.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
371	1978 06	04.08993	14 43 21.58	-24 49 40.6	304
371	1978 06	04.25486	14 43 15.60	-24 48 37.1	304
2104	1979 07	12.30208	20 35 55.93	+02 40 34.7	304
2104	1979 07	15.11181	20 33 56.00	+02 46 37.3	304
2104	1979 07	15.23056	20 33 50.70	+02 46 51.4	304
2104	1979 07	15.26944	20 33 48.97	+02 46 55.9	304

OBSERVATIONS MADE AT THE PURPLE MOUNTAIN OBSERVATORY UNDER THE DIRECTION OF J. ZHANG. MEASURED BY C.-Y. SHAO.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
2207	1979 11	18.63184	04 40 45.90	+13 43 45.7	16.2	330
2223	1979 11	18.71379	06 06 55.23	+09 51 44.4	17.2	330
1977 TJ3	1979 11	13.66171	05 41 36.53	-05 51 19.5	16.5	330
1977 TJ3	1979 11	18.67247	05 39 37.93	-06 17 55.9		330

OBSERVATION MADE AT THE TOKYO OBSERVATORY, KISO STATION, BY H. KOSAI.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
1977 HD	1978 11	02.62723	01 56 13.15	+35 24 15.9	381

OBSERVATIONS MADE AT THE SYDNEY OBSERVATORY BY D. S. KING, N. LOMB, W. H. ROBERTSON AND K. P. SIMS.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
/1979l	1980 01	10.7410	16 08 41.41	-46 08 26.0	420
1	1979 08	16.74670	01 31 07.35	-04 58 08.6	420
1	1979 08	21.74971	01 31 09.44	-05 15 59.8	420
1	1979 09	12.67118	01 24 34.71	-06 59 48.5	420
1	1979 09	17.63840	01 21 39.14	-07 26 20.9	420
1	1979 10	08.56872	01 05 25.92	-09 06 17.3	420
1	1979 10	30.50895	00 47 44.60	-09 49 21.1	420
1	1979 11	16.46248	00 38 48.87	-09 21 16.3	420
1	1979 11	20.45870	00 37 36.29	-09 07 09.3	420
3	1979 12	17.67029	07 42 29.23	+00 26 18.3	420
4	1979 10	30.58469	02 47 46.40	+05 06 00.0	420
4	1979 11	22.52022	02 25 42.59	+04 13 24.3	420
4	1979 12	10.46779	02 14 38.89	+04 30 33.8	420
4	1979 12	17.43898	02 12 38.88	+04 51 26.2	420
6	1979 03	26.76605	16 39 27.80	-03 17 12.0	420
6	1979 04	03.74979	16 40 38.67	-02 29 45.1	420
6	1979 05	28.58840	16 09 11.55	+02 01 07.4	420
6	1979 06	25.49054	15 46 04.19	+01 10 59.5	420
6	1979 07	02.47842	15 42 28.17	+00 34 18.6	420
6	1979 07	20.41539	15 38 49.14	-01 30 54.0	420
6	1979 07	23.40400	15 39 00.52	-01 55 00.6	420
6	1979 08	07.35960	15 43 15.20	-04 04 01.1	420
7	1979 03	26.74338	16 08 08.28	-24 44 07.7	420
7	1979 04	05.73484	16 06 45.21	-24 41 08.7	420
7	1979 05	30.54840	15 23 08.21	-21 37 29.5	420
7	1979 06	06.50476	15 17 00.58	-21 01 57.0	420
7	1979 06	14.48828	15 11 03.27	-20 23 22.6	420
7	1979 06	25.46220	15 05 11.67	-19 37 48.7	420
7	1979 07	03.43438	15 02 49.66	-19 12 08.5	420
7	1979 07	16.41561	15 02 25.19	-18 45 40.7	420
7	1979 07	23.37708	15 03 52.87	-18 39 16.7	420
7	1979 07	30.36991	15 06 27.36	-18 37 58.5	420
40	1979 03	06.72180	14 23 01.12	-07 47 45.8	420
40	1979 03	27.65910	14 16 12.10	-06 37 46.8	420

40	1979 04 03.65414	14 11 11.32	-06 04 50.4			420
40	1979 05 17.49310	13 32 09.47	-03 18 51.9			420
40	1979 06 25.40765	13 28 55.83	-04 55 54.3			420
40	1979 07 11.36089	13 38 45.95	-06 35 33.8			420
51	1979 07 03.67742	20 59 33.39	-03 51 37.2			420
51	1979 07 17.63395	20 50 13.01	-04 30 35.2			420
51	1979 07 24.61797	20 44 19.10	-05 04 40.1			420
51	1979 08 13.54931	20 26 39.12	-07 20 50.9			420
51	1979 10 09.38689	20 18 48.75	-13 15 32.3			420
532	1979 07 18.69368	22 32 06.70	-22 38 36.3			420
532	1979 07 23.70898	22 29 58.29	-23 22 18.4			420
532	1979 08 02.66703	22 24 14.16	-24 51 33.9			420
532	1979 08 15.61961	22 14 30.48	-26 43 02.4			420
532	1979 08 21.60406	22 09 30.83	-27 28 57.3			420
532	1979 09 12.54209	21 52 08.73	-29 24 59.4			420
532	1979 10 08.44070	21 41 24.90	-29 43 03.2			420
704	1979 06 07.75422	21 11 35.74	-08 30 44.8			420
704	1979 06 25.70719	21 09 09.14	-06 24 43.1			420
704	1979 07 02.68402	21 06 10.25	-05 42 16.3			420
704	1979 07 16.64973	20 57 09.53	-04 31 57.3			420
704	1979 07 23.61243	20 51 27.43	-04 05 19.0			420
704	1979 08 01.57542	20 43 26.67	-03 39 58.4			420
704	1979 08 02.59160	20 42 30.88	-03 37 44.3			420
704	1979 08 14.54500	20 31 47.22	-03 20 29.5			420
704	1979 10 08.40102	20 15 58.27	-03 47 15.7			420

OBSERVATIONS MADE AT MOUNT JOHN UNIVERSITY OBSERVATORY (CODE 474), AT THE CARTER OBSERVATORY'S WELLINGTON (CODE 485) AND BLACK BIRCH (CODE 483) STATIONS AND AT HAPPY VALLEY, WELLINGTON (CODE 484), BY A. C. GILMORE, P. M. KILMARTIN, P. MAC QUEEN AND R. MILLINGTON. MEASURED BY KILMARTIN.

Object	Date	UT	R. A. (1950)	Decl.	N	Obs.
/1978 XIV	1978 07 31.69760	00 36 19.45	-01 52 24.5			474
/1978 XIV	1978 07 31.71902	00 36 19.89	-01 52 15.7			474
/1978 XXI	1979 04 01.70186	23 01 15.23	-26 20 07.1		1	483
/1978 XXI	1979 04 01.71639	23 01 16.53	-26 19 56.5		1	483
/1978 XXI	1979 10 15.42444	22 28 30.29	-17 38 41.0			484
/1978 XXI	1979 10 15.45124	22 28 29.31	-17 38 35.8			484
/1978 XXII	1978 12 27.43542	01 08 52.14	-05 01 59.4			474
/1978 XXII	1978 12 27.45709	01 08 54.51	-05 01 37.9			474
/1979l	1980 01 18.64102	16 39 14.97	-62 16 43.4			484
/1979l	1980 01 18.64941	16 39 20.48	-62 18 33.5			484
/1979l	1980 01 21.64222	18 09 27.66	-75 26 12.2			484
/1979l	1980 01 21.64672	18 09 48.93	-75 27 34.7			484
/1979l	1980 01 25.65805	02 04 40.68	-61 21 09.0		1	483
/1979l	1980 02 11.40279	03 29 19.62	+12 47 27.9		1	483
/1979l	1980 02 11.41493	03 29 20.31	+12 48 11.7		1	483
1125	1978 08 04.56667	19 55 13.54	-22 28 45.5			474
1125	1978 08 04.61043	19 55 11.39	-22 28 53.1			474
2035	1978 08 02.57094	18 14 16.87	-62 30 37.7			474
2035	1978 08 02.58818	18 14 15.86	-62 30 43.4			474
2045	1978 07 31.50310	19 28 42.80	-33 20 25.1			474
2045	1978 07 31.52156	19 28 41.70	-33 20 24.0			474
2050	1978 08 01.59244	00 29 19.75	-44 00 11.3			474
2050	1978 08 01.61597	00 29 19.67	-44 00 32.6			474
2050	1978 08 04.74307	00 29 02.25	-44 44 56.1			474
2050	1978 08 04.75641	00 29 02.10	-44 45 08.2			474
2055	1978 07 31.59034	22 04 15.24	-31 16 16.2			474
2055	1978 07 31.60979	22 04 13.45	-31 16 11.0			474
2155	1978 06 02.46680	15 07 24.32	-18 45 58.6			485

2155		1978	06	02.51817	15	07	21.95	-18	45	49.7	485
2181		1978	07	30.64226	21	05	29.63	-36	11	10.8	474
2181		1978	07	31.54378	21	04	30.52	-36	13	43.3	474
2181		1978	07	31.56497	21	04	29.19	-36	13	45.4	474
2181		1978	08	04.64993	20	59	59.22	-36	23	13.7	474
2181		1978	08	04.70340	20	59	55.18	-36	23	19.4	474
2201		1979	12	16.40460	02	19	20.44	+13	19	55.8	484
2201		1979	12	16.41863	02	19	16.02	+13	19	36.1	484
1978 PM	*	1978	08	04.56667	19	53	55.63	-22	24	40.8	474
1978 PM		1978	08	04.61043	19	53	53.28	-22	24	45.5	474

Note 1: observatory code 483, Long. and Parallax 173.80, -319, +282 (see MPC 4766).

OBSERVATIONS MADE AT THE CENTRO ASTRONOMICO DE YEBES BY M. DE PASCUAL, GARCIA AND ELIZ.

Object	Date	UT	R. A. (1950)			Decl.			Obs.
/1979l	1980	02 11.88021	03	29	47.15	+13	14	51.8	491
/1979l	1980	02 12.87253	03	30	43.47	+14	08	17.9	491
/1979l	1980	02 13.81333	03	31	34.51	+14	54	39.7	491

OBSERVATIONS MADE AT MESCHEDE (CODE 519) BY R. HEMPEL AND AT FALKENSEE (CODE 542) BY M. GRESSMANN. COMMUNICATED BY L. D. SCHMADEL.

Object	Date	UT	R. A. (1950)			Decl.			O - C		N	Obs.
6	1979	05 14.96313	16	21	53.92	+01	25	42.0				542
6	1979	05 14.96645	16	21	53.74	+01	25	41.8				542
6	1979	05 14.96954	16	21	53.60	+01	25	43.3				542
6	1979	05 16.95698	16	20	07.77	+01	32	59.0				542
6	1979	05 16.96300	16	20	07.41	+01	33	01.8				542
6	1979	05 25.93255	16	11	44.38	+01	56	59.9				542
6	1979	05 25.93552	16	11	44.26	+01	56	59.3				542
6	1979	05 25.93806	16	11	44.07	+01	57	00.2				542
6	1979	05 28.92295	16	08	52.35	+02	01	24.3				542
6	1979	05 28.92561	16	08	52.17	+02	01	24.3				542
6	1979	05 28.92819	16	08	52.05	+02	01	25.5				542
6	1979	06 20.92782	15	49	01.16	+01	30	07.6				542
6	1979	06 20.93041	15	49	01.09	+01	30	07.7				542
6	1979	06 20.93285	15	49	00.93	+01	30	06.6				542
18	1979	02 28.84047	06	00	12.98	+15	34	38.0				542
18	1979	02 28.84194	06	00	13.21	+15	34	40.3				542
18	1979	02 28.84799	06	00	13.29	+15	34	43.1				542
148	1979	03 23.97644	11	15	34.47	+21	26	03.0				542
148	1979	03 23.98073	11	15	34.29	+21	26	05.9				542
148	1979	03 23.98505	11	15	34.12	+21	26	08.2				542
148	1979	03 24.99249	11	14	51.31	+21	34	20.4				542
148	1979	03 24.99632	11	14	51.07	+21	34	19.8				542
148	1979	03 25.00067	11	14	50.93	+21	34	22.8				542
148	1979	04 27.84845	11	00	50.76	+23	49	28.2				542
148	1979	04 27.85306	11	00	50.59	+23	49	30.2				542
148	1979	04 27.85764	11	00	50.64	+23	49	31.8				542
148	1979	05 14.87275	11	02	41.78	+23	29	59.6				542
148	1979	05 14.87698	11	02	41.88	+23	29	57.8			1	542
148	1979	05 15.87306	11	02	59.24	+23	27	33.7			2	542
148	1979	05 15.87712	11	02	58.85	+23	27	27.3			2	542
148	1979	05 15.88128	11	02	59.25	+23	27	30.5			2	542
397	1980	01 17.72847	23	46	21.18	+03	34	18.9	0.1+	0		519
397	1980	01 17.73681	23	46	22.15	+03	34	23.1	0.1+	0		519
397	1980	01 17.74097	23	46	22.71	+03	34	24.4	0.1+	0		519
397	1980	01 17.74514	23	46	23.24	+03	34	26.5	0.1+	0		519
737	1980	01 17.82153	05	37	53.43	+05	49	14.1	0.0	0		519

737	1980 01 17.82569	05 37 53.25	+05 49 14.5	0.0	0		519
737	1980 01 17.82986	05 37 53.09	+05 49 16.2	0.0	0		519
737	1980 01 17.83403	05 37 52.86	+05 49 17.7	0.0	0		519

Note 1: trail very weak. 2: measurement uncertain.

