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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 5287.

Object		Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	N Obs.
1936 NH	*	1936 07	14.94638	20 12 09.21	-20 08 52.0	740		020
1949 GS	*	1949 04	01.1	14 23.2	-05 13	730		020
1952 BH2	*	1952 01	30.34442	09 01.1	+21 32	730	17.4	760
1953 RN1	*	1953 09	13.17	23 01.3	-13 27	730	17.5	760
1953 RN1		1953 09	17.22292	22 57 12.74	-13 34 06.3	730	17.3	760
1953 RN1		1953 09	17.27363	22 57 09.53	-13 34 10.7	730		760
1956 GU	*	1956 04	14.28169	14 08 22.43	-12 45 50.7	1953 TG2	17.7	760
1962 QL	*	1962 08	30.16629	21 13 11.90	-12 40 11.8	1962 PJ	15.9	1 760
1962 QL		1962 08	30.21038	21 13 09.76	-12 40 07.0	1962 PJ	15.9	1 760
1966 LD	*	1966 06	13.91806	17 25 49.93	-21 12 28.0	730	15.8	076
1970 CQ	*	1970 02	09.08272	08 22 58.55	+02 03 16.5	789		805
1970 CQ		1970 02	09.09310	08 22 57.99	+02 03 17.9	789		805
1970 CQ		1970 02	09.10349	08 22 57.36	+02 03 19.3	789		805
1970 CQ		1970 02	10.16099	08 22 01.63	+02 05 06.9	789		805
1970 CQ		1970 02	10.17138	08 22 01.06	+02 05 08.8	789		805
1970 CQ		1970 02	10.18177	08 22 00.48	+02 05 09.6	789		805
1972 XN2	*	1972 12	02.78344	02 11 56.72	+06 53 14.9	1972 TY1	16.5	095
1972 XN2		1972 12	06.76241	02 10 16.73	+06 49 11.8	1972 TY1	16.5	095
1979 DN	*	1979 02	23.16477	08 22 51.88	+22 49 06.6	1977 VY	17.5	801

Note 1: see the note on MPC 2505; the designations with the orbit determination on MPC 2743 should read 1962 OB = 1962 PQ = 1962 QL.

* * * * *

IDENTIFICATIONS.

The following list of identifications with numbered minor planets continues that on MPC 5287.

	Note		Note		Note
1931 TQ = (515)	1	1933 UL1 = (1382)	1	1936 PR = (432)	1
1938 ET = (933)	1	1941 CB = (1888)	2	1949 HA = (1683)	3
1950 CV = (1879)	4	1954 WN = (1838)	5	1955 SN1 = (2011)	6
1957 LL = (2233)	7	1958 HK = (857)	1	1958 RL = (1401)	1
1958 TC1 = (701)	1	1958 XG = (1037)	8	1958 XP = (663)	1
1958 XU = (829)	1	1961 JF = (1022)	1	1964 YH = (1874)	1
1965 OD = (1490)	1	1970 CE = (789)	1	1970 KA = (897)	1
1972 TA = (2133)	1	1975 LD = (1465)	7	1975 LJ = (361)	7

Note 1: identification by E. Bowell. 2: from MPC 1853 and 3767. 3: identification by E. Bowell; the identification 1949 HA = 1950 OD (MPC 1451) is invalid. 4: from NAZ 12, 23 and MPC 3765. 5: from NAZ 12, 23 and 3543; the identification 1954 UR1 = 1954 WN (MPC 1753) is invalid. 6: from MPC 1453 and 4076. 7: identification by B. G. Marsden. 8: by O. Kippes.

OBSERVATION MADE AT HEIDELBERG. REMEASUREMENT BY L. D. SCHMADEL.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1958 XB	1958 12	03.86369	03 57 05.26	+20 26 39.5	15	024

OBSERVATIONS MADE AT THE ZIMMERWALD STATION OF THE BERNE ASTRONOMICAL INSTITUTE BY P. WILD.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
/1980d	1980 04	11.07708	13 30 57.71	+12 28 25.3	15.5T	026
/1980d	1980 04	11.94201	13 30 14.28	+12 29 26.8		026
/1980d	1980 04	12.90417	13 29 25.51	+12 30 22.8		026
/1980d	1980 05	07.86337	13 10 01.95	+11 36 05.5	15.5T	026
/1980d	1980 05	07.90104	13 10 00.44	+11 35 53.1		026

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

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
1020	1980 04	13.85359	11 36 14.24	+03 00 11.7			046
1020	1980 04	13.86782	11 36 13.96	+03 00 13.9			046
1020	1980 04	14.84890	11 35 44.88	+03 04 50.5			046
1020	1980 04	14.86348	11 35 44.59	+03 04 54.5			046
1020	1980 04	15.84199	11 35 16.80	+03 09 19.7			046
1020	1980 04	15.85617	11 35 16.41	+03 09 22.5			046
1020	1980 04	16.83624	11 34 49.79	+03 13 39.2			046
1020	1980 04	16.85036	11 34 49.34	+03 13 41.7			046
2169	1980 04	13.85359	11 30 24.99	+05 28 41.0	17.5		046
2169	1980 04	13.86782	11 30 24.62	+05 28 43.8			046
2169	1980 04	14.84890	11 29 54.98	+05 31 12.9			046
2169	1980 04	14.86348	11 29 54.39	+05 31 16.2			046
2169	1980 04	15.84199	11 29 25.86	+05 33 36.1			046
2169	1980 04	15.85617	11 29 25.28	+05 33 38.9			046
2169	1980 04	16.83624	11 28 58.01	+05 35 50.2			046
2169	1980 04	16.85036	11 28 57.80	+05 35 51.3			046
2240	1980 04	13.85359	11 31 38.44	+04 10 28.6	17.8		046
2240	1980 04	13.86782	11 31 38.08	+04 10 29.6			046
2240	1980 04	14.84890	11 31 10.42	+04 13 07.9			046
2240	1980 04	14.86348	11 31 10.16	+04 13 09.2			046
2240	1980 04	15.84199	11 30 43.65	+04 15 36.2			046
2240	1980 04	15.85617	11 30 43.41	+04 15 36.4			046
2240	1980 04	16.83624	11 30 17.94	+04 17 59.2			046
2240	1980 04	16.85036	11 30 17.72	+04 18 00.3			046
1977 VK1	1980 04	15.95993	12 51 45.32	+03 59 26.8	17.8		046
1977 VK1	1980 04	15.97417	12 51 44.90	+03 59 25.6			046
1980 FB	1980 04	13.85359	11 28 46.09	+04 33 46.3	17.5		046
1980 FB	1980 04	13.86782	11 28 45.67	+04 33 49.6			046
1980 FB	1980 04	14.84890	11 28 17.18	+04 36 11.3			046
1980 FB	1980 04	14.86348	11 28 17.05	+04 36 12.4			046
1980 FB	1980 04	16.83624	11 27 23.25	+04 40 33.3			046
1980 FB	1980 04	16.85036	11 27 22.72	+04 40 33.2			046
1980 GE *	1980 04	13.85359	11 32 23.39	+06 19 42.0	18.0		046
1980 GE	1980 04	13.86782	11 32 22.83	+06 19 43.0			046
1980 GE	1980 04	14.84890	11 31 43.08	+06 27 29.8			046
1980 GE	1980 04	14.86348	11 31 42.74	+06 27 34.3			046
1980 GF *	1980 04	13.85359	11 36 38.16	+04 47 40.8	17.5		046
1980 GF	1980 04	13.86782	11 36 37.68	+04 47 45.1			046
1980 GF	1980 04	14.84890	11 36 08.09	+04 51 09.6			046
1980 GF	1980 04	14.86348	11 36 07.83	+04 51 12.5			046
1980 GF	1980 04	15.84199	11 35 39.49	+04 54 23.6			046
1980 GF	1980 04	15.85617	11 35 39.05	+04 54 26.3			046
1980 GF	1980 04	16.83624	11 35 12.34	+04 57 26.5			046
1980 GF	1980 04	16.85036	11 35 12.05	+04 57 29.8			046

1980	GG	*	1980	04	13.89120	13	21	03.21	+04	34	04.4	17.6	046
1980	GG		1980	04	13.90544	13	21	02.49	+04	34	08.0		046
1980	GG		1980	04	14.88709	13	20	11.68	+04	37	15.0		046
1980	GG		1980	04	14.90168	13	20	10.81	+04	37	17.4		046
1980	GG		1980	04	15.87903	13	19	20.54	+04	40	12.2		046
1980	GG		1980	04	15.89338	13	19	19.92	+04	40	13.4		046
1980	GG		1980	04	16.94625	13	18	25.88	+04	43	06.1		046
1980	GG		1980	04	16.96205	13	18	24.78	+04	43	06.7		046
1980	GH	*	1980	04	13.89120	13	24	18.02	+06	26	56.7	17.2	046
1980	GH		1980	04	13.90544	13	24	17.07	+06	27	00.1		046
1980	GH		1980	04	14.88709	13	23	15.08	+06	31	04.6		046
1980	GH		1980	04	14.90168	13	23	14.12	+06	31	07.8		046
1980	GH		1980	04	15.87903	13	22	12.30	+06	34	59.9		046
1980	GH		1980	04	15.89338	13	22	11.31	+06	35	02.8		046
1980	GH		1980	04	16.94625	13	21	04.67	+06	38	54.0		046
1980	GH		1980	04	16.96205	13	21	03.38	+06	38	59.3		046
1980	GJ	*	1980	04	13.89120	13	24	39.57	+05	26	36.7	17.8	046
1980	GJ		1980	04	13.90544	13	24	39.11	+05	26	37.9		046
1980	GJ		1980	04	14.88709	13	23	40.02	+05	25	51.0		046
1980	GJ		1980	04	14.90168	13	23	39.26	+05	25	49.7		046
1980	GJ		1980	04	15.87903	13	22	40.66	+05	24	52.8		046
1980	GJ		1980	04	15.89338	13	22	39.68	+05	24	51.7		046
1980	GK	*	1980	04	13.92755	12	53	53.08	-04	33	59.3	17.8	046
1980	GK		1980	04	13.94306	12	53	52.62	-04	33	58.7		046
1980	GK		1980	04	14.92459	12	53	17.92	-04	30	56.9		046
1980	GK		1980	04	14.93918	12	53	17.47	-04	30	54.9		046
1980	GK		1980	04	15.92301	12	52	43.04	-04	27	55.9		046
1980	GK		1980	04	15.93713	12	52	42.39	-04	27	51.8		046
1980	GK		1980	04	16.90950	12	52	08.99	-04	25	01.0		046
1980	GK		1980	04	16.92368	12	52	08.18	-04	24	54.8		046
1980	GL	*	1980	04	13.92755	12	54	52.5	-07	30	50	17.6	1 046
1980	GL		1980	04	13.94306	12	54	51.7	-07	30	47		1 046
1980	GL		1980	04	14.92459	12	53	51.67	-07	30	59.5		046
1980	GL		1980	04	14.93918	12	53	50.70	-07	30	58.2		046
1980	GL		1980	04	15.92301	12	52	51.1	-07	31	12		1 046
1980	GL		1980	04	15.93713	12	52	50.3	-07	31	10		1 046
1980	GL		1980	04	16.90950	12	51	51.38	-07	31	23.6		046
1980	GL		1980	04	16.92368	12	51	50.42	-07	31	23.8		046
1980	GM	*	1980	04	13.92755	12	56	34.25	-03	53	29.3	18.0	046
1980	GM		1980	04	13.94306	12	56	33.40	-03	53	21.5		046
1980	GM		1980	04	14.92459	12	55	45.07	-03	46	45.2		046
1980	GM		1980	04	14.93918	12	55	44.22	-03	46	39.1		046
1980	GM		1980	04	15.92301	12	54	56.52	-03	40	04.4		046
1980	GM		1980	04	15.93713	12	54	55.75	-03	39	58.1		046
1980	GM		1980	04	16.90950	12	54	09.59	-03	33	35.1		046
1980	GM		1980	04	16.92368	12	54	08.71	-03	33	33.1		046
1980	GN	*	1980	04	13.92755	12	58	22.13	-05	47	45.5	17.4	046
1980	GN		1980	04	13.94306	12	58	21.40	-05	47	41.7		046
1980	GN		1980	04	14.92459	12	57	38.34	-05	43	12.7		046
1980	GN		1980	04	14.93918	12	57	37.86	-05	43	10.1		046
1980	GN		1980	04	15.92301	12	56	54.92	-05	38	45.1		046
1980	GN		1980	04	15.93713	12	56	54.31	-05	38	40.7		046
1980	GO	*	1980	04	13.92755	12	59	10.96	-03	58	29.6	18.0	046
1980	GO		1980	04	13.94306	12	59	10.11	-03	58	22.4		046
1980	GO		1980	04	14.92459	12	58	28.28	-03	53	46.1		046
1980	GO		1980	04	14.93918	12	58	27.36	-03	53	39.2		046
1980	GO		1980	04	15.92301	12	57	45.59	-03	49	03.9		046
1980	GO		1980	04	15.93713	12	57	45.15	-03	48	56.1		046
1980	GP	*	1980	04	13.92755	13	01	17.87	-07	04	14.1	17.5	046

1980 GP		1980 04 13.94306	13 01 16.98	-07 04 08.4						046
1980 GP		1980 04 14.92459	13 00 28.45	-06 59 33.6						046
1980 GP		1980 04 14.93918	13 00 27.73	-06 59 29.3						046
1980 GP		1980 04 15.92301	12 59 39.64	-06 54 56.8						046
1980 GP		1980 04 15.93713	12 59 38.92	-06 54 51.5						046
1980 GP		1980 04 16.90950	12 58 51.76	-06 50 19.7						046
1980 GP		1980 04 16.92368	12 58 51.02	-06 50 13.1						046
1980 GQ	*	1980 04 15.95993	12 48 38.99	+08 16 42.5					17.2	046
1980 GQ		1980 04 15.97417	12 48 38.39	+08 16 44.3						046
1980 GR	*	1980 04 15.95993	12 50 19.41	+06 36 41.9					18.0	046
1980 GR		1980 04 15.97417	12 50 18.48	+06 36 46.8						046
1980 HB	*	1980 04 16.87281	12 54 15.55	+03 54 43.3					15.5	046
1980 HB		1980 04 16.88705	12 54 14.99	+03 54 54.6						046

Note 1: near edge of plate.

OBSERVATIONS MADE AT TURKU BY Y. VAISALA, L. OTERMA AND H. A. ALIKOSKI.
MEASURED BY M.-O. SNARE.

Object	Date	UT	R. A. (1950)	Decl.			Obs.
2239	1938 09	21.99642	01 07 25.57	+03 48 00.6			062
2239	1938 09	26.96507	01 03 32.10	+03 42 23.8			062
2239	1938 11	15.86703	00 28 57.65	+03 26 55.8			062
1944 RJ	1944 09	15.88637	23 28 18.60	-03 10 26.9			062
1944 RJ	1944 09	15.91403	23 28 17.47	-03 10 34.8			062
1948 TM	1948 10	09.95928	01 14 41.91	-02 43 46.4			062
1948 TM	1948 10	09.99632	01 14 40.03	-02 43 51.9			062
1948 TN	1948 10	09.95928	01 21 44.69	-03 02 54.0			062
1948 TN	1948 10	09.99632	01 21 42.57	-03 02 59.9			062

OBSERVATIONS MADE AT BUCHAREST BY G. BOCSA, C. CRISTESCU, V. IONESCU,
M. STANESCU AND A. SULICIU.

Object	Date	UT	R. A. (1950)	Decl.	O - C		Obs.
4	1977 01	20.81138	07 07 09.32	+24 05 41.3	0.0	0	073
4	1977 01	20.81623	07 07 09.01	+24 05 42.0	0.0	0	073
4	1977 02	09.79036	06 50 38.18	+25 15 09.1	0.0	0	073
4	1977 02	09.79590	06 50 37.99	+25 15 10.3	0.0	0	073
4	1977 02	26.75468	06 46 01.67	+25 48 35.6			073
4	1977 02	26.76230	06 46 01.58	+25 48 35.8			073
5	1975 05	10.81543	13 29 30.75	-00 22 57.3	0.1-	0	073
5	1975 05	10.82097	13 29 30.54	-00 22 56.6	0.1-	0	073
6	1975 05	12.86399	14 50 53.27	+07 01 30.1	0.0	0	073
6	1975 05	12.86953	14 50 52.92	+07 01 31.2	0.0	0	073
6	1975 05	29.83039	14 37 03.63	+07 19 58.7	0.0	0	073
6	1975 05	29.83524	14 37 03.43	+07 19 58.7	0.0	0	073
6	1975 05	30.81864	14 36 22.80	+07 19 00.5			073
6	1975 05	30.82764	14 36 22.41	+07 19 00.0			073
6	1975 06	09.80797	14 30 32.56	+06 57 24.1	0.0	0	073
6	1975 06	09.80849	14 30 32.43	+06 57 22.9	0.0	0	073
6	1975 06	13.79358	14 28 48.28	+06 43 07.7	0.0	0	073
6	1975 06	13.80016	14 28 48.12	+06 43 06.1	0.0	0	073
6	1975 06	16.79128	14 27 44.13	+06 30 28.2	0.0	0	073
6	1975 06	16.79613	14 27 44.07	+06 30 26.7	0.0	0	073
6	1976 12	16.66006	00 32 01.38	-15 49 16.4			073
6	1976 12	16.66057	00 32 01.17	-15 49 19.8			073
7	1975 05	08.80981	13 40 01.11	-16 33 48.7			073
7	1975 05	08.81535	13 40 01.39	-16 33 50.9			073
7	1975 05	12.83005	13 36 54.65	-16 08 08.8			073
20	1975 06	13.05221	21 59 01.74	-11 23 39.2	0.3+	1+	073
20	1975 06	13.05983	21 59 01.80	-11 23 38.9	0.3+	1+	073
20	1977 02	09.80352	07 05 08.70	+21 22 26.8	0.0	0	073

20	1977	02	09.81044	07	05	08.53	+21	22	27.4	0.0	0	073
20	1977	02	26.76992	07	03	55.55	+21	32	44.0	0.0	0	073
20	1977	02	26.77615	07	03	55.62	+21	32	44.0	0.0	0	073
22	1977	01	05.68682	03	34	03.22	+21	36	08.3	0.0	0	073
22	1977	01	05.69721	03	34	03.04	+21	36	11.2	0.0	0	073
22	1977	01	10.69879	03	33	20.26	+21	54	10.5	0.0	0	073
22	1977	01	10.71264	03	33	20.14	+21	54	13.6	0.0	0	073
22	1977	02	09.74396	03	44	03.20	+24	03	13.9	0.0	1-	073
23	1975	07	19.08389	00	33	48.38	-09	32	11.5	0.0	1+	073
24	1975	03	08.80531	09	28	17.89	+16	02	08.4	0.4-	3+	073
24	1975	03	08.81293	09	28	17.60	+16	02	09.5	0.4-	3+	073
25	1975	02	10.86488	09	24	54.17	-16	02	45.6	0.0	0	073
25	1975	02	10.87319	09	24	53.64	-16	02	43.4	0.0	0	073
25	1975	03	03.81792	09	06	43.47	-13	24	18.3	0.0	0	073
25	1975	03	03.82623	09	06	43.14	-13	24	14.1	0.0	0	073
25	1975	03	04.79597	09	06	00.54	-13	14	47.5			073
25	1975	03	04.80428	09	06	00.20	-13	14	42.3			073
25	1975	03	06.80280	09	04	35.62	-12	54	55.5	0.0	0	073
25	1975	03	06.81111	09	04	35.23	-12	54	50.2	0.0	0	073
25	1976	07	03.81620	18	46	12.35	+19	40	17.6	0.0	0	073
25	1976	07	03.82244	18	46	12.05	+19	40	20.3	0.0	0	073
28	1975	06	13.84517	15	56	58.31	-06	33	55.2	0.0	0	073
28	1975	06	13.85452	15	56	57.77	-06	33	55.6	0.0	0	073
39	1975	02	10.68798	06	03	54.21	+12	35	31.1			073
39	1975	02	10.69421	06	03	54.25	+12	35	29.4			073
39	1975	02	11.73372	06	03	45.98	+12	41	04.7			073
39	1975	02	11.74186	06	03	46.06	+12	41	02.5			073
39	1975	02	18.72849	06	03	36.75	+13	17	56.8			073
39	1975	02	18.73680	06	03	36.78	+13	17	59.2			073
39	1975	02	22.70097	06	04	05.76	+13	38	30.0			073
39	1975	02	22.70582	06	04	05.79	+13	38	32.4			073
39	1975	03	08.72324	06	08	53.18	+14	46	57.1	0.0	0	073
39	1975	03	08.73294	06	08	53.42	+14	46	59.3	0.0	0	073
40	1975	02	11.84834	08	47	28.68	+22	46	17.6			073
40	1975	02	11.85734	08	47	28.09	+22	46	20.2			073
40	1975	02	12.79852	08	46	31.09	+22	50	51.1			073
40	1975	02	12.80648	08	46	30.59	+22	50	53.6			073
40	1975	02	18.79030	08	40	50.22	+23	16	23.3			073
40	1975	02	18.79844	08	40	49.77	+23	16	24.8			073
40	1975	02	28.75215	08	33	20.24	+23	45	36.9			073
40	1975	02	28.75908	08	33	20.03	+23	45	37.8			073
40	1975	03	04.74195	08	31	09.51	+23	52	42.3			073
40	1975	03	04.75026	08	31	09.34	+23	52	42.6			073
40	1975	03	05.76710	08	30	40.91	+23	54	06.9			073
40	1975	03	05.77541	08	30	40.67	+23	54	07.6			073
40	1975	03	08.76652	08	29	29.21	+23	57	16.7	0.0	0	073
40	1975	03	08.77553	08	29	29.01	+23	57	17.0	0.0	0	073
40	1975	03	18.78527	08	27	42.18	+23	58	04.6			073
40	1975	03	18.79427	08	27	42.15	+23	58	04.3			073
43	1975	06	13.94525	18	01	08.43	-23	18	09.9			073
43	1975	06	13.95217	18	01	07.99	-23	18	09.0			073
48	1975	02	12.77567	08	25	18.75	+11	26	28.3			073
48	1975	02	12.78259	08	25	18.34	+11	26	30.7			073
51	1975	06	13.88707	17	28	41.75	-05	49	07.4	0.1+	0	073
51	1975	06	13.89469	17	28	41.28	-05	49	07.1	0.1+	0	073
51	1975	06	28.83539	17	15	01.64	-05	56	23.2	0.1-	0	073
51	1975	06	28.84439	17	15	01.21	-05	56	24.8	0.1-	0	073
51	1975	07	04.83459	17	10	25.00	-06	10	55.7			073
51	1975	07	04.84359	17	10	24.66	-06	10	57.4			073

51	1975	07	16.80771	17	03	43.39	-06	56	47.2	0.1-	0	073
51	1975	07	16.81636	17	03	43.16	-06	56	49.6	0.1-	0	073
64	1975	03	08.82401	09	51	27.93	+11	59	26.0	0.0	0	073
64	1975	03	08.83232	09	51	27.62	+11	59	27.4	0.1+	0	073
65	1975	04	04.75271	11	02	58.86	+07	36	17.8			073
65	1975	04	04.76240	11	02	58.55	+07	36	19.7			073
73	1975	04	04.75271	10	58	40.33	+07	24	34.0			073
78	1976	12	28.75887	04	01	57.14	+35	00	15.0	0.0	0	073
78	1976	12	28.76788	04	01	56.86	+35	00	13.3	0.0	0	073
88	1975	03	05.82701	09	16	02.03	+10	01	05.2			073
88	1975	03	05.83601	09	16	01.65	+10	01	06.8			073
92	1975	06	13.92447	17	43	23.36	-19	05	26.9	0.1+	0	073
92	1975	06	13.93555	17	43	22.90	-19	05	28.2	0.1+	0	073
116	1975	03	08.86625	12	21	45.74	+03	38	46.4			073
116	1975	03	08.87456	12	21	45.37	+03	38	48.1			073
119	1975	02	28.77639	08	44	49.73	+10	04	08.4			073
119	1975	02	28.78470	08	44	49.42	+10	04	10.7			073
129	1976	06	22.85628	16	47	57.13	-04	27	12.2	0.0	0	073
129	1976	06	22.86320	16	47	56.87	-04	27	14.8	0.0	0	073
129	1976	07	03.80097	16	41	52.25	-05	40	15.5	0.1-	0	073
148	1975	05	08.82608	14	12	33.69	+21	01	28.3			073
148	1975	05	08.83855	14	12	34.26	+21	01	27.0			073
148	1975	05	12.84494	14	09	40.55	+21	07	21.3			073
148	1975	05	12.85314	14	09	40.90	+21	07	20.8			073
148	1975	05	16.79835	14	07	00.58	+21	09	05.2			073
148	1975	05	16.80943	14	07	00.17	+21	09	05.2			073
148	1975	05	29.79991	13	59	47.82	+20	48	10.5			073
148	1975	05	29.81099	13	59	48.10	+20	48	11.2			073
216	1975	07	16.86554	20	22	02.80	+02	02	39.3	0.0	0	073
216	1975	07	16.87350	20	22	02.43	+02	02	39.5	0.0	0	073
225	1976	07	03.83490	19	43	50.51	+13	21	53.0			073
225	1976	07	03.84806	19	43	50.05	+13	21	54.7			073
234	1975	06	28.87452	18	48	17.27	-01	05	23.6			073
234	1975	06	28.88560	18	48	17.20	-01	05	23.5			073
234	1975	07	04.87060	18	44	17.33	-01	37	15.8	0.1+	0	073
234	1975	07	04.87961	18	44	16.76	-01	37	19.7	0.1+	0	073
234	1975	07	09.85141	18	39	45.60	-02	23	52.9	0.0	1-	073
234	1975	07	09.86110	18	39	45.10	-02	23	58.2	0.0	1-	073
234	1975	07	16.84510	18	33	38.69	-03	42	48.2			073
234	1975	07	16.85376	18	33	38.22	-03	42	54.8			073
240	1977	01	20.72204	05	41	35.49	+22	30	01.4			073
240	1977	01	20.73312	05	41	35.49	+22	30	01.7			073
287	1975	06	13.82682	15	42	28.09	-02	48	48.9			073
287	1975	06	13.83513	15	42	27.77	-02	48	50.1			073
306	1975	06	13.86768	16	49	45.45	-09	50	07.6	0.0	1-	073
306	1975	06	13.87669	16	49	45.05	-09	50	07.8	0.0	1-	073
306	1975	07	04.81381	16	33	26.63	-10	49	22.1	0.0	0	073
306	1975	07	04.82386	16	33	26.33	-10	49	24.3	0.0	0	073
313	1977	01	20.69988	05	30	31.90	+03	23	35.2			073
313	1977	01	20.70957	05	30	31.62	+03	23	39.5			073
324	1975	02	11.82271	07	35	05.90	+29	12	52.6			073
324	1975	02	11.83310	07	35	05.32	+29	12	50.0			073
324	1975	02	18.77056	07	30	38.48	+28	45	21.5			073
324	1975	02	18.77905	07	30	38.21	+28	45	18.9			073
324	1975	03	05.74598	07	26	12.75	+27	38	20.5			073
324	1975	03	05.75498	07	26	12.72	+27	38	17.7			073
349	1975	05	30.84080	15	03	25.41	-22	15	36.5			073
349	1975	05	30.85519	15	03	24.92	-22	15	35.7			073
349	1975	06	13.81020	14	53	55.23	-21	53	01.5			073

349	1975 06 13.81816	14 53 54.58	-21 52 59.9						073
354	1977 01 20.79337	06 04 32.74	+05 38 13.0	0.0	0				073
354	1977 01 20.80030	06 04 32.47	+05 38 16.6	0.0	0				073
354	1977 01 28.76980	06 00 10.77	+06 56 53.2	0.0	0				073
354	1977 01 28.77811	06 00 10.53	+06 56 58.7	0.0	0				073
354	1977 02 26.70724	05 59 18.24	+11 49 25.3	0.0	0				073
354	1977 02 26.71486	05 59 18.42	+11 49 33.9	0.0	0				073
389	1975 06 13.96776	18 17 20.06	-26 23 22.3	0.0	0				073
389	1975 06 13.97780	18 17 19.85	-26 23 24.7	0.1+	0				073
389	1975 07 10.84209	17 51 04.36	-24 56 30.5	0.0	0				073
389	1975 07 10.84261	17 51 03.98	-24 56 29.0	0.0	0				073
419	1975 06 13.90716	17 34 42.64	-18 44 55.5						073
419	1975 06 13.91408	17 34 42.28	-18 44 54.0						073
419	1975 06 28.85512	17 23 13.60	-17 57 46.5						073
419	1975 06 28.86344	17 23 13.14	-17 57 45.1						073
419	1975 07 09.83860	17 17 13.01	-17 36 16.5						073
419	1975 07 09.84206	17 17 12.81	-17 36 16.9						073
419	1975 07 16.82641	17 15 14.30	-17 29 31.2						073
419	1975 07 16.83402	17 15 14.46	-17 29 31.8						073
471	1976 12 28.73913	03 58 07.15	+16 45 35.7	0.0	0				073
471	1976 12 28.74744	03 58 06.91	+16 45 38.9	0.0	0				073
471	1977 01 05.70968	03 55 18.71	+17 45 57.7	0.0	0				073
471	1977 01 05.71695	03 55 18.56	+17 46 00.4	0.0	0				073
471	1977 01 10.72546	03 54 37.03	+18 24 19.8	0.0	0				073
471	1977 01 10.73931	03 54 36.91	+18 24 25.6	0.0	0				073
471	1977 01 28.72686	03 58 47.03	+20 41 38.6	0.0	0				073
471	1977 01 28.73656	03 58 47.33	+20 41 42.5	0.0	0				073
471	1977 02 09.75539	04 06 48.07	+22 10 46.0	0.0	0				073
471	1977 02 09.76370	04 06 48.48	+22 10 49.9	0.0	0				073
511	1975 02 18.80917	08 58 49.13	+29 12 48.5						073
511	1975 02 18.81679	08 58 48.79	+29 12 51.3						073
511	1975 03 05.78580	08 50 01.83	+30 18 43.4						073
511	1975 03 05.79411	08 50 01.60	+30 18 44.6						073
511	1975 03 08.78626	08 48 52.33	+30 26 29.1	0.0	0				073
511	1975 03 08.79457	08 48 52.10	+30 26 30.3	0.0	0				073
532	1976 12 28.80631	05 31 04.74	+14 37 46.7	0.0	0				073
532	1976 12 28.81497	05 31 04.28	+14 37 49.2	0.0	0				073
532	1977 01 10.77428	05 19 35.25	+15 51 50.1	0.0	0				073
532	1977 01 10.78398	05 19 34.77	+15 51 53.5	0.0	0				073
532	1977 01 20.68049	05 13 09.47	+16 52 49.4	0.0	0				073
532	1977 01 20.68880	05 13 09.19	+16 52 52.7	0.0	0				073
532	1977 01 28.74729	05 09 53.10	+17 43 56.7	0.0	0				073
532	1977 01 28.76011	05 09 52.89	+17 44 01.5	0.0	0				073
674	1975 03 08.84340	11 37 04.17	+25 05 28.3	0.2-	3+				073
674	1975 03 08.85171	11 37 03.67	+25 05 29.8	0.2-	3+				073
674	1975 04 04.79703	11 14 24.29	+25 03 16.5						073
674	1975 04 04.80811	11 14 23.96	+25 03 14.7						073
1665	1975 04 04.79703	11 18 15.69	+24 03 45.4						073
1665	1975 04 04.80811	11 18 15.40	+24 03 44.1						073

OBSERVATIONS MADE AT THE CRIMEAN ASTROPHYSICAL OBSERVATORY BY N. S. CHERNYKH AND L. I. CHERNYKH.

