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

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

EDITORIAL NOTICE.

The Minor Planet Center reiterates its policy of not giving provisional designations to reports of discoveries of minor planets if accurate positions are not provided. Exceptions are made if the objects are of sufficient interest to warrant mention on the IAU Circulars, or if the discoverers can arrange for other observers to perform astrometry (as in the case of the IRAS discoveries included in this batch of MPCs). It is also very helpful if magnitudes are indicated. Discoverers are further advised that the task of determining meaningful orbits for new objects is greatly simplified if observations are made over an arc of at least one week, and attempts to obtain follow-up observations during subsequent months are strongly urged.

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CRITICAL LIST OF MINOR PLANETS.

The following list updates and is in the same form as that on MPC 7279:

1. Objects observed at only one opposition:
473 719 724 878 1026 1179

2. Objects observed at only two oppositions:
1538 1981 2059 2061 2063 2101 2135 2202 2340 2608

3. Objects accurately observed at only three oppositions:
1009 1316 1916 1921 2062 2076 2100 2129 2130 2143 2146 2148
2183 2189 2198 2204 2210 2212 2218 2223 2229 2257 2260 2261
2272 2278 2285 2303 2327 2328 2368 2373 2420 2435 2444 2449
2462 2482 2489 2495 2503 2537 2539 2551 2552 2593 2596 2619
2625 2629 2642 2643 2645 2663 2669 2671 2688 2695 2703 2706
2710 2722 2733 2736 2745 2764 2765 2775 2791 2795 2798 2799
2800 2823 2860 2868 2876 2886 2895 2899 2904 2906 2914 2915
2917 2920 2926

4. Objects observed at four or more oppositions, last during 1971-1972:
1104 1759 1836

5. Objects observed at four or more oppositions, last during 1973:
625 914 926 1006 1065 1134 1226 1293 1404 1431 1543

* * * * *

ERRATUM.

MPC	Line			
8151	4	For	Roblemont	read Robelmont

CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Mag.	N Obs.
1952 KB	1952 05	17.87222	16 33 29.89	-18 37 03.2	MPC 2404	14.0	1 078
1982 SU	1982 09	24.37509	00 00 49.90	+03 32 53.8	MPC 7342		675
1982 SH1	1982 09	24.37509	00 01 37.39	+04 53 30.6	MPC 7342	17.5	675

Note 1: originally erroneously given as 1952 KA.

* * * * *

DELETED OBSERVATIONS.

The following observations are to be deleted.

Object	Date	UT	R. A. (1950)	Decl.	Reference	N Obs.
1983 JG *	1983 05	14.94676	15 30 46.04	-15 13 00.8	MPC 8008	1 046
1983 JG	1983 05	14.97436	15 30 44.77	-15 12 53.5	MPC 8008	1 046

Note 1: this is a comet; see MPC 8188.

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IDENTIFICATION CHANGE.

Continuation to MPC 8085.

Object	Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
1976 SZ10*	1976 09	29.89029	00 32 45.62	+03 09 39.2	1976 SB4	17.5	095

* * * * *

OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

006 Fabra Observatory. Observers J. M. Codina, J. Nunez and N. Torras.
017 Hoher List. Observer M. Geffert.
020 Nice. Observer B. Milet.
046 Klet. Observers A. Mrkos and Z. Vavrova.
071 Smolyan. Observers V. Shkodrov and V. Ivanova. Measured by A. Thintharova.
372 Geisei. Observer T. Seki. From Orient. Astron. Assoc. Comet Bull. No. 250.
413 Siding Spring. 1.2-m U.K. Schmidt Telescope Unit. Observer K. S. Russell.
474 Mt. John University Observatory. Observer A. C. Gilmore. Measured by P. M. Kilmartin (assisted by R. McIntosh and W. M. Kissling).
500 Geocentric observations made at Pic du Midi. Observers S. Koutchmy, P. Laques and J. Lecacheux.
552 Osservatore S. Vittore.
657 Climenhaga Observatory. Observers D. D. Balam and J. B. Tatum.
675 Palomar. Observers J. Gibson and C. Kowal.
688 Lowell Observatory, Anderson Mesa Station. Observer B. Skiff. Measured by E. Bowell.
707 Chamberlin Observatory, field station. Observer E. Everhart.
801 Oak Ridge Observatory. Observers R. E. McCrosky, G. Schwartz and C.-Y. Shao (assisted by C. M. Bardwell, D. W. E. Green and B. G. Marsden).
805 Cerro El Roble. Observers C. Torres, J. Maza, H. Wroblewski and L. E.

Gonzalez. Measured by Torres and M. Wischnjewsky.
890 JCPM Tone Station. Observer S. Furuyama. Measured by N. Ishiyama.
From Japan Astron. Circ. No. 387.
984 West Chinnock. Observer H. B. Ridley. Measured by M. J. Hendrie.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
		Periodic Comet Gunn					
/1976 III	1983	09 28.16701	22 37 33.87	-24 29 52.9			707
		Comet Meier (1978 XXI)					
/1978 XXI	1979	09 30.20818	22 37 26.20	-18 18 19.4		1	805
		Comet Torres (1980 II)					
/1980 II	1980	07 09.17639	18 20 00.26	-21 51 39.2	15.5T		805
/1980 II	1980	07 11.09139	18 16 35.78	-21 01 20.0	16 T	2	805
/1980 II	1980	07 12.09069	18 14 52.38	-20 35 18.1	16 T		805
/1980 II	1980	07 12.10597	18 14 50.88	-20 34 54.7			805
/1980 II	1980	07 12.12194	18 14 49.14	-20 34 31.1			805
/1980 II	1980	07 12.29381	18 14 30.95	-20 30 02.9			805
/1980 II	1980	07 13.15388	18 13 04.02	-20 07 53.8	19 N	3	805
/1980 II	1980	07 13.22541	18 12 56.73	-20 06 02.5		3	805
/1980 II	1980	08 02.10486	17 47 24.11	-12 32 58.3	19.5N		805
/1980 II	1980	08 05.08405	17 44 53.51	-11 36 39.8	19 N	4	805
/1980 II	1980	08 12.08518	17 40 14.84	-09 36 35.4			805
/1980 II	1980	08 13.12673	17 39 41.97	-09 20 08.8	18 N	5	805
/1980 II	1980	08 14.15242	17 39 11.76	-09 04 16.8			805
/1980 II	1980	08 16.09235	17 38 20.51	-08 35 13.6	18 N		805
/1980 II	1980	08 18.09027	17 37 35.01	-08 06 28.1			805
/1980 II	1980	09 01.07431	17 35 28.57	-05 15 51.2			805
/1980 II	1980	09 02.04722	17 35 30.98	-05 05 42.4			805
/1980 II	1980	09 03.03579	17 35 34.94	-04 55 36.3			805
/1980 II	1980	09 04.03403	17 35 40.17	-04 45 37.4	18.5N	6	805
/1980 II	1980	09 05.02986	17 35 46.80	-04 35 50.8			805
/1980 II	1980	09 09.08380	17 36 27.04	-03 57 55.3			805
/1980 II	1980	09 14.00612	17 37 43.13	-03 15 32.6			805
/1980 II	1980	09 15.02763	17 38 02.35	-03 07 12.6	20 N		805
/1980 II	1980	09 16.00748	17 38 21.89	-02 59 20.0	20.5N		805
		Periodic Comet Forbes					
/1980 VI	1980	04 14.02561	13 12 26.05	-07 25 41.3	17.5T	7	805
/1980 VI	1980	04 15.09505	13 11 18.32	-07 22 05.7		7	805
/1980 VI	1980	04 16.15952	13 10 10.55	-07 18 31.1		7	805
		Comet Bowell (1980b)					
/1980b	1983	07 17.35556	22 20 31.96	-11 27 09.1	15.0T		688
/1980b	1983	07 17.40972	22 20 31.09	-11 27 14.8			688
/1980b	1983	09 04.25770	22 01 56.27	-13 18 43.3			801
/1980b	1983	10 04.10278	21 53 16.38	-14 04 40.3	16.8T		688
/1980b	1983	10 04.18681	21 53 15.38	-14 04 44.3			688
		Periodic Comet Tempel 2					
/1982d	1983	08 20.46765	02 58 36.46	-01 29 31.1			657
/1982d	1983	09 05.42437	03 12 24.58	-03 18 46.7			657
/1982d	1983	09 06.48819	03 12 54.68	-03 27 17.6			657
/1982d	1983	09 09.36407	03 14 04.35	-03 50 48.5			801