OBSERVATIONS MADE DURING THE SUMMER SCIENCE PROGRAM AT THACHER SCHOOL, OJAI, CALIFORNIA, UNDER THE DIRECTION OF D. A. PIERCE.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
51	1979 06	21.36308	21 04 02.05	-03 50 29.8	669
51	1979 06	22.44919	21 03 47.77	-03 49 22.6	669
51	1979 06	29.44182	21 01 32.19	-03 47 47.7	669
51	1979 07	06.46378	20 58 00.96	-03 56 11.9	669
51	1979 07	19.44850	20 48 44.78	-04 38 32.5	669
51	1979 07	19.41517	20 48 45.97	-04 38 31.0	669
80	1979 06	29.28253	17 44 47.16	-10 35 31.6	669
80	1979 06	29.28253	17 44 47.05	-10 35 30.8	669
80	1979 07	17.20197	17 29 08.64	-10 09 00.5	669
80	1979 07	17.24572	17 29 06.51	-10 09 01.1	669
80	1979 07	22.25683	17 26 10.09	-10 10 45.6	669
80	1979 07	22.32767	17 26 07.50	-10 10 49.4	669
185	1979 06	23.27350	17 31 43.06	+09 39 13.8	669
185	1979 06	24.39919	17 30 50.21	+09 35 34.9	669
185	1979 06	30.21031	17 26 00.14	+09 09 48.4	669
185	1979 07	02.20371	17 24 26.64	+08 59 01.9	669
185	1979 07	20.28461	17 13 04.98	+06 41 35.2	669
185	1979 07	22.28947	17 12 12.75	+06 22 45.2	669
216	1979 06	24.22142	16 20 43.94	-09 51 53.5	669
216	1979 06	27.21517	16 18 43.51	-09 45 23.7	669
216	1979 07	13.20544	16 10 39.62	-09 27 23.4	669
216	1979 07	13.25336	16 10 38.70	-09 27 22.3	669
216	1979 07	21.20632	16 08 33.09	-09 28 32.4	669
216	1979 07	25.31864	16 07 59.91	-09 31 36.4	669
287	1979 06	24.39711	20 13 11.63	-10 41 28.0	669
287	1979 07	01.30028	20 08 49.21	-11 11 14.1	669
287	1979 07	17.29850	19 55 15.97	-12 50 09.6	669
287	1979 07	21.42038	19 51 25.07	-13 20 23.3	669
287	1979 07	24.26100	19 48 40.53	-13 42 47.5	669
354	1979 06	25.44572	21 02 29.54	-08 40 02.1	669
354	1979 06	29.35058	21 00 59.26	-08 56 32.3	669
354	1979 07	17.42628	20 50 28.19	-10 41 00.7	669
354	1979 07	19.35510	20 49 04.39	-10 54 33.2	669
354	1979 07	23.43392	20 45 59.01	-11 24 23.8	669
354	1979 07	24.32697	20 45 17.54	-11 31 10.7	669

OBSERVATIONS MADE AT PALOMAR. MEASUREMENTS BY C. J. VAN HOUTEN AND I. VAN HOUTEN-GROENEVELD ON SCHMIDT EXPOSURES BY T. GEHRELS.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
3516 P-L *	1960 10	17.17917	00 21 28.12	+16 40 52.1	675
3516 P-L	1960 10	17.23681	00 21 25.12	+16 40 33.5	675
3516 P-L	1960 10	17.33750	00 21 20.01	+16 40 02.3	675
3516 P-L	1960 10	22.12083	00 17 30.35	+16 14 28.5	675
3516 P-L	1960 10	22.17778	00 17 27.61	+16 14 09.6	675
3516 P-L	1960 10	22.29097	00 17 22.33	+16 13 33.2	675
3516 P-L	1960 10	24.21256	00 15 56.31	+16 03 04.3	675
3516 P-L	1960 10	24.30972	00 15 51.92	+16 02 33.6	675
3516 P-L	1960 10	25.20486	00 15 13.25	+15 57 40.0	675
3516 P-L	1960 10	25.32778	00 15 07.78	+15 56 59.9	675
3516 P-L	1960 10	26.28264	00 14 27.62	+15 51 46.8	675
3516 P-L	1960 10	26.37951	00 14 23.51	+15 51 15.4	675

OBSERVATIONS MADE AT THE LOWELL OBSERVATORY, ANDERSON MESA STATION, BY E. BOWELL.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
/1980b	1980 02	11.32292	10 40 40.40	+09 39 09.8	16.5T		688
/1980b	1980 02	11.34653	10 40 39.94	+09 39 14.7			688
/1980b	1980 03	13.28333	10 28 58.57	+10 51 06.0	16.0T	1	688
/1980b	1980 03	13.32153	10 28 57.61	+10 51 12.1			688
/1980b	1980 03	14.25694	10 28 36.72	+10 53 15.8	16.5T	1	688
/1980b	1980 03	14.27500	10 28 36.29	+10 53 18.3		2	688
/1980b	1980 03	16.21042	10 27 53.67	+10 57 30.0	16.5T		688
/1980b	1980 03	16.22708	10 27 53.25	+10 57 32.5			688
17	1980 03	13.28333	10 27 25.18	+15 22 12.3			688
17	1980 03	13.32153	10 27 23.22	+15 22 26.2		1	688
17	1980 03	14.25694	10 26 36.96	+15 27 59.8		1	688
17	1980 03	14.27500	10 26 36.09	+15 28 06.5			688
17	1980 03	16.21042	10 25 02.97	+15 39 09.1			688
17	1980 03	16.22708	10 25 02.20	+15 39 14.1			688
100	1980 01	22.26597	08 38 41.10	+18 09 42.0			688
100	1980 02	11.25000	08 22 58.14	+19 30 47.0			688
100	1980 03	05.13889	08 09 54.95	+20 39 03.5			688
154	1980 03	13.30278	12 37 28.46	+18 19 46.4			688
157	1980 01	22.32431	10 51 56.91	+29 19 57.6			688
177	1980 01	22.26597	08 21 35.78	+21 05 39.0			688
177	1980 02	11.25000	08 02 57.78	+21 52 10.1		1	688
177	1980 03	05.13889	07 51 48.35	+22 07 47.3			688
213	1980 01	22.25069	08 06 42.43	+19 54 51.2			688
254	1980 03	13.28333	10 20 12.94	+16 40 35.6			688
254	1980 03	13.32153	10 20 10.59	+16 40 41.9			688
254	1980 03	14.25694	10 19 16.41	+16 43 03.5			688
254	1980 03	14.27500	10 19 15.34	+16 43 05.4			688
254	1980 03	16.21042	10 17 26.50	+16 47 23.4			688
254	1980 03	16.22708	10 17 25.58	+16 47 26.1			688
277	1979 12	14.37153	08 46 14.93	+16 33 02.5			688
277	1979 12	16.48958	08 45 38.43	+16 34 16.3			688
277	1980 01	22.26597	08 20 32.94	+17 51 50.9			688
277	1980 01	22.28264	08 20 32.04	+17 51 53.8			688
277	1980 02	11.25000	08 03 28.19	+18 46 19.3			688
277	1980 02	11.26806	08 03 27.27	+18 46 26.6			688
277	1980 03	05.13889	07 51 57.73	+19 25 23.1			688
356	1980 01	22.30208	09 38 57.92	+24 16 50.8			688
401	1980 03	14.25694	10 27 59.16	+17 02 20.1			688
401	1980 03	14.27500	10 27 58.43	+17 02 24.3			688
401	1980 03	16.21042	10 26 40.99	+17 06 33.7			688
401	1980 03	16.22708	10 26 40.32	+17 06 36.2			688
462	1980 03	13.25972	08 13 03.36	+22 05 06.9			688
469	1980 02	11.32292	10 57 15.08	+06 24 30.7			688
469	1980 02	11.34653	10 57 13.88	+06 24 29.5		3	688
491	1980 03	14.43681	14 44 28.85	-02 04 02.1			688
514	1980 01	22.25069	08 03 28.60	+17 25 15.4			688
549	1980 01	22.26597	08 31 29.30	+17 16 19.6			688
549	1980 02	11.25000	08 13 23.47	+17 28 08.8			688
549	1980 03	05.13889	08 04 47.30	+17 22 28.6			688
586	1980 01	22.25069	07 54 02.62	+18 30 34.3			688
620	1980 01	22.30208	09 36 52.59	+23 26 52.7			688
747	1980 01	22.26597	08 35 37.67	+15 38 46.8			688
747	1980 02	11.25000	08 18 29.72	+19 17 01.1		1	688
747	1980 02	11.26806	08 18 28.86	+19 17 11.2			688
747	1980 03	05.13889	08 07 52.08	+22 19 38.5			688
747	1980 03	13.25972	08 07 28.98	+23 02 29.9			688

856	1980	01	22.22500	05	58	27.32	+14	20	34.2		2	688
870	1980	02	11.32292	10	36	53.22	+13	48	44.3		2	688
870	1980	02	11.34653	10	36	52.13	+13	48	55.4			688
873	1980	01	22.26597	08	28	31.57	+15	26	28.2			688
873	1980	02	11.25000	08	10	13.16	+17	01	19.9			688
873	1980	03	05.13889	07	56	37.16	+18	29	37.9		1	688
918	1980	02	11.32292	10	38	35.42	+07	36	44.8		2	688
918	1980	02	11.34653	10	38	34.37	+07	36	49.7			688
918	1980	03	14.25694	10	11	36.69	+08	49	07.6			688
918	1980	03	14.27500	10	11	35.78	+08	49	10.5			688
932	1980	03	16.21042	10	31	18.82	+17	05	11.0			688
932	1980	03	16.22708	10	31	17.87	+17	05	11.8			688
952	1980	01	22.30208	09	53	15.36	+26	13	01.7			688
960	1980	01	22.26597	08	22	01.20	+15	20	47.3			688
960	1980	01	22.28264	08	22	00.25	+15	20	50.1			688
960	1980	02	11.25000	08	01	03.66	+16	22	37.0			688
973	1980	02	11.32292	10	57	48.51	+12	30	24.0		2	688
973	1980	02	11.34653	10	57	47.37	+12	30	25.1			688
973	1980	03	13.28333	10	30	35.92	+12	52	19.8			688
973	1980	03	13.32153	10	30	33.94	+12	52	19.5			688
973	1980	03	14.25694	10	29	48.14	+12	52	07.0			688
973	1980	03	14.27500	10	29	47.14	+12	52	06.9			688
973	1980	03	16.21042	10	28	14.26	+12	51	26.4			688
973	1980	03	16.22708	10	28	13.47	+12	51	25.9			688
981	1980	03	13.28333	10	38	20.87	+11	20	22.9			688
981	1980	03	13.32153	10	38	19.19	+11	20	32.2			688
1100	1980	02	11.32292	10	45	03.78	+07	08	23.2			688
1100	1980	02	11.34653	10	45	02.69	+07	08	30.3			688
1100	1980	03	13.28333	10	20	49.41	+09	23	23.5			688
1100	1980	03	13.32153	10	20	47.67	+09	23	33.6			688
1100	1980	03	14.25694	10	20	07.64	+09	27	14.7			688
1100	1980	03	16.21042	10	18	45.95	+09	34	46.0		1	688
1100	1980	03	16.22708	10	18	45.26	+09	34	51.6			688
1117	1980	01	22.26597	08	21	32.37	+16	36	05.4		2	688
1117	1980	01	22.28264	08	21	31.30	+16	36	10.6			688
1117	1980	02	11.25000	08	00	51.84	+18	12	13.8			688
1117	1980	03	05.13889	07	46	32.04	+19	32	53.8			688
1128	1980	02	11.32292	10	45	36.38	+09	31	05.1			688
1128	1980	02	11.34653	10	45	35.26	+09	31	12.0			688
1238	1980	01	22.32431	10	43	12.61	+29	40	36.8			688
1245	1980	02	11.32292	10	42	05.95	+08	22	01.2		2	688
1245	1980	02	11.34653	10	42	04.93	+08	22	08.6			688
1245	1980	03	13.28333	10	18	27.34	+11	05	15.9			688
1245	1980	03	13.32153	10	18	25.69	+11	05	26.9			688
1245	1980	03	14.25694	10	17	47.34	+11	09	44.7		2	688
1245	1980	03	14.27500	10	17	46.62	+11	09	50.2			688
1245	1980	03	16.21042	10	16	29.34	+11	18	29.0			688
1245	1980	03	16.22708	10	16	28.64	+11	18	34.3			688
1247	1980	02	11.32292	10	42	31.75	+07	48	59.2			688
1247	1980	02	11.34653	10	42	30.78	+07	49	06.2			688
1247	1980	03	13.28333	10	20	20.07	+10	11	02.4			688
1247	1980	03	13.32153	10	20	18.42	+10	11	14.0		3	688
1247	1980	03	14.25694	10	19	41.23	+10	15	07.0			688
1247	1980	03	16.21042	10	18	25.07	+10	23	09.3		1	688
1247	1980	03	16.22708	10	18	24.49	+10	23	13.2			688
1274	1980	03	05.13889	07	53	30.84	+22	10	59.4			688
1456	1980	01	22.26597	08	34	13.52	+13	24	32.4		3	688
1717	1980	03	13.25972	08	13	41.32	+22	50	55.4			688
1778	1980	02	11.32292	10	52	51.39	+10	01	17.3			688

1778			1980	02	11.34653	10	52	50.50	+10	01	24.1			688
1778			1980	03	13.28333	10	30	03.33	+12	34	50.4			688
1778			1980	03	13.32153	10	30	01.70	+12	34	59.8			688
1778			1980	03	14.25694	10	29	22.44	+12	38	55.0			688
1778			1980	03	14.27500	10	29	21.61	+12	38	59.2			688
1778			1980	03	16.21042	10	28	02.03	+12	46	47.3			688
1778			1980	03	16.22708	10	28	01.26	+12	46	52.5			688
1813			1980	01	22.30208	09	51	22.32	+26	23	21.8			688
1904			1980	01	22.30208	09	40	36.80	+23	15	50.7			688
1967			1980	03	13.28333	10	29	29.02	+16	23	43.6	16.0	2	688
1967			1980	03	13.32153	10	29	26.77	+16	23	50.6			688
1967			1980	03	14.25694	10	28	35.94	+16	26	56.5			688
1967			1980	03	14.27500	10	28	34.93	+16	27	00.8			688
1967			1980	03	16.21042	10	26	53.37	+16	32	50.1			688
1967			1980	03	16.22708	10	26	52.54	+16	32	53.0			688
2144			1980	02	11.32292	10	47	14.29	+08	54	43.6			688
2144			1980	02	11.34653	10	47	13.28	+08	54	50.8	16.5		688
2144			1980	03	13.28333	10	23	18.19	+11	43	32.4			688
2144			1980	03	13.32153	10	23	16.56	+11	43	42.3			688
2144			1980	03	14.25694	10	22	37.47	+11	48	01.4			688
2144			1980	03	14.27500	10	22	36.71	+11	48	05.4			688
2144			1980	03	16.21042	10	21	18.23	+11	56	43.5			688
2217			1980	03	16.21042	10	13	00.72	+12	38	53.8	17.5		688
1975	BU		1980	03	13.30278	12	34	11.89	+19	23	11.0	15.0		688
1977	OH		1980	02	11.32292	10	38	34.07	+09	15	29.4			688
1977	OH		1980	02	11.34653	10	38	32.87	+09	15	35.6	17.0	2	688
1977	OH		1980	03	14.27500	10	14	54.52	+11	50	36.9			688
1977	OH		1980	03	16.21042	10	13	43.12	+11	58	03.5		1	688
1979	UJ		1980	01	22.17917	03	12	40.57	+02	44	28.1	17.0	3	688
1979	XD		1980	01	22.26597	08	18	08.12	+14	29	32.6	15.5		688
1979	XD		1980	02	11.25000	07	57	58.64	+15	24	43.3	16.5	2	688
1979	XD		1980	03	05.13889	07	47	23.88	+16	14	00.6			688
1979	XE		1979	12	14.37153	08	51	42.95	+10	59	45.8			688
1979	XE		1980	01	22.26597	08	34	09.56	+16	23	28.9	15.5		688
1979	XE		1980	01	22.28264	08	34	08.59	+16	23	39.8			688
1979	XE		1980	02	11.25000	08	16	35.86	+20	08	46.6	16.0		688
1979	XG		1979	12	16.45069	08	45	41.88	+16	10	11.2		4	688
1979	XG		1979	12	16.48958	08	45	41.37	+16	10	16.1		3	688
1979	XH		1980	01	22.26597	08	32	19.51	+14	15	47.2	17.0		688
1979	XH		1980	02	11.25000	08	19	01.44	+15	28	08.9	17.0	3	688
1979	XH		1980	03	05.13889	08	08	21.23	+16	42	17.4			688
1979	YK		1980	01	22.26597	08	34	27.33	+18	33	20.1	16.5		688
1979	YK		1980	02	11.25000	08	18	37.94	+19	27	58.5	17.0		688
1979	YK		1980	02	11.26806	08	18	37.20	+19	28	02.7		3	688
1979	YK		1980	03	05.13889	08	05	44.31	+20	08	41.2			688
1980	BM	*	1980	01	22.26597	08	36	01.51	+16	17	14.7	17.0		688
1980	BM		1980	01	22.28264	08	36	00.29	+16	17	21.4		3	688
1980	BN	*	1980	01	22.26597	08	19	57.20	+17	04	11.2	16.5		688
1980	BN		1980	01	22.28264	08	19	56.34	+17	04	22.3			688
1980	BO	*	1980	01	22.26597	08	23	11.80	+18	20	47.2	15.5		688
1980	BO		1980	01	22.28264	08	23	10.84	+18	20	49.1			688
1980	CC	*	1980	02	11.25000	08	18	07.11	+18	35	37.1	17.0		688
1980	CC		1980	02	11.26806	08	18	06.23	+18	35	43.4			688
1980	CD		1980	02	11.32292	10	40	42.52	+12	51	12.7		2	688
1980	CD	*	1980	02	11.34653	10	40	41.28	+12	51	18.1	16.5	2	688
1980	CD		1980	03	14.25694	10	13	15.94	+14	36	02.0	16.5		688
1980	CD		1980	03	14.27500	10	13	15.04	+14	36	03.5			688
1980	CD		1980	03	16.21042	10	11	52.03	+14	39	18.8			688
1980	CD		1980	03	16.22708	10	11	51.31	+14	39	18.5	16.5		688