Object	Date	UT	R. A. (1950)	Decl.			Mag.	Obs.
/1979l	1980 02 20.72696	03 37 11.27	+19 00 32.9					095
/1979l	1980 02 20.73668	03 37 11.41	+19 00 49.1					095
1370	1976 12 20.84847	04 23 11.18	+27 36 33.6				18.0	095
2207	1979 11 16.96176	04 41 36.92	+13 46 20.7					095
2207	1979 12 18.86962	04 24 28.27	+13 10 31.5					095

OBSERVATIONS MADE AT GEISEI BY T. SEKI.

Object	Date UT	R. A. (1950)	Decl.	Mag.	N Obs.
/1980b	1980 04 10.62431	10 20 14.22	+11 41 04.8	16.5T	372
/1980c	1980 05 01.44896	04 29.41	+16 14.5	14.5T 1	372
/1980c	1980 05 06.46042	05 03.04	+16 17.7	15.0T 1	372

Note 1: object very diffuse, with central condensation.

OBSERVATIONS MADE AT THE TOKYO OBSERVATORY, KISO STATION, BY H. KOSAI AND K. HURUKAWA.

Object	Date UT	R. A. (1950)	Decl.	Mag.	Obs.
1972 HN	1977 03 15.64872	12 32 14.50	-02 27 59.2	17.5	381
1972 HN	1977 03 15.67229	12 32 13.48	-02 27 51.5		381

OBSERVATIONS MADE AT JCPM SAKURA STATION BY Y. BANNO. FROM JAPAN ASTRON. CIRC. NO. 237.

Object	Date UT	R. A. (1950)	Decl.	N Obs.
/1979l	1980 02 03.41436	03 18 16.03	-00 54 58.2	1 393
/1979l	1980 02 07.42818	03 24 52.51	+07 47 04.0	1 393
/1979l	1980 02 07.42940	03 24 52.69	+07 47 10.6	1 393
/1979l	1980 02 11.55948	03 29 28.60	+12 56 30.4	1 393

Note 1: observatory code 393, Long. and Parallax 140.13, -345, -250 (see MPC 4766).

OBSERVATIONS MADE AT MOUNT JOHN UNIVERSITY OBSERVATORY (CODE 474) BY M. CLARK, AND AT PALMERSTON NORTH, NEW ZEALAND (CODE 486), BY N. MUNFORD. MEASURED BY P. M. KILMARTIN.

Object	Date UT	R. A. (1950)	Decl.	N Obs.
/1979g	1979 08 18.32882	12 52 02.60	-05 08 47.8	474
/1979l	1979 12 30.6354	16 11 43.43	-37 54 43.9	1 486

Note 1: observatory code 486, Long. and Parallax 175.47, -326, +274 (see MPC 4766).

OBSERVATIONS MADE AT BENDESTORF BY K. RESSEL.

Object	Date UT	R. A. (1950)	Decl.	N Obs.
2	1979 09 09.84167	20 51 42.63	+06 54 06.4	1 506
54	1979 09 30.85833	01 59 09.90	+30 33 44.4	1 506
115	1978 12 04.89549	04 17 46.58	+41 13 50.6	1 506
115	1978 12 04.94063	04 17 43.32	+41 13 27.5	1 506
115	1979 02 28.94826	04 48 23.00	+28 34 40.5	1 506
202	1979 03 24.95278	12 26 58.50	+07 46 37.0	1 506
397	1979 09 29.81667	21 05 02.97	+04 06 25.2	1 506

Note 1: observatory code 506, Long. and Parallax 9.96, -255, -340 (see MPC 4766).

OBSERVATIONS MADE AT THE ANTARES OBSERVATORY, LA SEYNE SUR MER, BY R. ALLEGRE, B. CANDELA, B. OLIVI AND J. PINSON.

Object	Date UT	R. A. (1950)	Decl.	Obs.
/1977 XIV	1977 11 26.72637	20 41 39.91	-22 56 16.5	509
4	1978 09 20.79597	17 20 29.94	-23 46 06.0	509
4	1978 09 20.80014	17 20 30.36	-23 46 07.4	509
4	1978 09 20.80431	17 20 30.64	-23 46 08.9	509
4	1978 11 15.73286	19 05 41.69	-24 49 49.6	509
4	1978 11 23.71721	19 22 23.77	-24 30 55.3	509
4	1978 11 23.72138	19 22 24.17	-24 30 54.4	509
4	1978 11 23.72554	19 22 24.45	-24 30 54.4	509
4	1978 11 24.71493	19 24 30.06	-24 28 03.7	509
4	1978 11 24.71910	19 24 30.56	-24 28 01.1	509
8	1979 01 31.85555	09 22 12.06	+19 53 26.8	509
8	1979 01 31.86319	09 22 11.42	+19 53 30.1	509

8	1979	01	31.87025	09	22	11.04	+19	53	33.7	509
8	1979	02	18.84410	09	03	10.24	+22	02	52.2	509
8	1979	02	18.85104	09	03	09.94	+22	02	53.9	509
8	1979	02	18.85799	09	03	09.59	+22	02	58.4	509
8	1979	02	18.86094	09	03	09.31	+22	02	59.2	509
8	1979	02	18.86632	09	03	09.16	+22	03	01.6	509
8	1979	02	18.87037	09	03	08.89	+22	03	03.5	509
8	1979	02	18.87465	09	03	08.58	+22	03	04.8	509
8	1979	02	18.87891	09	03	08.39	+22	03	06.0	509
8	1979	02	18.88299	09	03	08.14	+22	03	08.4	509
8	1979	02	18.88715	09	03	07.85	+22	03	08.8	509
8	1979	02	18.89132	09	03	07.65	+22	03	09.3	509
8	1979	02	18.89549	09	03	07.41	+22	03	12.6	509
8	1979	02	18.89965	09	03	07.06	+22	03	13.7	509
8	1979	02	18.90382	09	03	06.90	+22	03	14.4	509
8	1979	02	18.90799	09	03	06.63	+22	03	14.7	509
8	1979	03	02.87001	08	53	32.11	+22	57	42.0	509
8	1979	03	02.87348	08	53	32.07	+22	57	44.0	509
8	1979	03	02.87696	08	53	31.99	+22	57	45.0	509
8	1979	03	02.88043	08	53	31.66	+22	57	46.1	509
8	1979	03	02.88402	08	53	31.63	+22	57	46.8	509
8	1979	03	02.88737	08	53	31.51	+22	57	47.6	509
8	1979	03	02.89085	08	53	31.32	+22	57	48.4	509
8	1979	03	02.89432	08	53	31.24	+22	57	48.4	509
8	1979	03	02.89779	08	53	31.14	+22	57	49.8	509
8	1979	03	02.90126	08	53	31.01	+22	57	50.3	509
8	1979	03	04.91081	08	52	19.20	+23	04	04.5	509
8	1979	03	04.91406	08	52	19.15	+23	04	06.5	509
8	1979	03	04.92622	08	52	18.60	+23	04	09.0	509
8	1979	03	07.84705	08	50	48.91	+23	11	46.9	509
8	1979	03	07.85038	08	50	48.78	+23	11	47.8	509
8	1979	03	07.85209	08	50	48.56	+23	11	48.0	509
8	1979	03	07.85385	08	50	48.61	+23	11	48.5	509
8	1979	03	07.86108	08	50	48.54	+23	11	51.2	509
8	1979	03	07.86312	08	50	48.53	+23	11	49.1	509
8	1979	03	07.86446	08	50	48.30	+23	11	51.1	509
8	1979	03	07.86662	08	50	48.35	+23	11	51.3	509
39	1978	11	25.97105	01	31	03.63	-04	33	51.9	509
39	1978	11	25.98630	01	31	03.36	-04	33	50.9	509
39	1978	12	05.84495	01	29	57.85	-04	15	27.6	509
39	1978	12	05.85333	01	29	57.77	-04	15	25.6	509
39	1978	12	05.87289	01	29	57.73	-04	15	23.2	509
39	1979	01	31.83316	02	05	48.55	+02	00	24.9	509
39	1979	01	31.84080	02	05	48.99	+02	00	27.7	509
39	1979	01	31.84774	02	05	49.39	+02	00	32.6	509
148	1979	03	02.99840	11	31	36.01	+17	49	12.3	509
148	1979	03	03.00535	11	31	35.75	+17	49	17.9	509
148	1979	03	03.01194	11	31	35.53	+17	49	21.3	509
148	1979	03	22.86371	11	16	22.62	+21	16	45.4	509
148	1979	03	22.86927	11	16	22.47	+21	16	47.5	509
148	1979	03	22.87500	11	16	22.25	+21	16	50.7	509
148	1979	03	22.88055	11	16	22.05	+21	16	54.3	509
148	1979	03	24.86706	11	14	56.61	+21	33	17.5	509
148	1979	03	24.87465	11	14	56.47	+21	33	21.2	509
148	1979	03	24.88055	11	14	56.22	+21	33	26.3	509
148	1979	03	30.84444	11	10	57.34	+22	17	01.1	509
148	1979	03	30.84965	11	10	57.32	+22	17	01.8	509
148	1979	03	30.85486	11	10	57.05	+22	17	07.9	509
148	1979	03	30.92865	11	10	54.43	+22	17	34.8	509

148	1979	03	30.93767	11	10	54.05	+22	17	35.5		509
148	1979	03	30.94496	11	10	53.71	+22	17	41.7		509
324	1978	12	05.88956	02	14	58.92	+35	48	54.5		509
324	1978	12	05.89616	02	14	58.86	+35	48	51.0		509
324	1978	12	05.90275	02	14	58.78	+35	48	47.3		509

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

Object	Date	UT	R. A. (1950)			Decl.			Mag.	N	Obs.
/1980b	1980	05 08.17257	10	17	27.10	+11	54	38.7			688
/1980d	1980	05 09.17847	13	09	14.82	+11	28	52.9		4	688
/1980d	1980	05 10.27257	13	08	37.11	+11	22	36.6	15.5T	5	688
17	1980	05 08.17257	10	19	04.82	+16	06	27.4			688
92	1980	05 08.19236	14	02	46.74	+01	10	08.9		1	688
92	1980	05 10.34028	14	01	18.78	+01	13	08.8			688
254	1980	05 08.17257	10	12	42.58	+14	12	50.9		1	688
401	1980	05 08.17257	10	15	36.41	+16	13	33.0			688
412	1980	05 10.35903	16	50	35.85	-07	47	48.4			688
450	1980	05 08.17257	10	26	15.40	+14	58	37.6			688
487	1980	05 10.35903	16	50	59.76	-10	37	35.8		1	688
490	1980	05 10.35903	16	42	23.06	-10	17	59.0			688
491	1980	03 14.46111	14	44	28.60	-02	03	50.7			688
491	1980	05 08.19236	14	15	43.57	+04	39	46.2		1	688
491	1980	05 08.21042	14	15	42.95	+04	39	51.9			688
491	1980	05 10.32222	14	14	22.49	+04	49	58.6			688
491	1980	05 10.34028	14	14	21.72	+04	50	02.3			688
598	1980	05 08.21042	14	23	30.81	+00	30	15.6			688
598	1980	05 10.32222	14	21	48.08	+00	33	34.4			688
622	1980	05 10.35903	16	41	10.20	-09	26	02.3			688
630	1980	05 10.35903	16	51	41.78	-07	52	20.8			688
633	1980	05 08.19236	13	54	37.12	+03	26	27.9			688
633	1980	05 10.34028	13	53	13.39	+03	32	45.6			688
749	1980	05 08.17257	10	19	26.76	+17	39	33.2		1	688
817	1980	05 10.35903	16	57	28.61	-08	23	10.6			688
932	1980	05 08.17257	10	21	45.42	+13	48	36.6			688
973	1980	03 21.18889	10	24	30.55	+12	48	10.9			688
973	1980	05 08.17257	10	14	33.18	+10	21	51.6			688
981	1980	05 08.17257	10	21	42.64	+12	20	09.1		2	688
1033	1980	05 10.35903	17	00	19.44	-10	00	59.3			688
1052	1980	05 08.17257	10	01	46.88	+17	40	20.4		1	688
1100	1980	05 08.17257	10	10	19.08	+10	24	01.8			688
1102	1980	05 10.35903	16	42	45.73	-11	21	01.3			688
1137	1980	05 08.17257	10	02	07.17	+17	22	02.3		1	688
1247	1980	05 08.17257	10	08	31.55	+11	37	08.2			688
1248	1980	05 08.19236	13	59	47.36	-01	44	48.3		1	688
1248	1980	05 10.34028	13	58	04.96	-01	43	38.7			688
1343	1980	05 08.17257	10	01	08.95	+18	00	32.9			688
1346	1980	05 08.17257	10	03	02.86	+13	00	42.2			688
1379	1980	05 08.17257	10	26	15.11	+13	06	29.9		1	688
1410	1980	05 08.19236	13	59	17.65	-01	30	29.4		1	688
1410	1980	05 10.34028	13	57	54.33	-01	21	35.7			688
1465	1980	05 08.17257	10	01	14.26	+12	45	49.2			688
1529	1980	05 08.19236	13	52	35.87	-00	14	08.7		1	688
1529	1980	05 10.34028	13	51	28.51	-00	10	42.0			688
1679	1980	05 08.21042	14	20	40.16	+04	50	02.5			688
1679	1980	05 10.32222	14	19	17.65	+05	03	43.9			688
1778	1980	03 21.18889	10	24	51.03	+13	05	02.5		3	688
1778	1980	04 14.20000	10	16	06.66	+13	46	53.0			688
1778	1980	05 08.17257	10	20	09.38	+13	10	35.9			688

1844		1980	05	10.27257	13	02	21.74	+10	55	06.9		688
1845		1980	05	08.21042	14	29	52.58	+01	29	31.6		688
1845		1980	05	10.32222	14	28	19.56	+01	35	56.4		688
1967		1980	05	08.17257	10	21	02.12	+14	50	32.1	1	688
2089		1980	05	10.35903	16	56	41.56	-08	26	05.0		688
2144		1980	05	08.17257	10	15	30.12	+12	41	40.0		688
1950	DS	1980	05	10.35903	16	52	33.10	-09	48	52.6	16.5	688
1975	WM1	1980	03	14.46111	14	52	02.88	+01	00	26.9		688
1975	WM1	1980	05	10.32222	14	28	19.37	+02	53	25.1	17.0	688
1980	CF	1980	03	21.18889	10	26	48.29	+11	51	49.3		688
1980	CF	1980	05	08.17257	10	24	12.80	+12	39	39.6	17.5	688
1980	ED	1980	02	11.32292	10	34	04.09	+12	13	22.2		688
1980	ED	1980	03	21.20625	10	05	55.02	+14	51	26.0		688
1980	ED	1980	04	14.17569	09	58	25.83	+15	15	27.2	16.5	688
1980	ED	1980	04	14.20000	09	58	25.58	+15	15	27.3	2	688
1980	EF	1980	04	14.17569	10	08	01.99	+13	36	21.8	18.0	688
1980	EG	1980	04	15.23889	14	48	11.51	+05	26	08.1	17.0 3	688
1980	EG	1980	05	08.21042	14	26	43.30	+05	56	35.1	17.5 1	688
1980	EG	1980	05	10.32222	14	24	48.42	+05	53	52.3	17.0 2	688
1980	GA	1980	05	08.19236	13	57	37.04	-01	07	34.4	1	688
1980	GA	1980	05	10.34028	13	54	39.85	-01	43	40.6		688
1980	GB	1980	03	14.43681	14	51	45.23	-02	11	30.0	17.5	688
1980	GB	1980	05	10.32222	14	16	07.75	+01	22	21.9	17.0 1	688
1980	GB	1980	05	10.34028	14	16	06.54	+01	22	20.8	1	688
1980	GC	1980	03	14.46111	14	56	43.89	+01	36	05.5	17.5 2	688
1980	GC	1980	04	15.23889	14	47	35.42	+04	33	57.1	1	688
1980	GC	1980	05	08.21042	14	36	45.27	+06	14	32.5	17.5	688
1980	GC	1980	05	10.32222	14	35	45.02	+06	21	17.9	17.5	688
1980	GD	1980	03	14.46111	14	48	49.42	+01	57	11.1	17.0 1	688
1980	GD	1980	05	08.19236	14	07	35.03	+04	32	32.6	17.5	688
1980	GD	1980	05	10.34028	14	05	43.93	+04	30	32.2		688

Note 1: right ascension uncertain. 2: declination uncertain. 3 = 1 + 2.
4: plate taken by H. L. Giclas. 5: object diffuse, no condensation.

OBSERVATIONS MADE AT THE GOETHE LINK OBSERVATORY (CODE 760) AND THE LEIDEN SOUTHERN STATION (CODE 081). MEASURED AND REDUCED AT INDIANA UNIVERSITY.

Object		Date	UT	R. A. (1950)	Decl.	N	Obs.
2233		1957	06 05.97500	17 27 00.97	-22 00 33.2		081
2233		1957	06 06.03000	17 26 57.35	-22 00 25.3		081
1950	TO2	1950	10 06.19780	02 28 43.15	+18 30 58.8		760
1950	TO2	1950	10 06.24640	02 28 40.43	+18 30 55.7		760
1950	TQ2	1950	10 10.35304	02 01 07.97	-06 41 31.6	1	760
1950	TQ2	1950	10 10.37943	02 01 06.83	-06 41 40.4	1	760
1950	TC3	1950	10 15.23617	00 57 05.04	+17 54 20.0		760
1950	TC3	1950	10 15.26049	00 57 03.74	+17 54 12.5		760
1950	TC3	1950	10 16.22438	00 56 19.75	+17 47 51.9		760
1950	TF3	1950	10 07.17977	22 56 41.00	-19 44 18.4		760
1950	TF3	1950	10 07.21101	22 56 40.19	-19 44 22.2		760
1950	TG3	1950	10 07.17977	23 12 25.69	-21 22 36.8		760
1950	TG3	1950	10 07.21101	23 12 24.34	-21 22 35.6		760
1950	TJ3	1950	10 07.24020	23 30 26.55	-15 46 49.1		760
1950	TJ3	1950	10 07.26589	23 30 25.71	-15 46 24.0		760
1950	TK3	1950	10 07.24020	23 34 02.05	-18 50 02.0		760
1950	TK3	1950	10 07.26589	23 34 01.89	-18 50 05.1		760
1950	TL3	1950	10 07.24020	23 32 39.55	-16 33 36.6		760
1950	TL3	1950	10 07.26589	23 32 39.20	-16 33 37.7		760
1950	TM4	1950	10 06.19780	02 33 21.09	+23 37 49.3		760
1950	TM4	1950	10 06.24640	02 33 19.26	+23 37 49.0		760
1950	UA	1950	10 17.22141	02 57 05.78	+23 54 06.5		760

1950	UA		1950	10	17.26795	02	57	04.03	+23	53	53.2	760
1950	UF		1950	10	18.15216	22	43	09.04	+04	04	11.7	760
1950	UF		1950	10	18.21117	22	43	08.68	+04	04	01.6	760
1953	VB1		1953	11	05.20696	02	42	34.37	+08	05	48.4	2 760
1953	VB1		1953	11	05.26876	02	42	30.16	+08	05	30.8	2 760
1953	VB1		1953	11	16.31630	02	31	33.03	+07	23	19.2	2 760
1953	VB1		1953	11	16.35866	02	31	30.67	+07	23	11.7	2 760
1961	TF		1961	10	06.18402	01	57	17.62	+17	11	43.9	760
1961	TF		1961	10	06.22707	01	57	15.71	+17	11	32.0	760
1965	WW		1965	11	20.26735	04	40	39.56	+23	30	09.6	2 760
1965	WW		1965	11	20.31179	04	40	37.06	+23	29	58.2	2 760

Note 1: the approximate position is given incorrectly on MPC 551. 2: 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, E. FOGELIN AND V. TEMPELMAN (WITH ASSISTANCE FROM C. M. BARDWELL AND B. G. MARSDEN).

Object		Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
/1978 VIII		1978 11	10.31850	06 14 47.15	+10 09 24.7			801
/1978 XXII		1978 11	20.12795	00 16 37.05	-13 00 53.5			801
/1980d		1980 05	14.17383	13 06 35.87	+10 58 02.9		1	801
/1980d		1980 05	17.10972	13 05 18.59	+10 37 13.2	15.6T		801
706		1980 04	17.09906	09 44 27.50	+08 16 04.2			801
706		1980 04	18.05947	09 44 24.81	+08 15 02.3			801
791		1980 05	17.26424	16 33 32.51	+00 40 33.8			801
973		1980 03	19.23677	10 25 55.19	+12 49 46.2			801
1037		1980 04	17.12697	10 33 01.95	+05 13 19.8			801
1037		1980 04	18.14421	10 32 51.87	+05 17 22.2			801
1040		1978 12	29.97345	23 02 26.13	+11 18 15.3			801
1221		1980 04	18.33485	18 53 59.72	+08 59 44.3			801
1591		1978 11	29.26848	03 31 41.60	-03 48 57.2			801
1772		1978 11	04.24937	01 29 15.01	+01 07 57.5			801
1921		1980 02	06.06716	02 54 21.95	+40 53 48.2			801
2234		1978 10	31.13568	01 59 25.99	+35 25 08.1			801
2234		1980 02	12.99001	07 42 55.15	+53 27 06.9			801
1939	QB	1980 02	13.03981	07 34 15.54	+14 33 03.4			801
1950	DB	1980 03	12.32914	14 53 33.74	+11 24 17.5			801
1950	DB	1980 04	17.32941	14 35 24.01	+17 25 15.1			801
1953	GE	1980 04	20.28119	15 09 34.05	-15 54 38.4			801
1953	GE	1980 05	10.20983	14 51 19.96	-15 31 39.0			801
1971	OG	1980 02	11.20781	06 10 14.97	+22 29 59.3			801
1971	SL2	1980 04	20.30765	16 25 20.38	-17 03 27.3			801
1972	FA	1980 04	18.29494	17 05 14.48	+11 46 32.8			801
1975	BU	1980 05	10.12407	12 04 33.91	+23 10 30.3			801
1975	BU	1980 05	17.15035	12 05 19.74	+22 33 31.3			801
1975	WM1	1980 04	17.30709	14 39 58.21	+02 23 06.0			801
1975	WM1	1980 04	18.26440	14 39 30.28	+02 25 00.1			801
1976	GC8	1980 02	11.38877	09 22 28.57	+19 35 13.7			801
1977	HC	1979 12	12.14189	05 06 37.69	+06 44 55.7			801
1978	YD *	1978 12	29.22559	09 08 19.42	+20 06 24.7	17.5		801
1979	FK	1980 04	17.35991	18 15 19.26	-03 15 56.9			801
1980	CF	1980 04	20.08090	10 19 11.06	+13 00 33.4			801
1980	CK	1980 04	14.08284	09 42 52.71	+03 09 27.6			801
1980	DA	1980 04	17.09906	09 43 40.88	+08 15 22.6			801
1980	DA	1980 04	18.05947	09 43 59.62	+08 15 21.1			801
1980	DC	1980 04	17.15178	10 43 17.30	+07 09 50.4		1	801
1980	DC	1980 04	20.13101	10 42 27.85	+07 08 08.5			801
1980	HC *	1980 04	20.28119	15 08 20.48	-15 55 50.5	16		801

Note 1: weak image.

OBSERVATIONS MADE WITH THE 0.4-M ASTROGRAPH AT THE EUROPEAN SOUTHERN OBSERVATORY BY H. DEBEHOGNE AND F. CALDEIRA (ASSISTED BY G. ROMAN).