Periodic Comet Tempel 1

/1982j	1983	04	14.86111	12	47	56.86	+15	48	52.3	552
/1982j	1983	04	18.20347	12	44	59.13	+15	39	05.6	688
/1982j	1983	04	18.24167	12	44	56.98	+15	38	56.6	688

Periodic Comet Kopff

/1982k	1983	04	19.41042	15	46	55.58	-10	40	18.9	688
/1982k	1983	04	19.46806	15	46	55.51	-10	40	07.4	688
/1982k	1983	06	09.93750	15	24	47.18	-09	32	36.4	071
/1982k	1983	06	09.97708	15	24	46.53	-09	32	40.9	071
/1982k	1983	06	09.99653	15	24	46.42	-09	32	45.5	071
/1982k	1983	06	10.01146	15	24	45.77	-09	32	47.1	071
/1982k	1983	06	10.88199	15	24	28.92	-09	35	51.8	071
/1982k	1983	08	04.92153	16	06	38.03	-17	54	56.6	984
/1982k	1983	09	04.02512	17	15	16.93	-22	48	25.3	801

Periodic Comet Pons-Winnecke

/1983b	1983	10	06.60625	01	10	27.13	-33	13	50.1	19	T	413
/1983b	1983	10	06.64792	01	10	24.38	-33	13	48.0			413

Comet IRAS-Araki-Alcock (1983d)

/1983d	1983	05	11.88715	08	52	51.21	+24	35	14.2	006
/1983d	1983	05	11.89479	08	52	25.81	+24	16	40.7	006
/1983d	1983	05	11.89688	08	52	18.65	+24	11	27.1	006
/1983d	1983	05	11.89826	08	52	13.70	+24	08	00.3	006
/1983d	1983	05	11.90955	08	51	36.05	+23	40	46.4	006

Periodic Comet du Toit-Neujmin-Delporte

/1983g	1983	09	04.35278	00	05	33.92	+02	28	46.9	16.0	T	688
/1983g	1983	09	04.38333	00	05	32.53	+02	28	38.3			688
/1983g	1983	09	14.27847	23	59	37.49	+01	23	45.9	16.5	T	688
/1983g	1983	09	14.35278	23	59	34.20	+01	23	14.0			688

Periodic Comet Russell 3

/1983i	1983	07	31.87926	20	07	34.73	-01	44	52.6	046
/1983i	1983	09	08.11579	19	50	32.97	-03	27	34.6	801

Periodic Comet IRAS

/1983j	1983	08	31.91516	01	24	04.87	+11	21	23.2			046
/1983j	1983	08	31.91956	01	24	04.43	+11	21	34.8			046
/1983j	1983	09	01.93611	01	22	20.41	+12	08	46.2			046
/1983j	1983	09	01.94051	01	22	19.88	+12	09	00.1			046
/1983j	1983	09	04.00677	01	18	33.39	+13	45	52.3	10.5	T	046
/1983j	1983	09	04.00990	01	18	32.97	+13	46	01.5			046
/1983j	1983	09	05.35435	01	15	54.83	+14	49	36.3			657
/1983j	1983	09	06.32833	01	13	55.38	+15	35	55.4			657
/1983j	1983	09	07.37770	01	11	41.16	+16	25	57.4			657
/1983j	1983	09	07.98102	01	10	21.79	+16	54	47.7			046
/1983j	1983	09	08.36891	01	09	29.41	+17	13	20.4			801
/1983j	1983	09	13.41359	00	57	12.93	+21	12	51.7			657
/1983j	1983	09	15.39475	00	51	54.27	+22	45	02.5			657
/1983j	1983	09	19.05156	00	41	26.10	+25	30	07.2			020
/1983j	1983	10	01.21771	00	02	43.40	+33	15	59.7			707

Comet IRAS (1983k)

/1983k	1983	08	05.40120	12	10	19.00	-37	41	25.8	413

Comet Cernis (1983l)

/1983l	1983	08	03.71806	02	40	00.62	+08	16	21.3	13 T	372
/1983l	1983	08	06.70069	02	38	50.27	+07	29	36.3		890
/1983l	1983	08	06.08056	02	39	05.71	+07	39	30.6		984
/1983l	1983	08	07.73576	02	38	22.65	+07	12	48.5		890
/1983l	1983	08	07.74063	02	38	22.45	+07	12	44.3		890
/1983l	1983	08	12.73889	02	35	46.62	+05	46	58.6		890
/1983l	1983	08	12.74410	02	35	46.25	+05	46	54.2		890
/1983l	1983	09	04.02066	02	15	25.14	-02	12	59.1	9.0T	046
/1983l	1983	09	04.02581	02	15	24.69	-02	13	07.9		046
/1983l	1983	09	04.99042	02	14	10.70	-02	37	26.5		046
/1983l	1983	09	04.99354	02	14	10.40	-02	37	30.3		046
/1983l	1983	09	05.36476	02	13	41.51	-02	46	58.7		657
/1983l	1983	09	06.33824	02	12	24.28	-03	11	52.4		657
/1983l	1983	09	07.99225	02	10	08.56	-03	54	41.3		046
/1983l	1983	09	09.29808	02	08	17.77	-04	28	58.6		801
/1983l	1983	09	12.41383	02	03	40.37	-05	52	21.2		657
/1983l	1983	09	13.46543	02	02	02.69	-06	20	56.7		657
/1983l	1983	09	18.04529	01	54	33.91	-08	27	24.4	10 T	020
/1983l	1983	09	18.04772	01	54	33.71	-08	27	26.2		020
/1983l	1983	10	01.26076	01	29	58.52	-14	35	45.1		707

Periodic Comet Crommelin

/1983n	1983	09	04.94350	20	07	26.92	+22	13	55.5		500
/1983n	1983	09	04.96399	20	07	25.44	+22	13	46.8		500
/1983n	1983	09	04.97875	20	07	24.52	+22	13	40.3		500

Comet IRAS (1983o)

/1983o	1983	09	16.34709	12	59	29.70	-45	40	25.5	16 N	474
/1983o	1983	09	16.36943	12	59	31.72	-45	40	02.0		474

Comet Shoemaker (1983p)