1980	CE		1980	02	11.32292	10	46	24.11	+07	08	19.4		688
1980	CE	*	1980	02	11.34653	10	46	23.32	+07	08	24.6	17.5	688
1980	CF		1980	02	11.32292	10	53	37.80	+08	10	53.7		688
1980	CF	*	1980	02	11.34653	10	53	36.78	+08	10	59.7	16.5	688
1980	CF		1980	03	13.28333	10	31	43.19	+11	13	09.0		688
1980	CF		1980	03	13.32153	10	31	41.65	+11	13	21.0		688
1980	CF		1980	03	14.25694	10	31	04.25	+11	18	18.4	16.0	2 688
1980	CF		1980	03	14.27500	10	31	03.41	+11	18	21.8		688
1980	CF		1980	03	16.21042	10	29	48.00	+11	28	15.5		688
1980	CF		1980	03	16.22708	10	29	47.29	+11	28	20.9	16.5	688
1980	CP	*	1980	02	11.25000	08	03	31.23	+18	55	05.7	16.0	688
1980	CP		1980	02	11.26806	08	03	30.27	+18	55	12.0		688
1980	EC	*	1980	03	13.28333	10	29	41.57	+11	07	03.4	16.5	688
1980	EC		1980	03	13.32153	10	29	39.89	+11	07	29.0		688
1980	EC		1980	03	14.25694	10	29	01.88	+11	17	27.4	16.5	2 688
1980	EC		1980	03	14.27500	10	29	01.02	+11	17	39.2		3 688
1980	EC		1980	03	16.21042	10	27	44.45	+11	37	55.6		688
1980	EC		1980	03	16.22708	10	27	43.79	+11	38	06.7	16.5	688
1980	ED	*	1980	03	14.25694	10	10	09.01	+14	31	20.6	16.5	688
1980	ED		1980	03	14.27500	10	10	08.23	+14	31	22.6		688
1980	ED		1980	03	16.21042	10	08	52.54	+14	37	32.5		688
1980	ED		1980	03	16.22708	10	08	52.30	+14	37	34.2	17.0	688
1980	EE	*	1980	03	14.25694	10	15	15.01	+15	02	07.3	17.5	688
1980	EE		1980	03	14.27500	10	15	14.13	+15	02	14.5		688
1980	EE		1980	03	16.21042	10	13	50.23	+15	12	38.4		688
1980	EE		1980	03	16.22708	10	13	49.63	+15	12	42.0	17.5	688
1980	EF		1980	03	13.28333	10	24	19.16	+16	49	14.9		688
1980	EF	*	1980	03	14.25694	10	23	18.70	+16	46	05.6	17.5	1 688
1980	EF		1980	03	14.27500	10	23	17.62	+16	46	02.7		688
1980	EF		1980	03	16.21042	10	21	21.72	+16	39	11.2		688
1980	EG	*	1980	03	14.43681	15	04	27.16	+02	58	48.6	17.5	3 688
1980	EG		1980	03	14.46111	15	04	27.19	+02	58	56.2		688

Note 1: declination uncertain. 2: right ascension uncertain. 3 = 1 + 2. 4: correction to MPC 5172.

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

Object	Date	UT	R. A. (1950)	Decl.	N Obs.
2222	1961 12	06.32188	06 14 41.85	+22 46 42.8	760
2222	1961 12	06.38611	06 14 38.65	+22 46 49.4	760
1950 BR	1950 01	28.37361	08 49 27.62	+23 09 23.8	1 760
1950 BR	1950 01	28.39304	08 49 26.27	+23 09 27.0	1 760
1950 HV	1950 04	20.30796	14 27 11.46	-07 51 37.1	760
1950 HV	1950 04	20.33296	14 27 09.71	-07 51 31.7	760
1950 HV	1950 04	20.35931	14 27 08.17	-07 51 30.4	760
1950 HV	1950 04	20.38500	14 27 06.35	-07 51 25.6	760
1950 HC1	1950 04	20.35931	14 32 44.78	-08 12 37.6	760
1950 HC1	1950 04	20.38500	14 32 43.49	-08 12 32.7	760
1950 JN	1950 05	13.36184	16 07 20.28	-16 12 59.8	760
1950 JN	1950 05	13.37781	16 07 17.88	-16 12 52.3	760
1950 LM	1950 06	07.16190	15 55 41.59	+01 57 04.1	760
1950 LM	1950 06	07.22163	15 55 38.97	+01 57 10.9	760
1950 LP	1950 06	07.16190	15 49 55.82	-01 37 41.8	760
1950 LP	1950 06	07.22163	15 49 52.98	-01 38 00.3	760
1950 NU	1950 07	15.27425	21 00 44.57	-13 06 01.7	760
1950 NU	1950 07	15.32844	21 00 43.31	-13 06 38.5	760
1950 NV	1950 07	15.27425	20 51 15.19	-14 11 00.9	760
1950 NV	1950 07	15.32844	20 51 12.55	-14 11 05.2	760
1950 NY	1950 07	15.27425	20 54 03.92	-15 41 34.4	760

1950	NY	1950	07	15.32844	20	54	00.98	-15	41	09.3	760
1950	OB	1950	07	25.30004	22	04	30.82	-11	28	30.8	760
1950	OB	1950	07	25.34309	22	04	29.21	-11	28	34.6	760
1950	OC	1950	07	25.30004	21	57	40.51	-12	01	49.9	760
1950	OC	1950	07	25.34309	21	57	39.01	-12	02	00.2	760
1950	QS	1950	08	21.22572	23	08	27.81	+04	23	17.7	760
1950	QS	1950	08	21.25142	23	08	26.63	+04	23	13.5	760
1950	QT	1950	08	21.22572	23	14	28.76	+01	15	09.3	760
1950	QT	1950	08	21.25142	23	14	27.86	+01	14	52.0	760
1950	QU	1950	08	21.22572	23	00	36.04	-01	01	13.9	760
1950	QU	1950	08	21.25142	23	00	35.07	-01	01	21.8	760
1950	QV	1950	08	21.29829	02	51	52.14	+15	59	02.3	760
1950	QV	1950	08	21.35592	02	51	54.13	+15	59	14.9	760
1950	QW	1950	08	21.29829	02	50	27.29	+22	53	15.8	760
1950	QW	1950	08	21.35592	02	50	29.68	+22	53	33.8	760
1950	QX	1950	08	21.29829	02	35	27.54	+17	37	23.7	760
1950	QX	1950	08	21.35592	02	35	28.25	+17	37	27.8	760
1950	QY	1950	08	21.29829	02	30	17.82	+19	11	42.4	760
1950	QY	1950	08	21.35592	02	30	20.50	+19	11	58.9	760
1953	VL1	1953	11	07.26596	03	33	52.84	+15	43	56.7	1 760
1953	VL1	1953	11	07.31110	03	33	50.19	+15	43	54.0	1 760
1953	VL1	1953	11	14.22986	03	28	07.56	+15	28	08.1	1 760
1953	VL1	1953	11	14.27289	03	28	05.29	+15	28	00.0	1 760

Note 1: reduced at the Smithsonian Astrophysical Observatory.

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

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
/1979j	1980	02 05.01969	01 41 44.47	+02 23 11.4		1	801
/1980a	1980	03 13.26041	13 36 44.35	-08 35 51.6	19.5T		801
/1980a	1980	03 13.32389	13 36 42.65	-08 35 50.4			801
/1980b	1980	03 19.23677	10 26 48.10	+11 03 53.2	16.0T		801
1632	1980	02 22.21743	10 08 09.53	+04 49 01.0	16		801
2215	1978	10 30.24760	05 05 38.71	+18 56 09.9			801
2215	1978	10 31.35222	05 05 21.02	+19 02 00.0			801
2215	1980	02 19.37337	12 54 47.00	+09 12 25.4			801
2217	1980	02 13.18838	10 35 52.89	+10 14 51.4			801
A915	TA	1980	02 09.07667	05 48 49.73	+16 14 12.0		801
1941	SA1	1980	02 16.17087	09 06 49.13	+26 43 17.0	1	801
1955	RX	1980	02 13.15979	10 16 00.99	+05 47 33.6		801
1955	RX	1980	02 14.21892	10 15 00.23	+05 56 12.4		801
1968	BC	1980	02 08.98123	01 12 38.33	-00 23 24.3		801
1969	RD2	1978	12 28.00707	01 33 12.71	+09 08 38.6		801
1969	RD2	1978	12 29.02245	01 33 41.91	+09 10 33.6		801
1969	RD2	1980	02 09.17509	07 46 20.98	+15 50 00.1		801
1969	RD2	1980	02 11.25141	07 44 47.94	+15 55 42.1		801
1969	RD2	1980	02 13.07677	07 43 30.21	+16 00 38.1		801
1969	RD2	1980	03 12.04723	07 33 11.61	+17 00 27.2		801
1976	DD	1980	02 14.08580	09 34 15.25	+13 50 08.5		801
1977	HD	1978	11 27.00664	01 30 24.75	+34 18 49.8		801
1977	RO	1980	02 13.21409	09 59 12.84	-04 08 20.0		801
1978	RB	1979	01 18.99270	00 07 03.44	+08 04 43.4		801
1978	RB	1980	02 16.15697	08 50 15.20	+32 46 19.5		801
1978	RC	1980	02 19.08083	06 03 23.82	+36 55 02.2		801
1978	UW1	1980	02 14.06663	09 39 04.24	+31 16 19.6		801
1978	UW1	1980	03 13.16475	09 17 29.06	+31 46 21.8		801
1978	VT	1980	02 19.31605	11 24 02.51	+05 47 11.3		801
1978	VT	1980	02 22.24356	11 21 42.30	+05 58 28.6		801

1978	WL14	*	1978	11	20.09986	01	33	57.20	+10	00	19.2	17.5	801
1979	WM		1980	02	09.00983	04	10	04.23	+24	53	20.5		801
1979	WM		1980	03	10.02692	04	19	12.31	+24	17	18.6		801
1979	YB		1980	02	09.11319	05	18	37.83	+00	34	48.1		801
1980	BA		1980	02	09.20537	08	04	12.53	+24	29	01.1		801
1980	BA		1980	02	11.35587	08	02	37.17	+24	40	05.6		801
1980	BA		1980	03	10.09910	07	55	41.95	+25	52	35.6		801
1980	CA		1980	02	11.28726	09	12	29.35	+37	56	28.8		801
1980	CA		1980	02	11.31494	09	12	27.49	+37	56	31.2		801
1980	CB		1980	02	06.10914	05	01	32.08	+10	09	41.8		801
1980	CG	*	1980	02	09.17509	07	45	41.71	+15	49	28.3	17.5	801
1980	CG		1980	02	11.25141	07	44	11.42	+16	02	56.2		801
1980	CG		1980	02	13.07677	07	42	57.38	+16	14	29.9		801
1980	CG		1980	02	18.11918	07	40	00.46	+16	45	02.4		801
1980	CG		1980	03	12.10701	07	35	45.56	+18	32	56.9		801
1980	CH	*	1980	02	09.20537	08	03	59.19	+24	27	50.1	18.5	801
1980	CJ	*	1980	02	13.15979	10	16	53.22	+05	22	56.6	18	801
1980	CJ		1980	02	14.21892	10	15	57.82	+05	23	28.0		801
1980	CJ		1980	02	16.10764	10	14	19.33	+05	24	26.8		801
1980	CJ		1980	02	18.30539	10	12	22.42	+05	25	57.4		801
1980	CJ		1980	03	10.24080	09	54	35.77	+05	47	38.5		801
1980	CK	*	1980	02	13.21409	09	57	57.67	-04	00	34.2	15	801
1980	CK		1980	02	14.24352	09	57	14.78	-03	56	01.4		801
1980	CK		1980	02	16.04605	09	55	59.13	-03	47	27.0		801
1980	CK		1980	02	18.14441	09	54	29.35	-03	36	27.5		801
1980	CK		1980	03	10.14851	09	41	19.98	-01	03	00.6		801
1980	CL	*	1980	02	13.21409	09	58	20.41	-04	05	45.0	19	801
1980	CM	*	1980	02	13.24344	10	32	30.29	+13	04	11.0	17.5	801
1980	CM		1980	02	14.10711	10	31	52.73	+13	08	53.6		801
1980	CN	*	1980	02	13.24344	10	32	29.77	+12	56	24.1	17	801
1980	CN		1980	02	14.10711	10	31	54.16	+13	01	46.8		801
1980	CO	*	1980	02	13.24344	10	34	16.55	+12	52	16.2	16	801
1980	CO		1980	02	14.10711	10	33	37.05	+12	57	05.9		801
1980	CO		1980	02	16.08293	10	32	05.37	+13	08	10.0		801
1980	CO		1980	02	18.16532	10	30	26.21	+13	19	49.6		801
1980	CO		1980	03	12.13338	10	12	25.48	+15	12	36.7		801
1980	CS	*	1980	02	13.18838	10	35	59.90	+10	09	07.3	18	801
1980	DA	*	1980	02	18.30539	10	11	24.80	+05	01	34.5	16.5	801
1980	DA		1980	02	22.21743	10	07	32.16	+05	19	21.9		801
1980	DA		1980	02	26.21503	10	03	37.37	+05	38	21.6		801
1980	DA		1980	03	10.20737	09	52	16.19	+06	40	21.0		801
1980	DB	*	1980	02	19.31605	11	23	24.62	+05	52	21.4	17	801
1980	DC	*	1980	02	19.31605	11	23	58.59	+05	27	19.5	16.5	801
1980	DC		1980	02	22.24356	11	21	48.90	+05	33	56.5		801
1980	DC		1980	02	25.35398	11	19	24.26	+05	41	27.5		801
1980	DC		1980	03	10.27601	11	07	47.28	+06	17	48.9		801
1980	DC		1980	03	12.24316	11	06	07.06	+06	22	50.2		801
1980	DC		1980	03	13.22632	11	05	17.09	+06	25	21.0		801
1980	DD	*	1980	02	16.08293	10	30	52.14	+13	28	17.8	18	2 801
1980	DE	*	1980	02	18.16532	10	29	48.70	+13	47	11.8	18	801
1980	DR		1980	02	16.13332	10	09	04.38	+11	00	22.3	17	801
1980	DF1	*	1980	02	19.37337	12	54	36.82	+09	15	37.5	19	801
1980	EA	*	1980	03	10.27601	11	07	59.24	+06	19	44.7	18	801
1980	EA		1980	03	12.24316	11	06	01.05	+06	31	28.0		801
1980	EA		1980	03	13.22632	11	05	02.18	+06	37	15.0		801
1980	EB	*	1980	03	10.27601	11	09	20.74	+06	25	41.8	17	801
1980	EB		1980	03	12.24316	11	07	29.29	+06	34	59.7		801
1980	EB		1980	03	13.22632	11	06	33.66	+06	39	35.7		801

Note 1: weak solution. 2: very poor image.

OBSERVATIONS MADE WITH THE 0.4-M ASTROGRAPH AT THE EUROPEAN SOUTHERN OBSERVATORY BY H. DEBEHOGNE AND E. RANGEL NETTO (ASSISTED BY G. ROMAN, G. VIEIRA, F. CALDEIRA AND O. TAVARES).