Object	Date	UT	R. A. (1950)	Decl.	O - C	Obs.
/1978 XXI	1979 04	21.36568	23 24 36.04	-22 52 37.0		809
/1978 XXI	1979 04	21.37261	23 24 36.47	-22 52 33.2		809
/1978 XXI	1979 04	21.40377	23 24 38.37	-22 52 16.4		809
/1978 XXI	1979 04	21.40620	23 24 38.53	-22 52 13.6		809
/1978 XXI	1979 04	21.41208	23 24 38.81	-22 52 11.2		809
/1978 XXI	1979 04	22.38235	23 25 37.91	-22 43 16.8		809
/1978 XXI	1979 04	22.38720	23 25 38.20	-22 43 14.0		809
/1978 XXI	1979 04	22.40728	23 25 39.41	-22 43 03.4		809
/1978 XXI	1979 04	22.41213	23 25 39.67	-22 43 00.1		809
/1978 XXI	1979 04	23.40905	23 26 39.40	-22 33 58.7		809
/1978 XXI	1979 04	23.41320	23 26 39.68	-22 33 57.3		809
/1978 XXI	1979 04	23.41805	23 26 39.94	-22 33 54.6		809
/1978 XXI	1979 04	23.42290	23 26 40.23	-22 33 51.8		809
/1978 XXI	1979 04	24.39836	23 27 37.70	-22 25 10.2		809
/1978 XXI	1979 04	24.40390	23 27 37.98	-22 25 07.9		809
/1978 XXI	1979 04	24.41013	23 27 38.39	-22 25 04.3		809
/1978 XXI	1979 04	24.41498	23 27 38.65	-22 25 01.8		809
/1978 XXI	1979 04	26.35758	23 29 30.39	-22 08 06.2		809
/1978 XXI	1979 04	26.36312	23 29 30.74	-22 08 03.7		809
/1978 XXI	1979 04	26.38736	23 29 32.02	-22 07 50.8		809
/1978 XXI	1979 04	26.39221	23 29 32.28	-22 07 48.7		809
/1978 XXI	1979 04	26.40121	23 29 32.80	-22 07 43.7		809
/1978 XXI	1979 04	26.40606	23 29 33.07	-22 07 40.8		809
/1978 XXI	1979 04	29.42626	23 32 19.23	-21 42 22.5		809
/1978 XXI	1979 04	29.43110	23 32 19.52	-21 42 22.0		809
/1978 XXI	1979 04	30.37019	23 33 09.29	-21 34 44.1		809
/1978 XXI	1979 04	30.37504	23 33 09.60	-21 34 40.6		809
/1978 XXI	1979 04	30.38127	23 33 09.93	-21 34 38.4		809
/1978 XXI	1979 04	30.38612	23 33 10.16	-21 34 36.3		809
718	1979 04	21.27981	16 21 30.51	-24 18 51.0	0.4+ 1-	809
718	1979 04	21.28881	16 21 30.31	-24 18 52.8	0.4+ 1-	809
718	1979 04	21.29781	16 21 30.08	-24 18 54.4	0.4+ 1-	809
718	1979 04	22.25146	16 21 07.85	-24 21 35.6	0.4+ 1-	809
718	1979 04	22.25907	16 21 07.63	-24 21 37.0	0.4+ 1-	809
718	1979 04	22.26669	16 21 07.40	-24 21 38.0	0.4+ 1-	809
718	1979 04	25.27235	16 19 46.76	-24 29 45.0	0.1- 1+	809
718	1979 04	25.28135	16 19 46.57	-24 29 46.3	0.1- 1+	809
718	1979 04	25.29035	16 19 46.29	-24 29 47.5	0.1- 1+	809
718	1979 04	26.25162	16 19 17.35	-24 32 15.7	0.0 0	809
718	1979 04	26.26131	16 19 17.04	-24 32 17.2	0.0 0	809
718	1979 04	26.27101	16 19 16.70	-24 32 18.6	0.0 0	809
718	1979 04	29.39648	16 17 31.90	-24 39 51.6	0.3+ 1-	809
718	1979 04	29.40548	16 17 31.61	-24 39 52.9	0.3+ 1-	809
718	1979 04	29.41344	16 17 31.28	-24 39 53.9	0.3+ 1-	809
718	1979 04	30.33072	16 16 57.92	-24 41 59.9	0.3+ 1-	809
718	1979 04	30.33972	16 16 57.57	-24 42 01.3	0.3+ 1-	809
718	1979 04	30.34907	16 16 57.22	-24 42 02.5	0.3+ 1-	809
847	1979 04	21.27981	16 17 07.23	-23 24 19.6	0.3+ 1-	809
847	1979 04	21.28881	16 17 06.94	-23 24 19.0	0.3+ 1-	809
847	1979 04	21.29781	16 17 06.68	-23 24 18.4	0.3+ 1-	809
847	1979 04	22.25146	16 16 37.80	-23 23 04.9	0.3+ 1-	809
847	1979 04	22.25907	16 16 37.55	-23 23 04.5	0.3+ 1-	809
847	1979 04	22.26669	16 16 37.32	-23 23 03.6	0.3+ 1-	809
847	1979 04	25.27235	16 14 58.14	-23 18 49.2	0.2- 1+	809
847	1979 04	25.28135	16 14 57.88	-23 18 48.2	0.2- 1+	809
847	1979 04	25.29035	16 14 57.60	-23 18 47.6	0.2- 1+	809

847		1979	04	26.25162	16	14	23.48	-23	17	17.5	0.0	0	809
847		1979	04	26.26131	16	14	23.20	-23	17	16.1	0.0	0	809
847		1979	04	26.27101	16	14	22.77	-23	17	15.6	0.1-	0	809
847		1979	04	29.39648	16	12	23.66	-23	11	52.2	0.2+	1-	809
847		1979	04	29.40548	16	12	23.33	-23	11	51.1	0.2+	1-	809
847		1979	04	29.41344	16	12	23.01	-23	11	49.6	0.2+	1-	809
847		1979	04	30.33072	16	11	45.96	-23	10	06.1	0.2+	1-	809
847		1979	04	30.33972	16	11	45.54	-23	10	05.5	0.2+	1-	809
847		1979	04	30.34907	16	11	45.15	-23	10	04.3	0.2+	1-	809
1757		1979	04	21.27981	16	20	02.65	-22	50	24.1	0.4+	1-	809
1757		1979	04	21.28881	16	20	02.41	-22	50	25.0	0.4+	1-	809
1757		1979	04	21.29781	16	20	02.16	-22	50	26.3	0.4+	1-	809
1757		1979	04	22.25146	16	19	36.45	-22	52	07.5	0.4+	1-	809
1757		1979	04	22.25907	16	19	36.23	-22	52	08.4	0.4+	1-	809
1757		1979	04	22.26669	16	19	35.94	-22	52	08.7	0.4+	1-	809
1757		1979	04	25.27235	16	18	02.29	-22	57	02.5	0.4-	1+	809
1757		1979	04	25.28135	16	18	02.07	-22	57	03.8	0.4-	1+	809
1757		1979	04	25.29035	16	18	01.72	-22	57	05.2	0.4-	1+	809
1757		1979	04	26.25162	16	17	27.95	-22	58	28.2	0.2-	1+	809
1757		1979	04	26.26131	16	17	27.61	-22	58	29.6	0.2-	1+	809
1757		1979	04	26.27101	16	17	27.26	-22	58	30.2	0.2-	1+	809
1757		1979	04	29.39648	16	15	23.94	-23	02	31.5	0.1+	0	809
1757		1979	04	29.40548	16	15	23.55	-23	02	31.7	0.1+	0	809
1757		1979	04	29.41344	16	15	23.24	-23	02	31.6	0.1+	0	809
1757		1979	04	30.33072	16	14	43.91	-23	03	35.4	0.2+	1-	809
1757		1979	04	30.33972	16	14	43.44	-23	03	36.5	0.2+	1-	809
1757		1979	04	30.34907	16	14	43.04	-23	03	36.9	0.2+	1-	809
1979	HK1 *	1979	04	21.27981	16	20	16.36	-23	54	54.5			809
1979	HK1	1979	04	21.28881	16	20	16.07	-23	54	54.9			809
1979	HK1	1979	04	21.29781	16	20	15.84	-23	54	57.7			809
1979	HK1	1979	04	22.25146	16	19	46.20	-23	57	39.7			809
1979	HK1	1979	04	22.25907	16	19	45.92	-23	57	41.2			809
1979	HK1	1979	04	22.26669	16	19	45.64	-23	57	43.2			809
1979	HK1	1979	04	25.27235	16	18	02.27	-24	05	56.2			809
1979	HK1	1979	04	25.28135	16	18	01.93	-24	05	57.4			809
1979	HK1	1979	04	25.29035	16	18	01.64	-24	05	58.5			809
1979	HK1	1979	04	26.25162	16	17	25.34	-24	08	29.7			809
1979	HK1	1979	04	26.26131	16	17	25.09	-24	08	30.7			809
1979	HK1	1979	04	26.27101	16	17	24.61	-24	08	32.1			809
1979	HK1	1979	04	29.39648	16	15	16.60	-24	16	16.6			809
1979	HK1	1979	04	29.40548	16	15	16.14	-24	16	17.2			809
1979	HK1	1979	04	29.41344	16	15	15.82	-24	16	17.8			809
1979	HK1	1979	04	30.33072	16	14	35.66	-24	18	27.3			809
1979	HK1	1979	04	30.33972	16	14	35.28	-24	18	29.6			809
1979	HK1	1979	04	30.34907	16	14	34.75	-24	18	30.3			809

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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, M = B. G. Marsden, P = O. Kippes, U = T. Urata. For further information see MPC 4499.

Planet	B(1,0)	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1959 RJ	13.0	590929	3.28	196.68	159.44	4.95	0.1668	2.6195	20	5	1	B
1974 FD	12.5	740403	261.57	292.74	356.49	10.63	0.0307	2.9763	34	5	3	B
1974 FF	14.5	740403	336.06	234.80	342.17	5.12	0.0842	2.4660	34	5	1	B
1974 FG	13.5	740403	320.79	37.73	205.34	5.90	0.1716	2.3087	34	5	1	B

1974 FJ	14.5	740403	8.75	185.37	352.46	4.85	0.1307	2.3944	34	5	1	B
1974 FN	14.0	740403	265.27	324.34	337.93	3.51	0.1614	2.2280	34	5	1	B
1974 FO	13.5	740403	222.07	342.31	358.27	8.62	0.2086	2.4392	34	4	5	B
1974 HZ	14.0	740423	146.70	40.74	0.29	13.58	0.1077	2.5295	3	4	3	B
1977 QM3	13.5	770914	12.39	1.18	330.74	1.10	0.1208	2.8921	26	3	1	M
1977 RH7	14.5	770914	44.92	286.72	18.22	4.65	0.1933	2.3915	30	4	1	M
1977 SS1	12.5	771024	353.74	4.33	32.52	17.93	0.1195	3.2019	89	6	1	U
1977 TC1	16.0	770914	19.24	115.44	223.81	3.22	0.2100	2.1761	34	9	1	M
1977 TS3	13.0	771024	5.93	262.09	113.56	4.20	0.2444	3.0858	43	5	1	U
1979 HK1		790507	55.33	133.34	43.68	9.03	0.0544	2.6851	9	0		F
1979 YB	15.5	800102	330.72	239.55	266.42	26.37	0.2791	2.1399	54	0		M
1980 DC	12.5	800322	262.81	287.36	349.46	9.37	0.0972	3.0429	61	8		M
1980 ED	12.2	800302	277.61	176.31	76.00	2.14	0.1333	3.1585	63	7	6	E
1980 EF	15.6	800322	338.20	194.13	1.05	9.92	0.1593	2.2849	32	5		E
1980 EG	13.8	800411	83.43	19.66	93.16	14.76	0.1282	2.5801	57	8		E
1980 FB	13.5	800411	314.96	210.89	30.20	1.59	0.1611	3.2717	31	0		M
1980 GA	13.5	800411	10.78	140.38	48.61	25.34	0.2080	2.3760	26	9		M
1980 GB	15.1	800411	7.64	97.16	102.93	8.32	0.1044	2.2740	57	6		E
1980 GC	10.8	800411	36.56	4.85	170.57	22.00	0.0685	5.1587	57	8		E
1980 GD	13.6	800411	122.06	351.33	82.26	14.64	0.1486	2.5852	57	6		E
1980 GF	15.0	800411	330.19	82.99	142.55	1.81	0.1578	2.6199	3	7	2	F
1980 GG	16.0	800411	349.61	120.32	94.60	6.19	0.1968	2.4160	3	8		M
1980 GH	15.5	800411	307.94	193.44	85.07	8.01	0.2540	2.2773	3	8		F
1980 GJ	16.0	800411	327.86	204.03	52.06	14.31	0.2984	3.0003	2	6		F
1980 GK	12.0	800411	203.83	330.93	27.67	4.38	0.1670	3.9265	3	8	2	M
1980 GL	13.5	800411	137.73	36.08	15.85	23.65	0.1191	2.8153	3	8	2	F
1980 GM	15.5	800411	56.83	294.05	180.13	3.60	0.2415	2.5164	3	8	2	F
1980 GN	14.0	800411	346.72	103.55	112.81	0.26	0.1573	3.1457	2	6	2	F
1980 GO	15.0	800411	348.27	83.90	135.50	1.29	0.2752	2.9044	2	6	2	F
1980 GP	17.0	800411	336.17	262.14	345.57	0.36	0.3394	2.4502	3	8		F

Note 1: double designations 1959 RJ = 1959 TC (JC 189/190), 1974 FD = 1974 HK (B), 1974 FF = 1974 HM (B), 1974 FG = 1974 HU (B), 1974 FJ = 1974 HT (B), 1974 FN = 1974 HV (B), 1974 FO = 1974 HL1 (B), 1974 HZ = 1974 HK1 (B), 1977 QM3 = 1977 RP3 (P), 1977 RH7 = 1977 TP7 (P), 1977 SS1 = 1977 YB (U, NOC 1102), 1977 TC1 = 1977 TB5 (P), 1977 TS3 = 1977 VN1 (P), 1977 TS3 = 1977 VN1 = 1977 VQ1 (U, NOC 1101). 2: e assumed. 3 = 1 + 2. 4: the time of the discovery observation of 1974 HL1 was changed to Apr. 24.13485. 5 = 1 + 4. 6: the observation of 1980 ED on Mar. 16.21042 (MPC 5263) is to be discarded.

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ORBITAL ELEMENTS BY L. K. KRISTENSEN, INSTITUTE OF PHYSICS, AARHUS.

(730) Athanasia

The identification (730) = 1929 LA (BZ 11, 53) is invalid.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	150.42721	(1950.0)		P	Q
n	0.29322023	Peri.	122.45148	-0.79369430	+0.60385542
a	2.2439170	Node	94.79992	-0.57993792	-0.71462478
e	0.1769521	Incl.	4.23215	-0.18363377	-0.35308647
P	3.36	B(1,0)	14.8		

Residuals in seconds of arc

120411	045	4.1-	2.1+	120421	045	4.0+	3.3-	120519	024	0.4+	0.6+
120411	045	2.6+	1.1+	120424	045	4.7-	0.4+	490422	024	1.2-	3.8-
120413	045	2.3+	1.4-	120503	045	4.7+	0.1+	490426	012	2.9-	2.7+
120415	045	1.5-	1.0+	120506	045	1.8-	0.8+	690313	095	1.6+	2.8-
120417	045	0.8-	1.6+	120519	024	0.4+	0.4-	690314	095	4.6-	3.9+

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

(1370) Hella
Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	179.45173	(1950.0)		P	Q
n	0.29202965	Peri.	3.02048	+0.62553123	+0.77722446
a	2.2500115	Node	305.71177	-0.71752953	+0.53883436
e	0.1711344	Incl.	4.80860	-0.30636916	+0.32493024
P	3.37	B(1,0)	14.2		

Residuals in seconds of arc

350831	024	1.8+	1.8+	351101	024	0.6-	1.4-	791215	809	2.8-	0.1+
350901	024	1.6+	1.4+	351101	024	2.1-	1.6-	791216	809	0.3+	0.9+
350909	024	2.5+	2.1-	550627	760	0.1-	0.4-	791221	809	0.1-	0.2+
350920	024	2.6-	2.4-	761220	095	0.3+	1.2-				
350924	024	1.1-	3.2+	791213	809	1.8+	0.2+				

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

The following orbital elements are from NOC 1104, 1106, 1111, 1112 and 1113. The identifications are by T. Urata unless otherwise stated.

(2248)* 1933 DE = 1949 BD = 1974 SO4 = 1974 WE = 1975 XX5 = 1977 FY
Discovered 1933 Feb. 27 by K. Reinmuth at Heidelberg.
Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	260.64607	(1950.0)		P	Q
n	0.18086223	Peri.	151.22615	-0.99627382	+0.08477368
a	3.0967357	Node	33.64832	-0.08359403	-0.90385460
e	0.1189728	Incl.	1.64138	-0.02122523	-0.41935697
P	5.45	B(1,0)	13.0		

Residuals in seconds of arc

330227	024	1.3+	1.2+	330413	024	1.3+	1.6-	751204	095	0.0	0.7+
330322	024	3.7-	0.8-	330520	024	1.4-	1.5+	770322	095	0.7+	1.0+
330323	024	1.7+	0.6-	490124	020	(18.8-	8.0+)X	770515	095	0.9-	0.3-
330327	024	0.1-	0.3+	740926	095	1.3-	1.7-	770518	095	0.7+	0.3+
330329	012	1.0-	0.9-	741116	095	1.5+	1.0+				

(2249)* 1942 GA = 1949 OX = 1968 WA = 1971 HY = 1972 RM = 1976 GX5
Discovered 1942 Apr. 6 by K. Reinmuth at Heidelberg.
Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	241.91292	(1950.0)		P	Q
n	0.17389876	Peri.	111.82475	-0.17997842	+0.98292950
a	3.1788624	Node	147.73284	-0.92681062	-0.15644374
e	0.1024834	Incl.	4.10057	-0.32959039	-0.09682435
P	5.67	B(1,0)	12.0		

Residuals in seconds of arc

420406	024	1.5+	0.7+	681130	095	1.5-	3.7-	710615	095	3.0-	5.9-
420411	024	0.6-	1.3-	681130	095	0.6-	1.1-	720907	095	1.5-	0.6+
420413	024	1.0-	0.4+	681222	095	3.9+	3.3+	760402	095	0.9-	6.4+
490728	024	1.9-	1.3+	710428	095	1.3+	3.0+				
490730	024	0.1-	3.1+	710612	095	3.9+	2.9-				

(2250)* 1972 HN = 1951 UL = 1968 UK
Discovered 1972 Apr. 18 by T. Smirnova at the Crimean Astrophysical Observatory. The identifications are by H. Oishi (contrary to the implication on MPC 5038).

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M 110.02582		(1950.0)	P	Q
n 0.17501161	Peri.	173.42079	+0.87569419	+0.48276269
a 3.1653724	Node	157.70466	-0.44419143	+0.81349965
e 0.2044301	Incl.	1.50945	-0.18935061	+0.32428152
P 5.63	B(1,0)	12.5		

Residuals in seconds of arc

511026 020(67.1+	45.7+)X	720512 095	1.3-	1.1-	791014 885	0.9+	2.8+
681022 095	0.5+	2.3-	770315 381	0.9+	0.5+	791020 879	1.4-	0.6-
681026 095	0.6-	1.9-	770315 381	0.1-	1.7+	791020 879	0.6-	1.0-
720418 095	0.9-	1.2-	791014 885	0.4+	2.4+	791111 879	0.3-	1.4-
720509 095	1.2+	1.3-	791014 885	0.4+	1.2+	791111 879	0.4-	1.1-

(2251)* 1977 SU1 = 1950 SS = 1955 XV = 1975 ED5 = 1976 ND

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

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M 266.94067		(1950.0)	P	Q
n 0.22099983	Peri.	182.71548	+0.96356269	-0.26593908
a 2.7094102	Node	192.81794	+0.24777203	+0.92782463
e 0.1490644	Incl.	7.43128	+0.10077675	+0.26156808
P 4.46	B(1,0)	12.8		

Residuals in seconds of arc

500917 711	1.8-	3.3- Y	750315 095	2.9-	1.2-	771007 095	0.1-	1.1-
501006 711	0.3-	3.7+ Y	750317 095	0.2-	2.1+	771013 095	2.1-	1.1+
551206 020(31.9+	9.7+)	760701 095	3.0+	0.1-	771017 095	1.5-	1.1-	
551212 760	0.7-	0.8-	770919 095	1.2+	0.7-			
551212 760	3.7+	0.8+	770922 095	2.3+	0.4-			

(2252)* 1978 VT = 1949 YX = 1950 BR = 1961 VO = 1969 RF1 = 1971 BV1 = 1975 AA1 = 1976 GB5

Discovered 1978 Nov. 1 by K. Tomita at Caussols. The identifications 1978 VT = 1950 BR = 1961 VO are by C. M. Bardwell.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M 205.99659		(1950.0)	P	Q
n 0.23294276	Peri.	25.19256	+0.91841057	-0.39562111
a 2.6159930	Node	358.10706	+0.34930206	+0.81374949
e 0.0723915	Incl.	4.23723	+0.18576891	+0.42578833
P 4.23	B(1,0)	13.0		

Residuals in seconds of arc

491228 760	0.1-	0.2+	750109 330	1.6+	1.1+	800209 879	1.0+	0.1+
491228 760	1.6-	0.3-	760402 095	0.0	1.9-	800209 879	2.4+	2.0+
500128 760	1.1+	0.3+	781030 010	0.4-	0.1-	800209 879	0.3-	0.0
500128 760	0.6-	0.2+	781101 010	0.2+	0.0	800209 387	4.8-	2.6-
611110 760	0.8+	0.7-	781101 010	1.1-	0.5-	800209 387	3.1-	4.4-
611110 760	0.5-	0.5+	781102 010	0.6-	0.3-	800219 801	3.3+	1.6+
690913 095	1.3+	1.8-	781102 010	0.3+	1.2-	800222 801	0.2+	0.5+
710130 095	1.7+	0.6+	800125 801	1.5-	1.3+	800310 801	(0.2+	1.8-)

1953 TG2 = 1977 VY

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M 233.19230		(1950.0)	P	Q
n 0.20627005	Peri.	359.33337	+0.85831317	-0.51268674
a 2.8369081	Node	31.53836	+0.47094865	+0.77065885
e 0.0794390	Incl.	2.32637	+0.20372990	+0.37846695
P 4.78	B(1,0)	14.0		

Residuals in seconds of arc

531010	760	2.2-	1.2-		771010	095	0.1+	0.5+		771109	026	0.5-	0.2+
531010	760	1.5-	1.7+		771013	095	0.2+	2.1+		771110	026	0.4-	0.3-
531015	760	1.4+	2.4-		771103	026	0.3-	1.3-		771110	026	0.4-	0.1+
531015	760	2.6+	0.7+		771103	026	0.2-	1.1-		771110	026	0.8+	0.1-
531030	760	2.2+	0.1+		771105	026	1.1-	1.3+		771205	026	(1.3+	1.9-)
531030	760	2.5-	0.9+		771108	026	0.8+	0.6-					
770911	095	0.0	0.7-		771108	026	0.8+	0.1+					

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

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

(2253)* 1932 PB = 1939 RJ = 1953 VB1 = 1970 PM = 1977 TG

Discovered 1932 July 30 by G. Van Biesbroeck at the Yerkes Observatory. The identification 1977 TG = 1970 PM is by E. Bowell.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	2.54866		(1950.0)	P	Q
n	0.28552633	Peri.	175.35953	+0.75421297	+0.65540268
a	2.2840482	Node	143.58753	-0.60457162	+0.71696696
e	0.2777450	Incl.	3.87610	-0.25623418	+0.23749884
P	3.45	B(1,0)	14.5		

Residuals in seconds of arc

320730	754	(11.7+	5.4-)		531105	760	2.6+	0.8+		770825	095	2.3+	1.3+
320731	078	(5.1+	0.6+)Y		531116	760	2.0-	1.3-		770906	095	1.1+	1.2+
320803	754	0.9-	0.1-		531116	760	2.5-	1.4-		770908	095	0.0	0.1-
320804	094	(4.0-	5.7+)		700808	095	1.0+	1.9-		770910	095	0.0	0.4-
320805	094	0.4-	0.1+		700809	095	1.3-	0.0		770918	095	0.6+	0.8-
320806	754	0.6-	0.9-		700829	095	1.9+	0.5+		770922	095	0.3-	0.2-
320809	754	0.2+	1.5-		770819	095	2.7-	0.6+		771007	095	0.4-	1.5-
320810	094	1.0+	1.6+		770820	095	1.0-	0.7+		771009	805	0.1-	0.4-
390909	094	(51.8-	28.8-)X		770822	095	0.4+	0.1+		771011	805	1.8-	0.5+
390913	094	(3.3+	1.8-)		770823	095	0.8+	1.4+		771011	095	1.9-	1.0-
390917	094	(0.7+	9.9-)		770824	095	0.2+	0.5-		771013	095	2.5-	0.3-
531105	760	4.0+	0.9+		770824	095	1.6+	0.6+		771017	095	0.8-	0.7+

(2254)* 1977 QJ1 = 1959 RG = 1959 RR = 1966 PF = 1972 GS = 1976 JQ

Discovered 1977 Aug. 19 by N. S. Chernykh at the Crimean Astrophysical Observatory. The double designation 1959 RG = 1959 RR is by O. Kippes (MPC 2015).

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	326.75983		(1950.0)	P	Q
n	0.27498171	Peri.	23.89049	+0.99891824	-0.03265942
a	2.3420716	Node	337.90460	+0.01322298	+0.88195749
e	0.1501735	Incl.	5.04860	+0.04458136	+0.47019606
P	3.58	B(1,0)	14.0		

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

590901	024	0.1+	1.1-		720409	095	2.4+	3.3+		770822	095	0.9+	0.3-
590907	760	(0.04-	0.01+)X		760502	095	1.3-	0.9-		770824	095	0.3+	0.9-
660814	095	0.5+	0.4-		770819	095	1.4-	1.1-		770912	095	0.8+	1.3+
660822	095	0.4-	2.2+		770820	095	0.5-	0.7+		770919	095	0.8-	1.9+

(2255)* 1977 VK1 = 1977 VE = 1950 XB = 1973 AP2

Discovered 1977 Nov. 3 at the Purple Mountain Observatory. The double designation 1977 VK1 = 1977 VE was found independently by T. Urata (NOC 1101) and by O. Kippes.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5
M 202.99641 (1950.0) P Q
n 0.18078656 Peri. 350.35364 +0.85197658 -0.49837817
a 3.0975997 Node 40.85050 +0.49522656 +0.66755399
e 0.1539106 Incl. 14.20284 +0.16996043 +0.55316441
P 5.45 B(1,0) 12.5
Residuals in seconds of arc

501212 012	1.1-	2.3+	771008 095	1.8-	0.3+	771111 330	0.2+	0.9+
730102 095	0.2+	1.0-	771103 330	1.5+	1.2-	771112 801	0.5-	0.2+
730103 095	0.6+	0.9-	771104 330	0.8+	0.9-	800415 046	2.0-	1.0+
770923 095	0.0	0.2-	771108 330	0.6+	0.1+	800415 046	1.8+	1.4-

(2256)* 4519 P-L = 1965 OH = 1970 LP = 1971 UA2 = 1980 FF

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels. The key identification 4519 P-L = 1980 FF is by E. Bowell.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5
M 293.54536 (1950.0) P Q
n 0.18026391 Peri. 195.31792 +0.64776419 +0.76180496
a 3.1035841 Node 115.05593 -0.69807959 +0.59741227
e 0.1606802 Incl. 0.46803 -0.30510070 +0.25050303
P 5.47 B(1,0) 13.1
Residuals in seconds of arc

600924 675	0.1-	1.9-	601022 675	0.9+	0.6-	711021 095	(4.4+	45.2-)
600926 675	0.3-	1.1-	601024 675	1.1+	0.8+	800316 046	0.9+	2.1-
600927 675	0.3+	0.5-	601026 675	1.3+	1.5-	800316 046	2.9-	0.7-
600928 675	0.4-	0.1-	650726 095	2.0+	2.5+	800317 046	0.4+	1.5-
601017 675	0.3-	1.4+	650801 095	1.8-	3.2-	800317 046	0.4-	0.3-
601017 675	0.9-	0.2-	700610 095	0.0	0.2-			

1969 TQ4 = 1976 QQ = 1976 SU

The identifications are by T. Urata (NOC 1060).

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5 (J-P)
M 28.24132 (1950.0) P Q
n 0.27045436 Peri. 210.14665 +0.90831372 -0.41823641
a 2.3681412 Node 174.56382 +0.39645112 +0.85569627
e 0.1295627 Incl. 4.03791 +0.13338927 +0.30473300
P 3.64 B(1,0) 15.0
Residuals in seconds of arc

691013 095	1.2+	1.0+	691111 095	0.6-	1.6-	760924 095	0.1+	0.7+
691016 095	0.9-	1.9+	691113 095	1.3+	0.8-			
691104 095	1.0-	0.7-	760826 095	0.1+	1.0-			

1969 VW = 1976 YQ3

The identification is by H. Oishi (NOC 1094).

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5 (J-P)
M 160.72253 (1950.0) P Q
n 0.29344619 Peri. 189.69801 +0.95368268 +0.29905616
a 2.2427693 Node 152.83261 -0.27099184 +0.90098110
e 0.1605027 Incl. 4.07884 -0.13058621 +0.31432223
P 3.36 B(1,0) 14.5
Residuals in seconds of arc

691111 095	0.3+	0.7+	691115 095	0.5+	0.3-	761220 095	1.0-	1.0+
691113 095	0.8-	0.6-	761216 095	0.2+	0.3+	770113 095	0.9+	1.2-

1978 GB
Epoch 1980 Dec. 27.0 ET = JDE 2444600.5 (J-P)

M	184.98347	(1950.0)	P	Q
n	0.35399341	Peri. 208.58090	+0.97349616	-0.09864969
a	1.9791261	Node 154.43048	+0.09102156	+0.99477829
e	0.0460538	Incl. 28.55875	-0.20981013	-0.02616089
P	2.78	B(1,0) 15.0		

From 12 observations 1978 Apr. 11-Sept. 5, mean residual 1".9.

1979 MH = 1969 TH = 1972 LS = 1976 WF

The key identification 1979 MH = 1969 TH is by E. Bowell.

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

M	94.63069	(1950.0)	P	Q
n	0.28337164	Peri. 153.21588	+0.98418530	+0.17418532
a	2.2956164	Node 196.84623	-0.17581720	+0.93831051
e	0.1704445	Incl. 6.38521	-0.02162403	+0.29871868
P	3.48	B(1,0) 14.5		

Residuals in seconds of arc

691007	095	0.1+	2.1+	761126	026	1.6-	2.8-	790617	809	0.6+	0.4+
691016	095	0.4-	0.4+	761126	026	1.2+	0.6-	790618	809	0.2-	0.4-
720606	095	0.7-	1.0-	790616	809	0.4-	0.0	790721	809	0.7+	0.3-

1980 CF = 1972 XN2 = 1976 OE

The identification 1980 CF = 1972 XN2 was found by E. Bowell. The identification 1980 CF = 1976 OE was found by C. M. Bardwell.