/1983p	1983	09	16.18368	23	34	51.07	+17	08	55.5		707
/1983p	1983	09	16.50068	23	34	11.3	+17	01	02	16 N	474
/1983p	1983	09	16.56608	23	34	03.1	+16	59	22		474
/1983p	1983	09	18.03006	23	30	59.48	+16	21	55.5	13 T	020
/1983p	1983	09	18.03768	23	30	58.63	+16	21	39.8		020
/1983p	1983	09	18.20556	23	30	37.70	+16	17	20.9		707
/1983p	1983	09	19.01347	23	28	56.26	+15	56	20.2	13 T	020
/1983p	1983	09	19.02022	23	28	55.72	+15	56	10.8		020
/1983p	1983	09	19.11111	23	28	44.46	+15	53	51.8		984
/1983p	1983	09	26.11667	23	14	20.50	+12	45	31.3		707
/1983p	1983	09	28.11111	23	10	21.11	+11	50	27.3		688
/1983p	1983	09	28.12326	23	10	19.81	+11	50	04.6		707
/1983p	1983	09	28.21582	23	10	08.86	+11	47	40.5		657
/1983p	1983	10	04.83472	22	57	27.2	+08	43	20		017
/1983p	1983	10	05.88993	22	55	31.2	+08	14	04		017
/1983p	1983	10	05.94965	22	55	24.6	+08	12	25		017

Periodic Comet Arend

/1983q	1983	09	16.48892	08	18	06.19	+36	39	35.4	20.5N	675
/1983q	1983	09	17.49100	08	20	23.80	+36	35	46.2		675

Periodic Comet Harrington-Abell

/1983r	1983	09	17.46600	07	22	37.58	+31	17	07.2	20.5N	675
/1983r	1983	09	18.47015	07	25	21.32	+31	13	08.4		675

Periodic Comet Wild 2

/1983s	1983	09	18.43751	04	52	30.00	+18	54	48.4	20 N	675

Comet Kowal-Vavrova (1983t)

/1983t	1983	05	08.22917	15	34	04.67	-15	38	07.6	16 T	675
/1983t	1983	05	08.28125	15	34	03.45	-15	37	57.6		675
/1983t	1983	05	09.30000	15	33	33.66	-15	34	04.6		675
/1983t	1983	05	09.35208	15	33	32.54	-15	33	55.3		675
/1983t	1983	05	14.94676	15	30	46.04	-15	13	00.8	16.5N 8	046
/1983t	1983	05	14.97436	15	30	44.77	-15	12	53.5	8	046
/1983t	1983	05	15.25764	15	30	36.41	-15	11	48.7		675
/1983t	1983	05	15.30972	15	30	35.19	-15	11	38.5		675

Note 1: 5" nucleus centered in 15" coma; faint, narrow tail 40′ long in p.a. 200 . 2: 2" condensation, 7" coma, 50" faint tail in p.a. 190 . 3: 5" condensation, 15" faint coma, no tail. 4: 5" condensation in broad, faint 20" coma. 5: 5" condensation in broad, eccentric, 15" coma from p.a. 130 to 170 ; faint, very narrow, tail 13′ long in p.a. 190 . 6: 5" coma, 7" broad tail from p.a. 120 to 160 . 7: 3" condensation in 10"-20" coma; no tail. 8: this object was originally designated 1983 JG (see MPC 8184).

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OBSERVATIONS MADE AT ZIMMERWALD BY P. WILD.

Object		Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1983 RJ	*	1983 09	08.03264	00 30 08.3	-11 18 24	15	026
1983 SA	*	1983 09	26.80035	22 58 49.85	+11 03 33.6	14	026
1983 SA		1983 09	28.78958	22 55 14.83	+12 21 02.6		026
1983 SA		1983 10	01.89427	22 50 24.55	+14 07 29.4		026
1983 SA		1983 10	02.97153	22 48 56.18	+14 40 39.2		026
1983 SA		1983 10	03.91458	22 47 44.47	+15 08 14.9		026

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

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
51	1983 09	05.98762	23 35 55.41	-00 40 26.4		046
51	1983 09	06.00176	23 35 54.72	-00 40 34.0		046
51	1983 09	07.95220	23 34 21.04	-00 59 01.3		046
51	1983 09	07.96684	23 34 20.29	-00 59 10.4		046
51	1983 09	08.93624	23 33 33.08	-01 08 25.4		046
51	1983 09	08.95036	23 33 32.34	-01 08 33.0		046
124	1983 09	05.95399	23 07 28.26	-03 36 13.9		046
124	1983 09	05.96817	23 07 27.56	-03 36 19.2		046
124	1983 09	07.91713	23 05 51.34	-03 48 38.4		046
124	1983 09	07.93125	23 05 50.57	-03 48 44.0		046
124	1983 09	08.89972	23 05 02.88	-03 54 51.2		046
124	1983 09	08.91488	23 05 02.13	-03 54 56.6		046
163	1983 09	05.95399	23 11 05.24	-06 00 27.7		046
163	1983 09	05.96817	23 11 04.47	-06 00 32.4		046
514	1983 09	09.00609	00 12 59.63	+07 41 22.1		046
514	1983 09	09.02044	00 12 59.06	+07 41 18.9		046
523	1983 07	14.98854	20 23 57.75	-15 17 40.7		046
569	1983 09	01.90550	22 50 59.59	-05 55 53.7		046
569	1983 09	01.91979	22 50 58.86	-05 55 57.8		046
658	1983 09	05.98762	23 32 49.35	-03 02 13.6		046
658	1983 09	06.00176	23 32 48.65	-03 02 15.5		046
658	1983 09	07.95220	23 31 17.68	-03 10 55.8		046
658	1983 09	07.96684	23 31 16.92	-03 11 00.6		046
682	1983 09	09.00609	00 16 05.00	+06 36 32.4		046
682	1983 09	09.02044	00 16 04.54	+06 36 25.2		046
1079	1983 09	05.91863	21 52 01.84	-12 52 31.4		046