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
627	1979 12	15.11752	02 53 55.17	+07 11 01.2		809
627	1979 12	15.12583	02 53 54.93	+07 11 01.3		809
627	1979 12	15.13414	02 53 54.73	+07 11 01.6		809
627	1979 12	16.08086	02 53 30.95	+07 11 38.8		809
627	1979 12	16.08917	02 53 30.76	+07 11 39.0		809
627	1979 12	16.09748	02 53 30.52	+07 11 39.5		809
627	1979 12	17.04211	02 53 08.03	+07 12 24.4		809
627	1979 12	17.05065	02 53 07.84	+07 12 25.4		809
627	1979 12	17.05919	02 53 07.65	+07 12 25.6		809
790	1979 12	16.30109	06 05 23.48	+14 49 57.9		809
790	1979 12	16.30940	06 05 23.09	+14 49 56.3		809
790	1979 12	16.31771	06 05 22.70	+14 49 54.6		809
790	1979 12	18.20196	06 03 52.42	+14 43 31.1		809
790	1979 12	18.21258	06 03 51.92	+14 43 29.1		809
790	1979 12	18.23982	06 03 50.57	+14 43 23.4		809
790	1979 12	18.24657	06 03 50.24	+14 43 22.2		809
790	1979 12	18.25350	06 03 49.92	+14 43 21.0		809
790	1979 12	18.26042	06 03 49.58	+14 43 19.5		809
790	1979 12	19.27027	06 03 00.89	+14 39 58.1		809
790	1979 12	19.27719	06 03 00.59	+14 39 56.6		809
790	1979 12	20.19943	06 02 16.12	+14 36 54.4		809
790	1979 12	20.20774	06 02 15.72	+14 36 52.5		809
790	1979 12	20.21605	06 02 15.30	+14 36 51.1		809
790	1979 12	21.19879	06 01 27.85	+14 33 39.3		809
790	1979 12	21.20710	06 01 27.43	+14 33 37.9		809
790	1979 12	21.21541	06 01 27.00	+14 33 36.4		809
790	1979 12	22.17735	06 00 40.52	+14 30 31.3		809
790	1979 12	22.18566	06 00 40.12	+14 30 30.0		809
790	1979 12	22.19397	06 00 39.70	+14 30 28.2		809
790	1979 12	22.22791	06 00 38.01	+14 30 22.3		809
790	1979 12	23.23488	05 59 49.33	+14 27 11.3		809
790	1979 12	23.24319	05 59 48.90	+14 27 09.8		809
790	1979 12	24.23016	05 59 01.30	+14 24 06.3		809
790	1979 12	24.23768	05 59 00.92	+14 24 05.0		809
790	1979 12	24.24461	05 59 00.57	+14 24 03.6		809
790	1979 12	25.18123	05 58 15.55	+14 21 10.9		809
790	1979 12	25.18958	05 58 15.19	+14 21 09.5		809
790	1979 12	25.19756	05 58 14.77	+14 21 08.3		809
790	1979 12	26.16436	05 57 28.37	+14 18 13.8		809
790	1979 12	26.17267	05 57 27.92	+14 18 11.9		809
790	1979 12	28.18521	05 55 51.94	+14 12 17.7		809
790	1979 12	28.19768	05 55 51.33	+14 12 15.7		809
790	1979 12	28.20807	05 55 50.81	+14 12 14.3		809
790	1979 12	28.22053	05 55 50.22	+14 12 11.9		809
790	1979 12	28.23097	05 55 49.70	+14 12 09.7		809
790	1979 12	28.25447	05 55 48.54	+14 12 05.4		809
790	1979 12	29.21918	05 55 02.96	+14 09 20.4		809
790	1979 12	29.23026	05 55 02.43	+14 09 18.6		809
790	1979 12	29.23996	05 55 01.97	+14 09 17.2		809
790	1979 12	29.25104	05 55 01.44	+14 09 15.0		809
790	1979 12	30.20122	05 54 16.82	+14 06 35.6		809
790	1979 12	30.21369	05 54 16.22	+14 06 33.9		809
790	1979 12	31.14239	05 53 32.95	+14 04 00.1		809
1172	1979 12	16.30109	06 05 29.20	+15 18 29.7		809
1172	1979 12	16.30940	06 05 28.92	+15 18 28.4		809

1172	1979	12	16.31771	06	05	28.59	+15	18	27.8	809
1172	1979	12	18.21258	06	04	26.52	+15	15	41.6	809
1172	1979	12	18.23982	06	04	25.58	+15	15	39.1	809
1172	1979	12	18.24657	06	04	25.39	+15	15	39.7	809
1172	1979	12	18.25350	06	04	25.18	+15	15	38.7	809
1172	1979	12	18.26042	06	04	24.94	+15	15	37.7	809
1172	1979	12	19.27027	06	03	51.62	+15	14	11.4	809
1172	1979	12	19.27719	06	03	51.41	+15	14	10.9	809
1172	1979	12	20.19943	06	03	20.95	+15	12	53.2	809
1172	1979	12	20.20774	06	03	20.66	+15	12	52.1	809
1172	1979	12	20.21605	06	03	20.38	+15	12	51.1	809
1172	1979	12	21.19879	06	02	47.93	+15	11	30.6	809
1172	1979	12	21.20710	06	02	47.60	+15	11	29.4	809
1172	1979	12	21.21541	06	02	47.31	+15	11	28.9	809
1172	1979	12	22.17735	06	02	15.47	+15	10	11.1	809
1172	1979	12	22.18566	06	02	15.18	+15	10	10.8	809
1172	1979	12	22.19397	06	02	14.92	+15	10	10.2	809
1172	1979	12	22.22791	06	02	13.77	+15	10	07.0	809
1172	1979	12	23.23488	06	01	40.38	+15	08	48.2	809
1172	1979	12	23.24319	06	01	40.11	+15	08	47.1	809
1172	1979	12	23.32145	06	01	37.38	+15	08	40.4	809
1172	1979	12	24.23016	06	01	07.40	+15	07	30.3	809
1172	1979	12	24.23768	06	01	07.14	+15	07	30.0	809
1172	1979	12	24.24461	06	01	06.91	+15	07	29.3	809
1172	1979	12	25.18123	06	00	35.98	+15	06	18.4	809
1172	1979	12	25.18958	06	00	35.75	+15	06	17.5	809
1172	1979	12	25.19756	06	00	35.36	+15	06	16.6	809
1172	1979	12	26.16436	06	00	03.56	+15	05	06.2	809
1172	1979	12	26.17267	06	00	03.27	+15	05	04.6	809
1172	1979	12	26.18329	06	00	02.91	+15	05	05.0	809
1172	1979	12	26.19136	06	00	02.71	+15	05	03.5	809
1172	1979	12	26.19968	06	00	02.37	+15	05	03.2	809
1172	1979	12	28.23097	05	58	55.52	+15	02	37.2	809
1172	1979	12	28.25447	05	58	54.73	+15	02	35.6	809
1172	1979	12	29.26074	05	58	21.90	+15	01	25.7	809
1172	1979	12	30.32311	05	57	47.27	+15	00	15.1	809
1172	1979	12	30.33073	05	57	46.99	+15	00	14.4	809
1172	1979	12	31.22688	05	57	18.04	+14	59	16.3	809
1391	1979	12	15.11752	02	56	21.04	+08	29	01.4	809
1391	1979	12	15.12583	02	56	20.72	+08	29	02.4	809
1391	1979	12	15.13414	02	56	20.41	+08	29	02.8	809
1391	1979	12	16.03446	02	55	49.30	+08	30	07.5	809
1391	1979	12	16.04277	02	55	48.96	+08	30	08.2	809
1391	1979	12	16.05177	02	55	48.64	+08	30	09.1	809
1391	1979	12	16.08086	02	55	47.56	+08	30	10.9	809
1391	1979	12	16.08917	02	55	47.26	+08	30	11.7	809
1391	1979	12	16.09748	02	55	47.02	+08	30	12.0	809
1391	1979	12	17.04211	02	55	15.58	+08	31	27.0	809
1391	1979	12	17.05065	02	55	15.29	+08	31	27.8	809
1391	1979	12	17.05919	02	55	15.00	+08	31	28.3	809
1391	1979	12	19.17703	02	54	09.04	+08	34	41.8	809
1391	1979	12	19.18395	02	54	08.79	+08	34	42.7	809
1391	1979	12	19.19088	02	54	08.56	+08	34	42.8	809
1391	1979	12	20.04222	02	53	44.36	+08	36	13.1	809
1391	1979	12	20.05054	02	53	44.10	+08	36	14.1	809
1391	1979	12	20.05885	02	53	43.89	+08	36	14.9	809
1391	1979	12	20.06716	02	53	43.54	+08	36	15.4	809
1391	1979	12	20.07547	02	53	43.32	+08	36	16.0	809
1391	1979	12	20.08378	02	53	43.08	+08	36	17.1	809

1391	1979	12	21.04643	02	53	16.80	+08	38	04.0	809
1391	1979	12	21.05508	02	53	16.54	+08	38	05.6	809
1391	1979	12	21.06305	02	53	16.34	+08	38	06.0	809
1391	1979	12	22.05373	02	52	50.78	+08	40	04.8	809
1391	1979	12	22.06210	02	52	50.56	+08	40	05.7	809
1391	1979	12	22.06970	02	52	50.35	+08	40	06.4	809
1391	1979	12	23.08183	02	52	25.79	+08	42	15.1	809
1391	1979	12	23.10814	02	52	25.13	+08	42	18.7	809
1391	1979	12	23.11645	02	52	24.92	+08	42	20.4	809
1391	1979	12	23.12476	02	52	24.69	+08	42	21.1	809
1391	1979	12	23.13308	02	52	24.49	+08	42	23.5	809
1391	1979	12	23.14035	02	52	24.32	+08	42	23.5	809
1391	1979	12	23.14762	02	52	24.15	+08	42	24.1	809
1391	1979	12	23.15385	02	52	24.00	+08	42	24.7	809
1391	1979	12	23.16047	02	52	23.84	+08	42	25.7	809
1391	1979	12	24.12351	02	52	02.20	+08	44	35.6	809
1391	1979	12	24.13190	02	52	02.02	+08	44	36.7	809
1391	1979	12	24.14040	02	52	01.75	+08	44	37.6	809
1391	1979	12	25.08537	02	51	42.06	+08	46	53.8	809
1391	1979	12	25.09368	02	51	41.93	+08	46	55.5	809
1391	1979	12	26.07642	02	51	22.85	+08	49	22.6	809
1391	1979	12	26.08471	02	51	22.62	+08	49	23.8	809
1409	1979	12	15.11752	02	58	19.37	+07	47	31.0	809
1409	1979	12	15.12583	02	58	19.17	+07	47	30.8	809
1409	1979	12	15.13414	02	58	18.95	+07	47	30.8	809
1409	1979	12	16.03446	02	57	57.17	+07	47	04.9	809
1409	1979	12	16.04277	02	57	56.94	+07	47	04.6	809
1409	1979	12	16.05177	02	57	56.71	+07	47	04.6	809
1409	1979	12	16.08086	02	57	55.97	+07	47	04.5	809
1409	1979	12	16.08917	02	57	55.76	+07	47	04.8	809
1409	1979	12	16.09748	02	57	55.55	+07	47	04.4	809
1409	1979	12	17.04211	02	57	34.03	+07	46	47.9	809
1409	1979	12	17.05065	02	57	33.84	+07	46	48.3	809
1409	1979	12	17.05919	02	57	33.62	+07	46	48.0	809
1733	1979	12	16.30109	06	10	58.21	+15	19	18.4	809
1733	1979	12	16.30940	06	10	57.63	+15	19	18.8	809
1733	1979	12	16.31771	06	10	57.08	+15	19	19.5	809
1733	1979	12	19.27027	06	07	44.46	+15	21	11.5	809
1733	1979	12	19.27719	06	07	43.99	+15	21	11.5	809
1733	1979	12	20.19943	06	06	42.96	+15	21	56.6	809
1733	1979	12	20.20774	06	06	42.40	+15	21	57.2	809
1733	1979	12	20.21605	06	06	41.83	+15	21	58.0	809
1733	1979	12	21.19879	06	05	36.14	+15	22	54.5	809
1733	1979	12	21.20710	06	05	35.55	+15	22	55.1	809
1733	1979	12	21.21541	06	05	35.00	+15	22	55.6	809
1733	1979	12	22.17735	06	04	30.47	+15	23	57.2	809
1733	1979	12	22.18566	06	04	29.90	+15	23	57.8	809
1733	1979	12	22.19397	06	04	29.31	+15	23	58.6	809
1733	1979	12	22.22791	06	04	26.97	+15	24	00.5	809
1733	1979	12	23.23488	06	03	19.10	+15	25	10.1	809
1733	1979	12	23.24319	06	03	18.50	+15	25	10.9	809
1733	1979	12	23.32145	06	03	13.02	+15	25	16.4	809
1733	1979	12	24.23016	06	02	12.03	+15	26	25.1	809
1733	1979	12	24.23768	06	02	11.45	+15	26	26.0	809
1733	1979	12	24.24461	06	02	10.96	+15	26	26.7	809
1733	1979	12	25.18123	06	01	08.08	+15	27	43.7	809
1733	1979	12	25.18958	06	01	07.48	+15	27	44.5	809
1733	1979	12	25.19756	06	01	06.93	+15	27	45.2	809
1733	1979	12	26.16436	06	00	02.21	+15	29	09.6	809

1733		1979	12	26.17267	06	00	01.62	+15	29	10.1		809
1733		1979	12	26.18329	06	00	00.84	+15	29	12.6		809
1733		1979	12	26.19136	06	00	00.29	+15	29	12.8		809
1733		1979	12	26.19968	05	59	59.69	+15	29	13.5		809
1733		1979	12	28.23097	05	57	44.12	+15	32	30.4		809
1733		1979	12	28.25447	05	57	42.48	+15	32	32.4		809
1733		1979	12	29.26074	05	56	36.23	+15	34	20.0		809
2021		1979	12	23.32145	06	07	07.51	+15	32	00.0		809
2021		1979	12	26.18329	06	03	54.14	+15	35	48.4		809
2021		1979	12	26.19136	06	03	53.70	+15	35	49.4		809
2021		1979	12	26.19968	06	03	53.00	+15	35	49.9		809
1979 XJ	*	1979	12	15.11752	02	55	53.86	+08	38	51.4	17.0	809
1979 XJ		1979	12	15.12583	02	55	53.71	+08	38	53.4		809
1979 XJ		1979	12	15.13414	02	55	53.54	+08	38	56.9		809
1979 XJ		1979	12	16.03446	02	55	40.71	+08	44	17.9		809
1979 XJ		1979	12	16.04277	02	55	40.65	+08	44	20.3		809
1979 XJ		1979	12	16.05177	02	55	40.60	+08	44	22.4		809
1979 XJ		1979	12	16.08086	02	55	39.98	+08	44	33.9		809
1979 XJ		1979	12	16.08917	02	55	39.82	+08	44	37.4		809
1979 XJ		1979	12	16.09748	02	55	39.67	+08	44	40.2		809
1979 XJ		1979	12	17.04211	02	55	28.06	+08	50	24.7		809
1979 XJ		1979	12	17.05065	02	55	27.99	+08	50	28.5		809
1979 XJ		1979	12	17.05919	02	55	27.92	+08	50	32.0		809
1979 XJ		1979	12	19.17703	02	55	08.65	+09	03	47.8		809
1979 XJ		1979	12	19.18395	02	55	08.60	+09	03	51.2		809
1979 XJ		1979	12	19.19088	02	55	08.50	+09	03	53.0		809
1979 XJ		1979	12	20.04222	02	55	04.19	+09	09	24.1		809
1979 XJ		1979	12	20.05054	02	55	04.16	+09	09	26.4		809
1979 XJ		1979	12	20.05885	02	55	04.05	+09	09	30.7		809
1979 XJ		1979	12	20.06716	02	55	03.98	+09	09	34.0		809
1979 XJ		1979	12	20.07547	02	55	03.93	+09	09	37.3		809
1979 XJ		1979	12	20.08378	02	55	03.83	+09	09	39.9		809
1979 XJ		1979	12	21.04643	02	55	00.60	+09	16	00.1		809
1979 XJ		1979	12	21.05508	02	55	00.54	+09	16	03.7		809
1979 XJ		1979	12	21.06305	02	55	00.50	+09	16	06.6		809
1979 XJ		1979	12	22.05373	02	54	59.23	+09	22	45.0		809
1979 XJ		1979	12	22.06210	02	54	59.21	+09	22	48.0		809
1979 XJ		1979	12	22.06970	02	54	59.22	+09	22	51.0		809
1979 XJ		1979	12	23.08183	02	55	00.16	+09	29	45.8		809
1979 XJ		1979	12	23.10814	02	55	00.12	+09	29	56.4		809
1979 XJ		1979	12	23.11645	02	55	00.13	+09	29	59.6		809
1979 XJ		1979	12	23.12476	02	55	00.16	+09	30	02.1		809
1979 XJ		1979	12	23.13308	02	55	00.11	+09	30	06.6		809
1979 XJ		1979	12	23.14035	02	55	00.12	+09	30	09.0		809
1979 XJ		1979	12	23.14762	02	55	00.09	+09	30	12.1		809
1979 XJ		1979	12	23.15385	02	55	00.09	+09	30	14.7		809
1979 XJ		1979	12	23.16047	02	55	00.06	+09	30	16.8		809
1979 XJ		1979	12	24.06524	02	55	03.28	+09	36	33.1		809
1979 XJ		1979	12	24.08498	02	55	03.31	+09	36	42.2		809
1979 XJ		1979	12	24.10264	02	55	03.33	+09	36	50.4		809
1979 XJ		1979	12	24.12351	02	55	03.34	+09	36	58.0		809
1979 XJ		1979	12	24.13190	02	55	03.40	+09	37	01.7		809
1979 XJ		1979	12	24.14040	02	55	03.40	+09	37	04.6		809
1979 XJ		1979	12	25.08537	02	55	08.65	+09	43	43.1		809
1979 XJ		1979	12	25.09368	02	55	08.63	+09	43	46.6		809
1979 YL	*	1979	12	16.30109	06	05	13.78	+15	07	25.2	16.5	809
1979 YL		1979	12	16.30940	06	05	13.24	+15	07	23.9		809
1979 YL		1979	12	16.31771	06	05	12.63	+15	07	22.9		809
1979 YL		1979	12	18.20196	06	03	09.07	+15	03	11.8		809