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

M	33.88638	(1950.0)	P	Q
n	0.17862723	Peri. 36.29228	-0.99802655	+0.04381143
a	3.1225194	Node 146.13466	-0.05638938	-0.94049857
e	0.0881376	Incl. 4.63030	+0.02762679	-0.33696142
P	5.52	B(1,0) 12.5		

Residuals in seconds of arc

721202	095	1.7-	2.5-	800313	688	0.7+	0.5-	800321	688	0.6+	0.9-
721206	095	2.3+	2.9+	800314	688	0.9+	1.3+	800414	688	1.0+	1.4-
760727	095	0.2+	0.7+	800314	688	0.4-	1.0-	800420	801	0.1+	2.3+
800211	688	0.4+	0.7+	800316	688	0.5+	1.6-	800508	688	0.9+	0.4+
800211	688	1.6-	1.1-	800316	688	0.2-	1.3-				
800313	688	0.3-	0.4-	800321	688	0.1+	0.6-				

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

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

(2257)* 1939 QB = 1943 TD

Discovered 1939 Aug. 18 by H. Alikoski at Turku.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	177.73528	(1950.0)	P	Q
n	0.25076550	Peri. 126.53712	+0.99745456	-0.00810271
a	2.4905248	Node 234.03310	-0.01719013	+0.93689410
e	0.2370707	Incl. 5.02154	+0.06920193	+0.34951936
P	3.93	B(1,0) 14.3		

Residuals in seconds of arc

390818	062	2.0-	0.4+	391018	062	1.7-	1.4-	800113	801	0.9+	1.2-
390916	062	0.8+	1.6-	431005	062	0.6-	1.1+	800213	801	0.7-	0.8+
390920	062	2.2+	0.0	431005	062	0.5-	0.6+				
391007	062	1.2-	0.3-	791218	801	0.1-	0.4+				

(2258)* 1939 TA = 1950 DU = 1956 PG = 1969 ON = 1970 RS = 1972 BK = 1979 UU

Discovered 1939 Oct. 7 by Y. Vaisala at Turku.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	22.36527	(1950.0)		P	Q
n	0.22287160	Peri.	173.51416	-0.51630846	-0.85615746
a	2.6942190	Node	307.56880	+0.78452888	-0.46324581
e	0.0797411	Incl.	1.48155	+0.34342393	-0.22890548
P	4.42	B(1,0)	13.0		

Residuals in seconds of arc

391007	062	1.7-	1.9+	560902	839	0.6+	0.2+	791020	046	0.8+	1.1-
391017	062	1.4+	5.1-	690717	095	2.2-	0.3-	791023	046	3.3-	6.0+
391018	062	1.0+	1.6-	700913	095	0.4+	1.7-	791023	046	3.8+	3.3+
391111	062	0.9+	0.8+	720120	095	0.8+	0.9-	791025	046	2.5-	1.5+
391111	062	0.3-	0.3-	791019	046	0.0	0.8-	791025	046	2.1-	0.8-
500221	012	0.6-	0.1+	791019	046	1.0+	1.6-	791125	046	0.3+	1.0-
560801	839	0.9+	0.6+	791020	046	0.0	0.6+	791125	046	0.3+	0.6-
560811	839	0.8+	1.0+								

(2259)* 1971 OG = 1956 AF = 1970 CJ = 1972 YC = 1972 YN1 = 1975 WE1

Discovered 1971 July 19 by B. Burnasheva at the Crimean Astrophysical Observatory.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	266.62304	(1950.0)		P	Q
n	0.28358085	Peri.	11.09138	+0.35884289	+0.92992786
a	2.2944827	Node	279.97661	-0.86246188	+0.29739678
e	0.1858518	Incl.	4.68317	-0.35691914	+0.21630842
P	3.48	B(1,0)	14.0		

Residuals in seconds of arc

560113	760	1.5+	4.0+	710719	095	2.1-	2.0+	721229	029	1.0-	0.2-
560113	760	0.5+	2.3+	710725	095	2.9-	0.3-	721230	095	1.8+	1.3+
700211	805	0.5-	1.1-	710818	095	4.1+	1.9+	751124	330	0.1-	0.9-
700211	805	(0.3-	3.8+)	710820	095	0.1-	0.2-	800211	801	0.9-	0.7-
700211	805	0.0	1.1-	721229	029	0.2-	0.4-	800311	801	0.6+	1.0+

(2260)* 1975 WM1 = 1951 XK

Discovered 1975 Nov. 26 at the Purple Mountain Observatory.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	186.22296	(1950.0)		P	Q
n	0.08330675	Peri.	321.36305	+0.64857296	-0.69757872
a	5.1921744	Node	85.92540	+0.75190123	+0.52498901
e	0.0427045	Incl.	17.77617	+0.11831170	+0.48761713
P	11.83	B(1,0)	10.0		

Residuals in seconds of arc

511205	711	0.8+	0.1-	751211	330	1.3+	0.6-	800416	688	1.3-	0.5-
511205	711	0.4+	0.5+	751222	330	0.8+	0.2+	800417	801	1.6-	1.9+
511223	711	0.2+	0.0	751229	330	1.3-	0.3-	800418	801	1.2-	1.6+
511223	711	0.8-	1.0-	800312	801	0.3+	1.9+	800419	688	1.1+	1.0-
751126	330	2.3+	0.0	800314	688	1.5+	2.0-	800510	688	0.4+	1.4-
751129	330	1.3-	1.0+	800414	688	0.7+	0.5-				
751202	330	1.3-	0.2-	800415	688	1.0+	0.6-				

(2261)* 1977 HC

Discovered 1977 Apr. 20 by A. R. Klemola at the Lick Observatory.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	0.40887		(1950.0)		P		Q				
n	0.26882354	Peri.	99.42821		-0.85351694		+0.35931172				
a	2.3777044	Node	102.39452		-0.47761162		-0.82901432				
e	0.2380369	Incl.	22.72879		+0.20831700		-0.42852110				
P	3.67	B(1,0)	14.0								

Residuals in seconds of arc

770420	662	4.5-	0.3+	Y	770423	662	5.3+	3.3-	791121	801	1.0+	1.1-
770420	662	1.1+	2.0+	Y	770514	662	1.4-	0.4+	791212	801	0.1+	0.5-
770421	662	2.5-	1.6+		770616	662	1.1-	0.4+	800113	801	0.9-	0.5-
770421	662	1.6-	1.7+		770819	801	1.7-	1.9-	800213	801	0.2+	0.8+
770423	662	4.5+	2.7-		780927	809	0.0	0.7+				

(2262)* 1978 RB = 1949 UB = 1974 TL

Discovered 1978 Sept. 10 by P. Wild at Zimmerwald.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	191.01184		(1950.0)		P		Q				
n	0.23656159	Peri.	350.74141		+0.98756906		+0.15718314				
a	2.5892455	Node	0.22122		-0.12616211		+0.78981552				
e	0.2812342	Incl.	13.45561		-0.09508833		+0.59286162				
P	4.17	B(1,0)	13.5								

Residuals in seconds of arc

491022	024	1.6+	2.1-		780924	026	0.4+	0.4+	781119	026	1.5+	2.2+
491025	024	(3.9+ | 10.4-)		780925	026	1.0-	0.6-	781124	026	0.3-	0.3+
741010	095	(18.6+ | 6.1-)		781001	026	0.8-	2.6+	781230	801	0.0	0.6-
780910	026	2.7+	2.0-		781001	026	0.6-	1.9+	790118	801	0.3+	0.4+
780913	026	0.6-	0.8+		781008	026	1.5-	1.0+	791219	801	0.5-	0.4+
780913	026	0.7+	0.1+		781027	026	3.8-	2.4-	800113	801	0.7+	0.8-
780916	026	0.3+	1.5-		781027	026	1.7-	0.1+	800216	801	0.3-	0.7+
780921	026	1.4+	0.4-									

(2263)* 1978 UW1 = 1969 AE = 1973 YT1

Discovered 1978 Oct. 30 at the Purple Mountain Observatory.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	177.96721		(1950.0)		P		Q				
n	0.18764493	Peri.	316.05854		+0.97265680		-0.16779696				
a	3.0216547	Node	54.27309		+0.22649291		+0.83827434				
e	0.1089257	Incl.	11.40796		-0.05137817		+0.51878734				
P	5.25	B(1,0)	12.5								

Residuals in seconds of arc

690115	095	0.2-	0.7+		781103	330	0.8+	0.4-	781130	330	1.1-	2.0-
731220	095	0.5+	0.3+		781107	330	0.9+	0.7+	800214	801	0.8+	0.5-
731221	095	0.3+	2.0-		781127	330	0.1+	0.8-	800313	801	0.6-	1.2-
781030	330	0.6-	0.7+									

(2264)* 1979 YK = 1933 SU = 1939 VJ = 1944 RJ = 1949 MW = 1966 QK = 1966 RP = 1972 TL7 = 1975 ED2 = 1976 JT1 = 1978 WY4

Discovered 1979 Dec. 16 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory. The key identification 1979 YK = 1966 RP is by E. Bowell. The double designation 1966 QK = 1966 RP is by O. Kippes.

Epoch 1980 Dec. 27.0 ET = JDE 2444600.5

M	229.76865		(1950.0)		P		Q				
n	0.17697207	Peri.	63.32832		+0.67373975		+0.73896495				
a	3.1419521	Node	249.02825		-0.67885104		+0.61766606				
e	0.1635781	Incl.	0.14455		-0.29195205		+0.26910861				
P	5.57	B(1,0)	12.0								

Residuals in seconds of arc

330920 094	1.3-	5.1+	660822 095	0.6+	2.4+	760502 095	1.0+	0.7-
330925 094	0.0	1.1+	660914 020	1.5+	4.0-	781129 675	2.7-	0.3-
391107 012	1.5+	0.7+	660914 020	0.4+	1.3-	781130 675	2.0-	0.4+
391203 012	1.0+	1.5-	660919 020	0.7-	3.3-	791216 688	1.1+	1.1-
391205 012	0.8-	2.0+	721006 095	0.5-	0.4-	800122 688	2.3-	1.5-
440915 062	2.3-	0.6-	721013 095	4.9+	1.6+	800211 688	0.0	1.3-
440915 062	0.2-	0.6-	750308 095	2.7-	0.4+	800211 688	1.0+	0.3+
490623 094	(13.5+	12.1-)X	750317 095	3.4+	4.1+	800305 688	0.3+	1.7-
660820 095	0.4-	0.5+						

1936 EA = 1961 TF = 1965 WQ = 1965 WW = 1968 QM1

The identification 1936 EA = 1965 WQ was found independently by O. Kippes.

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

M 326.12616		(1950.0)	P	Q
n 0.26125743	Peri.	222.82931	-0.47033561	-0.88026553
a 2.4233965	Node	255.31627	+0.82612079	-0.41424551
e 0.2245933	Incl.	3.70958	+0.31033667	-0.23137256
P 3.77	B(1,0)	14.0		

Residuals in seconds of arc

360217 012	0.3-	2.6+	360323 012	3.9+	2.9+	651120 760	0.0	0.1+
360220 012	0.3-	1.5+	360324 012	(4.6+	56.5-)	651120 330	0.3-	1.8-
360224 012	3.2-	4.3+	360325 012	(2.2+	7.9+)	651125 330	0.7-	1.2-
360312 012	(9.7-	1.4-)	360327 012	3.3+	1.7+	651128 330	1.2-	0.8+
360316 012	0.8+	4.0-	611006 760	1.6-	3.4+	651213 330	0.2-	1.3-
360317 012	3.0-	3.8-	611006 760	1.1+	2.2+	651218 330	2.8+	2.3-
360319 012	1.1-	1.0-	651120 760	0.3-	0.4+	680828 095	0.5-	0.2-
360321 012	2.8+	1.2-						

1942 RZ = 1939 XE = 1955 SF1 = 1955 UO = 1965 YE = 1971 OE1

The key identification 1942 RZ = 1955 UO is by E. Bowell. The double designation 1955 SF1 = 1955 UM (NAZ 12, 23) is invalid.

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

M 289.91894		(1950.0)	P	Q
n 0.30444100	Peri.	150.89834	+0.98590437	-0.16421838
a 2.1884409	Node	218.59522	+0.14184740	+0.92188774
e 0.1485502	Incl.	2.94170	+0.08872367	+0.35093491
P 3.24	B(1,0)	14.7		

Residuals in seconds of arc

391208 020	(17.4+	14.9-)X	421011 062	1.2+	1.1+	551110 760	0.9+	0.7-
420908 062	1.3-	1.4+	550918 760	(35.2+	10.4-)X	651219 330	0.1-	1.7-
420914 062	1.6-	1.2+	551020 760	0.2+	0.7-	710728 095	1.8-	1.2+
421003 062	0.2+	0.4-	551020 760	0.2+	0.1-	710801 095	1.5+	0.7-
421003 062	0.7-	0.6+	551110 760	0.6+	0.9-	710802 095	0.5+	4.1-

1943 EP = 1952 HS3 = 1954 UK2 = 1973 GT

The identification 1943 EP = 1973 GT is by E. Bowell.

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

M 307.62178		(1950.0)	P	Q
n 0.22893095	Peri.	98.51433	-0.73407287	-0.66596550
a 2.6464716	Node	39.88704	+0.51254243	-0.67161770
e 0.1338708	Incl.	11.94865	+0.44546298	-0.32468386
P 4.31	B(1,0)	13.0		

Residuals in seconds of arc

430303	062	1.6-	2.9+		520427	711	4.4-	6.6-		541116	760	0.7-	1.1-
430308	062	1.0+	0.8+		520428	711	5.1+	0.2-		541117	760	0.3+	1.2-
430311	062	1.2+	0.5+		541028	760	2.7+	0.8-		541117	760	0.4+	1.9-
430327	062	1.7+	0.6-		541028	760	3.6+	4.3-		730401	095	1.0-	3.5-
520427	711	6.9-	5.0-		541116	760	0.2+	1.7-		730404	095	0.8-	0.2-

1968 HK1 = 1975 GB

The identification is by E. Bowell (MPC 4780).

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

M	209.15228		(1950.0)	P	Q
n	0.27726450	Peri.	51.36940	-0.85509146	+0.51702311
a	2.3292033	Node	159.67257	-0.50360413	-0.81043564
e	0.1970399	Incl.	6.41342	-0.12329426	-0.27546536
P	3.55	B(1,0)	15.0		

Residuals in seconds of arc

680427	095	1.5-	0.4+		750406	414	0.9+	0.7-		750407	414	1.1-	0.6-
680428	095	2.3+	0.1-		750407	414	0.0	0.7+		790723	801	0.6+	0.9-
680526	095	1.3-	0.6-		750407	414	0.9-	0.7+		790726	801	0.8-	0.2-
750406	414	0.1-	0.1+		750407	414	0.1-	0.2-					

1975 NY = 1954 WD

The identification is by E. Bowell.

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

M	359.80155		(1950.0)	P	Q
n	0.17944581	Peri.	238.15671	+0.41140453	+0.91108426
a	3.1130161	Node	56.15799	-0.82529928	+0.38443502
e	0.1484893	Incl.	1.78825	-0.38681703	+0.14877897
P	5.49	B(1,0)	13.0		

Residuals in seconds of arc

541116	760	0.7-	0.8+		750711	095	0.6+	0.7+		750831	808	0.4+	3.1+
541116	760	0.8-	1.5-		750713	095	1.0+	1.0+		750902	808	5.4+	1.8+
541117	760	0.8+	0.0		750830	808	1.4+	1.5+		750902	808	1.5+	0.6+
541117	760	1.3+	0.9-		750830	808	2.5+	1.2+		750905	808	0.4+	1.0+

1975 TU2 = 1939 EL = 1956 ES = 1969 EW

The key identification 1975 TU2 = 1969 EW was found by T. Urata (NOC 1051) and also independently by E. Bowell.

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

M	235.88942		(1950.0)	P	Q
n	0.22992728	Peri.	78.44499	-0.77436596	+0.62892301
a	2.6388209	Node	140.46976	-0.61465989	-0.72168341
e	0.0673566	Incl.	6.25771	-0.15016850	-0.28918661
P	4.29	B(1,0)	14.0		

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

390314	062	0.0	3.8-		690312	095	2.3+	3.1+		751013	095	1.6-	0.6+
390318	062	2.8-	2.1-		690323	095	0.3+	2.9+		751106	095	1.2+	2.7-
560309	760(0.00+	0.03+)X			751003	095	0.5-	2.0+					

1976 JF2 = 1939 HD = 1973 YC3

The key identification 1976 JF2 = 1973 YC3 is by T. Urata (NOC 1067).

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

M	204.90560		(1950.0)	P	Q
n	0.18688666	Peri.	266.62074	+0.96339912	+0.19304422
a	3.0298284	Node	82.18812	-0.10127575	+0.90452590
e	0.1117782	Incl.	10.82107	-0.24820427	+0.38021943
P	5.27	B(1,0)	12.0		

Residuals in seconds of arc

390420	024	0.9-	1.6-	760422	808	0.5+	0.4+	760502	095	1.8-	0.6+
731225	095	0.1-	0.3+	760422	808	0.4+	0.7+	760525	095	0.8-	0.2-
760406	808	0.3+	0.2+	760426	808	0.7+	0.8+	760530	095	2.1+	0.3-
760406	808	0.6-	0.0	760426	808	0.1+	0.5+				

1980 CK = 1959 JO = 1975 JK
Epoch 1980 Dec. 27.0 ET = JDE 2444600.5 (J-P)

M	46.06921		(1950.0)	P	Q
n	0.18482580	Peri.	317.17992	-0.98642692	-0.13485366
a	3.0523092	Node	215.39327	+0.15563682	-0.94972195
e	0.2989209	Incl.	9.30841	-0.05233646	-0.28256451
P	5.33	B(1,0)	13.0		

Residuals in seconds of arc

590508	760	0.6-	1.0+	750511	808	2.8+	2.1+	800310	801	2.1-	1.0+
590508	760	0.3+	2.5-	800213	801	0.8-	0.2-	800320	801	0.2-	0.2-
750507	808	0.5-	0.6+	800214	801	1.2+	0.8+	800414	801	0.5+	0.3+
750507	808	2.0-	0.1-	800216	801	2.0+	0.3-				
750511	808	0.1-	1.5-	800218	801	0.7-	1.3-				

* * * * *

NEW NAMES OF MINOR PLANETS.

(1655) Comas Sola = 1929 WG

Discovered 1929 Nov. 28 by J. Comas Sola at Barcelona.

Named by the Fabra Observatory in memory of Josep Comas Sola (1868-1937), first director of the Fabra Observatory, Barcelona, and a well-known observer of minor planets and comets for many years. Among his discoveries were the short-period comet Comas Sola and 11 numbered minor planets.

(1708) Polit = 1929 XA

Discovered 1929 Nov. 30 by J. Comas Sola at Barcelona.

Named in memory of Isidre Polit (1880-1958), second director of the astronomical section of the Fabra Observatory and an assiduous observer of minor planets and comets.

(1735) ITA = 1948 RJ1

Discovered 1948 Sept. 10 by P. F. Shajn at Simeis.

Named in 1979 on the occasion of the 60th anniversary of the founding of the Institute for Theoretical Astronomy, U.S.S.R. Academy of Sciences.

(1752) van Herk = 1930 OK

Discovered 1930 July 22 by H. van Gent at Johannesburg.

Named in honor of G. van Herk, former staff member of the Leiden Observatory and a well-known authority on astrometry. Name proposed by the Leiden Observatory.

(1753) Mieke = 1934 JM

Discovered 1934 May 10 by H. van Gent at Johannesburg.

Named in honor of the wife of former director of the Leiden Observatory Jan Oort. Name proposed by the Leiden Observatory.

(1783) Albitskij = 1935 FJ

Discovered 1935 Mar. 24 by G. Neujmin at Simeis.

Named in memory of Vladimir Aleksandrovich Albitskij (1891-1952), head of the Simeis department of the Pulkovo Observatory from 1934 onward. He discovered ten numbered minor planets and is well known for his research on radial velocities and variable stars.

(1954) Kukarkin = 1952 PH
Discovered 1952 Aug. 15 by P. F. Shajn at Simeis.
Named in memory of Boris Vasil'evich Kukarkin (1909-1977), professor of stellar astronomy and astrometry at Moscow State University for many years and a prominent specialist in the fields of variable stars and the structure of stellar systems. He was the initiator and one of the compilers of the "General Catalogue of Variable Stars", served as Vice President of the Astronomical Council of the U.S.S.R. Academy of Sciences from 1947 to 1960, as Vice President of the IAU from 1955 to 1961 and as President of IAU Commission 27 from 1951 to 1958.

(1973) Colocolo = 1968 OA
Discovered 1968 July 18 by C. Torres on exposures by S. Cofre and himself at the University of Chile, Cerro El Roble Station.
Named for the old and wise Araucanian chief who succeeded in unifying the Araucanian Indian tribes against the Spanish conquerors.

(1974) Caupolican = 1968 OE
Discovered 1968 July 18 by C. Torres on exposures by S. Cofre and himself at the University of Chile, Cerro El Roble Station.
Named for the Great Chief of the unified Araucanian tribes. He was selected after winning a competition in which a trunk had to be carried on the shoulders for as long as possible; he carried it for three days and nights.

(1984) Fedynskij = 1926 TN
Discovered 1926 Oct. 10 by S. I. Belyavskij at Simeis.
Named in memory of Vsevolod Vladimirovich Fedynskij (1908-1978), an outstanding expert in reconnaissance geophysics, physics of the earth and meteor astronomy, a capable organizer of scientific research, Vice President of the Committee on Meteorites of the U.S.S.R. Academy of Sciences, President of IAU Commission 22 (1958-1964), and an honorary member and Vice President of the All-Union Astronomy and Geodesy Association.

(1987) Kaplan = 1952 RH
Discovered 1952 Sept. 11 by P. F. Shajn at Simeis.
Named in memory of Samuil Aronovich Kaplan (1921-1978), head of the astrophysics department at the Lvov Observatory from 1948 to 1961 and subsequently a staff member of the Scientific Research Radiophysics Institute in Gorkij. He contributed extensively to a wide range of astrophysical topics, including white dwarfs, interstellar matter, radiative transfer, solar radiation, pulsars and galactic nuclei.

(1992) Galvarino = 1968 OD
Discovered 1968 July 18 by C. Torres on exposures by S. Cofre and himself at the University of Chile, Cerro El Roble Station.
Named for the heroic Araucanian chief condemned by the Spanish soldiers to have his hands cut off and then to be freed as a living lesson to other Indians. Since his request for death was not granted, he promised revenge. He continued to fight the conquerors until recaptured and condemned to the gallows.

(1993) Guacolda = 1968 OH1
Discovered 1968 July 25 by H. Wroblewski on exposures by G. Plouguin and I. Belyaiev at the University of Chile, Cerro El Roble Station.
Named for the beautiful and heroic wife of the Araucanian chief Lautaro, formerly a servant in a Spanish home. She accompanied her husband in battle, fighting side by side with him.

(2013) Tucapel = 1971 UH4
Discovered 1971 Oct. 22 by C. Torres on exposures by J. Petit at the University of Chile, Cerro El Roble Station.
Named for one of the brave Araucanian chiefs who, with his wife Gualeva, victoriously entered the city of Imperial. He died in 1560, fighting against the Spanish soldiers.

(2028) Janequeo = 1968 OB1
Discovered 1968 July 18 by C. Torres on exposures by S. Cofre and himself at the University of Chile, Cerro El Roble Station.
Named for the wife of the Araucanian chief Guepotan. After her husband's death in battle, she took command and won. Later, she brought together Indians from various tribes and commanded them successfully in several further battles.

(2033) Basilea = 1973 CA
Discovered 1973 Feb. 6 by P. Wild at Zimmerwald.
Named for the old city of Basel and the 50th anniversary of the Astronomical Institute at Basel University.

(2034) Bernoulli = 1973 EE
Discovered 1973 Mar. 5 by P. Wild at Zimmerwald.
Named for the great dynasty of mathematicians of Basel, notably Jakob (1654-1705), founder of the calculus of variations; Johann (1667-1748), contributor to integral calculus and the teacher of Euler; and Daniel (1700-1782), cofounder of hydrodynamics.

(2037) Tripaxeptalis = 1973 UB
Discovered 1973 Oct. 25 by P. Wild at Zimmerwald.
A whimsical name, suggested by the fact that (2037) = 3 x (679) Pax = 7 x (291) Alice.

(2038) Bistro = 1973 WF
Discovered 1973 Nov. 24 by P. Wild at Zimmerwald.
The French name for a small, cozy restaurant. The name is also suggested by the fact that (2038) = 2 x (1019) Stracke.

(2108) Otto Schmidt = 1948 TR1
Discovered 1948 Oct. 4 by P. F. Shajn at Simeis.
Named in memory of Otto Yul'evich Schmidt (1891-1956), a prominent Soviet scientist famous for his investigations in mathematics, astronomy and geophysics. He was also an outstanding Arctic researcher, academician and statesman. His cosmogonic theories contributed extensively to the evolution of concepts on the formation of the earth and other planets.

(2126) Gerasimovich = 1970 QZ
Discovered 1970 Aug. 30 by T. M. Smirnova at the Crimean Astrophysical Observatory.
Named in memory of Boris Petrovich Gerasimovich (1889-1937), professor at Kharkov University (1922-1931), then chief of the astrophysics section and from 1933 director of the Pulkovo Observatory. His scientific papers cover a large range of astrophysical problems, and he was a member of many scientific societies.

(2129) Cosicosi = 1973 SJ
Discovered 1973 Sept. 27 by P. Wild at Zimmerwald.
The Italian characterization of indifference.

(2138) Swissair = 1968 HB

Discovered 1968 Apr. 17 by P. Wild at Zimmerwald.

Named for the Swiss national airline, the international designation of which is HB.

(2190) Coubertin = 1976 GV3

Discovered 1976 Apr. 2 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Named in memory of Pierre de Coubertin (1863-1937), a prominent French public figure, teacher, historian and man of letters. He was responsible for the renaissance of the Olympic Games, and the name is suggested by the discoverer in connection with the 22nd Olympic Games in Moscow.

(2202) Pele = 1972 RA

Discovered 1972 Sept. 7 by A. R. Klemola at the Lick Observatory,

Named for the goddess of fire in Hawaiian legend. She made her home in the volcano Kilauea, after being driven out of the western sea by her angry sister, the sea goddess.

(2240) Tsai = 1978 YA

Discovered 1978 Dec. 30 at the Harvard College Observatory, Agassiz Station.

Named in honor of Tsai Chang-hsien, director of the Taipei Observatory since World War II, an active observer of planets and variable stars, and a long-time popularizer of astronomy. He has enlightened the public and directed amateur activity in astronomy for more than three decades with great patience and dedication.

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EPHEMERIDES.

1975 NY Elements MPC 5356

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	05 21	16 05.43	-21 08.1	1.780	2.791	176.2	1.4	16.3
1980	05 31	15 56.94	-20 50.8					
1980	06 10	15 49.04	-20 33.2	1.789	2.768	160.7	7.0	16.6
1980	06 20	15 42.59	-20 18.3					
1980	06 30	15 38.27	-20 08.9	1.897	2.747	139.1	14.0	16.9
1980	07 10	15 36.40	-20 06.6					
1980	07 20	15 37.10	-20 12.2	2.077	2.728	119.8	18.9	17.2
1980	07 30	15 40.31	-20 25.5					
1980	08 09	15 45.85	-20 45.5	2.300	2.711	102.8	21.4	17.5
1980	08 19	15 53.51	-21 10.8					
1980	08 29	16 03.08	-21 39.8	2.541	2.695	87.6	22.0	17.7

(2254) 1977 QJ1 Elements MPC 5350

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	05 21	17 11.56	-31 27.1	1.446	2.416	158.4	8.9	16.9
1980	05 31	17 01.14	-31 26.5					
1980	06 10	16 49.58	-31 11.5	1.376	2.384	170.4	4.1	16.6
1980	06 20	16 38.38	-30 43.3					
1980	06 30	16 29.03	-30 06.0	1.408	2.350	151.2	12.0	16.9
1980	07 10	16 22.54	-29 25.8					
1980	07 20	16 19.48	-28 47.8	1.523	2.316	130.6	19.5	17.2
1980	07 30	16 19.96	-28 15.9					
1980	08 09	16 23.79	-27 51.4	1.694	2.282	112.5	24.2	17.5
1980	08 19	16 30.68	-27 34.2					
1980	08 29	16 40.26	-27 22.9	1.891	2.248	96.9	26.5	17.8

(730) Athanasia Elements MPC 5347

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 06 30	00 04.04	-04 17.1	1.984	2.362	98.7	25.2	18.7
1980 07 10	00 10.39	-04 01.4					
1980 07 20	00 14.43	-04 02.3	1.782	2.398	115.2	22.5	18.5
1980 07 30	00 15.90	-04 20.5					
1980 08 09	00 14.59	-04 56.4	1.612	2.432	134.4	17.3	18.2
1980 08 19	00 10.45	-05 48.4					
1980 08 29	00 03.74	-06 52.4	1.506	2.464	156.4	9.5	17.9
1980 09 08	23 55.04	-08 02.3					
1980 09 18	23 45.31	-09 09.7	1.494	2.494	172.8	2.9	17.6
1980 09 28	23 35.73	-10 06.7					
1980 10 08	23 27.39	-10 47.3	1.589	2.521	153.0	10.4	18.1
1980 10 18	23 21.16	-11 08.3					
1980 10 28	23 17.53	-11 09.3	1.778	2.546	131.3	17.1	18.5
1980 11 07	23 16.60	-10 51.9					
1980 11 17	23 18.28	-10 18.3	2.029	2.567	111.9	20.9	18.9
1980 11 27	23 22.30	-09 30.9					
1980 12 07	23 28.35	-08 31.9	2.312	2.587	94.7	22.3	19.2

(2176) 2529 P-L Elements MPC 4930

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 07 20	00 39.91	+00 23.4	2.422	2.897	107.6	19.5	18.1
1980 07 30	00 42.90	+00 28.6					
1980 08 09	00 43.81	+00 20.6	2.195	2.907	125.8	16.4	17.8
1980 08 19	00 42.51	-00 00.9					
1980 08 29	00 39.05	-00 34.7	2.023	2.918	146.4	11.0	17.5
1980 09 08	00 33.63	-01 18.3					
1980 09 18	00 26.73	-02 07.9	1.937	2.928	168.6	3.9	17.2
1980 09 28	00 19.05	-02 58.2					
1980 10 08	00 11.41	-03 43.5	1.960	2.939	165.9	4.7	17.3
1980 10 18	00 04.64	-04 19.0					
1980 10 28	23 59.43	-04 41.1	2.091	2.950	143.5	11.6	17.6
1980 11 07	23 56.20	-04 48.2					
1980 11 17	23 55.16	-04 40.2	2.308	2.960	122.6	16.3	17.9
1980 11 27	23 56.31	-04 17.8					
1980 12 07	23 59.49	-03 42.6	2.577	2.970	103.8	18.8	18.3
1980 12 17	00 04.54	-02 56.2					
1980 12 27	00 11.21	-02 00.2	2.869	2.980	86.8	19.2	18.5