1079			1983	09	05.93333	21	52	00.83	-12	52	36.2	046
1190			1983	09	05.04667	23	44	00.22	-05	23	16.0	046
1190			1983	09	05.06099	23	43	59.48	-05	23	18.7	046
1231			1983	09	07.91713	23	08	26.79	-04	12	25.2	046
1231			1983	09	07.93125	23	08	25.96	-04	12	26.6	046
1231			1983	09	08.89972	23	07	29.78	-04	14	11.6	046
1231			1983	09	08.91488	23	07	28.80	-04	14	13.1	046
1802			1983	09	08.97102	23	54	21.00	-02	55	27.1	046
1802			1983	09	08.98514	23	54	20.28	-02	55	31.2	046
1805			1983	09	05.06099	23	45	27.28	-05	23	42.8	046
1841			1983	09	05.04667	23	42	09.90	-05	07	04.1	17.2 046
1841			1983	09	05.06099	23	42	09.48	-05	07	05.6	046
2204			1983	09	04.92028	22	00	54.04	-07	58	32.3	046
2204			1983	09	04.93451	22	00	53.36	-07	58	40.0	046
2204			1983	09	05.88420	22	00	02.95	-08	11	46.3	046
2204			1983	09	05.89890	22	00	01.99	-08	11	58.2	046
2647			1983	07	17.95191	20	24	15.49	-18	08	26.3	046
2647			1983	07	17.96606	20	24	14.61	-18	08	21.0	046
2833			1983	09	05.95399	23	08	15.15	-05	13	56.9	046
2833			1983	09	05.96817	23	08	14.37	-05	14	00.8	046
1976	GN8		1983	09	03.96414	22	05	32.47	-05	38	08.1	046
1976	GN8		1983	09	03.97826	22	05	31.84	-05	38	10.3	046
1976	GN8		1983	09	04.92028	22	04	46.85	-05	40	23.6	046
1976	GN8		1983	09	04.93451	22	04	46.32	-05	40	26.8	046
1976	GN8		1983	09	05.88420	22	04	01.18	-05	42	41.8	046
1976	GN8		1983	09	05.89890	22	04	00.31	-05	42	45.6	046
1983	QA		1983	08	30.83299	22	04	10.89	-07	18	34.5	046
1983	QA		1983	08	30.84716	22	04	10.01	-07	18	29.5	046
1983	QA		1983	09	01.87020	22	02	09.94	-07	09	35.8	046
1983	QA		1983	09	01.88472	22	02	09.01	-07	09	32.5	046
1983	QA		1983	09	04.92028	21	59	15.20	-06	56	16.2	046
1983	QA		1983	09	04.93451	21	59	14.54	-06	56	15.1	046
1983	QA		1983	09	05.88420	21	58	22.42	-06	52	14.2	046
1983	QA		1983	09	05.89890	21	58	21.65	-06	52	10.5	046
1983	QE	*	1983	08	31.86030	22	06	13.01	-03	54	25.2	16.8 046
1983	QE		1983	08	31.87442	22	06	12.32	-03	54	32.3	046
1983	QE		1983	09	01.83333	22	05	37.58	-04	08	38.6	046
1983	QE		1983	09	01.84745	22	05	37.22	-04	08	47.7	046
1983	QE		1983	09	03.96414	22	04	21.89	-04	39	57.7	046
1983	QE		1983	09	03.97826	22	04	21.19	-04	40	12.7	046
1983	QE		1983	09	04.92028	22	03	49.20	-04	53	56.4	046
1983	QE		1983	09	04.93451	22	03	48.74	-04	54	12.3	046
1983	RM	*	1983	09	01.87020	22	03	26.61	-08	30	42.6	17.4 046
1983	RM		1983	09	01.88472	22	03	26.00	-08	30	47.2	046
1983	RN	*	1983	09	05.04667	23	43	56.11	-04	52	05.8	17.0 046
1983	RN		1983	09	05.06099	23	43	55.38	-04	52	09.5	046
1983	RO	*	1983	09	05.91863	21	54	05.53	-10	48	46.2	16.0 046
1983	RO		1983	09	05.93333	21	54	04.97	-10	48	51.8	046
1983	RO		1983	09	07.86875	21	52	44.73	-10	58	16.3	046
1983	RO		1983	09	07.88287	21	52	44.15	-10	58	20.5	046
1983	RO		1983	09	08.86564	21	52	05.60	-11	02	57.5	046
1983	RO		1983	09	08.87976	21	52	05.05	-11	03	01.4	046
1983	RP	*	1983	09	05.95399	23	10	38.37	-02	32	27.5	17.0 046
1983	RP		1983	09	05.96817	23	10	37.70	-02	32	30.0	046
1983	RQ	*	1983	09	05.95399	23	10	50.04	-04	00	42.1	17.0 046
1983	RQ		1983	09	05.96817	23	10	49.20	-04	00	43.5	046
1983	RQ		1983	09	07.91713	23	09	16.94	-04	09	54.5	046
1983	RQ		1983	09	07.93125	23	09	16.31	-04	09	58.4	046

1983	RQ		1983	09	08.89972	23	08	30.35	-04	14	33.6	046
1983	RQ		1983	09	08.91488	23	08	29.64	-04	14	39.0	046
1983	RR	*	1983	09	05.95399	23	13	40.37	-02	29	43.1	16.8 046
1983	RR		1983	09	05.96817	23	13	39.42	-02	29	45.4	046
1983	RR		1983	09	07.91713	23	11	52.08	-02	44	53.1	046
1983	RR		1983	09	07.93125	23	11	51.29	-02	45	03.7	046
1983	RR		1983	09	08.89972	23	10	57.39	-02	52	39.1	046
1983	RR		1983	09	08.91488	23	10	56.55	-02	52	45.9	046
1983	RS	*	1983	09	05.95399	23	16	11.07	-01	59	43.9	16.6 046
1983	RS		1983	09	05.96817	23	16	10.41	-01	59	48.7	046
1983	RS		1983	09	07.91713	23	14	35.71	-02	11	31.2	046
1983	RS		1983	09	07.93125	23	14	34.85	-02	11	35.2	046
1983	RS		1983	09	08.89972	23	13	46.87	-02	17	30.3	046
1983	RS		1983	09	08.91488	23	13	46.11	-02	17	36.0	046
1983	RT	*	1983	09	05.98762	23	31	02.08	-01	04	35.8	16.5 046
1983	RT		1983	09	06.00176	23	31	01.19	-01	04	40.9	046
1983	RT		1983	09	07.95220	23	29	14.97	-01	12	43.8	046
1983	RT		1983	09	07.96684	23	29	14.11	-01	12	48.2	046
1983	RT		1983	09	08.93624	23	28	20.49	-01	16	53.8	046
1983	RT		1983	09	08.95036	23	28	19.55	-01	16	56.1	046
1983	RU	*	1983	09	05.98762	23	32	20.55	-01	52	18.5	16.8 046
1983	RU		1983	09	06.00176	23	32	19.95	-01	52	21.9	046
1983	RU		1983	09	07.95220	23	30	57.38	-02	01	40.8	046
1983	RU		1983	09	07.96684	23	30	56.84	-02	01	44.9	046
1983	RU		1983	09	08.93624	23	30	15.10	-02	06	25.3	046
1983	RU		1983	09	08.95036	23	30	14.43	-02	06	30.8	046
1983	RV	*	1983	09	05.98762	23	34	55.16	-00	33	59.8	16.2 046
1983	RV		1983	09	06.00176	23	34	54.59	-00	34	03.6	046
1983	RV		1983	09	07.95220	23	33	43.14	-00	41	33.4	046
1983	RV		1983	09	07.96684	23	33	42.54	-00	41	38.0	046
1983	RV		1983	09	08.93624	23	33	06.62	-00	45	24.5	046
1983	RV		1983	09	08.95036	23	33	06.03	-00	45	28.2	046
1983	RW	*	1983	09	05.98762	23	36	06.62	-00	19	47.2	16.9 046
1983	RW		1983	09	06.00176	23	36	05.70	-00	19	53.6	046
1983	RW		1983	09	08.93624	23	33	31.13	-00	44	51.2	046
1983	RW		1983	09	08.95036	23	33	30.36	-00	44	57.2	046
1983	RX	*	1983	09	07.91713	23	03	00.22	-01	46	27.2	16.3 046
1983	RX		1983	09	07.93125	23	02	59.45	-01	46	29.5	046
1983	RX		1983	09	08.89972	23	02	00.46	-01	49	25.1	046
1983	RX		1983	09	08.91488	23	01	59.52	-01	49	26.9	046
1983	RY	*	1983	09	07.91713	23	10	21.90	-01	07	27.3	046
1983	RY		1983	09	07.93125	23	10	21.23	-01	07	30.9	046
1983	RY		1983	09	08.89972	23	09	32.34	-01	11	22.1	046
1983	RY		1983	09	08.91488	23	09	31.59	-01	11	24.6	046
1983	RZ	*	1983	09	08.97102	23	48	35.73	-03	30	53.5	16.0 046
1983	RZ		1983	09	08.98514	23	48	35.19	-03	31	00.8	046
1983	RA1	*	1983	09	08.97102	23	49	00.28	-01	37	13.0	16.5 046
1983	RA1		1983	09	08.98514	23	48	59.38	-01	37	17.1	046
1983	RB1	*	1983	09	08.97102	23	50	43.88	-01	23	01.4	17.0 046
1983	RB1		1983	09	08.98514	23	50	43.17	-01	23	05.9	046
1983	RC1	*	1983	09	08.97102	23	54	24.19	-00	51	03.1	17.2 046
1983	RC1		1983	09	08.98514	23	54	23.30	-00	51	05.3	046
1983	RD1	*	1983	09	08.97102	23	54	27.56	-00	08	27.7	16.2 046
1983	RD1		1983	09	08.98514	23	54	26.90	-00	08	19.0	046
1983	RE1	*	1983	09	09.00609	00	18	24.63	-05	24	15.2	046
1983	RE1		1983	09	09.02044	00	18	23.98	-05	24	10.5	046
1983	RF1	*	1983	09	09.00609	00	18	50.80	+05	40	44.9	17.2 046
1983	RF1		1983	09	09.02044	00	18	49.98	+05	40	46.3	046