1979	YL		1979	12	18.21258	06	03	08.21	+15	03	11.2	809
1979	YL		1979	12	18.23982	06	03	06.37	+15	03	06.9	809
1979	YL		1979	12	18.24657	06	03	05.89	+15	03	06.1	809
1979	YL		1979	12	18.25350	06	03	05.48	+15	03	05.4	809
1979	YL		1979	12	18.26042	06	03	04.95	+15	03	04.6	809
1979	YL		1979	12	19.27027	06	01	57.80	+15	00	59.3	809
1979	YL		1979	12	19.27719	06	01	57.31	+15	00	57.9	809
1979	YL		1979	12	20.19943	06	00	55.93	+14	59	09.6	809
1979	YL		1979	12	20.20774	06	00	55.36	+14	59	08.4	809
1979	YL		1979	12	20.21605	06	00	54.80	+14	59	07.5	809
1979	YL		1979	12	21.19879	05	59	49.03	+14	57	18.7	809
1979	YL		1979	12	21.20710	05	59	48.46	+14	57	17.8	809
1979	YL		1979	12	21.21541	05	59	47.84	+14	57	16.6	809
1979	YL		1979	12	22.17735	05	58	43.41	+14	55	36.5	809
1979	YL		1979	12	22.18566	05	58	42.78	+14	55	35.8	809
1979	YL		1979	12	22.19397	05	58	42.22	+14	55	35.1	809
1979	YL		1979	12	22.22791	05	58	39.87	+14	55	32.5	809
1979	YL		1979	12	23.23488	05	57	32.21	+14	53	47.9	809
1979	YL		1979	12	23.24319	05	57	31.61	+14	53	46.8	809
1979	YL		1979	12	24.23016	05	56	25.63	+14	52	22.4	809
1979	YL		1979	12	24.23768	05	56	25.13	+14	52	21.3	809
1979	YL		1979	12	24.24461	05	56	24.61	+14	52	20.8	809
1979	YL		1979	12	25.18123	05	55	22.28	+14	51	02.1	809
1979	YL		1979	12	25.18958	05	55	21.72	+14	51	01.2	809
1979	YL		1979	12	25.19756	05	55	21.06	+14	51	00.8	809
1979	YL		1979	12	26.16436	05	54	17.15	+14	49	45.1	809
1979	YL		1979	12	26.17267	05	54	16.61	+14	49	44.5	809
1979	YL		1979	12	28.18521	05	52	04.56	+14	47	29.4	809
1979	YL		1979	12	28.19768	05	52	03.77	+14	47	28.6	809
1979	YL		1979	12	28.20807	05	52	02.95	+14	47	28.2	809
1979	YL		1979	12	28.22053	05	52	02.18	+14	47	27.3	809
1979	YL		1979	12	29.21918	05	50	57.72	+14	46	31.5	809
1979	YL		1979	12	29.23026	05	50	56.97	+14	46	30.7	809
1979	YL		1979	12	29.23996	05	50	56.32	+14	46	29.9	809
1979	YL		1979	12	29.25104	05	50	55.46	+14	46	28.9	809
1979	YL		1979	12	30.20122	05	49	55.21	+14	45	42.7	809
1979	YL		1979	12	30.21369	05	49	54.37	+14	45	40.9	809
1979	YM	*	1979	12	16.30109	06	09	00.82	+14	41	12.7	16.5 809
1979	YM		1979	12	16.30940	06	09	00.22	+14	41	11.3	809
1979	YM		1979	12	16.31771	06	08	59.75	+14	41	10.7	809
1979	YM		1979	12	18.23982	06	06	55.88	+14	36	43.4	809
1979	YM		1979	12	18.24657	06	06	55.42	+14	36	43.2	809
1979	YM		1979	12	18.25350	06	06	54.94	+14	36	41.8	809
1979	YM		1979	12	18.26042	06	06	54.45	+14	36	41.1	809
1979	YM		1979	12	19.27027	06	05	48.50	+14	34	29.1	809
1979	YM		1979	12	19.27719	06	05	48.07	+14	34	28.2	809
1979	YM		1979	12	20.19943	06	04	47.79	+14	32	33.1	809
1979	YM		1979	12	20.20774	06	04	47.15	+14	32	32.1	809
1979	YM		1979	12	20.21605	06	04	46.61	+14	32	31.0	809
1979	YM		1979	12	21.19879	06	03	41.88	+14	30	33.1	809
1979	YM		1979	12	21.20710	06	03	41.31	+14	30	32.1	809
1979	YM		1979	12	21.21541	06	03	40.76	+14	30	31.4	809
1979	YM		1979	12	22.17735	06	02	37.29	+14	28	41.6	809
1979	YM		1979	12	22.18566	06	02	36.72	+14	28	41.1	809
1979	YM		1979	12	22.19397	06	02	36.12	+14	28	40.0	809
1979	YM		1979	12	22.22791	06	02	33.88	+14	28	36.1	809
1979	YM		1979	12	23.23488	06	01	27.15	+14	26	47.3	809
1979	YM		1979	12	23.24319	06	01	26.56	+14	26	46.3	809
1979	YM		1979	12	23.32145	06	01	21.24	+14	26	37.3	809

1979 YM		1979	12	24.23016	06	00	21.28	+14	25	06.1	809
1979 YM		1979	12	24.23768	06	00	20.80	+14	25	05.0	809
1979 YM		1979	12	24.24461	06	00	20.26	+14	25	04.1	809
1979 YM		1979	12	25.18123	05	59	18.61	+14	23	33.7	809
1979 YM		1979	12	25.18958	05	59	18.10	+14	23	33.4	809
1979 YM		1979	12	25.19756	05	59	17.39	+14	23	33.1	809
1979 YM		1979	12	26.16436	05	58	13.94	+14	22	06.1	809
1979 YM		1979	12	26.17267	05	58	13.33	+14	22	05.0	809
1979 YM		1979	12	28.18521	05	56	01.84	+14	19	22.2	809
1979 YM		1979	12	28.19768	05	56	01.07	+14	19	20.9	809
1979 YM		1979	12	28.20807	05	56	00.28	+14	19	20.6	809
1979 YM		1979	12	28.22053	05	55	59.56	+14	19	20.0	809
1979 YM		1979	12	29.21918	05	54	55.00	+14	18	07.5	809
1979 YM		1979	12	29.23026	05	54	54.30	+14	18	07.1	809
1979 YM		1979	12	29.23996	05	54	53.61	+14	18	06.6	809
1979 YM		1979	12	29.25104	05	54	52.85	+14	18	05.4	809
1979 YM		1979	12	30.20122	05	53	52.21	+14	17	04.0	809
1979 YM		1979	12	30.21369	05	53	51.26	+14	17	02.6	809
1979 YN	*	1979	12	23.32145	06	04	12.13	+14	51	37.5	17.0 809
1979 YN		1979	12	25.21144	06	02	29.24	+14	58	13.5	809
1979 YN		1979	12	25.22042	06	02	28.67	+14	58	13.9	809
1979 YN		1979	12	26.18329	06	01	36.29	+15	01	42.5	809
1979 YN		1979	12	26.19136	06	01	35.87	+15	01	44.6	809
1979 YN		1979	12	26.19968	06	01	35.33	+15	01	46.4	809
1979 YN		1979	12	28.23097	05	59	45.14	+15	09	14.6	809
1979 YN		1979	12	28.25447	05	59	43.72	+15	09	19.9	809
1979 YN		1979	12	29.26074	05	58	49.63	+15	13	07.7	809
1979 YO	*	1979	12	23.32145	06	06	35.40	+15	13	55.9	17.0 809
1979 YO		1979	12	25.21144	06	04	33.97	+15	19	07.5	809
1979 YO		1979	12	25.22042	06	04	33.37	+15	19	08.1	809
1979 YO		1979	12	26.18329	06	03	31.38	+15	21	53.5	809
1979 YO		1979	12	26.19136	06	03	30.92	+15	21	55.1	809
1979 YO		1979	12	26.19968	06	03	30.32	+15	21	56.3	809
1979 YO		1979	12	28.23097	06	01	20.00	+15	27	55.9	809
1979 YO		1979	12	28.25447	06	01	18.56	+15	27	59.5	809
1979 YO		1979	12	29.26074	06	00	14.53	+15	31	02.4	809

OBSERVATIONS MADE WITH THE 1-M SCHMIDT TELESCOPE AT THE EUROPEAN SOUTHERN OBSERVATORY BY H.-E. SCHUSTER. MEASURED BY R. M. WEST AND L. D. SCHMADEL.

Object	Date	UT	R. A. (1950)	Decl.	N	Obs.
/1980a	1980	03 14.21771	13 36 22.67	-08 35 13.8		809
1221	1980	02 14.27535	13 45 07.49	-19 36 24.1		809
1221	1980	02 14.28715	13 45 11.69	-19 36 21.9		809
1221	1980	02 14.29549	13 45 14.54	-19 36 20.7		809
1370	1979	12 13.07561	00 32 16.30	+10 33 28.5	1	809
1370	1979	12 15.06594	00 33 49.41	+10 37 13.7	1	809
1370	1979	12 16.09105	00 34 39.73	+10 39 25.0	1	809
1370	1979	12 21.06444	00 39 02.02	+10 52 12.7		809

Note 1: trail affected by clouds.

OBSERVATIONS MADE AT GEISEI (CODE 372) BY T. SEKI AND AT TOKAI (CODE 879) BY T. FURUTA. FROM YAMAMOTO CIRC. NO. 1933 AND NIHONDAIRA OBS. CIRC. NOS. 1096 AND 1097.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
/1979l	1980	02 09.46146	03 27 18.52	+10 38 09.1		879
/1979l	1980	02 09.46354	03 27 18.51	+10 38 21.1		879
/1979l	1980	02 20.52743	03 37 01.08	+18 55 14.8		372
/1979l	1980	02 20.53437	03 37 01.34	+18 55 23.8		372
1976 GC8	1980	02 16.56256	09 17 48.95	+19 55 10.1	16.5	879

1976	GC8	1980 02 16.57940	09 17 48.08	+19 55 14.9						879
1978	VT	1980 02 09.64063	11 30 41.06	+05 14 58.9					17	879
1978	VT	1980 02 09.65382	11 30 40.67	+05 15 03.1						879
1978	VT	1980 02 09.66649	11 30 40.02	+05 15 03.2						879
1980	AA	1980 02 09.59792	09 17 13.49	+01 35 56.7					16	879
1980	AA	1980 02 09.60764	09 17 14.68	+01 35 39.3						879

OBSERVATIONS MADE AT WOOLSTON BY A. GRIFFITHS AND P. BIRTWHISTLE. MEASURED BY BIRTWHISTLE AND R. L. WATERFIELD.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
/1979l	1980 02	10.84420	03 28 46.22	+12 12 48.1	7.5T	1	993
/1979l	1980 03	10.84096	03 51 33.46	+24 24 46.1	12 T	2	993

Note 1: diffuse outer coma, diameter 4′; well-defined central condensation, diameter 10"; faint tail 5′ long in p.a. 80 . 2: very diffuse outer coma, diameter 3′; central condensation diameter 15".

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ORBITAL ELEMENTS OF ONE-OPPOSITION MINOR PLANETS.

The orbit computers and authors of double designations are B = C. M. Bardwell, E = E. Bowell, F = E. Fogelin, H = P. Herget, M = B. G. Marsden, U = T. Urata. See also MPC 4499.