(2104) Toronto Elements MPC 4606

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 07 20	00 41.37	+25 03.5	3.253	3.524	97.0	16.6	16.8
1980 07 30	00 43.52	+26 00.0					
1980 08 09	00 43.89	+26 45.9	2.995	3.525	113.6	15.3	16.6
1980 08 19	00 42.37	+27 18.5					
1980 08 29	00 39.00	+27 35.0	2.775	3.524	131.3	12.4	16.3
1980 09 08	00 33.94	+27 33.0					
1980 09 18	00 27.55	+27 10.8	2.626	3.523	148.7	8.5	16.1
1980 09 28	00 20.41	+26 28.2					
1980 10 08	00 13.19	+25 27.5	2.574	3.520	158.0	6.1	16.0
1980 10 18	00 06.59	+24 12.8					
1980 10 28	00 01.25	+22 50.3	2.633	3.517	148.3	8.5	16.1
1980 11 07	23 57.59	+21 26.5					
1980 11 17	23 55.87	+20 07.2	2.793	3.513	130.2	12.4	16.3
1980 11 27	23 56.16	+18 57.3					
1980 12 07	23 58.39	+17 59.5	3.026	3.507	111.4	15.2	16.6
1980 12 17	00 02.43	+17 15.4					
1980 12 27	00 08.08	+16 45.4	3.300	3.501	93.6	16.3	16.8

1976 YQ7 Elements MPC 4781

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 07 20	00 44.86	+09 30.4	1.956	2.398	102.9	24.4	18.6
1980 07 30	00 51.73	+10 21.5					
1980 08 09	00 56.54	+10 58.9	1.712	2.373	118.8	22.0	18.2
1980 08 19	00 58.99	+11 20.0					
1980 08 29	00 58.85	+11 22.8	1.507	2.350	137.2	17.0	17.8
1980 09 08	00 56.08	+11 05.5					
1980 09 18	00 50.91	+10 28.0	1.367	2.331	158.5	9.1	17.4
1980 09 28	00 44.00	+09 32.9					
1980 10 08	00 36.29	+08 25.7	1.318	2.315	175.0	2.2	17.0
1980 10 18	00 28.99	+07 14.7					
1980 10 28	00 23.22	+06 09.2	1.371	2.302	153.3	11.2	17.5
1980 11 07	00 19.76	+05 16.5					
1980 11 17	00 19.07	+04 41.7	1.511	2.292	131.8	18.8	17.8
1980 11 27	00 21.21	+04 26.8					
1980 12 07	00 26.04	+04 31.3	1.712	2.286	113.1	23.3	18.2
1980 12 17	00 33.28	+04 53.7					
1980 12 27	00 42.62	+05 31.7	1.945	2.284	97.0	25.3	18.5

1979 HA Elements MPC 4771

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1980 07 20	01 20.17	-20 06.9	2.283	2.729	-0.63	-10.0	18.0
1980 07 30	01 23.51	-20 44.1					
1980 08 09	01 24.31	-21 33.2	2.092	2.754	-0.71	-11.2	17.7
1980 08 19	01 22.30	-22 31.0					
1980 08 29	01 17.41	-23 31.6	1.947	2.776	-0.82	-12.0	17.5
1980 09 08	01 09.73	-24 27.8					
1980 09 18	00 59.75	-25 10.9	1.880	2.796	-0.92	-12.0	17.3
1980 09 28	00 48.32	-25 32.8					
1980 10 08	00 36.53	-25 27.9	1.912	2.813	-0.95	-10.9	17.4
1980 10 18	00 25.57	-24 54.5					
1980 10 28	00 16.42	-23 54.6	2.044	2.828	-0.88	-9.6	17.6
1980 11 07	00 09.67	-22 32.8					
1980 11 17	00 05.61	-20 54.2	2.257	2.839	-0.76	-8.4	18.0
1980 11 27	00 04.19	-19 04.0					
1980 12 07	00 05.21	-17 06.0	2.520	2.849	-0.65	-7.6	18.2
1980 12 17	00 08.39	-15 03.1					
1980 12 27	00 13.43	-12 57.5	2.802	2.855	-0.56	-7.0	18.5

(2124) Nissen Elements MPC 4663

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 07 20	01 06.97	-03 54.3	2.415	2.821	102.9	20.6	17.3
1980 07 30	01 11.29	-03 43.6					
1980 08 09	01 13.53	-03 44.5	2.190	2.836	120.0	18.0	17.1
1980 08 19	01 13.48	-03 56.5					
1980 08 29	01 11.06	-04 18.0	2.009	2.852	139.4	13.3	16.8
1980 09 08	01 06.37	-04 46.4					
1980 09 18	00 59.71	-05 17.7	1.904	2.869	160.1	6.9	16.5
1980 09 28	00 51.70	-05 47.0					
1980 10 08	00 43.15	-06 09.2	1.902	2.886	167.9	4.2	16.4
1980 10 18	00 34.98	-06 20.1					
1980 10 28	00 28.02	-06 16.7	2.010	2.904	148.6	10.3	16.8
1980 11 07	00 22.88	-05 58.5					
1980 11 17	00 19.92	-05 25.7	2.211	2.922	127.7	15.5	17.1
1980 11 27	00 19.25	-04 39.8					
1980 12 07	00 20.78	-03 42.8	2.475	2.941	108.6	18.5	17.4
1980 12 17	00 24.35	-02 36.2					
1980 12 27	00 29.71	-01 22.0	2.769	2.960	91.3	19.4	17.7

(2183) 1959 OB Elements MPC 5034

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 07 20	00 50.47	-22 24.4	1.226	1.866	112.3	30.2	15.1
1980 07 30	01 03.61	-23 42.3					
1980 08 09	01 13.59	-25 14.9	1.119	1.881	123.7	26.6	14.8
1980 08 19	01 19.85	-26 56.4					
1980 08 29	01 22.07	-28 37.7	1.054	1.908	135.2	21.9	14.6
1980 09 08	01 20.21	-30 06.5					
1980 09 18	01 14.73	-31 08.9	1.045	1.946	143.4	17.9	14.6
1980 09 28	01 06.78	-31 32.3					
1980 10 08	00 57.90	-31 09.9	1.103	1.995	143.1	17.5	14.7
1980 10 18	00 49.74	-30 01.2					
1980 10 28	00 43.63	-28 12.4	1.233	2.051	134.0	20.4	15.1
1980 11 07	00 40.25	-25 53.3					
1980 11 17	00 39.83	-23 13.7	1.427	2.115	121.2	23.6	15.5
1980 11 27	00 42.22	-20 22.2					
1980 12 07	00 47.05	-17 25.5	1.672	2.185	107.8	25.4	16.0
1980 12 17	00 53.99	-14 28.0					
1980 12 27	01 02.66	-11 32.7	1.955	2.258	94.6	25.7	16.4

1978 GD Elements MPC 4580

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 07 20	01 27.33	+01 16.3	3.254	3.514	96.3	16.7	17.4
1980 07 30	01 30.66	+01 29.8					
1980 08 09	01 32.34	+01 34.1	2.990	3.526	114.0	15.2	17.2
1980 08 19	01 32.22	+01 29.1					
1980 08 29	01 30.22	+01 15.4	2.764	3.537	133.6	11.9	16.9
1980 09 08	01 26.38	+00 54.0					
1980 09 18	01 20.88	+00 27.1	2.611	3.547	154.9	6.9	16.7
1980 09 28	01 14.08	-00 02.6					
1980 10 08	01 06.52	-00 31.5	2.562	3.556	172.9	2.0	16.4
1980 10 18	00 58.83	-00 56.2					
1980 10 28	00 51.69	-01 13.3	2.631	3.563	156.3	6.4	16.7
1980 11 07	00 45.67	-01 20.5					
1980 11 17	00 41.20	-01 16.6	2.808	3.570	134.3	11.4	17.0
1980 11 27	00 38.53	-01 01.1					
1980 12 07	00 37.72	-00 34.6	3.063	3.575	113.7	14.6	17.2
1980 12 17	00 38.76	+00 01.9					
1980 12 27	00 41.50	+00 47.4	3.360	3.580	94.9	15.9	17.5

1961 RA Elements MPC 5180

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1980 07 20	00 51.78	+16 36.7	1.567	1.990	-1.85	-2.0	17.2
1980 07 30	01 03.66	+17 22.5					
1980 08 09	01 13.61	+17 46.8	1.361	1.979	-2.19	-2.1	16.8
1980 08 19	01 21.19	+17 45.5					
1980 08 29	01 26.00	+17 14.4	1.179	1.974	-2.59	-3.0	16.4
1980 09 08	01 27.74	+16 09.9					
1980 09 18	01 26.35	+14 30.0	1.044	1.975	-2.97	-4.9	15.9
1980 09 28	01 22.23	+12 17.6					
1980 10 08	01 16.24	+09 41.5	0.986	1.981	-3.11	-6.5	15.5
1980 10 18	01 09.68	+06 57.0					
1980 10 28	01 03.97	+04 22.4	1.025	1.993	-2.90	-6.2	15.8
1980 11 07	01 00.23	+02 12.7					
1980 11 17	00 59.20	+00 37.0	1.155	2.010	-2.47	-4.5	16.3
1980 11 27	01 01.12	-00 22.8					
1980 12 07	01 05.86	-00 49.2	1.352	2.032	-2.05	-3.0	16.8
1980 12 17	01 13.15	-00 46.8					
1980 12 27	01 22.64	-00 21.3	1.588	2.058	-1.71	-2.1	17.2

(2142) Landau Elements MPC 4775

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 07 20	01 35.17	+09 30.6	3.318	3.495	91.5	16.9	18.6
1980 07 30	01 39.60	+09 54.0					
1980 08 09	01 42.48	+10 08.2	3.037	3.496	108.7	15.9	18.4
1980 08 19	01 43.65	+10 12.5					
1980 08 29	01 42.98	+10 06.4	2.784	3.496	127.9	13.2	18.1
1980 09 08	01 40.44	+09 49.6					
1980 09 18	01 36.13	+09 22.6	2.595	3.495	149.1	8.5	17.9
1980 09 28	01 30.34	+08 47.0					
1980 10 08	01 23.51	+08 05.1	2.501	3.493	172.1	2.3	17.5
1980 10 18	01 16.25	+07 20.5					
1980 10 28	01 09.25	+06 37.5	2.524	3.490	164.2	4.5	17.7
1980 11 07	01 03.13	+05 59.8					
1980 11 17	00 58.41	+05 31.0	2.660	3.486	141.2	10.2	18.0
1980 11 27	00 55.43	+05 13.2					
1980 12 07	00 54.33	+05 07.4	2.884	3.481	119.9	14.2	18.2
1980 12 17	00 55.14	+05 13.6					
1980 12 27	00 57.75	+05 31.1	3.159	3.475	100.5	16.2	18.5

(2103) 1960 FL Elements MPC 4605

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 07 20	01 41.85	+18 53.6	3.582	3.665	86.6	16.1	18.5
1980 07 30	01 46.33	+19 40.8					
1980 08 09	01 49.35	+20 21.3	3.281	3.650	103.3	15.7	18.3
1980 08 19	01 50.69	+20 53.6					
1980 08 29	01 50.22	+21 16.6	3.001	3.635	121.7	13.7	18.0
1980 09 08	01 47.88	+21 28.6					
1980 09 18	01 43.69	+21 28.2	2.774	3.618	141.9	9.9	17.7
1980 09 28	01 37.89	+21 14.4					
1980 10 08	01 30.89	+20 47.4	2.635	3.599	162.3	4.8	17.5
1980 10 18	01 23.26	+20 08.5					
1980 10 28	01 15.71	+19 20.9	2.608	3.580	165.9	3.9	17.4
1980 11 07	01 08.92	+18 29.0					
1980 11 17	01 03.47	+17 37.5	2.698	3.558	145.7	9.0	17.6
1980 11 27	00 59.78	+16 51.1					
1980 12 07	00 58.03	+16 13.2	2.883	3.536	124.5	13.3	17.8
1980 12 17	00 58.29	+15 46.0					
1980 12 27	01 00.47	+15 30.7	3.130	3.512	104.8	15.7	18.1

(2171) 1973 QD1 Elements MPC 4929

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 07 20	01 33.97	+00 36.7	1.732	2.083	95.0	29.1	18.5
1980 07 30	01 44.12	+00 49.7					
1980 08 09	01 51.98	+00 46.1	1.553	2.120	109.5	26.8	18.2
1980 08 19	01 57.15	+00 25.2					
1980 08 29	01 59.29	-00 12.5	1.395	2.158	126.8	22.0	17.9
1980 09 08	01 58.15	-01 05.0					
1980 09 18	01 53.72	-02 08.2	1.285	2.196	146.8	14.5	17.6
1980 09 28	01 46.39	-03 15.4					
1980 10 08	01 37.00	-04 17.8	1.254	2.235	165.2	6.6	17.4
1980 10 18	01 26.79	-05 06.5					
1980 10 28	01 17.18	-05 34.2	1.323	2.273	157.6	9.6	17.6
1980 11 07	01 09.33	-05 37.9					
1980 11 17	01 04.06	-05 17.7	1.486	2.310	137.1	16.9	18.1
1980 11 27	01 01.70	-04 36.4					
1980 12 07	01 02.21	-03 37.8	1.718	2.346	117.9	21.8	18.5
1980 12 17	01 05.39	-02 25.6					
1980 12 27	01 10.89	-01 03.2	1.991	2.381	100.9	23.9	18.9

7631 P-L Elements MPC 4932

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 09	01 52.42	+07 47.6	2.154	2.638	107.2	21.5	17.5
1980 08 19	01 56.92	+07 57.1					
1980 08 29	01 59.16	+07 53.7	1.925	2.635	124.8	18.3	17.1
1980 09 08	01 58.96	+07 37.2					
1980 09 18	01 56.24	+07 08.2	1.747	2.634	145.0	12.6	16.8
1980 09 28	01 51.20	+06 29.0					
1980 10 08	01 44.34	+05 43.0	1.650	2.634	167.3	4.8	16.5
1980 10 18	01 36.43	+04 55.5					
1980 10 28	01 28.48	+04 12.5	1.659	2.636	166.9	4.9	16.5
1980 11 07	01 21.48	+03 39.6					
1980 11 17	01 16.23	+03 20.7	1.773	2.639	144.2	12.6	16.8
1980 11 27	01 13.26	+03 18.1					
1980 12 07	01 12.75	+03 31.7	1.971	2.644	123.4	18.1	17.2
1980 12 17	01 14.70	+04 00.4					
1980 12 27	01 18.94	+04 42.4	2.220	2.651	105.0	21.0	17.5
1981 01 06	01 25.23	+05 35.4					
1981 01 16	01 33.33	+06 37.3	2.493	2.659	88.7	21.7	17.8

1979 KB Elements MPC 4832

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 09	01 56.63	+13 29.4	2.286	2.720	104.3	21.2	18.0
1980 08 19	02 00.50	+13 15.5					
1980 08 29	02 02.08	+12 45.4	2.067	2.746	122.5	18.1	17.7
1980 09 08	02 01.24	+11 58.3					
1980 09 18	01 57.96	+10 54.3	1.897	2.770	143.5	12.4	17.4
1980 09 28	01 52.51	+09 35.7					
1980 10 08	01 45.39	+08 06.4	1.812	2.794	166.8	4.7	17.1
1980 10 18	01 37.39	+06 33.0					
1980 10 28	01 29.46	+05 03.1	1.838	2.816	167.6	4.3	17.1
1980 11 07	01 22.47	+03 44.1					
1980 11 17	01 17.15	+02 41.4	1.976	2.837	144.1	11.8	17.5
1980 11 27	01 13.95	+01 58.0					
1980 12 07	01 13.04	+01 34.2	2.203	2.857	122.6	16.9	17.9
1980 12 17	01 14.39	+01 28.9					
1980 12 27	01 17.86	+01 39.8	2.481	2.875	103.6	19.4	18.2
1981 01 06	01 23.21	+02 04.3					
1981 01 16	01 30.23	+02 40.0	2.779	2.892	86.5	19.8	18.5

1974 VK Elements MPC 5317

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 09	01 50.33	+21 23.6	2.550	2.944	102.7	19.6	16.8
1980 08 19	01 54.98	+21 50.5					
1980 08 29	01 57.68	+22 04.2	2.272	2.909	119.8	17.5	16.5
1980 09 08	01 58.22	+22 02.6					
1980 09 18	01 56.51	+21 43.6	2.039	2.876	139.2	13.2	16.1
1980 09 28	01 52.69	+21 05.6					
1980 10 08	01 47.11	+20 08.6	1.883	2.844	160.5	6.7	15.8
1980 10 18	01 40.41	+18 54.8					
1980 10 28	01 33.48	+17 29.1	1.830	2.815	170.5	3.3	15.5
1980 11 07	01 27.21	+15 58.8					
1980 11 17	01 22.41	+14 31.7	1.889	2.787	149.6	10.3	15.8
1980 11 27	01 19.65	+13 14.9					
1980 12 07	01 19.22	+12 13.2	2.043	2.762	128.2	16.3	16.1
1980 12 17	01 21.18	+11 28.9					
1980 12 27	01 25.43	+11 02.4	2.259	2.740	108.9	19.9	16.4
1981 01 06	01 31.77	+10 52.4					
1981 01 16	01 39.97	+10 57.1	2.505	2.720	91.8	21.2	16.7

1972 LD1 Elements MPC 4782

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 09	02 07.24	-04 44.4	1.932	2.436	107.4	23.4	17.9
1980 08 19	02 11.59	-05 47.9					
1980 08 29	02 13.28	-07 06.5	1.770	2.485	124.5	19.6	17.7
1980 09 08	02 12.12	-08 36.8					
1980 09 18	02 08.09	-10 13.0	1.660	2.533	142.6	14.0	17.4
1980 09 28	02 01.51	-11 46.8					
1980 10 08	01 52.99	-13 09.0	1.634	2.579	156.0	9.1	17.3
1980 10 18	01 43.48	-14 10.6					
1980 10 28	01 34.11	-14 45.5	1.708	2.622	151.0	10.6	17.5
1980 11 07	01 25.91	-14 51.7					
1980 11 17	01 19.67	-14 30.3	1.879	2.663	134.0	15.5	17.9
1980 11 27	01 15.82	-13 45.5					
1980 12 07	01 14.48	-12 42.0	2.122	2.702	115.9	19.2	18.2
1980 12 17	01 15.58	-11 24.2					
1980 12 27	01 18.87	-09 56.4	2.407	2.738	98.9	20.8	18.6
1981 01 06	01 24.10	-08 21.8					
1981 01 16	01 31.01	-06 42.7	2.707	2.771	83.4	20.6	18.9

(2115) Irakli Elements MPC 4609

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 09	02 00.86	+19 55.7	2.806	3.160	101.0	18.4	17.7
1980 08 19	02 04.10	+20 20.8					
1980 08 29	02 05.36	+20 34.6	2.551	3.164	118.9	16.2	17.4
1980 09 08	02 04.50	+20 35.7					
1980 09 18	02 01.49	+20 22.4	2.341	3.168	138.9	12.0	17.1
1980 09 28	01 56.53	+19 54.1					
1980 10 08	01 49.98	+19 11.1	2.211	3.171	160.7	6.0	16.8
1980 10 18	01 42.50	+18 15.4					
1980 10 28	01 34.86	+17 11.1	2.188	3.173	170.9	2.8	16.7
1980 11 07	01 27.87	+16 03.7					
1980 11 17	01 22.23	+14 59.1	2.282	3.175	149.7	9.0	17.0
1980 11 27	01 18.44	+14 02.6					
1980 12 07	01 16.73	+13 17.8	2.473	3.176	127.9	14.2	17.3
1980 12 17	01 17.20	+12 46.7					
1980 12 27	01 19.73	+12 29.6	2.730	3.176	108.1	17.1	17.6
1981 01 06	01 24.16	+12 25.9					
1981 01 16	01 30.30	+12 34.3	3.016	3.176	90.2	18.0	17.8

(2159) Kukkamaki Elements MPC 4826

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 09	02 09.47	+14 31.7	2.102	2.502	101.0	23.4	17.1
1980 08 19	02 15.21	+15 17.1					
1980 08 29	02 18.68	+15 52.1	1.859	2.494	117.7	21.0	16.8
1980 09 08	02 19.56	+16 15.4					
1980 09 18	02 17.62	+16 25.5	1.653	2.485	137.1	16.0	16.4
1980 09 28	02 12.84	+16 21.5					
1980 10 08	02 05.56	+16 03.0	1.516	2.476	159.5	8.1	16.1
1980 10 18	01 56.47	+15 31.4					
1980 10 28	01 46.72	+14 50.8	1.477	2.468	174.5	2.2	15.7
1980 11 07	01 37.52	+14 07.1					
1980 11 17	01 30.02	+13 27.2	1.546	2.459	151.2	11.2	16.2
1980 11 27	01 25.03	+12 57.1					
1980 12 07	01 22.92	+12 40.5	1.706	2.451	129.2	18.2	16.5
1980 12 17	01 23.74	+12 39.2					
1980 12 27	01 27.33	+12 53.2	1.925	2.442	110.0	22.2	16.9
1981 01 06	01 33.39	+13 20.8					
1981 01 16	01 41.65	+14 00.3	2.172	2.434	93.3	23.8	17.2

1974 QA Elements MPC 4934

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 09	02 11.57	+08 58.1	2.454	2.849	102.4	20.3	18.7
1980 08 19	02 16.69	+08 46.0					
1980 08 29	02 19.79	+08 20.4	2.217	2.857	119.8	17.9	18.4
1980 09 08	02 20.68	+07 41.3					
1980 09 18	02 19.26	+06 49.6	2.026	2.866	139.5	13.2	18.1
1980 09 28	02 15.65	+05 47.5					
1980 10 08	02 10.16	+04 38.8	1.913	2.876	160.8	6.6	17.8
1980 10 18	02 03.37	+03 28.7					
1980 10 28	01 56.10	+02 23.5	1.905	2.887	169.0	3.8	17.7
1980 11 07	01 49.18	+01 29.1					
1980 11 17	01 43.42	+00 50.0	2.008	2.899	148.6	10.2	18.1
1980 11 27	01 39.41	+00 28.5					
1980 12 07	01 37.48	+00 24.9	2.204	2.911	127.5	15.6	18.4
1980 12 17	01 37.75	+00 38.1					
1980 12 27	01 40.16	+01 05.8	2.461	2.925	108.4	18.6	18.7
1981 01 06	01 44.54	+01 45.8					
1981 01 16	01 50.71	+02 35.5	2.748	2.939	91.3	19.6	19.0

1976 TA Elements MPC 4829

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 09	02 14.90	+15 11.3	1.597	2.028	99.5	29.5	17.4
1980 08 19	02 24.83	+15 59.8					
1980 08 29	02 32.24	+16 33.7	1.417	2.051	114.4	26.6	17.1
1980 09 08	02 36.69	+16 51.8					
1980 09 18	02 37.80	+16 52.7	1.264	2.079	132.5	20.9	16.8
1980 09 28	02 35.47	+16 35.8					
1980 10 08	02 29.90	+16 01.4	1.166	2.110	154.1	11.9	16.4
1980 10 18	02 21.84	+15 12.0					
1980 10 28	02 12.56	+14 13.4	1.151	2.145	178.3	0.8	15.9
1980 11 07	02 03.53	+13 13.4					
1980 11 17	01 56.13	+12 20.8	1.237	2.182	157.0	10.2	16.6
1980 11 27	01 51.34	+11 42.4					
1980 12 07	01 49.56	+11 21.7	1.413	2.221	134.9	18.3	17.1
1980 12 17	01 50.86	+11 19.4					
1980 12 27	01 55.00	+11 34.2	1.653	2.262	115.8	23.0	17.6
1981 01 06	02 01.64	+12 03.3					
1981 01 16	02 10.42	+12 44.1	1.929	2.304	99.4	24.9	18.0

1979 KD Elements MPC 4927

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1980 08 09	02 32.44	+08 06.0	2.464	2.787	-0.79	-3.2	19.2
1980 08 19	02 37.72	+07 55.3					
1980 08 29	02 40.91	+07 32.1	2.234	2.813	-0.89	-3.7	18.9
1980 09 08	02 41.80	+06 56.6					
1980 09 18	02 40.22	+06 09.6	2.042	2.838	-0.99	-4.3	18.7
1980 09 28	02 36.23	+05 13.3					
1980 10 08	02 30.07	+04 11.2	1.920	2.861	-1.08	-4.8	18.4
1980 10 18	02 22.29	+03 08.0					
1980 10 28	02 13.69	+02 09.8	1.901	2.883	-1.10	-4.9	18.2
1980 11 07	02 05.18	+01 21.9					
1980 11 17	01 57.66	+00 49.0	1.995	2.902	-1.04	-4.6	18.5
1980 11 27	01 51.85	+00 33.3					
1980 12 07	01 48.15	+00 35.0	2.188	2.920	-0.93	-4.0	18.9
1980 12 17	01 46.77	+00 53.0					
1980 12 27	01 47.66	+01 25.0	2.447	2.936	-0.82	-3.5	19.2
1981 01 06	01 50.67	+02 08.7					
1981 01 16	01 55.60	+03 01.6	2.738	2.950	-0.72	-3.1	19.5

1978 GA Elements MPC 4501

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1980 08 09	02 17.04	+08 17.6	1.823	2.252	-1.36	-5.3	18.7
1980 08 19	02 26.13	+08 13.4					
1980 08 29	02 33.16	+07 52.3	1.575	2.221	-1.62	-6.3	18.3
1980 09 08	02 37.72	+07 13.4					
1980 09 18	02 39.41	+06 16.5	1.363	2.189	-1.92	-7.7	17.8
1980 09 28	02 38.01	+05 03.4					
1980 10 08	02 33.54	+03 38.0	1.212	2.159	-2.21	-8.9	17.3
1980 10 18	02 26.44	+02 07.7					
1980 10 28	02 17.71	+00 42.6	1.148	2.129	-2.31	-9.0	17.0
1980 11 07	02 08.65	-00 26.6					
1980 11 17	02 00.70	-01 11.4	1.183	2.102	-2.16	-7.8	17.3
1980 11 27	01 55.05	-01 27.5					
1980 12 07	01 52.37	-01 15.0	1.301	2.076	-1.88	-6.4	17.6
1980 12 17	01 52.93	-00 36.9					
1980 12 27	01 56.66	+00 22.1	1.473	2.053	-1.60	-5.5	18.0
1981 01 06	02 03.26	+01 37.5					
1981 01 16	02 12.44	+03 05.0	1.671	2.033	-1.40	-5.0	18.3

1979 KC Elements MPC 4823

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1980 08 09	02 42.35	+00 02.9	2.249	2.587	-0.90	-4.5	18.8
1980 08 19	02 49.15	-00 34.4					
1980 08 29	02 53.78	-01 25.4	2.046	2.620	-0.99	-5.4	18.6
1980 09 08	02 55.98	-02 28.9					
1980 09 18	02 55.54	-03 42.0	1.878	2.651	-1.11	-6.3	18.4
1980 09 28	02 52.45	-05 00.3					
1980 10 08	02 46.89	-06 17.7	1.775	2.682	-1.23	-6.8	18.1
1980 10 18	02 39.37	-07 26.6					
1980 10 28	02 30.70	-08 19.7	1.766	2.713	-1.27	-6.6	18.1
1980 11 07	02 21.85	-08 51.1					
1980 11 17	02 13.83	-08 58.0	1.862	2.742	-1.20	-5.8	18.3
1980 11 27	02 07.44	-08 40.4					
1980 12 07	02 03.20	-08 01.2	2.049	2.770	-1.07	-4.9	18.6
1980 12 17	02 01.35	-07 03.9					
1980 12 27	02 01.87	-05 53.0	2.300	2.797	-0.93	-4.3	19.0
1981 01 06	02 04.62	-04 32.1					
1981 01 16	02 09.37	-03 04.4	2.585	2.823	-0.81	-3.9	19.3

1978 LB Elements MPC 4501

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1980 08 09	02 53.18	-01 09.3	3.247	3.491	-0.49	-4.6	18.2
1980 08 19	02 57.07	-01 23.4					
1980 08 29	02 59.25	-01 45.6	2.997	3.508	-0.53	-5.1	18.0
1980 09 08	02 59.57	-02 14.9					
1980 09 18	02 57.92	-02 49.3	2.784	3.524	-0.59	-5.5	17.7
1980 09 28	02 54.32	-03 26.1					
1980 10 08	02 48.93	-04 01.9	2.641	3.539	-0.63	-5.8	17.5
1980 10 18	02 42.11	-04 32.7					
1980 10 28	02 34.39	-04 54.6	2.598	3.552	-0.65	-5.8	17.4
1980 11 07	02 26.42	-05 04.3					
1980 11 17	02 18.87	-04 59.7	2.670	3.565	-0.64	-5.6	17.6
1980 11 27	02 12.39	-04 40.2					
1980 12 07	02 07.41	-04 06.5	2.847	3.576	-0.59	-5.1	17.8
1980 12 17	02 04.21	-03 20.4					
1980 12 27	02 02.91	-02 23.8	3.100	3.587	-0.53	-4.7	18.1
1981 01 06	02 03.47	-01 19.0					
1981 01 16	02 05.79	-00 08.1	3.394	3.596	-0.48	-4.3	18.3