OBSERVATIONS MADE AT THE BULGARIAN NATIONAL OBSERVATORY, SMOLYAN, BY E. HELIN, V. SHKODROV, V. IVANOVA AND A. THINTHAROVA.

Object		Date	UT	R. A. (1950)	Decl.	N	Obs.
150		1983 09	03.89236	00 03 09.11	+02 22 42.0	1	071
150		1983 09	03.93402	00 03 07.48	+02 22 31.1	1	071
569		1983 09	03.89057	22 49 15.58	-06 05 29.7		071
569		1983 09	03.94201	22 49 12.93	-06 05 45.4		071
973		1983 09	07.80069	23 52 46.49	+01 59 24.3		071
973		1983 09	07.84653	23 52 45.00	+01 59 19.4		071
973		1983 09	09.98195	23 50 59.36	+01 58 11.0		071
973		1983 09	10.96528	23 50 10.60	+01 57 34.3		071
1229		1983 09	03.89057	23 01 03.59	-05 17 55.4		071
1229		1983 09	03.94201	23 01 01.45	-05 18 08.5		071
1743		1983 09	03.87140	22 35 56.94	-03 30 14.4		071
1743		1983 09	03.92939	22 35 53.96	-03 30 38.6		071
1795		1983 09	03.87140	22 43 10.61	-01 03 09.0		071
1795		1983 09	03.92939	22 43 08.00	-01 03 34.3		071
2228		1983 09	03.89057	23 01 28.23	-07 29 51.1		071
2228		1983 09	03.94201	23 01 26.11	-07 30 04.6		071
2581		1983 09	07.80069	23 45 43.80	+03 17 38.8		071
2581		1983 09	10.96528	23 42 51.42	+03 00 48.7		071
1983 PA		1983 09	03.84306	20 51 33.70	+22 42 01.2		071
1983 PA		1983 09	03.85694	20 51 32.83	+22 42 11.2		071
1983 PA		1983 09	03.86042	20 51 32.48	+22 42 13.8		071
1983 PA		1983 09	03.86736	20 51 32.05	+22 42 18.7		071
1983 PA		1983 09	05.04442	20 50 14.92	+22 56 44.2		071

Note 1: measured by J. Ciffreo and A. Maury.

OBSERVATIONS MADE WITH THE 1.2-M U.K. SCHMIDT TELESCOPE AT SIDING SPRING BY K. S. RUSSELL, M. HARTLEY AND P. CASS. MEASURED BY RUSSELL.

Object		Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1983 NH		1983 07	06.35536	11 10 56.83	-32 28 57.0		413
1983 NH		1983 07	06.36925	11 10 58.17	-32 28 57.7		413
1983 QF		1983 09	17.75441	03 57 30.98	-02 53 49.1	16	413
1983 RD		1983 10	06.71778	04 08 34.18	-13 38 39.1	15	413
1983 RD		1983 10	06.75944	04 08 43.60	-13 39 52.8		413
1983 RD		1983 10	07.63330	04 12 26.16	-14 05 01.2		413
1983 RD		1983 10	07.67497	04 12 35.13	-14 06 11.8		413
1983 RD		1983 10	07.68387	04 12 37.36	-14 06 27.0		413
1983 RD		1983 10	07.74637	04 12 50.68	-14 08 10.5		413
1983 RD		1983 10	08.66035	04 16 26.91	-14 32 32.3		413
1983 RD		1983 10	08.72285	04 16 39.12	-14 34 06.8		413
1983 TA	*	1983 10	01.54027	23 47 32.02	-07 12 03.2	17.5	413
1983 TA		1983 10	01.58194	23 47 26.05	-07 11 01.9		413
1983 TA		1983 10	06.57639	23 36 05.15	-05 17 37.8		413
1983 TA		1983 10	06.59028	23 36 03.50	-05 17 19.7		413
1983 TA		1983 10	13.51304	23 21 06.77	-02 27 19.2	19.5	413
1983 TA		1983 10	13.52693	23 21 05.35	-02 27 01.7		413

OBSERVATIONS MADE WITH THE INFRARED ASTRONOMY SATELLITE UNDER THE DIRECTION OF J. DAVIES AND S. GREEN.

Object		Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
1983 NH	*	1983 07	02.45895	11 03.22	-32 30.7		1	500
1983 NH		1983 07	02.53037	11 03.30	-32 30.3		1	500
1983 QF	*	1983 08	23.01970	03 31.72	+01 45.6	16	1	500
1983 QF		1983 08	23.09143	03 31.89	+01 45.2		1	500
1983 QF		1983 09	12.99079	03 53.75	-01 51.9		1	500
1983 QF		1983 09	13.06237	03 53.81	-01 52.9		1	500
1983 QG	*	1983 08	31.82309	02 43.61	-10 00.2	16	1	500

1983 QG		1983 08 31.89478	02 43.75	-10 00.2				1	500
1983 TB	*	1983 10 11.06869	17 26.86	+59 30.5			15.5	1	500
1983 TB		1983 10 11.14027	17 28.60	+59 29.9				1	500
1983 TB		1983 10 11.28340	17 31.82	+59 27.8				1	500
1983 TB		1983 10 11.42656	17 35.15	+59 25.7				1	500
1983 TB		1983 10 11.56972	17 38.31	+59 22.8				1	500

Note 1: the nature of these observations is such that the most appropriate observatory code to use is 500 (= geocentric).