Planet	B(1,0)	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
A903 SB		030923	340.15	30.23	359.24	6.09	0.2750	2.8635	9	3		B
A905 VA	12.5	051111	354.86	218.33	201.92	1.40	0.2012	3.0542	26	3		B
A906 BJ	12.0	060130	313.63	75.58	118.46	10.44	0.1140	3.0209	24	3		B
A907 PB	14.0	070813	346.00	197.44	140.40	7.07	0.1946	2.3395	10	3		B
A922 WC	12.0	221212	93.78	293.23	31.67	16.10	0.1275	2.9909	29	6		B
A924 GA	11.0	240515	86.99	257.46	209.20	19.43	0.2192	3.2808	54	3		B
1931 EE	14.0	310320	335.99	219.39	334.28	8.29	0.1419	3.0174	10	3		B
1931 FC	15.0	330320	164.34	227.71	352.63	5.91	0.1115	2.3074	10	3		B
1931 RN	14.0	310916	49.57	123.44	171.38	5.72	0.1785	2.1907	32	5	1	B
1933 GB	12.5	330418	98.02	64.82	17.61	10.11	0.0537	2.9881	11	3		B
1934 FF	13.5	340324	64.44	257.66	179.27	13.51	0.1794	2.6094	9	5		B
1938 HE		380412	231.43	203.84	125.09	6.01	0.1435	2.2022	8	9		H
1971 UR	13.5	711016	297.95	58.85	46.81	5.91	0.1160	3.1471	24	6		M
1972 EG	11.7	720324	27.13	199.02	302.73	8.86	0.0283	3.0310	29	3	2	U
1972 TF2	12.0	721010	5.21	180.58	210.23	9.08	0.1019	3.0398	62	4	2	U
1974 MH	15.4	740602	17.00	263.24	346.32	6.48	0.1512	2.2845	54	0	2	U
1979 QJ	12.5	790904	9.02	249.32	119.01	11.53	0.1329	3.1644	92	8		M
1979 UJ	11.9	791123	198.11	29.29	188.81	15.64	0.0381	3.2324	97	5		E
1979 WM	9.0	800102	240.36	290.48	267.24	16.56	0.0650	5.2529	109	6		M
1979 XE	14.7	800102	22.70	310.93	130.28	9.82	0.2042	2.3167	59	6		E
1979 XH	11.8	800122	305.69	33.49	155.45	6.52	0.0958	3.9435	82	5		E
1979 XJ	15.0	791213	45.11	246.26	106.58	6.08	0.2383	2.1946	10	0		F
1979 YK	12.0	800102	165.49	61.54	251.23	0.15	0.1659	3.1363	80	5		E
1979 YL	14.5	791213	1.43	237.23	207.41	4.97	0.0803	2.2013	14	0		F
1979 YM	14.0	791213	310.17	286.69	213.15	6.04	0.0280	2.2956	14	0		F
1979 YN	13.5	791213	351.74	337.11	120.52	11.16	0.0697	3.0120	6	9		F
1979 YO	14.0	791213	182.50	137.65	128.64	8.29	0.0666	2.4033	6	9		F
1980 BA	15.5	800211	32.94	334.05	108.69	6.86	0.1690	2.4708	49	7		M
1980 CA	14.5	800211	53.82	359.45	46.21	13.39	0.3050	2.9880	2	5		M
1980 CF	12.7	800211	335.31	41.04	145.26	4.24	0.1280	3.1293	34	8		E
1980 CG	14.0	800211	78.50	228.09	144.73	9.65	0.2899	2.5265	32	5		M
1980 CJ	14.0	800211	329.94	227.57	316.18	13.25	0.0523	3.1486	26	5		M
1980 CK	13.0	800211	346.77	317.51	215.40	9.30	0.3000	3.0523	26	5		M
1980 CO	12.5	800211	30.35	13.82	102.44	3.10	0.0649	2.9299	28	5		M

1980 CR	12.0	800211	274.67	127.48	145.55	14.88	0.3583	2.8168	7	8	M
1980 DA	14.0	800211	65.36	162.20	270.51	3.80	0.1001	2.3849	21	4	M
1980 DC	12.5	800211	254.86	287.29	349.47	9.33	0.0919	3.0418	23	6	M
1980 DF	13.5	800211	170.29	31.57	304.22	22.85	0.1479	2.7703	2	3	F
1980 DR	14.0	800211	275.85	277.10	323.58	2.61	0.0778	2.6450	5	5	M
1980 EA	17.0	800302	319.87	193.57	31.74	0.46	0.2278	2.1665	3	3 3	M
1980 EB	15.0	800302	322.35	224.58	4.29	1.67	0.2845	2.5642	3	3	M
1980 EC	13.3	800302	303.98	67.67	158.28	16.04	0.1067	2.7247	3	6	E
1980 EF	15.7	800302	329.25	201.68	0.83	10.05	0.1955	2.3550	3	4	E

Note 1: the identification 1931 RN = 1953 GJ (MPC 1130) does not seem to be valid. 2: double designations 1972 EG = 1972 GP = 1972 GT (U, NOC 1050); 1972 TF2 = 1972 TK4 (U, NOC 1046); 1974 MH = 1974 KD (U, NOC 1051).
3: e assumed.

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

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

(1020) Arcadia = 1954 UA2 = 1975 EQ = 1977 QO2

The key identification (1020) = 1977 QO2 was found at the Crimean Astrophysical Observatory.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	27.34648		(1950.0)	P	Q
n	0.21150218	Peri.	32.95831	-0.83482443	+0.55051600
a	2.7899269	Node	180.44523	-0.51911611	-0.78753937
e	0.0397979	Incl.	4.04872	-0.18326655	-0.27697269
P	4.66	B(1,0)	12.2		

Residuals in seconds of arc

240308	024	0.4-	0.3+	541025	760	(14.1+	41.6+)X	770821	095	0.1-	0.6+
240309	024	0.8-	8.1+	630914	760	3.0-	1.3+	770823	095	0.0	1.2+
240313	024	3.2+	1.3-	630914	760	0.2-	2.0+	770909	095	1.0+	2.5+
240327	024	(9.2+	6.4-)	750306	095	1.8+	2.5+				
240407	024	(12.9-	1.3-)	750308	095	2.4-	1.3-				

(2226)* 1936 QC1 = 1939 DB = 1951 UA = 1956 UL = 1964 GC = 1970 QX = 1975 RR1 = 1976 YN2

Discovered 1936 Aug. 26 by A. Bohrmann at Heidelberg. The identification 1976 YN2 = 1971 UJ3 (NOC 1053) is invalid.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	3.25341		(1950.0)	P	Q
n	0.20286155	Peri.	330.21266	+0.97382058	-0.22529839
a	2.8685971	Node	42.84209	+0.21635166	+0.87779441
e	0.0832406	Incl.	2.54840	+0.06975264	+0.42275005
P	4.86	B(1,0)	13.5		

Residuals in seconds of arc

360826	024	1.0-	3.0-	511030	754	(49.6+	2.1-)	700829	095	1.1+	0.8-
360827	024	0.3+	0.2-	511102	754	0.8+	0.6+	750905	095	0.0	0.4-
360910	024	2.4-	3.7+	511104	754	1.0+	0.9-	761216	095	0.5+	0.9-
360916	024	1.7+	1.2-	561029	760	1.9-	0.0	761218	095	0.0	0.6-
360917	024	2.0+	1.2-	561029	760	0.1-	0.0	761220	095	0.4-	0.1-
390215	024	4.1+	1.1-	640411	760	3.0-	1.7-	770113	095	0.4+	2.3-
390221	024	3.2-	0.0	640411	760	0.1-	0.6-	790627	801	0.9+	0.2-

(2227)* 1955 RX = 1955 SA2 = 1965 SV = 1970 ET2

Discovered 1955 Sept. 13 at the Goethe Link Observatory, Indiana University. The double designation 1955 RX = 1955 SA2 was found independently by B. Potter (MPC 1410) and S. Kanda (MPC 1454).

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M 151.74220		(1950.0)	P	Q
n 0.29483882	Peri.	253.17568	+0.31252745	-0.94990642
a 2.2356970	Node	178.60748	+0.90104378	+0.29575086
e 0.1750532	Incl.	4.95013	+0.30074355	+0.10104074
P 3.34	B(1,0)	15.0		

Residuals in seconds of arc

550913 760	0.7+	1.6+	550920 024	1.6-	1.7-	700306 805	0.1-	0.5-
550913 760	1.5+	1.8+	650922 330	3.6+	0.9-	700306 805	0.5+	0.8-
550916 760	0.9-	1.0-	650923 330	0.4+	0.3+	800120 801	0.3-	1.6+
550916 760	1.0-	0.2-	651017 330	0.9-	1.0-	800213 801	0.2-	0.6-
550918 760	1.2-	0.3-	651020 330	0.8-	2.9-	800214 801	0.8+	0.6+
550918 760	1.7-	0.3-	651024 330	0.8-	0.1-			
550919 024	2.0+	4.0+	700306 805	0.8-	0.5-			

(2228)* 1977 OH = 1952 DT1 = 1963 DD = 1973 YN3

Discovered 1977 July 19 by N. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M 119.84053		(1950.0)	P	Q
n 0.17680894	Peri.	289.21964	+0.35459767	-0.93475303
a 3.1438844	Node	139.98918	+0.87032553	+0.32125243
e 0.1781696	Incl.	1.98765	+0.34175132	+0.15176840
P 5.57	B(1,0)	12.5		

Residuals in seconds of arc

520219 711	0.6-	1.8+ Y	770722 095	0.1+	0.5+	800211 688	0.6+	0.6-
630223 760	1.2+	0.7+	770814 095	0.5-	0.8+	800211 688	1.7-	1.4-
630223 760	1.3+	0.0	770819 095	0.2+	1.0+	800314 688	2.2+	1.6-
731225 095	1.3-	0.1-	800113 801	0.1+	1.0+	800316 688	2.1+	1.8-
770719 095	0.4-	0.0	800113 801	3.4-	4.0+			

(2229)* 1977 RO

Discovered 1977 Sept. 7 by P. Wild at the Zimmerwald Station of the Astronomical Institute, Berne University.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M 294.91086		(1950.0)	P	Q
n 0.22266688	Peri.	31.62241	+0.53908167	+0.81302888
a 2.6958701	Node	271.87697	-0.81133784	+0.43117404
e 0.2626857	Incl.	12.71263	-0.22610141	+0.39124543
P 4.43	B(1,0)	14.0		

Residuals in seconds of arc

770907 026	0.7-	0.6+	770915 026	0.4-	0.1+	781110 801	0.5+	0.2+
770909 026	1.9-	0.6+	770923 026	3.6+	1.9-	781125 801	0.8-	0.5+
770911 026	1.3-	0.2+	771018 026	1.0+	0.5+	781228 801	1.0+	0.6+
770912 026	0.1-	1.4+	771020 026	2.0+	0.4-	800121 801	1.6-	0.7-
770915 026	1.3-	1.4-	781102 801	0.7-	0.2-	800213 801	1.2+	0.2-

(2230)* 1978 UT1 = 1953 RW = 1964 YK = 1976 JW1

Discovered 1978 Oct. 29 at the Purple Mountain Observatory. The identification 1978 UT1 = 1953 RW is by E. Bowell.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M 156.03712		(1950.0)	P	Q
n 0.20390381	Peri.	256.70433	+0.63803033	-0.76975469
a 2.8588135	Node	153.61836	+0.72262639	+0.58965321
e 0.0628325	Incl.	2.56356	+0.26594809	+0.24451338
P 4.83	B(1,0)	13.2		

Residuals in seconds of arc

530901	024	0.5+	2.6-		781103	330	1.6+	0.5-		800219	046	0.4-	1.4-
530906	024	0.8+	2.6-		781107	330	1.6+	0.2+		800219	046	1.1+	1.0-
641231	330	1.5-	1.7+		781126	330	0.3+	0.1+		800221	046	1.7-	0.8-
650108	330	1.7+	1.0-		781130	330	3.5-	0.3-		800221	046	1.5-	1.4-
760502	095	0.4+	0.6+		800215	046	1.3+	1.6-					
781029	330	0.1+	0.1-		800215	046	1.0-	0.4+					

1932 BH = 1953 VL1 = 1966 CP = 1977 BT

The key identification 1932 BH = 1966 CP is by E. Bowell. The identifications 1932 BH = A909 BE (RI 1937) and 1932 BH = 1955 BL (MPC 1387) are invalid.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5 (J-P)

M	260.48314		(1950.0)	P	Q
n	0.17301601	Peri.	348.51588	+0.05954498	-0.99705255
a	3.1896722	Node	98.05691	+0.91963627	+0.03594323
e	0.2347757	Incl.	2.80070	+0.38823126	+0.06778119
P	5.70	B(1,0)	13.0		

Residuals in seconds of arc

320129	024	5.5+	2.1-		531107	760	1.4+	1.2-		660214	330	1.0+	1.6-
320206	024	(3.2-	9.8+)		531107	760	4.5-	2.3+		660225	330	0.3-	0.8+
320212	024	4.4-	3.3-		531114	760	0.7+	1.7-		770120	095	0.5-	0.8-
320302	024	0.1-	2.5+		531114	760	0.8+	4.0-					

1933 QA = 1977 RK3

The identification is by E. Bowell.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5 (J-P)

M	22.54977		(1950.0)	P	Q
n	0.26931843	Peri.	53.83086	-0.01868267	+0.99952025
a	2.3747954	Node	215.12318	-0.93051667	-0.02642107
e	0.1720278	Incl.	2.46084	-0.36577270	+0.01616177
P	3.66	B(1,0)	14.0		

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

330818	012	3.0+	2.6-		330825	012	(9.7+	5.4+)		330917	012	1.0-	1.5-
330819	094	(48.4-	21.9-)X		330826	012	1.8-	0.8-		770912	095	3.6-	1.2-
330820	012	4.3+	3.1-		330828	012	1.1-	2.3+		770918	095	1.4+	1.0-
330821	012	1.8+	1.8+		330915	012	(0.00+	0.06+)					

1950 FC = 1934 PA = 3516 P-L

The identification 1950 FC = 1934 PA is by O. Kippes (MPC 2808). The identification 1950 FC = 3516 P-L is by C. J. van Houten.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5 (J-P)

M	121.03954		(1950.0)	P	Q
n	0.23446950	Peri.	232.99043	-0.98074648	+0.14831509
a	2.6046298	Node	315.13684	-0.06399127	-0.85869015
e	0.1858199	Incl.	10.37508	-0.18450328	-0.49056483
P	4.20	B(1,0)	13.4		

Residuals in seconds of arc

340810	078	1.9+	1.7-		500505	078	5.3+	5.9+		601022	675	0.4+	0.2+
500323	078	1.8-	1.7-		601017	675	0.8+	0.4+		601024	675	0.7+	1.6-
500327	078	0.9-	2.8-		601017	675	0.4+	0.2-		601024	675	0.8+	0.5-
500409	078	1.6-	1.8-		601017	675	1.5+	0.3+		601025	675	0.2-	1.3-
500416	078	2.9-	3.6+		601022	675	0.2+	0.4+		601025	675	0.8-	1.0-
500422	078	0.3-	2.7+		601022	675	0.6-	0.2-					

1968 UP = 1976 ML = 1977 RG3

The key identification 1968 UP = 1977 RG3 is by E. Bowell. The identification 1968 UP = 1973 YW1 (NOC 1067) is invalid.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5 (J-P)

		(1950.0)	P	Q
M	256.26548			
n	0.20473563	Peri. 309.13010	+0.87612893	+0.48187628
a	2.8510706	Node 22.07250	-0.43006994	+0.79431759
e	0.0691835	Incl. 2.12057	-0.21780252	+0.36993893
P	4.81	B(1,0) 13.0		

Residuals in seconds of arc

681022	095	3.2+	0.4+	760620	808	1.0+	0.1-	760701	808	(9.6+	81.6+)
681026	095	2.3-	2.5+	760621	808	1.4+	0.5+	770912	095	0.4+	0.4-
681213	095	2.7-	0.4-	760621	808	0.4-	5.7+	770918	095	1.2+	0.6+
681213	095(13.9+	32.1-)		760627	808	1.2+	0.9+				
760620	808	1.8+	0.6+	760701	808 (7.9+	80.6+)					

1970 HA = 1949 QE

The identification is by E. Bowell.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5 (J-P)

		(1950.0)	P	Q
M	288.40351			
n	0.17895385	Peri. 134.39335	+0.29065678	+0.95365063
a	3.1187187	Node 152.22354	-0.91848871	+0.30090087
e	0.1244334	Incl. 9.62325	-0.26813637	+0.00302445
P	5.51	B(1,0) 12.8		

Residuals in seconds of arc

490821	024	2.0-	0.5+	700427	095	0.5-	0.6+	700528	095	1.2+	1.1+
490822	024	2.3+	1.0+	700508	095	1.2-	0.5-				

1972 RV3 = 1965 UN1

The identification is by E. Bowell. The identifications 1972 RV3 = 1971 FZ or FD1 and 1972 RV3 = 1976 YC or YD (NOC 987) are invalid.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5 (J-P)

		(1950.0)	P	Q
M	124.89829			
n	0.27713230	Peri. 235.05336	+0.97786520	+0.20246494
a	2.3299440	Node 113.21463	-0.16829973	+0.91102231
e	0.2045953	Incl. 3.29341	-0.12431756	+0.35923015
P	3.56	B(1,0) 15.5		

Residuals in seconds of arc

651018	330	0.6-	0.6-	720906	095	0.9-	0.7-	721007	095	0.9+	0.4+
651021	330	0.1+	0.7-	720909	095	2.1-	0.3-				

1977 NT = 1977 TS = 1955 RT = 1955 SC1

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). The double designation 1955 RT = 1955 UT1 (NAZ 12, 23) is invalid.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5 (J-P)

		(1950.0)	P	Q
M	242.97639			
n	0.17434968	Peri. 259.43629	+0.18189431	+0.98330383
a	3.1733853	Node 21.04606	-0.89626720	+0.16800434
e	0.1601782	Incl. 0.84483	-0.40449915	+0.06991507
P	5.65	B(1,0) 13.0		