(2134) Dennispalm Elements MPC 4743

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 09	02 58.05	+26 58.9	2.467	2.607	86.3	22.8	18.9
1980 08 19	03 05.66	+29 23.3					
1980 08 29	03 11.56	+31 54.2	2.160	2.552	100.9	22.9	18.5
1980 09 08	03 15.23	+34 32.2					
1980 09 18	03 16.04	+37 16.4	1.879	2.496	116.6	21.1	18.1
1980 09 28	03 13.29	+40 03.9					
1980 10 08	03 06.28	+42 48.8	1.651	2.441	132.7	17.5	17.7
1980 10 18	02 54.57	+45 20.8					
1980 10 28	02 38.42	+47 26.9	1.503	2.385	144.9	13.8	17.4
1980 11 07	02 19.11	+48 54.6					
1980 11 17	01 59.09	+49 37.0	1.454	2.331	144.5	14.3	17.3
1980 11 27	01 41.20	+49 37.8					
1980 12 07	01 27.69	+49 09.2	1.499	2.277	131.8	18.8	17.4
1980 12 17	01 19.70	+48 26.8					
1980 12 27	01 17.37	+47 44.3	1.609	2.226	116.2	23.3	17.6
1981 01 06	01 20.25	+47 10.7					
1981 01 16	01 27.76	+46 50.7	1.753	2.177	101.7	26.3	17.8

1968 HK1 Elements MPC 5356

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 09	02 58.55	+11 52.8	2.584	2.784	90.5	21.4	19.8
1980 08 19	03 05.33	+11 54.4					
1980 08 29	03 10.22	+11 45.3	2.321	2.787	106.9	20.3	19.5
1980 09 08	03 12.96	+11 24.9					
1980 09 18	03 13.26	+10 53.2	2.080	2.788	125.6	17.0	19.2
1980 09 28	03 10.98	+10 10.9					
1980 10 08	03 06.12	+09 19.3	1.895	2.786	146.9	11.3	18.9
1980 10 18	02 58.96	+08 21.3					
1980 10 28	02 50.12	+07 21.3	1.801	2.781	168.3	4.2	18.5
1980 11 07	02 40.46	+06 24.7					
1980 11 17	02 31.04	+05 37.2	1.820	2.772	160.8	6.7	18.7
1980 11 27	02 22.87	+05 03.4					
1980 12 07	02 16.66	+04 46.1	1.947	2.761	138.2	13.8	19.0
1980 12 17	02 12.90	+04 45.8					
1980 12 27	02 11.71	+05 01.7	2.154	2.747	117.2	18.6	19.3
1981 01 06	02 13.04	+05 31.6					
1981 01 16	02 16.70	+06 13.2	2.403	2.730	98.6	20.9	19.6

1969 TQ4 Elements MPC 5351

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 29	03 00.07	+14 39.1	1.505	2.062	108.6	27.7	18.1
1980 09 08	03 07.91	+14 41.3					
1980 09 18	03 12.85	+14 28.0	1.314	2.061	125.0	23.5	17.7
1980 09 28	03 14.53	+13 59.3					
1980 10 08	03 12.74	+13 16.0	1.166	2.064	144.8	16.2	17.3
1980 10 18	03 07.62	+12 20.7					
1980 10 28	02 59.90	+11 18.3	1.090	2.070	167.2	6.1	16.9
1980 11 07	02 50.77	+10 16.1					
1980 11 17	02 41.77	+09 22.5	1.108	2.080	165.3	6.9	17.0
1980 11 27	02 34.38	+08 44.8					
1980 12 07	02 29.62	+08 27.4	1.221	2.093	142.8	16.5	17.4
1980 12 17	02 28.04	+08 31.3					
1980 12 27	02 29.71	+08 54.7	1.407	2.108	122.8	23.1	17.9
1981 01 06	02 34.42	+09 34.3					
1981 01 16	02 41.84	+10 26.5	1.636	2.127	105.9	26.4	18.3
1981 01 26	02 51.59	+11 27.6					
1981 02 05	03 03.33	+12 34.2	1.886	2.148	91.3	27.3	18.7

(2143) Jimarnold Elements MPC 4776

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	08 29	03 01.34	+16 28.5	1.149	1.746	107.8	33.4	17.6
1980	09 08	03 11.47	+18 17.1					
1980	09 18	03 18.31	+20 00.2	1.000	1.756	122.4	28.9	17.2
1980	09 28	03 21.24	+21 37.3					
1980	10 08	03 19.75	+23 05.7	0.885	1.775	140.7	20.9	16.8
1980	10 18	03 13.78	+24 21.0					
1980	10 28	03 04.10	+25 17.6	0.830	1.801	162.0	9.8	16.4
1980	11 07	02 52.31	+25 51.7					
1980	11 17	02 40.67	+26 04.1	0.858	1.835	166.9	7.0	16.4
1980	11 27	02 31.38	+26 01.7					
1980	12 07	02 25.80	+25 53.5	0.974	1.875	146.3	16.9	17.0
1980	12 17	02 24.51	+25 48.1					
1980	12 27	02 27.37	+25 50.5	1.159	1.920	127.1	24.1	17.6
1981	01 06	02 33.90	+26 02.4					
1981	01 16	02 43.57	+26 23.3	1.391	1.969	110.9	27.8	18.1
1981	01 26	02 55.82	+26 51.5					
1981	02 05	03 10.17	+27 24.4	1.650	2.021	96.8	29.0	18.6

(2173) Maresjev Elements MPC 4929

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	08 29	03 09.96	+07 49.6	2.362	2.839	107.9	19.8	17.2
1980	09 08	03 13.83	+06 59.0					
1980	09 18	03 15.42	+05 56.4	2.152	2.859	125.9	16.5	16.9
1980	09 28	03 14.66	+04 43.8					
1980	10 08	03 11.59	+03 24.3	2.002	2.881	145.4	11.3	16.7
1980	10 18	03 06.47	+02 02.9					
1980	10 28	02 59.85	+00 45.5	1.941	2.903	162.3	6.0	16.5
1980	11 07	02 52.47	-00 21.6					
1980	11 17	02 45.20	-01 12.8	1.989	2.926	157.3	7.5	16.6
1980	11 27	02 38.87	-01 44.7					
1980	12 07	02 34.11	-01 56.3	2.142	2.950	138.2	12.9	16.9
1980	12 17	02 31.34	-01 48.5					
1980	12 27	02 30.73	-01 23.8	2.375	2.975	118.7	16.9	17.2
1981	01 06	02 32.27	-00 45.3					
1981	01 16	02 35.82	+00 04.0	2.654	3.000	100.9	18.8	17.5
1981	01 26	02 41.21	+01 01.2					
1981	02 05	02 48.21	+02 03.6	2.952	3.025	84.7	18.9	17.8

1940 GH Elements MPC 5010

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	08 29	03 21.80	+09 46.6	2.643	3.058	104.6	18.6	16.5
1980	09 08	03 24.32	+10 00.3					
1980	09 18	03 24.63	+10 08.3	2.406	3.071	123.0	15.9	16.2
1980	09 28	03 22.62	+10 11.4					
1980	10 08	03 18.29	+10 10.7	2.222	3.085	143.8	11.0	15.9
1980	10 18	03 11.85	+10 07.5					
1980	10 28	03 03.79	+10 03.9	2.125	3.098	166.1	4.4	15.6
1980	11 07	02 54.83	+10 01.9					
1980	11 17	02 45.83	+10 04.0	2.142	3.111	166.5	4.2	15.7
1980	11 27	02 37.70	+10 12.4					
1980	12 07	02 31.11	+10 28.6	2.274	3.125	144.0	10.7	16.0
1980	12 17	02 26.58	+10 53.4					
1980	12 27	02 24.31	+11 27.0	2.497	3.137	122.5	15.3	16.3
1981	01 06	02 24.33	+12 08.7					
1981	01 16	02 26.54	+12 57.5	2.776	3.150	103.2	17.7	16.6
1981	01 26	02 30.73	+13 52.2					
1981	02 05	02 36.69	+14 51.6	3.077	3.162	85.8	18.1	16.9

1977 FZ Elements MPC 4717

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1980	08 29	03 22.24	+16 11.7	2.997	3.371	-0.69	-2.8	18.1
1980	09 08	03 25.22	+16 17.0					
1980	09 18	03 26.26	+16 15.0	2.715	3.351	-0.77	-3.1	17.8
1980	09 28	03 25.23	+16 05.7					
1980	10 08	03 22.10	+15 49.1	2.485	3.330	-0.85	-3.5	17.5
1980	10 18	03 17.00	+15 25.9					
1980	10 28	03 10.33	+14 57.4	2.340	3.309	-0.90	-3.9	17.2
1980	11 07	03 02.63	+14 25.8					
1980	11 17	02 54.68	+13 54.2	2.308	3.287	-0.89	-4.1	17.1
1980	11 27	02 47.27	+13 25.8					
1980	12 07	02 41.10	+13 04.0	2.393	3.265	-0.84	-4.1	17.4
1980	12 17	02 36.70	+12 51.2					
1980	12 27	02 34.37	+12 48.7	2.574	3.243	-0.76	-3.8	17.6
1981	01 06	02 34.22	+12 56.7					
1981	01 16	02 36.21	+13 14.8	2.814	3.220	-0.69	-3.4	17.9
1981	01 26	02 40.20	+13 41.8					
1981	02 05	02 46.00	+14 16.2	3.080	3.197	-0.63	-3.0	18.1

(2113) Ehrdni Elements MPC 4609

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	08 29	03 22.78	+19 08.9	1.799	2.241	102.1	26.1	17.0
1980	09 08	03 29.94	+20 05.4					
1980	09 18	03 34.42	+20 55.1	1.588	2.248	118.5	23.1	16.7
1980	09 28	03 35.80	+21 37.5					
1980	10 08	03 33.80	+22 11.5	1.415	2.257	137.9	17.3	16.3
1980	10 18	03 28.36	+22 35.2					
1980	10 28	03 19.97	+22 47.0	1.309	2.269	160.3	8.5	16.0
1980	11 07	03 09.57	+22 46.1					
1980	11 17	02 58.62	+22 34.2	1.299	2.282	172.2	3.4	15.7
1980	11 27	02 48.70	+22 15.8					
1980	12 07	02 41.09	+21 57.0	1.393	2.297	149.5	12.6	16.2
1980	12 17	02 36.59	+21 43.5					
1980	12 27	02 35.50	+21 39.2	1.573	2.313	128.1	19.6	16.7
1981	01 06	02 37.68	+21 45.8					
1981	01 16	02 42.88	+22 03.2	1.809	2.331	109.6	23.4	17.1
1981	01 26	02 50.70	+22 30.0					
1981	02 05	03 00.76	+23 04.1	2.071	2.350	93.6	24.8	17.4

(2224) 2528 P-L Elements MPC 5222

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	08 29	03 29.21	+18 02.0	2.527	2.893	100.9	20.0	17.9
1980	09 08	03 33.53	+18 20.9					
1980	09 18	03 35.60	+18 32.5	2.283	2.903	118.8	17.7	17.6
1980	09 28	03 35.24	+18 36.4					
1980	10 08	03 32.36	+18 32.3	2.083	2.913	139.1	13.0	17.3
1980	10 18	03 27.06	+18 20.3					
1980	10 28	03 19.78	+18 01.1	1.961	2.922	162.0	6.0	17.0
1980	11 07	03 11.18	+17 36.1					
1980	11 17	03 02.21	+17 08.2	1.946	2.931	173.6	2.1	16.8
1980	11 27	02 53.86	+16 41.2					
1980	12 07	02 46.98	+16 19.0	2.047	2.940	149.7	9.7	17.2
1980	12 17	02 42.21	+16 04.6					
1980	12 27	02 39.84	+16 00.2	2.244	2.948	127.6	15.3	17.6
1981	01 06	02 39.93	+16 06.3					
1981	01 16	02 42.39	+16 22.4	2.502	2.956	107.9	18.5	17.9
1981	01 26	02 47.02	+16 47.6					
1981	02 05	02 53.58	+17 20.0	2.789	2.964	90.4	19.4	18.1

1979 KA Elements MPC 5126

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1980 08 29	03 28.65 +08 43.1	2.052	2.485	-1.10	-4.4	16.6
1980 09 08	03 34.59 +08 16.6					
1980 09 18	03 38.03 +07 39.1	1.851	2.510	-1.24	-5.1	16.3
1980 09 28	03 38.75 +06 52.1					
1980 10 08	03 36.64 +05 58.2	1.694	2.537	-1.39	-5.9	16.0
1980 10 18	03 31.84 +05 01.4					
1980 10 28	03 24.83 +04 06.8	1.611	2.564	-1.50	-6.4	15.8
1980 11 07	03 16.39 +03 20.3					
1980 11 17	03 07.57 +02 47.2	1.630	2.593	-1.49	-6.3	15.8
1980 11 27	02 59.49 +02 31.6					
1980 12 07	02 53.03 +02 34.9	1.755	2.622	-1.36	-5.7	16.1
1980 12 17	02 48.82 +02 56.4					
1980 12 27	02 47.14 +03 33.7	1.966	2.651	-1.19	-4.9	16.5
1981 01 06	02 48.00 +04 23.9					
1981 01 16	02 51.25 +05 23.9	2.231	2.681	-1.03	-4.2	16.9
1981 01 26	02 56.66 +06 30.6					
1981 02 05	03 03.95 +07 41.6	2.523	2.710	-0.90	-3.7	17.2

1936 EA Elements MPC 5355

Date ET	R. A. (1950) Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 29	03 17.43 +21 44.6	1.866	2.308	102.7	25.3	17.8
1980 09 08	03 25.73 +22 18.9					
1980 09 18	03 31.74 +22 43.1	1.597	2.258	118.6	23.0	17.3
1980 09 28	03 35.02 +22 56.0					
1980 10 08	03 35.17 +22 56.0	1.366	2.207	137.4	17.9	16.8
1980 10 18	03 31.93 +22 40.9					
1980 10 28	03 25.52 +22 09.6	1.199	2.158	159.4	9.3	16.3
1980 11 07	03 16.60 +21 22.3					
1980 11 17	03 06.47 +20 22.3	1.124	2.110	174.7	2.5	15.8
1980 11 27	02 56.80 +19 16.9					
1980 12 07	02 49.12 +18 15.1	1.149	2.065	150.7	13.5	16.2
1980 12 17	02 44.56 +17 25.3					
1980 12 27	02 43.68 +16 52.7	1.256	2.023	128.7	22.3	16.5
1981 01 06	02 46.50 +16 39.0					
1981 01 16	02 52.82 +16 43.2	1.415	1.985	110.4	27.7	16.9
1981 01 26	03 02.25 +17 02.3					
1981 02 05	03 14.40 +17 32.8	1.596	1.951	95.2	30.2	17.2

(2098) Zyskin Elements MPC 4537

Date ET	R. A. (1950) Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 29	03 32.15 +25 34.9	1.851	2.234	98.4	26.6	17.1
1980 09 08	03 40.06 +26 41.6					
1980 09 18	03 45.23 +27 41.1	1.652	2.259	114.3	23.9	16.8
1980 09 28	03 47.22 +28 32.1					
1980 10 08	03 45.71 +29 12.6	1.485	2.286	133.0	18.6	16.5
1980 10 18	03 40.59 +29 39.0					
1980 10 28	03 32.27 +29 47.9	1.378	2.313	154.3	10.7	16.2
1980 11 07	03 21.69 +29 36.6					
1980 11 17	03 10.31 +29 05.8	1.364	2.342	169.0	4.6	16.0
1980 11 27	02 59.77 +28 20.5					
1980 12 07	02 51.43 +27 28.6	1.455	2.370	152.0	11.2	16.3
1980 12 17	02 46.17 +26 38.5					
1980 12 27	02 44.33 +25 56.7	1.637	2.399	130.9	18.0	16.8
1981 01 06	02 45.78 +25 26.8					
1981 01 16	02 50.25 +25 09.8	1.881	2.427	112.0	22.1	17.2
1981 01 26	02 57.34 +25 05.0					
1981 02 05	03 06.66 +25 10.3	2.156	2.456	95.5	23.6	17.6

1979 PB Elements MPC 5009

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1980 08 29	03 47.22	+22 23.3	2.880	3.147	-0.68	-0.7	18.2
1980 09 08	03 51.26	+22 29.0					
1980 09 18	03 53.17	+22 27.1	2.628	3.170	-0.76	-0.7	18.0
1980 09 28	03 52.77	+22 16.9					
1980 10 08	03 49.99	+21 57.9	2.412	3.191	-0.84	-0.9	17.7
1980 10 18	03 44.89	+21 29.7					
1980 10 28	03 37.83	+20 52.3	2.271	3.210	-0.91	-1.3	17.5
1980 11 07	03 29.36	+20 07.1					
1980 11 17	03 20.29	+19 16.7	2.238	3.226	-0.92	-1.8	17.0
1980 11 27	03 11.55	+18 25.1					
1980 12 07	03 03.92	+17 36.5	2.326	3.240	-0.87	-1.9	17.6
1980 12 17	02 58.06	+16 55.0					
1980 12 27	02 54.34	+16 23.2	2.520	3.251	-0.78	-1.9	17.9
1981 01 06	02 52.89	+16 02.6					
1981 01 16	02 53.68	+15 53.3	2.785	3.260	-0.69	-1.6	18.2
1981 01 26	02 56.55	+15 54.4					
1981 02 05	03 01.29	+16 04.4	3.084	3.267	-0.62	-1.3	18.4

1965 QC Elements MPC 5012

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 29	03 38.60	+04 21.4	2.025	2.438	101.6	23.9	16.0
1980 09 08	03 46.91	+03 23.5					
1980 09 18	03 52.99	+02 11.9	1.801	2.427	116.9	21.7	15.7
1980 09 28	03 56.55	+00 48.7					
1980 10 08	03 57.35	-00 42.6	1.619	2.419	133.6	17.4	15.4
1980 10 18	03 55.31	-02 16.3					
1980 10 28	03 50.65	-03 44.7	1.504	2.413	149.6	12.0	15.1
1980 11 07	03 43.92	-04 59.1					
1980 11 17	03 36.03	-05 51.3	1.478	2.412	155.2	9.9	15.0
1980 11 27	03 28.11	-06 15.3					
1980 12 07	03 21.25	-06 09.2	1.548	2.413	143.5	14.0	15.2
1980 12 17	03 16.34	-05 34.8					
1980 12 27	03 13.92	-04 36.6	1.701	2.417	126.4	19.1	15.5
1981 01 06	03 14.18	-03 20.1					
1981 01 16	03 17.10	-01 50.8	1.909	2.425	109.7	22.5	15.8
1981 01 26	03 22.47	-00 13.6					
1981 02 05	03 30.03	+01 27.6	2.149	2.435	94.6	23.8	16.1

1975 UD Elements MPC 4504

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 29	03 58.73	+21 57.7	2.443	2.697	93.3	22.0	17.6
1980 09 08	04 05.61	+22 34.4					
1980 09 18	04 10.27	+23 05.8	2.209	2.720	109.9	20.3	17.4
1980 09 28	04 12.42	+23 31.9					
1980 10 08	04 11.82	+23 52.1	2.003	2.743	129.0	16.4	17.1
1980 10 18	04 08.35	+24 05.4					
1980 10 28	04 02.22	+24 10.8	1.857	2.767	150.8	10.1	16.8
1980 11 07	03 53.89	+24 07.3					
1980 11 17	03 44.25	+23 55.0	1.806	2.791	173.7	2.2	16.4
1980 11 27	03 34.42	+23 35.7					
1980 12 07	03 25.52	+23 12.8	1.869	2.814	159.8	6.9	16.7
1980 12 17	03 18.51	+22 50.6					
1980 12 27	03 13.97	+22 33.1	2.038	2.837	137.0	13.7	17.1
1981 01 06	03 12.14	+22 22.8					
1981 01 16	03 13.01	+22 21.2	2.283	2.860	116.4	17.9	17.5
1981 01 26	03 16.40	+22 28.1					
1981 02 05	03 22.02	+22 42.7	2.571	2.883	98.3	19.8	17.8

1977 FN1 Elements MPC 4717

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1980 08 29	04 05.15	+21 21.0	3.056	3.251	-0.70	-3.3	18.6
1980 09 08	04 10.65	+21 51.8					
1980 09 18	04 14.32	+22 18.9	2.764	3.235	-0.79	-3.5	18.3
1980 09 28	04 15.93	+22 42.4					
1980 10 08	04 15.26	+23 01.7	2.501	3.218	-0.89	-3.9	18.1
1980 10 18	04 12.22	+23 16.5					
1980 10 28	04 06.91	+23 25.7	2.302	3.202	-0.98	-4.5	17.7
1980 11 07	03 59.66	+23 28.8					
1980 11 17	03 51.08	+23 25.5	2.201	3.184	-1.02	-5.1	17.3
1980 11 27	03 42.04	+23 16.8					
1980 12 07	03 33.45	+23 04.5	2.217	3.167	-0.98	-5.4	17.5
1980 12 17	03 26.19	+22 51.8					
1980 12 27	03 20.91	+22 41.7	2.344	3.150	-0.89	-5.3	17.8
1981 01 06	03 17.97	+22 36.7					
1981 01 16	03 17.50	+22 38.5	2.554	3.132	-0.80	-4.9	18.1
1981 01 26	03 19.44	+22 47.5					
1981 02 05	03 23.62	+23 03.5	2.809	3.115	-0.73	-4.3	18.3

1979 OA Elements MPC 5126

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1980 08 29	04 30.08	+44 55.7	3.346	3.376	-0.66	+1.3	20.2
1980 09 08	04 36.41	+45 50.9					
1980 09 18	04 40.40	+46 43.8	3.134	3.434	-0.72	+1.8	20.0
1980 09 28	04 41.72	+47 33.0					
1980 10 08	04 40.10	+48 16.3	2.935	3.490	-0.81	+2.0	19.9
1980 10 18	04 35.39	+48 50.0					
1980 10 28	04 27.73	+49 09.7	2.781	3.542	-0.91	+1.8	19.7
1980 11 07	04 17.58	+49 10.8					
1980 11 17	04 05.83	+48 49.5	2.708	3.592	-0.97	+1.0	19.6
1980 11 27	03 53.67	+48 05.1					
1980 12 07	03 42.31	+47 00.0	2.742	3.639	-0.94	+0.1	19.7
1980 12 17	03 32.79	+45 39.3					
1980 12 27	03 25.77	+44 10.5	2.888	3.683	-0.85	-0.5	19.9
1981 01 06	03 21.51	+42 40.4					
1981 01 16	03 20.00	+41 14.7	3.128	3.725	-0.74	-0.6	20.1
1981 01 26	03 21.03	+39 57.2					
1981 02 05	03 24.30	+38 49.8	3.428	3.763	-0.64	-0.4	20.4

1943 EP Elements MPC 5355

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 08 29	04 14.52	+21 58.9	2.435	2.631	89.7	22.6	17.6
1980 09 08	04 23.23	+22 55.4					
1980 09 18	04 30.10	+23 50.6	2.151	2.603	105.3	21.9	17.2
1980 09 28	04 34.73	+24 45.1					
1980 10 08	04 36.72	+25 39.2	1.889	2.574	123.1	19.0	16.9
1980 10 18	04 35.69	+26 32.3					
1980 10 28	04 31.46	+27 22.9	1.677	2.546	143.6	13.4	16.5
1980 11 07	04 24.09	+28 08.0					
1980 11 17	04 14.11	+28 44.2	1.548	2.518	165.6	5.6	16.1
1980 11 27	04 02.62	+29 08.6					
1980 12 07	03 51.05	+29 20.6	1.527	2.490	164.5	6.1	16.0
1980 12 17	03 40.89	+29 22.6					
1980 12 27	03 33.37	+29 19.5	1.613	2.464	142.0	14.2	16.3
1981 01 06	03 29.16	+29 16.2					
1981 01 16	03 28.51	+29 17.0	1.779	2.438	121.2	20.2	16.7
1981 01 26	03 31.30	+29 23.9					
1981 02 05	03 37.23	+29 37.4	1.991	2.414	103.1	23.4	16.9

1970 OG Elements MPC 4934

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 09 18	04 34.70	+00 07.2	2.078	2.552	106.5	22.2	16.6
1980 09 28	04 38.94	-00 54.6					
1980 10 08	04 40.57	-02 00.4	1.892	2.573	122.7	19.1	16.4
1980 10 18	04 39.40	-03 06.0					
1980 10 28	04 35.48	-04 05.6	1.757	2.595	139.6	14.4	16.1
1980 11 07	04 29.13	-04 52.8					
1980 11 17	04 20.95	-05 21.1	1.700	2.617	152.5	10.0	16.0
1980 11 27	04 11.91	-05 25.5					
1980 12 07	04 03.05	-05 04.3	1.742	2.641	149.8	10.8	16.1
1980 12 17	03 55.40	-04 18.2					
1980 12 27	03 49.74	-03 11.2	1.882	2.665	134.5	15.3	16.4
1981 01 06	03 46.49	-01 48.3					
1981 01 16	03 45.81	-00 14.7	2.096	2.689	116.9	19.0	16.7
1981 01 26	03 47.65	+01 24.9					
1981 02 05	03 51.81	+03 06.7	2.358	2.713	100.3	20.9	17.0
1981 02 15	03 58.04	+04 48.0					
1981 02 25	04 06.08	+06 26.4	2.640	2.738	85.0	21.1	17.3

1974 QE1 Elements MPC 4579

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 09 18	04 41.13	+38 18.2	2.221	2.597	100.4	22.4	16.3
1980 09 28	04 47.24	+39 42.7					
1980 10 08	04 50.38	+41 04.1	2.028	2.632	116.6	19.8	16.1
1980 10 18	04 50.11	+42 19.9					
1980 10 28	04 46.24	+43 25.7	1.878	2.669	134.4	15.4	15.9
1980 11 07	04 38.91	+44 15.7					
1980 11 17	04 28.78	+44 43.9	1.799	2.708	151.2	10.1	15.7
1980 11 27	04 17.12	+44 45.9					
1980 12 07	04 05.49	+44 21.5	1.818	2.748	156.1	8.4	15.7
1980 12 17	03 55.47	+43 35.1					
1980 12 27	03 48.21	+42 34.7	1.941	2.789	143.0	12.3	15.9
1981 01 06	03 44.25	+41 28.6					
1981 01 16	03 43.72	+40 23.9	2.150	2.831	125.0	16.5	16.3
1981 01 26	03 46.38	+39 25.3					
1981 02 05	03 51.84	+38 35.0	2.418	2.874	107.5	19.1	16.6
1981 02 15	03 59.72	+37 53.3					
1981 02 25	04 09.61	+37 19.7	2.717	2.917	91.5	19.8	17.0

(2248) 1933 DE Elements MPC 5348

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 09 18	04 48.30	+23 07.9	2.952	3.298	101.2	17.4	18.3
1980 09 28	04 51.77	+23 18.7					
1980 10 08	04 53.13	+23 26.3	2.667	3.280	119.7	15.3	18.1
1980 10 18	04 52.19	+23 30.5					
1980 10 28	04 48.90	+23 30.8	2.431	3.260	140.5	11.2	17.8
1980 11 07	04 43.38	+23 26.8					
1980 11 17	04 36.02	+23 18.0	2.280	3.240	163.5	5.0	17.4
1980 11 27	04 27.46	+23 04.5					
1980 12 07	04 18.55	+22 47.5	2.241	3.219	172.0	2.4	17.2
1980 12 17	04 10.21	+22 28.8					
1980 12 27	04 03.28	+22 11.2	2.320	3.198	148.2	9.3	17.6
1981 01 06	03 58.33	+21 57.3					
1981 01 16	03 55.72	+21 48.9	2.496	3.176	126.0	14.5	17.8
1981 01 26	03 55.56	+21 47.0					
1981 02 05	03 57.75	+21 51.7	2.734	3.153	106.2	17.5	18.1
1981 02 15	04 02.16	+22 02.4					
1981 02 25	04 08.55	+22 17.9	2.996	3.131	88.5	18.4	18.3

(2132) Zhukov Elements MPC 4741

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	09 18	04 50.30	+18 49.5	2.165	2.559	101.3	22.6	16.6
1980	09 28	04 56.56	+19 03.3					
1980	10 08	05 00.34	+19 14.3	1.926	2.558	118.5	20.1	16.3
1980	10 18	05 01.33	+19 23.1					
1980	10 28	04 59.35	+19 30.5	1.728	2.558	138.5	14.9	16.0
1980	11 07	04 54.43	+19 36.8					
1980	11 17	04 46.93	+19 41.9	1.603	2.559	161.4	7.1	15.6
1980	11 27	04 37.68	+19 46.1					
1980	12 07	04 27.79	+19 49.9	1.581	2.562	173.5	2.5	15.4
1980	12 17	04 18.54	+19 54.7					
1980	12 27	04 11.09	+20 02.5	1.670	2.567	149.6	11.2	15.8
1981	01 06	04 06.18	+20 15.0					
1981	01 16	04 04.24	+20 33.1	1.850	2.572	127.7	17.6	16.2
1981	01 26	04 05.28	+20 57.0					
1981	02 05	04 09.15	+21 25.9	2.089	2.579	108.7	21.2	16.5
1981	02 15	04 15.57	+21 58.6					
1981	02 25	04 24.23	+22 33.4	2.355	2.588	92.1	22.5	16.8