OBSERVATIONS MADE AT THE OSSERVATORIO S. VITTORE.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
123	1983 09	04.95000	00 30 25.22	+11 56 41.1	552
123	1983 09	04.98958	00 30 23.66	+11 56 43.6	552
1620	1983 03	04.90417	10 21 24.01	-04 17 57.1	552
1620	1983 03	04.91111	10 21 21.07	-04 18 42.3	552
1620	1983 03	04.91806	10 21 18.03	-04 19 28.7	552
1620	1983 03	04.92500	10 21 14.97	-04 20 15.4	552
2468	1983 09	04.88403	23 18 08.69	+04 51 39.3	552
2468	1983 09	04.92431	23 18 06.76	+04 51 22.7	552
1933 QU	1983 09	14.90382	23 57 35.09	+19 02 32.1	552
1933 QU	1983 09	14.94201	23 57 32.65	+19 02 39.2	552

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

Object		Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
1983 QD		1983 09	17.32573	00 16 06.16	+18 25 52.4		1	675
1983 QF		1983 09	16.43510	03 56 31.78	-02 36 20.4		1	675
1983 QF		1983 09	18.51529	03 58 04.04	-03 04 13.3		1	675
1983 QG		1983 09	02.50350	02 45 06.83	-10 03 29.7		1	675
1983 RK	*	1983 09	15.44097	00 21 59	+06 21.5	18	2	675
1983 RK		1983 09	16.29864	00 21 17.50	+06 13 49.7	18	1	675
1983 RK		1983 09	17.36739	00 20 26.20	+06 05 21.4		1	675
1983 RK		1983 09	18.38751	00 19 36.58	+05 57 08.2		1	675
6554 P-L	*	1960 09	24.35002	23 51 59.25	-00 56 50.6	17.3	3	675
6554 P-L		1960 09	26.28543	23 50 21.63	-01 04 28.1		3	675
6554 P-L		1960 09	27.34237	23 49 28.64	-01 08 34.5		3	675
6554 P-L		1960 09	28.33822	23 48 39.06	-01 12 25.5		3	675
6554 P-L		1960 10	17.21390	23 35 09.32	-02 12 29.8		3	675
6554 P-L		1960 10	22.15559	23 32 38.14	-02 22 17.2		3	675
6554 P-L		1960 10	24.18787	23 31 45.30	-02 25 24.3		3	675
6554 P-L		1960 10	26.26113	23 30 57.11	-02 28 00.5		3	675

Note 1: observer J. Gibson. 2: 5-m reflector, observer T. A. Boroson. 3: observer T. Gehrels, plates scanned and measured by C. J. van Houten and I. van Houten-Groeneveld.

OBSERVATIONS MADE WITH THE 0.46-M SCHMIDT TELESCOPE AT PALOMAR BY C. S. SHOEMAKER AND E. M. SHOEMAKER (ASSISTED BY P. SHOEMAKER, P. KEMPCHINSKY AND H. CAMPOS).

Object		Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1983 RD		1983 09	07.34097	23 45 29.19	+15 14 41.8		675
1983 RD		1983 09	07.36111	23 45 40.09	+15 13 51.0		675
1983 RG	*	1983 09	06.39375	00 49 38.43	+00 10 09.8	17	675
1983 RG		1983 09	06.41666	00 49 38.09	+00 09 57.0		675
1983 RH	*	1983 09	07.38055	00 36 08.98	+23 30 47.1	17.5	675
1983 RH		1983 09	07.40000	00 36 08.59	+23 30 28.1		675
1983 RL	*	1983 09	06.24722	22 45 13.15	-05 40 48.0	17.5	675
1983 RL		1983 09	06.26597	22 45 11.01	-05 40 32.8		675
1983 RL		1983 09	07.19652	22 43 32.83	-05 28 28.4		675
1983 RL		1983 09	07.21666	22 43 30.54	-05 28 12.5		675

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

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N Obs.
54	1983 07	17.35556	22 24 09.07	-08 32 20.9		688
54	1983 07	17.40972	22 24 07.71	-08 32 02.7		688
54	1983 08	31.15972	21 46 52.42	-06 17 11.8		688
54	1983 08	31.18889	21 46 50.71	-06 17 10.0		688
87	1983 04	19.41042	15 47 53.84	-14 03 11.4		688
87	1983 04	19.46806	15 47 51.91	-14 03 08.9		688
90	1983 08	13.39167	23 08 17.70	-09 17 18.8		688
90	1983 08	13.42951	23 08 16.40	-09 17 28.6		688
90	1983 09	02.21667	22 54 57.48	-10 47 09.9		688
90	1983 09	02.24722	22 54 55.99	-10 47 17.5		688
90	1983 09	06.22083	22 51 56.09	-11 05 11.7		688
90	1983 09	06.25139	22 51 54.71	-11 05 19.4		688
104	1983 05	06.23264	13 43 43.37	-10 00 58.4		688
104	1983 05	06.28889	13 43 41.04	-10 00 47.6		688
104	1983 05	15.15833	13 38 06.81	-09 35 01.8		688
104	1983 05	15.21806	13 38 04.76	-09 34 52.5		688
110	1983 04	18.13681	12 21 24.94	+04 34 12.0		688
110	1983 04	18.16944	12 21 23.49	+04 34 16.5		688
150	1983 09	04.35278	00 02 52.31	+02 20 39.1		688
150	1983 09	04.38333	00 02 50.94	+02 20 31.4		688
150	1983 09	14.27847	23 56 13.14	+01 31 13.1		688
150	1983 09	14.35278	23 56 09.74	+01 30 49.4		688
163	1983 09	06.22083	23 10 51.19	-06 02 37.6		688
163	1983 09	06.25139	23 10 49.50	-06 02 51.3		688
176	1983 06	07.18472	16 04 44.75	+01 29 27.1		688
176	1983 06	07.22292	16 04 43.09	+01 29 34.7		688
195	1983 10	04.10278	21 45 34.95	-18 30 39.1		688
195	1983 10	04.18681	21 45 33.42	-18 30 30.5		688
197	1983 05	07.17361	13 51 58.58	-00 48 51.7		688
197	1983 05	07.23056	13 51 55.69	-00 48 46.9		688
201	1983 04	18.13681	12 14 41.25	+03 23 24.3		688
201	1983 04	18.16944	12 14 39.92	+03 23 34.2		688
229	1983 08	13.39167	22 56 29.17	-09 33 16.3		688
229	1983 08	13.42951	22 56 27.82	-09 33 24.7		688
229	1983 09	02.21667	22 43 16.06	-10 47 28.6		688
229	1983 09	02.24722	22 43 14.62	-10 47 35.7		688
250	1983 04	18.13681	12 19 15.18	+02 49 43.5		688
250	1983 04	18.16944	12 19 13.78	+02 49 43.9		688
253	1983 04	19.34583	14 40 22.83	-09 07 36.6		688
253	1983 04	19.37639	14 40 21.31	-09 07 25.3		688
289	1983 04	10.20208	11 27 47.35	+03 00 31.4		688
289	1983 04	10.26181	11 27 45.24	+03 00 49.4		688
336	1983 08	31.15972	21 51 56.92	-01 51 02.2		688
350	1983 06	07.18472	15 44 25.54	-01 45 13.0		688
350	1983 06	07.22292	15 44 23.85	-01 45 21.0		688
357	1983 04	18.20347	12 59 26.34	+12 37 44.0		688
357	1983 04	18.24167	12 59 24.75	+12 37 53.3		688
365	1983 06	07.18472	15 56 50.51	-04 20 36.2		688
365	1983 06	07.22292	15 56 48.75	-04 20 30.8		688
369	1983 05	15.18056	14 09 34.87	+03 51 27.3		688
369	1983 05	15.24028	14 09 31.94	+03 51 25.3		688
414	1983 04	19.41042	15 42 17.78	-08 09 49.5		688
414	1983 04	19.46806	15 42 15.82	-08 09 39.9		688
421	1983 04	10.20208	11 24 00.81	+02 19 22.5		688
421	1983 04	10.26181	11 23 58.65	+02 19 44.6		688
428	1983 04	18.13681	12 09 06.47	+00 08 05.3		688