Residuals in seconds of arc

550913	760	3.2+	2.4+	550920	024	4.0-	4.3-	770809	414	0.2+	0.2+
550913	760	0.8+	1.6+	770714	095	0.9+	0.9-	770809	414	0.5+	0.3-
550916	760	0.8-	0.1+	770722	095	2.3-	0.8+	770812	414	0.5+	0.3-
550916	760	0.1+	2.0+	770806	414	0.6+	0.8-	770812	414	0.5+	0.2-
550918	760	1.2+	2.6+	770806	414	0.9+	0.4-	770818	095	0.3+	1.6-
550918	760	0.2-	1.8+	770806	414	0.2-	1.1-	770906	095	1.2-	2.0-
550919	024	4.1+	1.7-	770806	414	0.4+	1.0-	771009	809	0.4-	1.3-

1977 RZ6 = 1971 SN = 1974 DM1
Epoch 1980 Dec. 27.0 ET = JDE 2444600.5 (J-P)

M	216.13997	(1950.0)	P	Q
n	0.17430528	Peri. 353.99309	+0.99879672	-0.04269982
a	3.1739242	Node 8.56630	+0.04896392	+0.84053564
e	0.0771818	Incl. 9.31933	+0.00276357	+0.54007088
P	5.65	B(1,0) 12.2		

Residuals in seconds of arc

710916	808	0.4-	0.2+	770911	095	1.9-	1.4-	770921 095 0.0- 0.2-
740216	095	0.2+	0.4+	770918	095	0.1-	0.1-	771010 095 2.1+ 1.9+

1978 XC = 1954 QG = 1968 QY

The key identification 1978 XC = 1954 QG is by E. Bowell. The double designation 1954 QG = 1954 UE1 (MPC 1855) is invalid.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5 (J-P)

M	230.87504	(1950.0)	P	Q
n	0.21152825	Peri. 147.59274	+0.99046236	+0.12109145
a	2.7897032	Node 205.69633	-0.13441832	+0.95400960
e	0.1705521	Incl. 8.71988	+0.03026590	+0.27423079
P	4.66	B(1,0) 14.0		

Residuals in seconds of arc

540831	024	5.9-	1.9+	781201	801	0.0+	0.6+	781228 801 0.1+ 0.7+
540901	024	3.8+	2.4+	781202	801	0.4+	0.5+	790104 801 0.7- 0.3+
680827	095	2.9+	4.1-	781206	801	0.4+	0.2+	790120 801 0.6+ 0.1-
680831	095	1.5+	0.4+	781207	801	0.3+	0.0+	790324 801 0.2- 0.6-

1979 UG = 1975 JO = 1976 YR7
Epoch 1980 Dec. 27.0 ET = JDE 2444600.5 (J-P)

M	148.27699	(1950.0)	P	Q
n	0.28890255	Peri. 207.08743	+0.97553267	+0.21634945
a	2.2662231	Node 140.35519	-0.18896790	+0.91601804
e	0.1909888	Incl. 3.51358	-0.11237058	+0.33779261
P	3.41	B(1,0) 14.2		

Residuals in seconds of arc

750514	095	0.3-	0.9+	791017	688	0.3+	1.2+	791207 688 1.5+ 0.4+
761220	095	0.1-	0.2+	791029	688	0.0	0.8+	
791017	688	0.3+	1.2+	791122	688	0.0	0.6-	

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

(1037) Davidweilla = 1951 TS = 1975 XC5

The identifications are by O. Kippes.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	232.13017	(1950.0)	P	Q
n	0.29112522	Peri. 169.14263	+0.98607320	-0.16243927
a	2.2546692	Node 200.31075	+0.14383900	+0.94066911
e	0.1915932	Incl. 5.90007	+0.08348644	+0.29791795
P	3.39	B(1,0) 14.0		

Residuals in seconds of arc

241029	008	0.5-	0.3-	241107	008	(16.7+	1.1-)	511006 012 2.4- 3.2-
241101	008	0.7+	1.0+	241114	008	0.4+	2.0-	751203 095 0.0 0.1+
241102	008	0.7-	1.5+	511005	012	2.5+	2.9+	

(1229) Tilia = 1936 MC = 1942 PH = 1948 PT = 1951 CM = 1973 YW3 = 1975 FP = 1976 KB1 = 1977 RC4 = 1978 VK4

The identifications are by B. G. Marsden. The identification 1933 BK = 1942 PH (MPC 2807) is invalid.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M 188.80807	(1950.0)	P	Q	
n 0.16844841	Peri. 151.54351	+0.98835624	+0.15205199	
a 3.2470685	Node 199.71306	-0.14258774	+0.91254696	
e 0.1475256	Incl. 0.96295	-0.05311006	+0.37965540	
P 5.85	B(1,0) 12.5			

Residuals in seconds of arc

311006	690	1.4+	3.2-	420806	078(0.04-	0.03+)X	770918	095	0.6+	2.4+
311007	690	1.7-	1.3-	480808	094(63.1+	14.1-)X	781105	675	0.8+	0.8+
311009	690	2.5-	0.6-	510210	760(60.6-	9.4+)X	781106	675	1.3+	1.4+
311009	024	2.0+	1.0-	731226	095	0.5- 0.1+	781107	675	0.1+	0.1-
311017	024	2.3+	0.3+	750317	095	4.2- 2.0+	781108	675	0.8+	0.3+
311020	024	2.1+	1.0+	760526	095	2.8+ 1.4-	781129	675	0.6-	0.6+
311102	024	1.6-	0.5+	760529	095	1.7+ 1.2-	781130	675	0.2+	0.0
311103	024	0.4-	1.0-	770907	095	1.3- 1.1+				
360622	078(21.0+	52.4-)X		770912	095	3.5- 0.2-				

(2231)* 1941 SG = 1950 TC = 1977 QZ2

Discovered 1941 Sept. 21 by S. Arend at Uccle. The identifications are by B. G. Marsden.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M 258.09968	(1950.0)	P	Q	
n 0.21888994	Peri. 23.25373	+0.99418590	-0.09831156	
a 2.7267931	Node 342.22027	+0.06133607	+0.85232385	
e 0.2515234	Incl. 8.27015	+0.08850016	+0.51369143	
P 4.50	B(1,0) 13.5			

Residuals in seconds of arc

410921	012	4.0+	1.1+	410927	012	2.0- 1.7-	770822	095	2.2-	1.6-
410922	024	1.0+	0.2-	501005	012	0.8+ 1.1-	770824	095	1.5-	0.6-
410923	012(73.8-	16.1+)		501009	711	0.2+ 2.1+ Y	770912	095	2.6+	0.4-
410924	024	0.5+	1.4-	501013	012	2.6- 0.9-	770919	095	0.6+	2.3+
410924	012	4.3-	1.1-	501014	012	0.5+ 1.1-	771008	095	0.3+	0.6-

(2232)* 1969 RD2 = 1974 VM1

Discovered 1969 Sept. 15 by B. Burnasheva at the Crimean Astrophysical Observatory. The identification is by M. A. Dirikis and V. A. Magone (MPC 4169).

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M 245.42343	(1950.0)	P	Q	
n 0.22589019	Peri. 90.40685	+0.62247733	+0.78162733	
a 2.6701632	Node 218.18417	-0.74118096	+0.57242891	
e 0.1406175	Incl. 3.68742	-0.25134191	+0.24775764	
P 4.36	B(1,0) 13.5			

Residuals in seconds of arc

690915	095	2.6+	1.9+	741112	095	1.3+ 0.6+	800209	801	2.1+	0.3-
691004	095	0.7+	1.4-	741117	095	0.8- 2.6-	800211	801	0.5+	0.6-
691008	095	2.4-	5.2-	781228	801	0.1+ 3.2+	800213	801	3.3-	1.0-
691009	095	0.1+	0.6+	781229	801	2.3- 3.4+	800312	801	0.0	1.0-

(2233)* 1972 XE1 = 1973 AO3 = 1958 XA = 1965 YC = 1968 QF1 = 1977 FS2 = 1979 XD

Discovered 1972 Dec. 3 by L. V. Zhuravleva at the Crimean Astrophysical Observatory. The double designation 1972 XE1 = 1973 AO3 is by C. M. Bardwell (MPC 4637). The key identifications 1972 XE1 = 1965 YC = 1979 XD are by E. Bowell. The identification 1972 XE1 = 1968 QF1 is by C. M. Bardwell. The identifications 1972 XE1 = 1958 XA = 1977 FS2 are by B. G. Marsden. The identification 1972 XE1 = 1975 TU1 (NOC 1053) is invalid.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M 164.84930	(1950.0)	P	Q	
n 0.28658809	Peri. 159.02370	+0.69485097	-0.71706420	
a 2.2784034	Node 246.91438	+0.65100623	+0.65954589	
e 0.0815657	Incl. 3.41402	+0.30556998	+0.22542880	
P 3.44	B(1,0) 14.0			

Residuals in seconds of arc

581203 024	0.0	0.6+	721203 095	0.0	2.4+	791214 688	0.3-	0.4+
651219 330	0.3-	0.5+	721207 095	2.7-	1.1-	791216 688	1.0-	1.9-
651231 330	2.6-	0.3+	730102 095	1.6+	1.9-	800122 688	2.0-	0.2-
680827 095	1.0+	2.1-	730103 095	2.2+	1.9-	800211 688	0.5-	1.4-
721202 095	4.9+	3.8+	770326 095	0.3+	0.5+	800305 688	(0.7-	0.0)

1967 JO = 1980 CD

The identification is by E. Bowell.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M 55.36292	(1950.0)	P	Q	
n 0.21485078	Peri. 156.88117	-0.97307693	-0.23015939	
a 2.7608624	Node 9.83585	+0.19876620	-0.86472711	
e 0.0884746	Incl. 4.08315	+0.11667602	-0.44640080	
P 4.59	B(1,0) 13.5			

Residuals in seconds of arc

670506 808	0.6-	1.9+	670613 808	0.2+	1.3+	800314 688	0.3+	2.3-
670510 808	0.2-	2.7+	800211 688	1.3+	0.3-	800316 688	0.2-	0.7+
670531 808	0.1-	1.4+	800211 688	0.2+	0.4-	800316 688	0.1-	1.2-
670602 808	1.8+	0.4+	800314 688	1.3+	1.8-			

1978 SQ

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5 (J-P)

M 179.82528	(1950.0)	P	Q	
n 0.25873435	Peri. 349.05009	+0.67484300	-0.73110665	
a 2.4391257	Node 58.42042	+0.68562426	+0.57086130	
e 0.1996410	Incl. 6.76474	+0.27295842	+0.37363142	
P 3.81	B(1,0) 15.0			

Residuals in seconds of arc

780924 046	2.2-	1.9+	781008 046	1.7-	0.1+	781119 046	0.8+	1.3+
780924 046	1.6+	0.2+	781008 046	1.4+	2.6-	781119 046	0.9+	1.1-
780925 046	2.9-	1.7+	781009 046	3.1+	1.7-	800219 046	0.5+	0.5+
780925 046	0.2+	1.7-	781009 046	0.8+	1.3-	800220 046	1.7+	0.3-
781007 046	0.4+	2.2+	781031 046	1.4-	0.1-	800221 046	1.2-	0.7+
781007 046	0.8-	1.2+	781031 046	0.3-	0.7+	800221 046	0.4-	0.2+

1980 AA

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M 133.69057	(1950.0)	P	Q	
n 0.37886428	Peri. 167.92141	-0.28459134	-0.95650748	
a 1.8915316	Node 298.58377	+0.87331655	-0.23112787	
e 0.4435066	Incl. 4.18226	+0.39538079	-0.17797009	
P 2.60	B(1,0) 20.5			

From 38 observations 1980 Jan. 13-Feb. 21, mean residual 1".3.

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ORBITAL ELEMENTS BY L. D. SCHMADEL, ASTRONOMISCHES RECHEN-INSTITUT.

(1370) Hella

The 1979 recovery was made on the basis of a predicted ephemeris by L. D. Schmadel.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	179.50006		(1950.0)	P	Q
n	0.29203011	Peri.	2.95138	+0.62462828	+0.77795005
a	2.2500092	Node	305.71432	-0.71815340	+0.53799765
e	0.1712348	Incl.	4.80897	-0.30674941	+0.32458012
P	3.37	B(1,0)	14.2		

Residuals in seconds of arc

350831	024	0.3+	0.8+	350924	024	0.5-	3.7+	791215 809	2.8- 0.4-
350901	024	0.2+	0.5+	351101	024	0.8+	0.1-	791216 809	0.5+ 0.5+
350909	024	2.0+	2.4-	351101	024	0.6-	0.4-	791221 809	1.4+ 0.3+
350920	024	2.2-	2.0-	791213	809	1.2+	0.5-		

(2234)* 1977 HD

Discovered 1977 Apr. 27 by H.-E. Schuster at the European Southern Observatory.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	278.91090		(1950.0)	P	Q
n	0.22192594	Peri.	271.49468	+0.11886191	+0.99194323
a	2.7018672	Node	5.89816	-0.65307140	+0.11134897
e	0.1992391	Incl.	25.24316	-0.74791015	+0.06041560
P	4.44	B(1,0)	13.4		

Residuals in seconds of arc

770427	809	0.1+	0.8-	770520	809	0.4-	0.3-	781101 033	0.3+ 0.0
770509	809	0.2-	0.4+	770529	809	0.9-	0.8-	781101 033	0.1+ 0.1+
770510	809	0.1-	0.8+	770609	809	1.1+	0.1-	781102 381	0.4+ 0.5+
770511	809	0.0	0.1-	770621	809	0.6-	1.8-	781127 801	(2.6- 0.1+)
770512	809	0.4+	1.3+	770707	809	(5.3+	3.9-)	781220 801	0.0 0.7-
770513	809	0.5+	0.1+	770903	809	0.0	0.1+	781227 801	1.4- 0.1-
770514	809	0.4+	0.4+	770905	809	0.1+	0.7-	791215 801	2.0- 1.1+
770515	809	0.5+	0.9+	781008	033	0.0	0.1+	800114 033	1.0+ 1.3-
770516	809	0.3+	0.3+	781008	033	0.1-	0.3+	800115 033	0.5+ 0.3-

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NEW NAMES OF MINOR PLANETS.

(1604) Tombaugh = 1931 FH

Marked by C. W. Tombaugh on a plate taken on 1931 Mar. 24 at the Lowell Observatory. The discovery position was published by C. O. Lampland and K. Newman.

Named by the Lowell Observatory for Clyde W. Tombaugh, the discoverer of Pluto, on the occasion of a symposium on Pluto, held on the fiftieth anniversary of its discovery, 1980 Feb. 18. Tombaugh marked, during the course of his blink examination, over 4000 minor planets on plates obtained with the 0.33-m photographic telescope during the trans-Saturnian search program at the Lowell Observatory.

(1680) Per Brahe = 1942 CH

Discovered 1942 Feb. 12 by L. Oterma at Turku.

Named in memory of the Swedish count Per Brahe (1602-1680), who was governor general of Finland. The "count’s epoch" was a happy era, with the establishment of Academia Aboensis, the first university in Finland, the construction of various new towns and many schools, and the publication of the first Finnish Bible.

(1695) Walbeck = 1941 UO
Discovered 1941 Oct. 15 by L. Oterma at Turku.
Named in memory of H. J. Walbeck (1793-1822), astronomer at the old Academia Aboensis who used the method of least squares to derive a good value for the earth's flattening.

(1696) Nurmela = 1939 FF
Discovered 1939 Mar. 18 by Y. Vaisala at Turku.
Named in honor of Finnish academician Tauno Kalervo Nurmela, some time professor of Romanic philology and later chancellor of Turku University.