(2117) Danmark Elements MPC 4610

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	09 18	04 56.50	+22 23.7	2.525	2.866	99.5	20.2	17.8
1980	09 28	05 01.38	+22 37.5					
1980	10 08	05 03.90	+22 48.3	2.282	2.881	117.4	17.9	17.5
1980	10 18	05 03.81	+22 56.4					
1980	10 28	05 01.01	+23 01.5	2.081	2.895	137.8	13.3	17.2
1980	11 07	04 55.61	+23 03.1					
1980	11 17	04 47.98	+23 00.4	1.957	2.909	160.9	6.4	16.9
1980	11 27	04 38.89	+22 53.5					
1980	12 07	04 29.29	+22 42.9	1.941	2.923	174.5	1.9	16.6
1980	12 17	04 20.28	+22 30.5					
1980	12 27	04 12.82	+22 18.9	2.042	2.937	150.4	9.5	17.1
1981	01 06	04 07.58	+22 10.5					
1981	01 16	04 04.91	+22 07.4	2.239	2.950	128.2	15.2	17.4
1981	01 26	04 04.89	+22 10.4					
1981	02 05	04 07.39	+22 19.3	2.500	2.963	108.4	18.4	17.8
1981	02 15	04 12.20	+22 33.5					
1981	02 25	04 19.05	+22 51.7	2.789	2.975	91.0	19.4	18.0

(2212) 1978 SB Elements MPC 5218

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	09 18	05 25.59	+31 03.6	3.455	3.636	92.2	16.0	21.1
1980	09 28	05 27.27	+31 34.3					
1980	10 08	05 26.71	+32 06.0	3.078	3.565	111.3	15.1	20.7
1980	10 18	05 23.55	+32 37.7					
1980	10 28	05 17.53	+33 07.5	2.737	3.486	132.5	12.1	20.4
1980	11 07	05 08.50	+33 32.3					
1980	11 17	04 56.62	+33 48.0	2.476	3.399	155.3	7.0	20.0
1980	11 27	04 42.47	+33 50.5					
1980	12 07	04 27.04	+33 36.8	2.336	3.304	167.5	3.7	19.6
1980	12 17	04 11.62	+33 07.2					
1980	12 27	03 57.55	+32 25.0	2.331	3.201	147.1	9.6	19.8
1981	01 06	03 45.85	+31 36.2					
1981	01 16	03 37.15	+30 47.3	2.438	3.088	123.2	15.5	19.9
1981	01 26	03 31.67	+30 03.4					
1981	02 05	03 29.32	+29 28.0	2.608	2.966	101.4	19.0	20.1
1981	02 15	03 29.88	+29 02.6					
1981	02 25	03 33.03	+28 47.5	2.793	2.832	82.1	20.3	20.2

(2225) 6546 P-L Elements MPC 5223

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 09 18	04 55.56	+20 31.5	2.432	2.786	99.9	20.8	17.8
1980 09 28	05 01.08	+20 40.2					
1980 10 08	05 04.28	+20 45.7	2.177	2.782	117.4	18.6	17.5
1980 10 18	05 04.88	+20 48.5					
1980 10 28	05 02.74	+20 48.9	1.963	2.779	137.6	13.9	17.2
1980 11 07	04 57.90	+20 46.8					
1980 11 17	04 50.68	+20 42.3	1.824	2.776	160.5	6.8	16.9
1980 11 27	04 41.81	+20 35.5					
1980 12 07	04 32.28	+20 27.4	1.791	2.773	174.7	1.9	16.5
1980 12 17	04 23.21	+20 19.6					
1980 12 27	04 15.67	+20 14.4	1.872	2.771	150.6	10.0	17.0
1981 01 06	04 10.39	+20 13.9					
1981 01 16	04 07.79	+20 19.4	2.048	2.769	128.5	16.1	17.3
1981 01 26	04 07.97	+20 31.5					
1981 02 05	04 10.82	+20 49.5	2.286	2.768	108.9	19.7	17.7
1981 02 15	04 16.12	+21 12.4					
1981 02 25	04 23.60	+21 38.6	2.552	2.767	91.8	21.0	17.9

(2235) A924 GA Elements MPC 5314

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 09 18	05 01.19	+11 49.9	2.517	2.857	99.3	20.3	16.3
1980 09 28	05 07.44	+10 40.3					
1980 10 08	05 11.62	+09 20.6	2.241	2.824	115.9	18.6	15.9
1980 10 18	05 13.50	+07 52.5					
1980 10 28	05 12.92	+06 18.4	2.010	2.793	134.0	14.8	15.6
1980 11 07	05 09.88	+04 42.2					
1980 11 17	05 04.61	+03 09.2	1.853	2.764	151.6	9.8	15.3
1980 11 27	04 57.64	+01 45.5					
1980 12 07	04 49.74	+00 37.3	1.797	2.736	158.1	7.7	15.1
1980 12 17	04 41.88	-00 10.3					
1980 12 27	04 35.05	-00 35.1	1.848	2.711	144.7	12.1	15.3
1981 01 06	04 29.99	-00 37.5					
1981 01 16	04 27.23	-00 19.9	1.986	2.688	126.3	17.2	15.5
1981 01 26	04 27.01	+00 13.6					
1981 02 05	04 29.31	+00 58.7	2.182	2.667	108.7	20.5	15.8
1981 02 15	04 34.02	+01 51.4					
1981 02 25	04 40.92	+02 48.1	2.406	2.649	93.0	21.9	16.0

1969 TO1 Elements MPC 4644

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 09 18	05 19.35	+20 57.6	2.043	2.343	94.3	25.3	17.9
1980 09 28	05 27.45	+20 38.3					
1980 10 08	05 32.91	+20 13.4	1.832	2.378	110.8	23.1	17.6
1980 10 18	05 35.37	+19 43.8					
1980 10 28	05 34.57	+19 10.5	1.648	2.412	130.2	18.3	17.3
1980 11 07	05 30.44	+18 34.5					
1980 11 17	05 23.22	+17 56.7	1.524	2.444	152.7	10.7	17.0
1980 11 27	05 13.61	+17 19.0					
1980 12 07	05 02.71	+16 43.4	1.494	2.476	173.8	2.5	16.7
1980 12 17	04 51.88	+16 12.9					
1980 12 27	04 42.46	+15 50.3	1.577	2.505	155.5	9.4	17.1
1981 01 06	04 35.42	+15 37.5					
1981 01 16	04 31.30	+15 35.3	1.759	2.533	132.9	16.5	17.5
1981 01 26	04 30.25	+15 42.8					
1981 02 05	04 32.12	+15 58.4	2.007	2.559	113.0	20.8	17.9
1981 02 15	04 36.65	+16 20.0					
1981 02 25	04 43.48	+16 45.3	2.289	2.583	95.7	22.4	18.3

(2155) 6542 P-L Elements MPC 4779

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 09 18	05 15.74	+24 00.0	2.388	2.669	94.9	22.0	18.1
1980 09 28	05 23.19	+24 17.3					
1980 10 08	05 28.35	+24 32.5	2.144	2.679	111.6	20.3	17.9
1980 10 18	05 30.87	+24 46.1					
1980 10 28	05 30.53	+24 58.4	1.931	2.689	131.0	16.2	17.6
1980 11 07	05 27.22	+25 08.6					
1980 11 17	05 21.11	+25 15.7	1.782	2.701	153.1	9.5	17.2
1980 11 27	05 12.77	+25 18.3					
1980 12 07	05 03.09	+25 15.5	1.729	2.713	176.5	1.3	16.8
1980 12 17	04 53.28	+25 07.6					
1980 12 27	04 44.56	+24 56.5	1.790	2.726	157.8	7.8	17.2
1981 01 06	04 37.88	+24 45.0					
1981 01 16	04 33.88	+24 35.8	1.954	2.740	135.1	14.7	17.6
1981 01 26	04 32.76	+24 30.8					
1981 02 05	04 34.49	+24 30.6	2.190	2.754	114.9	18.9	17.9
1981 02 15	04 38.86	+24 35.1					
1981 02 25	04 45.57	+24 43.1	2.464	2.769	97.3	20.8	18.2

1978 TB Elements MPC 4664

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 09 18	05 25.02	+28 40.2	5.436	5.571	92.5	10.4	20.1
1980 09 28	05 27.13	+28 52.6					
1980 10 08	05 27.92	+29 04.2	5.133	5.575	111.4	9.6	20.0
1980 10 18	05 27.32	+29 14.7					
1980 10 28	05 25.33	+29 23.5	4.871	5.580	131.6	7.7	19.8
1980 11 07	05 22.03	+29 30.0					
1980 11 17	05 17.58	+29 33.6	4.686	5.584	152.9	4.6	19.6
1980 11 27	05 12.26	+29 33.6					
1980 12 07	05 06.42	+29 29.7	4.610	5.588	172.5	1.3	19.4
1980 12 17	05 00.49	+29 22.2					
1980 12 27	04 54.89	+29 11.6	4.658	5.591	159.7	3.5	19.6
1981 01 06	04 50.00	+28 59.0					
1981 01 16	04 46.16	+28 45.4	4.824	5.595	138.0	6.8	19.8
1981 01 26	04 43.57	+28 32.3					
1981 02 05	04 42.34	+28 20.4	5.080	5.597	117.1	9.0	20.0
1981 02 15	04 42.53	+28 10.6					
1981 02 25	04 44.08	+28 03.2	5.387	5.600	97.3	10.1	20.1

(2141) 1970 QC1 Elements MPC 4775

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 09 18	05 35.89	+26 21.5	2.612	2.802	90.2	21.0	17.3
1980 09 28	05 43.33	+26 21.9					
1980 10 08	05 48.54	+26 19.7	2.370	2.828	107.0	19.7	17.1
1980 10 18	05 51.22	+26 15.3					
1980 10 28	05 51.14	+26 08.7	2.152	2.854	126.2	16.3	16.8
1980 11 07	05 48.20	+25 59.5					
1980 11 17	05 42.52	+25 46.7	1.992	2.880	148.2	10.4	16.5
1980 11 27	05 34.55	+25 29.2					
1980 12 07	05 25.06	+25 06.6	1.926	2.905	172.3	2.6	16.2
1980 12 17	05 15.10	+24 39.3					
1980 12 27	05 05.81	+24 09.3	1.976	2.930	162.6	5.7	16.4
1981 01 06	04 58.14	+23 39.5					
1981 01 16	04 52.78	+23 12.8	2.137	2.953	139.2	12.6	16.8
1981 01 26	04 50.05	+22 51.1					
1981 02 05	04 49.98	+22 35.2	2.380	2.976	118.2	17.0	17.1
1981 02 15	04 52.45	+22 25.2					
1981 02 25	04 57.19	+22 20.1	2.668	2.997	99.6	19.0	17.5

1979 QE — Elements MPC 5009

Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1980 09	18	05 43.93	+30 29.6	2.807	2.954	-0.90	+2.5	17.1
1980 09	28	05 52.12	+30 28.3					
1980 10	08	05 58.24	+30 24.2	2.531	2.948	-1.00	+3.2	16.8
1980 10	18	06 02.00	+30 17.4					
1980 10	28	06 03.12	+30 07.6	2.276	2.942	-1.13	+3.6	16.5
1980 11	07	06 01.44	+29 54.1					
1980 11	17	05 56.95	+29 35.2	2.075	2.937	-1.26	+3.6	16.2
1980 11	27	05 49.98	+29 09.3					
1980 12	07	05 41.14	+28 35.1	1.962	2.932	-1.34	+3.2	15.8
1980 12	17	05 31.40	+27 52.5					
1980 12	27	05 21.91	+27 03.4	1.964	2.928	-1.32	+2.4	15.9
1981 01	06	05 13.71	+26 11.2					
1981 01	16	05 07.65	+25 19.9	2.080	2.925	-1.20	+1.9	16.2
1981 01	26	05 04.18	+24 32.9					
1981 02	05	05 03.43	+23 52.1	2.284	2.921	-1.06	+1.8	16.5
1981 02	15	05 05.35	+23 18.4					
1981 02	25	05 09.69	+22 51.1	2.539	2.919	-0.93	+1.9	16.8

(2192) 1972 HP — Elements MPC 5129

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 09	18	05 47.61	+16 00.0	2.982	3.111	87.8	18.8	17.8
1980 09	28	05 54.22	+15 26.3					
1980 10	08	05 58.97	+14 49.0	2.724	3.128	104.5	18.0	17.6
1980 10	18	06 01.62	+14 09.2					
1980 10	28	06 02.02	+13 28.2	2.490	3.146	123.2	15.3	17.3
1980 11	07	06 00.09	+12 47.8					
1980 11	17	05 55.89	+12 09.7	2.311	3.163	143.8	10.6	17.1
1980 11	27	05 49.74	+11 35.9					
1980 12	07	05 42.15	+11 08.4	2.223	3.180	163.7	5.0	16.8
1980 12	17	05 33.87	+10 48.9					
1980 12	27	05 25.74	+10 38.6	2.249	3.197	161.6	5.6	16.9
1981 01	06	05 18.57	+10 38.0					
1981 01	16	05 13.02	+10 46.5	2.388	3.214	141.2	11.1	17.2
1981 01	26	05 09.52	+11 03.1					
1981 02	05	05 08.24	+11 26.0	2.613	3.230	120.7	15.2	17.5
1981 02	15	05 09.19	+11 53.5					
1981 02	25	05 12.25	+12 23.5	2.891	3.246	102.1	17.4	17.8

1975 TU2 — Elements MPC 5356

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 10	08	06 11.68	+16 40.9	2.406	2.784	101.5	20.6	18.6
1980 10	18	06 16.24	+16 22.5					
1980 10	28	06 18.39	+16 04.8	2.147	2.776	119.6	18.1	18.3
1980 11	07	06 17.89	+15 49.4					
1980 11	17	06 14.64	+15 37.7	1.934	2.767	140.2	13.2	17.9
1980 11	27	06 08.78	+15 31.0					
1980 12	07	06 00.71	+15 30.0	1.801	2.757	162.6	6.1	17.6
1980 12	17	05 51.22	+15 35.1					
1980 12	27	05 41.39	+15 46.3	1.777	2.746	167.9	4.3	17.5
1981 01	06	05 32.32	+16 03.3					
1981 01	16	05 25.03	+16 25.6	1.866	2.735	145.6	11.7	17.8
1981 01	26	05 20.20	+16 52.4					
1981 02	05	05 18.14	+17 22.8	2.045	2.723	124.1	17.4	18.1
1981 02	15	05 18.93	+17 55.5					
1981 02	25	05 22.41	+18 29.1	2.278	2.711	105.1	20.6	18.4
1981 03	07	05 28.33	+19 02.3					
1981 03	17	05 36.40	+19 33.6	2.533	2.698	88.5	21.6	18.7

4578 P-L Elements MPC 5323

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 10 08	06 14.61	+18 22.7	1.590	2.032	100.9	28.9	19.1
1980 10 18	06 22.22	+17 56.1					
1980 10 28	06 26.50	+17 29.8	1.422	2.080	117.8	25.0	18.8
1980 11 07	06 27.08	+17 06.3					
1980 11 17	06 23.77	+16 47.7	1.287	2.129	138.2	18.0	18.5
1980 11 27	06 16.77	+16 35.4					
1980 12 07	06 06.76	+16 30.1	1.220	2.177	161.7	8.2	18.2
1980 12 17	05 55.01	+16 31.8					
1980 12 27	05 43.19	+16 40.1	1.252	2.225	168.8	4.9	18.2
1981 01 06	05 32.89	+16 54.5					
1981 01 16	05 25.34	+17 14.5	1.389	2.271	145.9	14.1	18.7
1981 01 26	05 21.18	+17 39.1					
1981 02 05	05 20.48	+18 07.1	1.608	2.316	124.8	20.5	19.2
1981 02 15	05 23.07	+18 36.9					
1981 02 25	05 28.55	+19 06.8	1.876	2.359	106.6	23.7	19.7
1981 03 07	05 36.49	+19 35.1					
1981 03 17	05 46.51	+20 00.2	2.167	2.400	90.9	24.5	20.0

1968 SB Elements MPC 5037

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 10 08	06 28.87	+23 30.5	2.568	2.880	97.8	20.1	17.8
1980 10 18	06 34.12	+23 34.0					
1980 10 28	06 36.98	+23 39.6	2.343	2.916	115.8	17.9	17.6
1980 11 07	06 37.22	+23 48.1					
1980 11 17	06 34.76	+23 59.3	2.157	2.953	136.4	13.3	17.3
1980 11 27	06 29.72	+24 12.5					
1980 12 07	06 22.48	+24 26.1	2.048	2.991	159.5	6.6	17.1
1980 12 17	06 13.71	+24 38.2					
1980 12 27	06 04.41	+24 47.4	2.047	3.029	175.8	1.4	16.8
1981 01 06	05 55.57	+24 53.2					
1981 01 16	05 48.17	+24 56.0	2.164	3.067	151.9	8.7	17.3
1981 01 26	05 42.88	+24 57.0					
1981 02 05	05 40.04	+24 57.4	2.380	3.105	129.8	14.1	17.7
1981 02 15	05 39.77	+24 58.0					
1981 02 25	05 41.94	+24 59.2	2.663	3.143	110.0	17.2	18.0
1981 03 07	05 46.33	+25 00.6					
1981 03 17	05 52.69	+25 01.7	2.978	3.180	92.5	18.2	18.3

(2166) Handahl Elements MPC 4831

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 10 08	06 40.41	+17 24.2	2.393	2.669	94.7	21.9	19.0
1980 10 18	06 45.77	+16 59.4					
1980 10 28	06 48.67	+16 36.2	2.161	2.701	112.4	19.9	18.8
1980 11 07	06 48.85	+16 16.2					
1980 11 17	06 46.12	+16 00.7	1.960	2.730	132.8	15.4	18.5
1980 11 27	06 40.55	+15 50.9					
1980 12 07	06 32.44	+15 47.4	1.829	2.757	155.7	8.5	18.2
1980 12 17	06 22.46	+15 50.0					
1980 12 27	06 11.65	+15 58.4	1.803	2.780	172.3	2.7	17.9
1981 01 06	06 01.15	+16 11.7					
1981 01 16	05 52.08	+16 29.1	1.894	2.801	151.9	9.5	18.3
1981 01 26	05 45.28	+16 49.9					
1981 02 05	05 41.16	+17 13.3	2.086	2.818	129.5	15.7	18.7
1981 02 15	05 39.89	+17 38.4					
1981 02 25	05 41.34	+18 04.0	2.343	2.833	109.6	19.2	19.1
1981 03 07	05 45.26	+18 29.1					
1981 03 17	05 51.38	+18 52.5	2.629	2.844	92.1	20.5	19.3

1936 TK Elements MPC 5012

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	10 08	06 37.52	+32 06.3	2.235	2.547	96.3	22.9	16.8
1980	10 18	06 45.49	+31 55.5					
1980	10 28	06 50.68	+31 43.9	2.017	2.575	113.1	20.8	16.6
1980	11 07	06 52.77	+31 31.6					
1980	11 17	06 51.55	+31 17.7	1.831	2.605	132.7	16.2	16.3
1980	11 27	06 47.05	+31 00.4					
1980	12 07	06 39.64	+30 37.1	1.712	2.638	155.0	9.1	16.0
1980	12 17	06 30.10	+30 05.4					
1980	12 27	06 19.65	+29 24.2	1.692	2.672	173.9	2.2	15.7
1981	01 06	06 09.59	+28 34.9					
1981	01 16	06 01.17	+27 40.8	1.787	2.709	154.6	9.0	16.1
1981	01 26	05 55.23	+26 46.1					
1981	02 05	05 52.18	+25 54.1	1.983	2.747	132.5	15.3	16.5
1981	02 15	05 52.07	+25 06.9					
1981	02 25	05 54.70	+24 25.0	2.247	2.786	112.9	19.1	16.9
1981	03 07	05 59.76	+23 47.7					
1981	03 17	06 06.91	+23 14.0	2.549	2.827	95.7	20.5	17.3

1968 UQ Elements MPC 5037

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	10 08	06 44.02	+22 43.7	2.591	2.846	94.3	20.5	17.3
1980	10 18	06 50.76	+22 34.7					
1980	10 28	06 55.26	+22 27.5	2.348	2.865	111.6	18.8	17.1
1980	11 07	06 57.28	+22 23.3					
1980	11 17	06 56.64	+22 22.6	2.137	2.887	131.3	14.9	16.8
1980	11 27	06 53.34	+22 25.6					
1980	12 07	06 47.59	+22 31.4	1.994	2.909	153.6	8.6	16.5
1980	12 17	06 39.89	+22 38.6					
1980	12 27	06 31.10	+22 45.8	1.950	2.933	177.7	0.8	16.0
1981	01 06	06 22.21	+22 51.5					
1981	01 16	06 14.26	+22 55.5	2.023	2.958	157.9	7.2	16.5
1981	01 26	06 08.11	+22 58.1					
1981	02 05	06 04.27	+22 59.8	2.201	2.984	135.3	13.4	16.9
1981	02 15	06 03.02	+23 01.2					
1981	02 25	06 04.32	+23 02.4	2.453	3.010	115.1	17.3	17.2
1981	03 07	06 08.00	+23 03.1					
1981	03 17	06 13.82	+23 02.8	2.746	3.037	97.3	19.0	17.5

(2133) Franceswright Elements MPC 4742

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	10 08	06 48.44	+22 28.9	1.947	2.238	93.3	26.5	18.3
1980	10 18	06 57.83	+22 41.4					
1980	10 28	07 04.55	+22 58.8	1.747	2.279	109.5	24.3	18.1
1980	11 07	07 08.21	+23 23.4					
1980	11 17	07 08.45	+23 56.3	1.570	2.321	128.8	19.4	17.8
1980	11 27	07 05.10	+24 37.2					
1980	12 07	06 58.26	+25 23.8	1.451	2.363	151.4	11.5	17.4
1980	12 17	06 48.51	+26 11.7					
1980	12 27	06 37.03	+26 55.5	1.423	2.404	175.0	2.0	17.1
1981	01 06	06 25.31	+27 30.7					
1981	01 16	06 14.93	+27 55.7	1.507	2.445	157.5	8.8	17.5
1981	01 26	06 07.15	+28 11.2					
1981	02 05	06 02.62	+28 19.6	1.691	2.485	134.7	16.4	18.0
1981	02 15	06 01.55	+28 23.4					
1981	02 25	06 03.75	+28 24.0	1.942	2.524	114.9	20.8	18.4
1981	03 07	06 08.85	+28 22.1					
1981	03 17	06 16.47	+28 17.6	2.230	2.561	97.7	22.6	18.8

1979 SF Elements MPC 5126

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1980 10 08	06 55.67 +31 40.0	2.626	2.849	-0.92	+2.3	18.3
1980 10 18	07 02.94 +31 52.9					
1980 10 28	07 07.85 +32 09.2	2.368	2.857	-1.03	+3.0	18.1
1980 11 07	07 10.08 +32 29.2					
1980 11 17	07 09.35 +32 52.3	2.138	2.864	-1.18	+3.4	17.8
1980 11 27	07 05.53 +33 16.4					
1980 12 07	06 58.72 +33 38.1	1.972	2.870	-1.33	+3.3	17.5
1980 12 17	06 49.42 +33 53.0					
1980 12 27	06 38.55 +33 57.0	1.904	2.875	-1.41	+2.4	17.2
1981 01 06	06 27.33 +33 47.7					
1981 01 16	06 17.09 +33 25.4	1.952	2.879	-1.36	+1.4	17.4
1981 01 26	06 08.93 +32 53.3					
1981 02 05	06 03.53 +32 15.1	2.105	2.882	-1.21	+0.8	17.7
1981 02 15	06 01.18 +31 34.7					
1981 02 25	06 01.83 +30 54.7	2.332	2.884	-1.05	+0.8	18.1
1981 03 07	06 05.24 +30 16.2					
1981 03 17	06 11.08 +29 39.6	2.598	2.885	-0.92	+1.1	18.3

1979 MC Elements MPC 5008

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1980 10 08	07 02.56 +10 59.0	2.615	2.780	-0.71	-1.0	19.8
1980 10 18	07 08.32 +10 22.9					
1980 10 28	07 11.89 +09 49.1	2.385	2.822	-0.78	-1.1	19.6
1980 11 07	07 13.05 +09 19.6					
1980 11 17	07 11.60 +08 56.9	2.177	2.861	-0.88	-1.2	19.3
1980 11 27	07 07.52 +08 43.4					
1980 12 07	07 00.97 +08 41.0	2.025	2.898	-0.98	-1.3	19.1
1980 12 17	06 52.38 +08 51.2					
1980 12 27	06 42.52 +09 14.1	1.970	2.931	-1.04	-1.4	18.9
1981 01 06	06 32.35 +09 48.2					
1981 01 16	06 22.90 +10 31.4	2.031	2.961	-1.01	-1.4	19.1
1981 01 26	06 15.07 +11 20.6					
1981 02 05	06 09.46 +12 12.9	2.203	2.987	-0.92	-1.4	19.4
1981 02 15	06 06.38 +13 05.8					
1981 02 25	06 05.88 +13 57.1	2.453	3.011	-0.81	-1.3	19.7
1981 03 07	06 07.81 +14 45.3					
1981 03 17	06 11.97 +15 29.2	2.745	3.031	-0.72	-1.2	20.0

(2241) 1979 WM Elements MPC 5316

Date ET	R. A. (1950) Decl.	Delta	r	Elong.	Phase	Mag.
1980 10 08	07 01.17 +20 49.1	5.215	5.312	90.2	10.8	17.0
1980 10 18	07 03.58 +20 27.6					
1980 10 28	07 04.69 +20 07.0	4.894	5.303	109.1	10.2	16.8
1980 11 07	07 04.43 +19 47.5					
1980 11 17	07 02.80 +19 29.5	4.609	5.293	129.5	8.3	16.6
1980 11 27	06 59.84 +19 13.1					
1980 12 07	06 55.71 +18 58.3	4.398	5.283	151.2	5.2	16.4
1980 12 17	06 50.64 +18 45.0					
1980 12 27	06 44.98 +18 33.1	4.296	5.273	172.7	1.3	16.1
1981 01 06	06 39.11 +18 22.5					
1981 01 16	06 33.47 +18 13.1	4.319	5.263	161.9	3.3	16.3
1981 01 26	06 28.46 +18 04.9					
1981 02 05	06 24.39 +17 57.9	4.461	5.253	139.9	7.0	16.5
1981 02 15	06 21.53 +17 51.9					
1981 02 25	06 20.01 +17 46.9	4.695	5.243	118.8	9.5	16.7
1981 03 07	06 19.87 +17 42.4					
1981 03 17	06 21.11 +17 38.2	4.983	5.233	99.1	10.8	16.8

(2250) 1972 HN Elements MPC 5348

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	10 08	07 11.19	+20 58.4	3.242	3.357	87.9	17.3	18.1
1980	10 18	07 16.56	+20 45.7					
1980	10 28	07 20.03	+20 35.9	2.987	3.392	105.6	16.4	17.9
1980	11 07	07 21.43	+20 30.0					
1980	11 17	07 20.60	+20 28.5	2.756	3.426	125.5	13.6	17.7
1980	11 27	07 17.55	+20 31.6					
1980	12 07	07 12.38	+20 39.1	2.586	3.459	147.7	8.8	17.5
1980	12 17	07 05.42	+20 49.7					
1980	12 27	06 57.26	+21 02.1	2.515	3.490	171.4	2.4	17.1
1981	01 06	06 48.61	+21 14.8					
1981	01 16	06 40.31	+21 26.7	2.565	3.521	163.9	4.4	17.3
1981	01 26	06 33.11	+21 37.1					
1981	02 05	06 27.59	+21 45.9	2.731	3.550	140.7	10.1	17.7
1981	02 15	06 24.11	+21 53.2					
1981	02 25	06 22.81	+21 59.3	2.986	3.577	119.4	13.9	18.0
1981	03 07	06 23.64	+22 04.0					
1981	03 17	06 26.47	+22 07.2	3.291	3.604	100.2	15.8	18.2

(2211) 1951 WO2 Elements MPC 5218

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	10 08	07 10.67	+07 15.7	3.145	3.240	86.4	17.9	19.5
1980	10 18	07 16.38	+06 40.0					
1980	10 28	07 20.32	+06 06.2	2.887	3.257	103.0	17.3	19.3
1980	11 07	07 22.30	+05 36.5					
1980	11 17	07 22.18	+05 13.4	2.649	3.275	121.4	14.9	19.0
1980	11 27	07 19.91	+04 59.3					
1980	12 07	07 15.58	+04 56.5	2.464	3.291	141.4	10.8	18.8
1980	12 17	07 09.46	+05 06.8					
1980	12 27	07 02.06	+05 31.1	2.368	3.308	159.7	5.9	18.6
1981	01 06	06 54.04	+06 08.6					
1981	01 16	06 46.19	+06 57.6	2.385	3.323	159.2	6.0	18.6
1981	01 26	06 39.28	+07 55.0					
1981	02 05	06 33.91	+08 57.4	2.517	3.339	140.7	10.8	18.9
1981	02 15	06 30.50	+10 01.6					
1981	02 25	06 29.23	+11 04.6	2.738	3.353	120.7	14.7	19.2
1981	03 07	06 30.11	+12 04.3					
1981	03 17	06 33.05	+12 59.3	3.015	3.367	102.1	16.8	19.4