428	1983	04	18.16944	12	09	04.83	+00	08	10.7	688
431	1983	04	18.13681	12	05	05.62	+01	59	41.0	688
431	1983	04	18.16944	12	05	04.43	+01	59	47.4	688
496	1983	08	31.15972	21	54	41.20	-06	51	54.8	688
496	1983	08	31.18889	21	54	39.53	-06	52	06.9	688
524	1983	08	13.39167	22	59	57.00	-04	22	04.7	688
524	1983	08	13.42951	22	59	55.33	-04	22	05.5	688
529	1983	04	19.34583	14	24	21.49	-05	27	44.7	688
529	1983	04	19.37639	14	24	20.02	-05	27	40.9	688
551	1983	05	06.23264	13	22	26.77	-08	55	18.7	688
551	1983	05	06.28889	13	22	24.56	-08	55	06.3	688
551	1983	05	15.15833	13	17	21.04	-08	25	19.6	688
551	1983	05	15.21806	13	17	19.16	-08	25	09.9	688
560	1983	05	07.17361	13	52	31.80	+01	35	59.0	688
560	1983	05	07.23056	13	52	29.26	+01	36	03.8	688
560	1983	05	15.18056	13	46	58.96	+01	41	19.1	688
560	1983	05	15.24028	13	46	56.60	+01	41	19.2	688
569	1983	08	13.39167	23	05	53.22	-04	34	38.9	688
569	1983	08	13.42951	23	05	51.78	-04	34	47.3	688
569	1983	09	02.21667	22	50	43.51	-05	57	19.9	688
569	1983	09	02.24722	22	50	41.85	-05	57	28.1	688
569	1983	09	06.22083	22	47	13.69	-06	16	55.0	688
569	1983	09	06.25139	22	47	12.09	-06	17	03.4	688
586	1983	09	04.35278	00	13	34.33	+03	27	35.1	688
586	1983	09	04.38333	00	13	33.04	+03	27	28.1	688
586	1983	09	14.27847	00	07	04.06	+02	44	46.0	688
586	1983	09	14.35278	00	07	00.76	+02	44	25.2	688
612	1983	04	19.34583	14	28	08.49	-08	17	46.5	688
612	1983	04	19.37639	14	28	07.20	-08	17	29.0	688
616	1983	10	04.10278	21	56	35.65	-18	47	40.4	688
616	1983	10	04.18681	21	56	33.25	-18	47	17.0	688
641	1983	08	13.39167	22	59	08.93	-09	37	45.3	688
641	1983	08	13.42951	22	59	07.33	-09	37	56.6	688
641	1983	09	02.21667	22	41	34.49	-11	23	24.3	688
641	1983	09	02.24722	22	41	32.42	-11	23	34.3	688
647	1983	08	13.18750	20	34	02.94	-08	13	58.3	688
647	1983	08	13.23333	20	34	00.32	-08	14	06.1	688
682	1983	09	14.27847	00	12	34.31	+05	45	34.4	688
682	1983	09	14.35278	00	12	30.84	+05	44	49.6	688
688	1983	04	10.20208	11	31	25.86	+05	53	33.9	688
688	1983	04	10.26181	11	31	23.69	+05	53	57.0	688
689	1983	09	04.35278	00	03	05.62	-00	07	04.5	688
689	1983	09	04.38333	00	03	04.75	-00	07	20.1	688
689	1983	09	14.27847	23	58	07.75	-01	47	26.3	688
689	1983	09	14.35278	23	58	04.83	-01	48	13.2	688
767	1983	05	06.23264	13	38	58.62	-07	34	21.3	688
767	1983	05	06.28889	13	38	56.27	-07	34	10.0	688
767	1983	05	15.15833	13	33	17.01	-07	07	37.0	688
767	1983	05	15.21806	13	33	14.90	-07	07	27.9	688
787	1983	06	07.18472	16	02	58.31	+02	05	34.9	688
787	1983	06	07.22292	16	02	56.41	+02	05	40.9	688
811	1983	04	19.41042	15	39	37.73	-14	47	39.7	688
811	1983	04	19.46806	15	39	35.63	-14	47	29.3	688
820	1983	04	19.41042	15	23	21.99	-10	01	30.5	688
820	1983	04	19.46806	15	23	19.69	-10	01	18.5	688
853	1983	06	07.18472	15	54	20.39	-04	14	23.6	688
853	1983	06	07.22292	15	54	18.55	-04	14	17.4	688
890	1983	09	02.21667	22	41	47.71	-07	43	04.1	688
890	1983	09	02.24722	22	41	46.34	-07	43	17.0	688

904		1983	04	19.34583	14	30	46.95	-07	57	00.5	688
904		1983	04	19.37639	14	30	45.65	-07	56	45.7	688
911		1983	10	04.10278	21	45	47.93	-16	27	16.4	688
911		1983	10	04.18681	21	45	46.35	-16	27	10.9	688
933		1983	10	04.10278	21	50	54.65	-15	39	51.3	688
933		1983	10	04.18681	21	50	53.00	-15	40	04.4	688
943		1983	04	18.20347	12	56	31.33	+13	08	31.3	688
943		1983	04	18.24167	12	56	29.69	+13	08	36.5	688
950		1983	04	10.20208	11	21	41.63	+06	00	54.0	688
950		1983	04	10.26181	11	21	40.66	+06	02	02.5	688
955		1983	04	10.20208	11	21	03.21	+00	31	50.8	688
955		1983	04	10.26181	11	20	59.98	+00	31	53.7	688
958		1983	08	13.39167	23	01	21.90	-07	02	23.7	688
958		1983	08	13.42951	23	01	20.83	-07	02	29.2	688
958		1983	09	02.21667	22	49	31.41	-07	55	19.0	688
958		1983	09	02.24722	22	49	30.35	-07	55	24.1	688
962		1983	04	10.20208	11	24	40.94	+05	57	59.0	688
962		1983	04	10.26181	11	24	38.85	+05	58	11.0	688
1040		1983	08	13.18750	20	33	12.04	-05	23	46.7	688
1040		1983	08	13.23333	20	33	09.84	-05	23	48.5	688
1058		1983	04	10.20208	11	22	26.80	-00	02	46.0	688
1058		1983	04	10.26181	11	22	24.04	-00	02	21.7	688
1079		1983	07	17.35556	22	26	24.81	-10	01	13.0	688
1079		1983	07	17.40972	22	26	23.65	-10	01	18.3	688
1079		1983	10	04.10278	21	38	06.57	-13	54	05.2	688
1079		1983	10	04.18681	21	38	05.46	-13	54	09.8	688
1086		1983	07	17.35556	22	15	23.08	-09	02	08.4	688
1086		1983	07	17.40972	22	15	21.61	-09	02	08.4	688
1121		1983	04	10.20208	11	24	51.34	+03	18	01.4	688
1121		1983	04	10.26181	11	24	48.91	+03	18	08.9	688
1145		1983	10	04.10278	21	40	31.33	-14	58	07.2	688
1145		1983	10	04.18681	21	40	30.47	-14	57	54.0	688
1163		1983	05	07.17361	13	55	15.35	+01	41	23.0	688
1163		1983	05	07.23056	13	55	13.00	+01	41	31.0	688
1163		1983	05	15.18056	13	50	17.01	+01	57	08.2	688
1163		1983	05	15.24028	13	50	14.83	+01	57	12.8	688
1200		1983	05	15.15833	13	41	33.52	-09	05	11.8	688
1200		1983	05	15.21806	13	41	31.61	-09	04	55.2	688
1229		1983	08	13.39167	23	14	19.60	-03	50	38.9	16.0 688
1229		1983	08	13.42951	23	14	18.69	-03	50	46.2	688
1229		1983	09	02.21667	23	02	15.19	-05	10	02.9	688
1229		1983	09	02.24722	23	02	13.99	-05	10	10.8	688
1229		1983	09	06.22083	22	59	23.86	-05	28	59.2	688
1229		1983	09	06.25139	22	59	22.49	-05	29	07.2	688
1231		1983	09	06.22083	23	10	04.93	-04	09	23.0	688
1231		1983	09	06.25139	23	10	03.27	-04	09	26.1	688
1236		1983	04	19.34583	14	30	45.24	-09	47	49.1	688
1236		1983	04	19.37639	14	30	43.35	-09	47	47.2	688
1242		1983	09	02.21667	22	42	31.75	-12	01	48.4	688
1242		1983	09	02.24722	22	42	29.82	-12	01	50.4	688
1256		1983	04	10.20208	11	19	42.81	-00	41	26.5	688
1256		1983	04	10.26181	11	19	41.16	-00	41	13.0	688
1258		1983	07	17.35556	22	12	33.37	-06	56	14.0	688
1258		1983	07	17.40972	22	12	32.03	-06	56	12.0	688
1282		1983	09	28.11111	23	04	53.80	+10	08	57.7	688
1332		1983	04	10.20208	11	31	40.78	+03	57	59.5	688
1332		1983	04	10.26181	11	31	38.66	+03	58	10.4	688
1340		1983	08	13.39167	23	18	55.60	-04	28	32.9	16.8 688
1340		1983	08	13.42951	23	18	54.38	-04	28	42.1	688