(1697) Koskenniemi = 1940 RM
Discovered 1940 Sept. 11 by H. Alikoski at Turku.
Named in memory of Veikko Antero Koskenniemi (1885-1962), the famous Finnish poet, a member of the Academy of Finland, professor of literature at Turku University. In various poems he wrote about the stars, and he was a founder member of the society Torun Ursa for amateur astronomers.

(1699) Honkaselo = 1941 QD
Discovered 1941 Aug. 26 by Y. Vaisala at Turku.
Named in memory of Tauno Bruno Honkaselo (1912-1975), a disciple of Y. Vaisala who measured geodesic standard base lines in various countries with the Vaisala interference comparator.

(1705) Tapio = 1941 SL1
Discovered 1941 Sept. 29 by L. Oterma at Turku.
Named for the guardian spirit of the forest in Kalevala, the Finnish national epic. Tapio is also a common boy's name in Finland.

(1715) Salli = 1938 GK
Discovered 1938 Apr. 9 by H. Alikoski at Turku.
Named in honor of the wife of the discoverer.

(1718) Namibia = 1942 RX
Discovered 1942 Sept. 14 by M. Vaisala.
Named for the African country, where the discoverer worked for many years, teaching the children of Finnish missionaries.

(1723) Klemola = 1936 FX
Discovered 1936 Mar. 18 by Y. Vaisala at Turku.
Named in honor of Irja Klemola, formerly rector of a school in Turku, one of the founders and for many years secretary of the society Torun Ursa for amateur astronomers; she also frequently participated in the minor planet program at the Turku Observatory. This planet also honors Arnold R. Klemola, currently in charge of the proper-motion program at the Lick Observatory, also well known for his astrometric observations of comets and minor planets.

(1724) Vladimir = 1932 DC
Discovered 1932 Feb. 28 by E. Delporte at Uccle.
Named by M. B. Protitch, whose rediscovery of this object in 1952 made the permanent numbering possible, in honor of his grandson.

(1740) Paavo Nurmi = 1939 UA
Discovered 1939 Oct. 18 by Y. Vaisala at Turku.
Named in memory of Turku-born Paavo Nurmi, the famous Finnish long-distance runner who won seven gold and three silver medals in the Olympic Games and broke 15 world records.

(1852) Carpenter = 1955 GA
Discovered 1955 Apr. 1 at the Goethe Link Observatory.
Named in memory of Edwin F. Carpenter (1898-1963), second director of the Steward Observatory and a director-at-large on the AURA board. His primary research interests were spectroscopic binaries, photometry and interacting galaxies. Despite extremely limited financial resources he succeeded in keeping Steward Observatory an active research center during the nearly three decades of his directorship, and he played a major role in persuading the Papago Tribal Council to lease the top of Kitt Peak to the AURA Board, thereby enabling the construction of the National Observatory on Kitt Peak. Name proposed by F. K. Edmondson and E. Roemer. Citation written by W. S. Fitch.

(1991) Darwin = 1967 JL
Discovered 1967 May 6 by C. U. Cesco and A. R. Klemola at the Yale-Columbia Southern Station, El Leoncito.
Named in memory of Charles Darwin (1809-1882), the English naturalist who first established the theory of organic evolution; much of his research was done in Argentina, and he crossed the Andes at a pass located some 100 km south of El Leoncito. This planet also honors his second son, George Darwin (1845-1912), the astronomer noted for his pioneering application of detailed dynamical analyses to problems of cosmogony and geology.

(2046) Leningrad = 1968 UD1
Discovered 1968 Oct. 22 by T. M. Smirnova at the Crimean Astrophysical Observatory.
Named for one of the largest industrial, cultural and scientific centers of the U.S.S.R.

(2049) Grietje = 1973 SH
Discovered 1973 Sept. 29 by T. Gehrels at Palomar.
Named in honor of Mrs. G. A. M. Haring-Gehrels, an exceptional person.

(2071) Nadezhda = 1971 QS
Discovered 1971 Aug. 18 by T. M. Smirnova at the Crimean Astrophysical Observatory.
Named in memory of Nadezhda Konstantinovna Krupskaya (1869-1939), one of the creators of the Soviet public education system, wife of V. I. Lenin.

(2072) Kosmodemyanskaya = 1973 QE2
Discovered 1973 Aug. 31 by T. M. Smirnova at the Crimean Astrophysical Observatory.
Named in memory of Lubov' Timofeevna Kosmodemyanskaya (1900-1978), social worker, mother of Soviet heroes Zoya and Aleksandr Kosmodemyanskij.

(2092) Sumiana = 1969 UP
Discovered 1969 Oct. 16 by L. I. Chernykh at the Crimean Astrophysical Observatory.
Named for the town of Sumy, in the Ukrainian S.S.R.

(2093) Genichesk = 1971 HX
Discovered 1971 Apr. 28 by T. M. Smirnova at the Crimean Astrophysical Observatory.
Named for the discoverer's birthplace, a town in the Ukrainian S.S.R.

(2094) Magnitka = 1971 TC2
Discovered 1971 Oct. 12 at the Crimean Astrophysical Observatory.
Named for the town of Magnitogorsk, one of the largest centers of metallurgy in the U.S.S.R.

(2098) Zyskin = 1972 QE
Discovered 1972 Aug. 18 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.
Named in honor of Lev Yur'evich Zyskin, professor at the Crimean Medical Institute, head of the Pulmonary Surgery Center.

(2111) Tselina = 1969 LG
Discovered 1969 June 13 by T. M. Smirnova at the Crimean Astrophysical Observatory.
Named on the 25th anniversary of the development of tselina (virgin soil) and long fallow lands in the U.S.S.R.

(2112) Ulyanov = 1972 NP
Discovered 1972 July 13 by T. M. Smirnova at the Crimean Astrophysical Observatory.
Named in memory of Aleksandr Ulyanov (1866-1887), eldest brother of V. I. Lenin.

(2113) Ehrdni = 1972 RJ2
Discovered 1972 Sept. 11 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of Ehrdni Tel'dzhievich Delikov (1922-1942), a hero from the Kalmyk S.S.R. who was killed in the Great Patriotic War (1941-1945).

(2120) Tyumenia = 1967 RM
Discovered 1967 Sept. 9 by T. M. Smirnova at the Crimean Astrophysical Observatory.
Named for the Tyumen' district of the R.S.F.S.R., the center of the West Siberian oil-gas basin that has become in recent years the main source of power in the U.S.S.R.

(2122) Pyatiletka = 1971 XB
Discovered 1971 Dec. 14 by T. M. Smirnova at the Crimean Astrophysical Observatory.
Named on the 50th anniversary of the adoption of the first five-year plan for the development of the national economy of the U.S.S.R.

(2123) Vltava = 1973 SL2
Discovered 1973 Sept. 22 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named for the river on which the city of Prague is situated.

(2127) Tanya = 1971 KB1
Discovered 1971 May 29 by L. I. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of Tanya Savicheva, a 12-year-old schoolgirl who perished during the 1941-1944 blockade of Leningrad. In her diary she made a record as her parents and other relatives died, one by one. Her last note was "... all the Savichev's have died, Tanya is left alone."

(2130) Evdokiya = 1974 QH1
Discovered 1974 Aug. 22 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.
Named by the discoverer in honor of her mother, Evdokiya Efimovna Shchelokova.

(2132) Zhukov = 1975 TW3
Discovered 1975 Oct. 3 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Georgij Konstantinovich Zhukov (1896-1974), Marshal of the Soviet Union and leader during the Great Patriotic War.

(2136) Jugta = 1933 OC

Discovered 1933 July 24 by K. Reinmuth at Heidelberg.

Named in honor of J. U. Gunter and his publication "Tonight's Asteroids". This publication has been extraordinarily successful at interesting the general public in minor planets and has inspired countless amateur and several professional astronomers to study these objects. Name proposed by E. Fogelin; endorsed by C. M. Bardwell, D. W. E. Green and B. G. Marsden.

(2142) Landau = 1972 GA

Discovered 1972 Apr. 3 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Lev Davydovich Landau (1908-1968), founder of the study of modern theoretical physics in the U.S.S.R. Among his accomplishments was fundamental research in quantum electrodynamics, superconductivity and neutrino theory.

(2144) Marietta = 1975 BC1

Discovered 1975 Jan. 18 by L. I. Chernykh at the Crimean Astrophysical Observatory.

Named in honor of Marietta Sergeevna Shaginyan, Soviet writer, doctor of philology, a member of the Armenian Academy of Sciences.

(2149) Schwambraniya = 1977 FX

Discovered 1977 Mar. 22 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named for the wonderland created by the characters in L. A. Kassil's children's novel "Conduite and Schwambraniya".

(2156) Kate = A917 SH

Discovered 1917 Sept. 23 by S. Belyavskij at Simeis.

Named by L. K. Kristensen, who found several of the identifications involving this planet, in honor of his wife.

(2157) Ashbrook = A924 EF

Discovered 1924 Mar. 7 by K. Reinmuth at Heidelberg.

Named in honor of Joseph Ashbrook, Editor of "Sky and Telescope", co-discoverer of periodic comet Ashbrook-Jackson. His extensive professional background in astronomy, together with his encyclopedic knowledge of intriguing and obscure astronomical facts and fancies, have secured for "Sky and Telescope" a unique position as a vital source of information, not only for professional astronomers and historians of science, but also for amateur astronomers of all levels of expertise. Name proposed by N. Sperling; endorsed by C. M. Bardwell and B. G. Marsden.

(2163) Korczak = 1971 SP1

Discovered 1971 Sept. 16 at the Crimean Astrophysical Observatory.

Named in memory of Janusz Korczak (1878-1942), Polish writer, teacher and doctor who perished with his 200 pupils at Treblinka.

(2164) Lyalya = 1972 RM2
Discovered 1972 Sept. 11 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named in memory of Elena (Lyalya) Konstantinovna Ubijvovk (1918-1942), a student in astronomy at Kharkov University who perished with other members of the Resistance during the Great Patriotic War.

(2166) Handahl = 1936 QB
Discovered 1936 Aug. 13 by G. Neujmin at Simeis.
Named by D. W. E. Green, who found the identifications for this planet, in honor of his mother, Violet Handahl Green.

(2170) Byelorussia = 1971 SZ
Discovered 1971 Sept. 16 at the Crimean Astrophysical Observatory.
Named for one of the Soviet Socialist Republics.

(2173) Maresjev = 1974 QG1
Discovered 1974 Aug. 22 by L. V. Zhuravleva at the Crimean Astrophysical Observatory.
Named in honor of Alexej Petrovich Maresjev, a war veteran whose heroic deed is described in B. Polevoj's novel "Story about a True Man".

(2178) Kazakhstania = 1972 RA2
Discovered 1972 Sept. 11 by N. S. Chernykh at the Crimean Astrophysical Observatory.
Named for one of the Soviet Socialist Republics.

(2191) Uppsala = 1977 PA1
Discovered 1977 Aug. 6 by C.-I. Lagerkvist at the Uppsala Southern Station, Mt. Stromlo.
Named for the ancient Swedish city and university.

(2198) Ceplecha = 1975 VF
Discovered 1975 Nov. 7 at the Harvard College Observatory, Agassiz Station.
Named in honor of the Czechoslovak astronomer Zdenek Ceplecha, well known for his work on meteors. His investigation of the Pribram meteorite represents the first time that an accurate orbit could be derived for such an object.

(2220) Hicks = 1975 VB
Discovered 1975 Nov. 4 by E. F. Helin at Palomar.
Named in honor of William B. Hicks, alumnus of the California Institute of Technology, distinguished engineer, businessman and supporter of the sciences. Name proposed by E. F. Helin and E. M. Shoemaker.

(2221) Chilton = 1976 QC
Discovered 1976 Aug. 25 at the Harvard College Observatory, Agassiz Station.
Named in honor of Jean Chilton McCrosky, wife of Harvard-Smithsonian astronomer Richard E. McCrosky.

(2234) Schmadel = 1977 HD
Discovered 1977 Apr. 27 by H.-E. Schuster at the European Southern Observatory.
Named in honor of Lutz D. Schmadel, Astronomisches Rechen-Institut, computer of orbits and ephemerides of minor planets, and Editor of "Astronomy and Astrophysics Abstracts". The lost objects (1206) Numerowia and (1370) Hella were recovered as the result of his calculations.

EPHEMERIDES.

1977 RZ6 Elements MPC 5277

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	03 02	11 37.86	+07 13.3	2.434	3.411	168.2	3.4	16.8
1980	03 12	11 30.06	+07 44.0					
1980	03 22	11 22.21	+08 11.0	2.437	3.414	166.5	3.9	16.8
1980	04 01	11 15.04	+08 30.9					
1980	04 11	11 09.14	+08 41.3	2.554	3.416	144.0	9.9	17.1
1980	04 21	11 04.91	+08 40.9					
1980	05 01	11 02.59	+08 29.4	2.761	3.418	123.1	14.3	17.4
1980	05 11	11 02.19	+08 07.3					
1980	05 21	11 03.64	+07 35.4	3.023	3.419	104.4	16.7	17.7

(1020) Arcadia Elements MPC 5273

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	03 02	12 06.40	-01 23.8	1.753	2.702	159.1	7.5	15.7
1980	03 12	11 59.40	-00 22.9					
1980	03 22	11 51.64	+00 43.9	1.701	2.697	176.7	1.2	15.3
1980	04 01	11 44.12	+01 49.2					
1980	04 11	11 37.73	+02 46.4	1.761	2.693	152.9	9.7	15.8
1980	04 21	11 33.16	+03 30.4					
1980	05 01	11 30.84	+03 58.3	1.914	2.689	131.4	16.3	16.1
1980	05 11	11 30.88	+04 09.3					
1980	05 21	11 33.22	+04 04.0	2.129	2.686	112.6	20.4	16.5
1980	05 31	11 37.67	+03 43.7					
1980	06 10	11 43.98	+03 10.1	2.376	2.683	96.2	22.1	16.7

(2231) 1941 SG Elements MPC 5278

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	03 02	13 22.26	-14 36.9	2.615	3.402	136.4	11.6	18.5
1980	03 12	13 16.84	-14 32.9					
1980	03 22	13 09.75	-14 16.5	2.446	3.394	158.7	6.1	18.2
1980	04 01	13 01.54	-13 48.8					
1980	04 11	12 52.90	-13 12.6	2.387	3.383	172.2	2.3	17.9
1980	04 21	12 44.60	-12 31.8					
1980	05 01	12 37.34	-11 50.9	2.446	3.369	152.0	8.1	18.3
1980	05 11	12 31.65	-11 14.3					
1980	05 21	12 27.86	-10 45.5	2.605	3.353	130.6	13.3	18.5
1980	05 31	12 26.11	-10 26.7					
1980	06 10	12 26.36	-10 19.0	2.831	3.334	111.1	16.5	18.8
1980	06 20	12 28.50	-10 22.6					
1980	06 30	12 32.37	-10 37.2	3.089	3.313	93.7	17.8	19.0

1933 QA Elements MPC 5275

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	03 02	13 59.73	-13 45.8	1.460	2.217	128.5	20.5	17.0
1980	03 12	13 59.97	-13 40.9					
1980	03 22	13 57.11	-13 16.9	1.263	2.180	149.2	13.5	16.5
1980	04 01	13 51.39	-12 34.4					
1980	04 11	13 43.48	-11 36.3	1.146	2.144	172.6	3.4	15.9
1980	04 21	13 34.49	-10 28.7					
1980	05 01	13 25.87	-09 20.8	1.126	2.110	163.0	8.0	16.1
1980	05 11	13 18.93	-08 21.9					
1980	05 21	13 14.62	-07 39.3	1.196	2.078	140.4	18.1	16.4
1980	05 31	13 13.46	-07 17.2					
1980	06 10	13 15.50	-07 16.3	1.329	2.050	121.3	25.0	16.8
1980	06 20	13 20.57	-07 35.5					
1980	06 30	13 28.37	-08 12.2	1.500	2.025	105.5	28.9	17.1