(2207) 1977 QH1 Elements MPC 5179

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980	10 08	07 12.50	+16 15.1	5.016	5.062	87.0	11.4	17.3
1980	10 18	07 15.68	+16 00.4					
1980	10 28	07 17.59	+15 47.6	4.706	5.062	105.4	10.9	17.1
1980	11 07	07 18.16	+15 37.5					
1980	11 17	07 17.32	+15 30.7	4.426	5.063	125.4	9.2	17.0
1980	11 27	07 15.13	+15 27.6					
1980	12 07	07 11.68	+15 28.5	4.211	5.063	146.6	6.1	16.8
1980	12 17	07 07.17	+15 33.3					
1980	12 27	07 01.92	+15 41.7	4.098	5.063	167.8	2.3	16.5
1981	01 06	06 56.31	+15 53.3					
1981	01 16	06 50.76	+16 07.2	4.106	5.064	165.3	2.8	16.5
1981	01 26	06 45.71	+16 22.8					
1981	02 05	06 41.51	+16 39.4	4.235	5.064	143.8	6.6	16.8
1981	02 15	06 38.46	+16 56.1					
1981	02 25	06 36.73	+17 12.5	4.460	5.065	122.7	9.5	17.0
1981	03 07	06 36.40	+17 28.0					
1981	03 17	06 37.49	+17 42.1	4.748	5.065	103.0	11.0	17.2

1979 SR Elements MPC 5126

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1980 10 28	07 31.77 +12 39.4	2.575	2.939	-0.78	+1.8	18.8
1980 11 07	07 34.58 +11 55.6					
1980 11 17	07 35.01 +11 16.3	2.346	2.969	-0.87	+2.0	18.6
1980 11 27	07 32.98 +10 43.5					
1980 12 07	07 28.51 +10 19.1	2.168	2.998	-0.96	+2.0	18.3
1980 12 17	07 21.87 +10 04.7					
1980 12 27	07 13.63 +10 00.9	2.075	3.025	-1.03	+2.0	18.1
1981 01 06	07 04.53 +10 07.6					
1981 01 16	06 55.54 +10 23.9	2.096	3.051	-1.03	+1.8	18.1
1981 01 26	06 47.55 +10 47.6					
1981 02 05	06 41.30 +11 16.5	2.230	3.076	-0.96	+1.6	18.4
1981 02 15	06 37.25 +11 48.2					
1981 02 25	06 35.62 +12 20.5	2.454	3.099	-0.86	+1.4	18.8
1981 03 07	06 36.36 +12 51.5					
1981 03 17	06 39.34 +13 19.7	2.732	3.120	-0.76	+1.3	19.1
1981 03 27	06 44.32 +13 43.8					
1981 04 06	06 51.04 +14 03.1	3.031	3.139	-0.68	+1.2	19.3

1979 MH Elements MPC 5352

Date ET	R. A. (1950) Decl.	Delta	r	Elong.	Phase	Mag.
1980 10 28	07 32.65 +14 16.4	1.860	2.278	101.6	25.3	18.2
1980 11 07	07 37.89 +13 26.4					
1980 11 17	07 40.11 +12 41.9	1.666	2.316	119.3	21.8	17.9
1980 11 27	07 39.10 +12 05.8					
1980 12 07	07 34.79 +11 40.6	1.513	2.354	140.0	15.6	17.6
1980 12 17	07 27.43 +11 28.3					
1980 12 27	07 17.74 +11 29.8	1.436	2.391	162.2	7.2	17.3
1981 01 06	07 06.82 +11 44.2					
1981 01 16	06 56.07 +12 09.4	1.464	2.426	164.5	6.2	17.4
1981 01 26	06 46.83 +12 42.2					
1981 02 05	06 40.07 +13 19.3	1.599	2.460	143.1	13.9	17.8
1981 02 15	06 36.34 +13 57.6					
1981 02 25	06 35.75 +14 34.5	1.816	2.492	122.5	19.6	18.2
1981 03 07	06 38.13 +15 08.2					
1981 03 17	06 43.18 +15 37.1	2.082	2.522	104.5	22.5	18.6
1981 03 27	06 50.52 +15 59.9					
1981 04 06	06 59.77 +16 15.9	2.366	2.549	88.8	23.1	18.9

(2116) Mtskheta Elements MPC 4610

Date ET	R. A. (1950) Decl.	Delta	r	Elong.	Phase	Mag.
1980 10 28	07 42.74 +11 00.7	2.294	2.632	98.6	21.9	17.9
1980 11 07	07 47.89 +10 16.7					
1980 11 17	07 50.60 +09 38.2	2.056	2.643	116.0	19.6	17.6
1980 11 27	07 50.69 +09 08.2					
1980 12 07	07 48.04 +08 49.2	1.857	2.655	135.9	15.0	17.3
1980 12 17	07 42.74 +08 43.7					
1980 12 27	07 35.22 +08 53.0	1.731	2.665	157.2	8.2	17.0
1981 01 06	07 26.19 +09 17.0					
1981 01 16	07 16.69 +09 53.9	1.709	2.675	166.4	5.0	16.9
1981 01 26	07 07.87 +10 40.3					
1981 02 05	07 00.70 +11 32.1	1.799	2.685	147.7	11.3	17.2
1981 02 15	06 55.92 +12 25.6					
1981 02 25	06 53.86 +13 17.3	1.981	2.694	126.8	17.1	17.5
1981 03 07	06 54.57 +14 04.9					
1981 03 17	06 57.92 +14 46.5	2.223	2.702	108.1	20.5	17.9
1981 03 27	07 03.63 +15 21.1					
1981 04 06	07 11.39 +15 47.9	2.490	2.710	91.6	21.7	18.1

1977 TJ3 Elements MPC 5037

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 10 28	07 46.87	-12 00.7	5.147	5.282	92.4	10.8	17.1
1980 11 07	07 48.09	-13 09.1					
1980 11 17	07 48.04	-14 14.1	4.891	5.280	107.9	10.3	17.0
1980 11 27	07 46.71	-15 13.5					
1980 12 07	07 44.15	-16 04.8	4.675	5.277	123.1	9.0	16.9
1980 12 17	07 40.47	-16 45.3					
1980 12 27	07 35.90	-17 12.9	4.527	5.275	135.6	7.5	16.8
1981 01 06	07 30.73	-17 25.9					
1981 01 16	07 25.32	-17 23.6	4.470	5.272	141.1	6.7	16.7
1981 01 26	07 20.07	-17 06.3					
1981 02 05	07 15.36	-16 35.5	4.511	5.269	136.3	7.4	16.7
1981 02 15	07 11.51	-15 53.4					
1981 02 25	07 08.76	-15 03.1	4.643	5.266	124.3	8.9	16.8
1981 03 07	07 07.26	-14 07.6					
1981 03 17	07 07.09	-13 09.7	4.845	5.262	109.6	10.3	17.0
1981 03 27	07 08.24	-12 12.3					
1981 04 06	07 10.65	-11 17.6	5.088	5.259	94.4	10.9	17.1

1979 SP Elements MPC 5126

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1980 10 28	07 50.54	+19 27.6	2.499	2.821	-0.93	+1.9	17.7
1980 11 07	07 55.89	+19 11.7					
1980 11 17	07 58.89	+19 02.2	2.267	2.847	-1.03	+2.3	17.5
1980 11 27	07 59.35	+19 00.2					
1980 12 07	07 57.19	+19 06.5	2.075	2.876	-1.16	+2.5	17.2
1980 12 17	07 52.49	+19 20.6					
1980 12 27	07 45.66	+19 41.1	1.960	2.905	-1.26	+2.4	16.9
1981 01 06	07 37.35	+20 05.3					
1981 01 16	07 28.49	+20 30.6	1.953	2.934	-1.29	+2.0	16.6
1981 01 26	07 20.14	+20 54.1					
1981 02 05	07 13.18	+21 14.3	2.062	2.965	-1.22	+1.5	17.1
1981 02 15	07 08.33	+21 30.1					
1981 02 25	07 05.93	+21 41.6	2.268	2.996	-1.10	+1.2	17.5
1981 03 07	07 06.06	+21 48.5					
1981 03 17	07 08.61	+21 51.1	2.538	3.027	-0.96	+1.1	17.8
1981 03 27	07 13.36	+21 49.1					
1981 04 06	07 20.01	+21 42.5	2.840	3.058	-0.85	+1.2	18.1

1979 OC Elements MPC 5175

Date ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1980 10 28	07 58.00	+17 52.2	2.099	2.419	-1.06	+4.8	18.6
1980 11 07	08 04.56	+16 58.9					
1980 11 17	08 08.49	+16 09.3	1.862	2.432	-1.20	+5.5	18.3
1980 11 27	08 09.50	+15 25.5					
1980 12 07	08 07.35	+14 49.2	1.659	2.444	-1.39	+6.1	17.9
1980 12 17	08 02.03	+14 21.9					
1980 12 27	07 53.87	+14 04.2	1.522	2.455	-1.57	+6.4	17.6
1981 01 06	07 43.59	+13 55.9					
1981 01 16	07 32.39	+13 55.7	1.486	2.464	-1.63	+6.0	17.3
1981 01 26	07 21.65	+14 01.9					
1981 02 05	07 12.63	+14 12.2	1.563	2.472	-1.52	+5.3	17.7
1981 02 15	07 06.28	+14 24.8					
1981 02 25	07 03.04	+14 37.7	1.732	2.478	-1.33	+4.6	18.1
1981 03 07	07 02.96	+14 49.3					
1981 03 17	07 05.86	+14 58.1	1.960	2.482	-1.14	+4.1	18.4
1981 03 27	07 11.40	+15 02.7					
1981 04 06	07 19.20	+15 01.9	2.214	2.485	-0.99	+3.8	18.7

(612) Veronika Elements MPC 5031

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 10 28	08 04.76	-01 40.5	3.604	3.746	90.5	15.4	18.4
1980 11 07	08 07.28	-02 47.8					
1980 11 17	08 08.07	-03 51.4	3.360	3.777	107.5	14.5	18.2
1980 11 27	08 07.05	-04 48.7					
1980 12 07	08 04.22	-05 36.9	3.148	3.805	125.5	12.2	18.1
1980 12 17	07 59.67	-06 13.0					
1980 12 27	07 53.67	-06 34.4	3.004	3.832	142.6	9.0	17.9
1981 01 06	07 46.62	-06 39.1					
1981 01 16	07 39.09	-06 26.5	2.958	3.857	152.4	6.8	17.8
1981 01 26	07 31.69	-05 57.6					
1981 02 05	07 25.01	-05 14.8	3.024	3.880	145.9	8.2	17.9
1981 02 15	07 19.58	-04 21.6					
1981 02 25	07 15.73	-03 22.1	3.192	3.900	129.8	11.2	18.1
1981 03 07	07 13.65	-02 20.1					
1981 03 17	07 13.40	-01 19.1	3.435	3.919	112.1	13.6	18.4
1981 03 27	07 14.91	-00 21.6					
1981 04 06	07 18.05	+00 30.5	3.720	3.936	95.0	14.7	18.6

(2187) La Silla Elements MPC 5036

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 10 28	08 13.64	+10 55.7	2.383	2.600	91.1	22.5	18.5
1980 11 07	08 20.55	+10 30.8					
1980 11 17	08 25.26	+10 14.3	2.144	2.624	108.0	21.0	18.2
1980 11 27	08 27.53	+10 08.9					
1980 12 07	08 27.13	+10 17.2	1.929	2.647	127.5	17.2	17.9
1980 12 17	08 23.96	+10 41.5					
1980 12 27	08 18.19	+11 22.3	1.773	2.669	149.8	10.7	17.6
1981 01 06	08 10.25	+12 18.4					
1981 01 16	08 00.93	+13 26.3	1.713	2.691	171.9	3.0	17.3
1981 01 26	07 51.34	+14 40.6					
1981 02 05	07 42.57	+15 55.6	1.770	2.711	158.4	7.7	17.6
1981 02 15	07 35.63	+17 06.2					
1981 02 25	07 31.17	+18 09.1	1.932	2.730	135.7	14.7	17.9
1981 03 07	07 29.46	+19 02.4					
1981 03 17	07 30.54	+19 45.5	2.170	2.747	115.3	19.1	18.3
1981 03 27	07 34.20	+20 18.4					
1981 04 06	07 40.14	+20 41.2	2.446	2.763	97.6	21.0	18.6

(2223) 1977 TL3 Elements MPC 5222

Date ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1980 10 28	08 16.33	+03 41.3	5.127	5.202	88.8	11.0	17.2
1980 11 07	08 18.50	+02 59.2					
1980 11 17	08 19.44	+02 20.2	4.826	5.202	107.0	10.5	17.0
1980 11 27	08 19.11	+01 45.7					
1980 12 07	08 17.52	+01 17.0	4.559	5.201	126.1	8.8	16.9
1980 12 17	08 14.72	+00 55.5					
1980 12 27	08 10.87	+00 42.1	4.363	5.200	145.1	6.2	16.7
1981 01 06	08 06.20	+00 37.6					
1981 01 16	08 01.04	+00 42.1	4.267	5.199	159.4	3.8	16.5
1981 01 26	07 55.76	+00 55.2					
1981 02 05	07 50.73	+01 15.6	4.288	5.198	154.9	4.6	16.6
1981 02 15	07 46.34	+01 41.8					
1981 02 25	07 42.87	+02 11.8	4.423	5.198	137.7	7.4	16.8
1981 03 07	07 40.53	+02 43.6					
1981 03 17	07 39.46	+03 15.4	4.645	5.197	118.7	9.7	16.9
1981 03 27	07 39.69	+03 45.5					
1981 04 06	07 41.19	+04 12.7	4.922	5.196	100.3	10.9	17.1

1979 SQ Elements MPC 5126

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1980 10 28	08 24.52 +19 47.4	2.496	2.696	-0.85	+3.7	18.1
1980 11 07	08 31.47 +19 16.4					
1980 11 17	08 36.17 +18 51.7	2.248	2.718	-0.94	+4.3	17.9
1980 11 27	08 38.38 +18 34.9					
1980 12 07	08 37.86 +18 27.2	2.026	2.739	-1.07	+4.8	17.6
1980 12 17	08 34.51 +18 29.0					
1980 12 27	08 28.45 +18 39.5	1.863	2.759	-1.20	+5.1	17.3
1981 01 06	08 20.10 +18 56.4					
1981 01 16	08 10.24 +19 16.7	1.797	2.778	-1.29	+4.9	16.9
1981 01 26	07 59.96 +19 36.9					
1981 02 05	07 50.42 +19 53.9	1.847	2.795	-1.26	+4.2	17.2
1981 02 15	07 42.64 +20 06.2					
1981 02 25	07 37.29 +20 12.9	2.005	2.810	-1.14	+3.5	17.6
1981 03 07	07 34.70 +20 14.3					
1981 03 17	07 34.87 +20 10.3	2.238	2.824	-0.99	+3.1	17.9
1981 03 27	07 37.63 +20 01.3					
1981 04 06	07 42.67 +19 47.1	2.511	2.836	-0.87	+2.9	18.2

1979 QJ Elements MPC 5272

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1980 10 28	08 25.43 +16 29.5	3.012	3.166	-0.70	+0.0	17.8
1980 11 07	08 31.22 +16 23.7					
1980 11 17	08 35.12 +16 26.0	2.753	3.191	-0.77	+0.2	17.6
1980 11 27	08 36.95 +16 37.7					
1980 12 07	08 36.56 +17 00.1	2.521	3.216	-0.85	+0.3	17.4
1980 12 17	08 33.88 +17 33.3					
1980 12 27	08 29.07 +18 16.3	2.353	3.241	-0.94	+0.4	17.1
1981 01 06	08 22.43 +19 06.8					
1981 01 16	08 14.56 +20 01.1	2.286	3.266	-0.99	+0.2	16.7
1981 01 26	08 06.26 +20 55.1					
1981 02 05	07 58.37 +21 45.1	2.339	3.290	-0.98	-0.1	17.0
1981 02 15	07 51.70 +22 28.1					
1981 02 25	07 46.85 +23 02.9	2.506	3.313	-0.91	-0.4	17.4
1981 03 07	07 44.16 +23 29.1					
1981 03 17	07 43.75 +23 47.0	2.755	3.336	-0.82	-0.5	17.7
1981 03 27	07 45.56 +23 57.2					
1981 04 06	07 49.41 +24 00.2	3.049	3.358	-0.74	-0.3	17.9

1979 UD Elements MPC 5175

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1980 10 28	08 30.72 +24 19.1	3.190	3.346	-0.68	+1.0	17.6
1980 11 07	08 36.70 +24 29.9					
1980 11 17	08 40.83 +24 49.2	2.914	3.356	-0.75	+1.3	17.4
1980 11 27	08 42.91 +25 17.7					
1980 12 07	08 42.75 +25 55.5	2.668	3.365	-0.84	+1.6	17.2
1980 12 17	08 40.27 +26 41.5					
1980 12 27	08 35.55 +27 33.1	2.489	3.374	-0.93	+1.6	16.9
1981 01 06	08 28.88 +28 26.6					
1981 01 16	08 20.81 +29 17.0	2.411	3.382	-0.99	+1.3	16.6
1981 01 26	08 12.14 +30 00.1					
1981 02 05	08 03.76 +30 32.4	2.452	3.390	-0.99	+0.8	16.8
1981 02 15	07 56.54 +30 52.6					
1981 02 25	07 51.14 +31 00.9	2.604	3.397	-0.92	+0.3	17.1
1981 03 07	07 47.94 +30 58.7					
1981 03 17	07 47.12 +30 47.8	2.837	3.404	-0.83	+0.2	17.4
1981 03 27	07 48.61 +30 29.9					
1981 04 06	07 52.23 +30 06.3	3.114	3.410	-0.74	+0.3	17.6

1979 UJ Elements MPC 5322

Date ET	R. A. (1950) Decl.	Delta	r	Elong.	Phase	Mag.
1980 10 28	08 27.60 +02 53.5	3.179	3.263	85.9	17.7	17.4
1980 11 07	08 33.26 +01 52.2					
1980 11 17	08 37.23 +00 54.4	2.898	3.255	102.3	17.3	17.2
1980 11 27	08 39.36 +00 02.6					
1980 12 07	08 39.49 -00 40.5	2.638	3.248	120.3	15.2	16.9
1980 12 17	08 37.56 -01 12.0					
1980 12 27	08 33.66 -01 29.1	2.430	3.241	139.4	11.4	16.6
1981 01 06	08 28.03 -01 29.3					
1981 01 16	08 21.14 -01 11.5	2.308	3.233	156.4	7.0	16.4
1981 01 26	08 13.67 -00 36.2					
1981 02 05	08 06.36 +00 14.1	2.294	3.226	157.2	6.8	16.4
1981 02 15	07 59.98 +01 15.4					
1981 02 25	07 55.15 +02 22.9	2.391	3.219	140.7	11.2	16.6
1981 03 07	07 52.27 +03 31.7					
1981 03 17	07 51.54 +04 37.7	2.575	3.211	121.7	15.3	16.8
1981 03 27	07 52.98 +05 37.9					
1981 04 06	07 56.46 +06 30.2	2.815	3.204	103.8	17.7	17.1

(2150) 1977 TA Elements MPC 4778

Date ET	R. A. (1950) Decl.	Delta	r	Elong.	Phase	Mag.
1980 10 28	08 05.91 -08 43.3	1.534	1.807	88.6	33.3	18.0
1980 11 07	08 18.69 -12 05.3					
1980 11 17	08 29.10 -15 29.2	1.382	1.812	98.4	32.7	17.7
1980 11 27	08 36.80 -18 49.2					
1980 12 07	08 41.35 -21 58.5	1.244	1.819	108.8	30.8	17.5
1980 12 17	08 42.36 -24 47.2					
1980 12 27	08 39.67 -27 04.1	1.129	1.827	119.6	27.9	17.2
1981 01 06	08 33.39 -28 35.9					
1981 01 16	08 24.28 -29 09.6	1.051	1.837	129.1	24.6	17.0
1981 01 26	08 13.78 -28 36.8					
1981 02 05	08 03.67 -26 56.3	1.023	1.848	133.8	22.7	16.9
1981 02 15	07 55.75 -24 16.8					
1981 02 25	07 51.27 -20 55.7	1.058	1.860	130.5	23.9	17.0
1981 03 07	07 50.76 -17 12.7					
1981 03 17	07 54.25 -13 27.0	1.157	1.873	120.9	27.1	17.3
1981 03 27	08 01.34 -09 53.5					
1981 04 06	08 11.50 -06 41.5	1.308	1.887	109.0	30.1	17.7

1979 UZ Elements MPC 5126

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1980 11 17	08 49.52 +27 17.8	2.206	2.665	-1.25	+1.6	16.3
1980 11 27	08 55.74 +28 08.9					
1980 12 07	08 59.50 +29 15.1	1.945	2.634	-1.47	+2.4	16.0
1980 12 17	09 00.43 +30 36.0					
1980 12 27	08 58.32 +32 08.8	1.741	2.605	-1.73	+2.7	15.6
1981 01 06	08 53.16 +33 47.8					
1981 01 16	08 45.33 +35 23.8	1.626	2.577	-1.94	+2.0	15.3
1981 01 26	08 35.75 +36 46.9					
1981 02 05	08 25.70 +37 48.7	1.618	2.551	-1.98	+0.4	15.3
1981 02 15	08 16.71 +38 24.8					
1981 02 25	08 10.03 +38 35.3	1.710	2.526	-1.84	-0.8	15.5
1981 03 07	08 06.47 +38 23.7					
1981 03 17	08 06.36 +37 54.4	1.874	2.504	-1.61	-1.0	15.8
1981 03 27	08 09.57 +37 11.6					
1981 04 06	08 15.77 +36 18.1	2.079	2.485	-1.40	-0.4	16.1
1981 04 16	08 24.55 +35 15.9					
1981 04 26	08 35.44 +34 06.0	2.300	2.468	-1.24	+0.6	16.3

1966 PD Elements MPC 5321

Date ET	R. A. (1950) Decl.	Delta	r	Elong.	Phase	Mag.
1980 11 17	09 10.23 +14 29.1	1.863	2.238	98.7	25.9	17.7
1980 11 27	09 15.58 +13 35.8					
1980 12 07	09 17.95 +12 53.0	1.673	2.291	116.7	22.6	17.4
1980 12 17	09 17.06 +12 23.1					
1980 12 27	09 12.84 +12 07.4	1.517	2.342	137.9	16.4	17.1
1981 01 06	09 05.44 +12 06.2					
1981 01 16	08 55.48 +12 18.0	1.436	2.390	161.9	7.3	16.8
1981 01 26	08 44.05 +12 39.4					
1981 02 05	08 32.52 +13 05.8	1.460	2.436	169.9	4.1	16.8
1981 02 15	08 22.31 +13 32.9					
1981 02 25	08 14.50 +13 56.8	1.594	2.480	146.4	12.8	17.3
1981 03 07	08 09.66 +14 15.4					
1981 03 17	08 07.98 +14 27.3	1.815	2.521	125.0	18.9	17.7
1981 03 27	08 09.26 +14 31.7					
1981 04 06	08 13.18 +14 28.5	2.087	2.558	106.5	22.0	18.1
1981 04 16	08 19.37 +14 17.3					
1981 04 26	08 27.42 +13 58.3	2.380	2.592	90.5	22.8	18.5

1979 UX Elements MPC 5126

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1980 11 17	09 07.93 +20 24.7	2.931	3.267	-0.64	+3.3	18.8
1980 11 27	09 10.71 +20 20.8					
1980 12 07	09 11.32 +20 26.0	2.683	3.293	-0.71	+3.7	18.6
1980 12 17	09 09.63 +20 40.4					
1980 12 27	09 05.66 +21 02.9	2.485	3.317	-0.79	+3.9	18.3
1981 01 06	08 59.58 +21 31.5					
1981 01 16	08 51.81 +22 02.7	2.378	3.339	-0.86	+3.9	18.0
1981 01 26	08 43.05 +22 32.9					
1981 02 05	08 34.10 +22 58.4	2.388	3.360	-0.87	+3.5	18.0
1981 02 15	08 25.86 +23 16.8					
1981 02 25	08 19.06 +23 26.7	2.516	3.379	-0.83	+3.0	18.4
1981 03 07	08 14.22 +23 28.2					
1981 03 17	08 11.60 +23 21.9	2.739	3.397	-0.75	+2.6	18.7
1981 03 27	08 11.24 +23 08.9					
1981 04 06	08 13.02 +22 49.8	3.019	3.413	-0.67	+2.4	18.9
1981 04 16	08 16.74 +22 25.3					
1981 04 26	08 22.16 +21 55.9	3.322	3.427	-0.60	+2.3	19.2

1979 OB Elements MPC 5126

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1980 11 17	09 14.71 +10 05.5	2.476	2.766	-0.73	+2.3	20.7
1980 11 27	09 18.42 +09 33.3					
1980 12 07	09 19.79 +09 11.8	2.228	2.791	-0.82	+2.6	20.4
1980 12 17	09 18.60 +09 02.9					
1980 12 27	09 14.76 +09 08.5	2.018	2.812	-0.94	+3.0	20.1
1981 01 06	09 08.36 +09 28.9					
1981 01 16	08 59.79 +10 03.5	1.885	2.829	-1.04	+3.2	19.8
1981 01 26	08 49.78 +10 49.2					
1981 02 05	08 39.32 +11 41.8	1.864	2.842	-1.07	+3.1	19.6
1981 02 15	08 29.51 +12 36.2					
1981 02 25	08 21.33 +13 27.7	1.961	2.850	-1.01	+2.6	20.0
1981 03 07	08 15.44 +14 13.0					
1981 03 17	08 12.21 +14 50.0	2.155	2.855	-0.90	+2.2	20.3
1981 03 27	08 11.67 +15 17.9					
1981 04 06	08 13.66 +15 36.3	2.406	2.855	-0.79	+1.9	20.6
1981 04 16	08 17.94 +15 45.3					
1981 04 26	08 24.19 +15 45.2	2.680	2.851	-0.70	+1.7	20.9

1979 UT Elements MPC 5126

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1980 11 17	09 07.89 +00 33.7	2.926	3.169	-0.65	+3.0	19.3
1980 11 27	09 10.98 -00 37.6					
1980 12 07	09 12.09 -01 41.7	2.692	3.202	-0.71	+3.1	19.1
1980 12 17	09 11.09 -02 35.6					
1980 12 27	09 08.02 -03 16.6	2.498	3.234	-0.79	+3.3	18.8
1981 01 06	09 03.03 -03 42.0					
1981 01 16	08 56.48 -03 49.8	2.376	3.267	-0.85	+3.6	18.6
1981 01 26	08 48.95 -03 39.5					
1981 02 05	08 41.16 -03 12.4	2.358	3.298	-0.87	+3.8	18.6
1981 02 15	08 33.87 -02 31.4					
1981 02 25	08 27.77 -01 41.0	2.452	3.329	-0.83	+3.7	18.8
1981 03 07	08 23.35 -00 46.0					
1981 03 17	08 20.92 +00 09.1	2.644	3.360	-0.76	+3.5	19.0
1981 03 27	08 20.56 +01 00.6					
1981 04 06	08 22.21 +01 45.9	2.903	3.389	-0.68	+3.1	19.3
1981 04 16	08 25.71 +02 23.1					
1981 04 26	08 30.86 +02 51.3	3.198	3.418	-0.61	+2.8	19.6

1979 SO Elements MPC 5126

Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1980 11 17	09 17.35 +25 09.3	2.592	2.934	-0.75	+4.5	19.9
1980 11 27	09 21.26 +25 17.0					
1980 12 07	09 22.70 +25 35.3	2.370	2.976	-0.83	+5.1	19.6
1980 12 17	09 21.47 +26 03.8					
1980 12 27	09 17.53 +26 40.3	2.195	3.017	-0.94	+5.5	19.4
1981 01 06	09 11.02 +27 21.0					
1981 01 16	09 02.39 +28 00.9	2.106	3.057	-1.04	+5.4	19.1
1981 01 26	08 52.47 +28 34.4					
1981 02 05	08 42.24 +28 56.8	2.130	3.095	-1.07	+4.8	19.2
1981 02 15	08 32.81 +29 05.6					
1981 02 25	08 25.08 +29 00.8	2.270	3.131	-1.01	+3.9	19.5
1981 03 07	08 19.63 +28 44.0					
1981 03 17	08 16.74 +28 17.5	2.502	3.165	-0.90	+3.3	19.8
1981 03 27	08 16.40 +27 43.5					
1981 04 06	08 18.40 +27 03.8	2.790	3.197	-0.78	+3.0	20.2
1981 04 16	08 22.50 +26 19.5					
1981 04 26	08 28.38 +25 31.4	3.101	3.226	-0.68	+2.8	20.4

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Date ET	R. A. (1950) Decl.	Delta	r	Variation		Mag.
1980 11 17	09 03.74 +10 38.3	2.369	2.707	-0.97	+1.5	18.0
1980 11 27	09 09.09 +10 15.8					
1980 12 07	09 12.24 +10 04.8	2.093	2.688	-1.12	+1.9	17.7
1980 12 17	09 12.94 +10 07.8					
1980 12 27	09 11.05 +10 26.9	1.859	2.669	-1.28	+2.2	17.3
1981 01 06	09 06.56 +11 03.2					
1981 01 16	08 59.77 +11 55.5	1.700	2.649	-1.43	+2.4	16.9
1981 01 26	08 51.34 +13 00.5					
1981 02 05	08 42.20 +14 12.6	1.648	2.629	-1.48	+2.1	16.6
1981 02 15	08 33.53 +15 25.4					
1981 02 25	08 26.39 +16 32.9	1.709	2.608	-1.40	+1.4	17.0
1981 03 07	08 21.57 +17 30.9					
1981 03 17	08 19.54 +18 17.0	1.863	2.587	-1.25	+0.9	17.3
1981 03 27	08 20.40 +18 50.3					
1981 04 06	08 24.00 +19 11.0	2.073	2.566	-1.11	+0.7	17.6
1981 04 16	08 30.09 +19 19.4					
1981 04 26	08 38.33 +19 16.1	2.307	2.545	-0.99	+0.8	17.9