1340	1983	09	06.22083	23	03	16.03	-06	04	57.5			688
1340	1983	09	06.25139	23	03	14.63	-06	05	04.8			688
1351	1983	05	06.23264	13	20	09.10	-13	23	50.5			688
1351	1983	05	06.28889	13	20	06.75	-13	23	42.9			688
1355	1983	06	07.18472	15	57	15.86	+00	18	05.2		2	688
1355	1983	06	07.22292	15	57	13.70	+00	18	40.0		2	688
1389	1983	07	17.35556	22	29	25.26	-07	51	34.8			688
1389	1983	07	17.40972	22	29	24.23	-07	51	40.2			688
1389	1983	10	04.10278	21	42	54.56	-12	53	36.6			688
1389	1983	10	04.18681	21	42	53.46	-12	53	44.1			688
1445	1983	04	18.13681	12	00	56.08	+03	11	03.5			688
1445	1983	04	18.16944	12	00	55.05	+03	11	11.3			688
1446	1983	09	06.22083	23	06	37.75	-11	16	39.4	16.8		688
1446	1983	09	06.25139	23	06	35.72	-11	16	46.3			688
1458	1983	05	15.18056	14	10	41.95	+01	02	34.6			688
1458	1983	05	15.24028	14	10	39.47	+01	02	58.3			688
1533	1983	07	17.35556	22	34	04.32	-05	49	53.8			688
1533	1983	07	17.40972	22	34	03.44	-05	50	05.5			688
1533	1983	10	04.10278	21	51	26.21	-13	27	13.5			688
1533	1983	10	04.18681	21	51	24.96	-13	27	32.8			688
1579	1983	04	19.34583	14	18	34.43	-08	02	32.4			688
1579	1983	04	19.37639	14	18	33.18	-08	02	22.7			688
1582	1983	04	18.20347	12	54	27.48	+12	56	00.2	16.0		688
1582	1983	04	18.24167	12	54	25.74	+12	56	03.1			688
1614	1983	04	18.20347	12	40	17.14	+07	43	31.2			688
1614	1983	04	18.24167	12	40	15.67	+07	43	46.0			688
1646	1983	04	18.20347	12	38	01.56	+09	40	40.8	16.8		688
1646	1983	04	18.24167	12	37	59.57	+09	40	50.0			688
1665	1983	04	19.41042	15	41	24.06	-07	11	31.0			688
1665	1983	04	19.46806	15	41	21.25	-07	11	22.0			688
1680	1983	04	19.41042	15	32	20.88	-14	12	49.5			688
1680	1983	04	19.46806	15	32	18.79	-14	12	44.6			688
1725	1983	04	19.34583	14	39	49.30	-10	41	44.0			688
1725	1983	04	19.37639	14	39	47.75	-10	41	38.3			688
1783	1983	04	19.34583	14	18	33.36	-05	59	48.7	16.0		688
1783	1983	04	19.37639	14	18	31.89	-05	59	32.0			688
1783	1983	05	07.17361	14	04	51.91	-03	28	43.1			688
1783	1983	05	07.23056	14	04	49.52	-03	28	21.2			688
1783	1983	05	15.18056	13	59	38.65	-02	36	52.3			688
1783	1983	05	15.24028	13	59	36.49	-02	36	33.0			688
1842	1983	04	19.34583	14	36	12.50	-05	43	37.6	16.0		688
1842	1983	04	19.37639	14	36	10.95	-05	43	23.2			688
1906	1983	09	04.35278	00	15	04.83	+01	16	05.6			688
1906	1983	09	04.38333	00	15	03.21	+01	16	05.5			688
1906	1983	09	14.27847	00	06	33.93	+01	10	09.9			688
1906	1983	09	14.35278	00	06	29.45	+01	10	05.7			688
1907	1983	04	19.41042	15	47	01.17	-14	50	00.0			688
1907	1983	04	19.46806	15	46	59.21	-14	49	46.9			688
1912	1983	05	06.23264	13	31	15.82	-06	02	01.1			688
1912	1983	05	06.28889	13	31	13.33	-06	01	50.7			688
2010	1983	05	06.23264	13	27	06.76	-10	22	02.4			688
2010	1983	05	06.28889	13	27	04.52	-10	21	49.6			688
2010	1983	05	15.15833	13	21	51.28	-09	53	22.5			688
2010	1983	05	15.21806	13	21	49.35	-09	53	10.9			688
2036	1983	09	04.35278	00	22	23.83	+03	34	16.6			688
2036	1983	09	04.38333	00	22	22.16	+03	34	13.4			688
2036	1983	09	14.27847	00	13	22.74	+03	09	03.5			688
2036	1983	09	14.35278	00	13	17.99	+03	08	50.4			688
2047	1983	05	06.23264	13	27	23.34	-07	24	10.3			688

2047	1983	05	06.28889	13	27	16.69	-07	24	56.5	1	688
2074	1983	04	19.34583	14	26	30.63	-07	28	18.5	2	688
2074	1983	04	19.37639	14	26	28.53	-07	27	22.2		688
2114	1983	08	13.39167	22	59	03.43	-06	51	33.6		688
2114	1983	08	13.42951	22	59	02.10	-06	51	43.1		688
2114	1983	09	02.24722	22	45	19.60	-08	13	26.2		688
2116	1983	08	31.15972	21	49	52.76	-07	38	55.6		688
2116	1983	08	31.18889	21	49	51.48	-07	39	09.1		688
2116	1983	10	04.10278	21	35	30.89	-11	42	59.9		688
2116	1983	10	04.18681	21	35	30.67	-11	43	26.3		688
2120	1983	10	04.22778	22	46	22.86	+13	09	27.2		688
2120	1983	10	04.26528	22	46	22.16	+13	09	03.4		688
2142	1983	04	10.20208	11	14	33.68	+05	17	24.2		688
2142	1983	04	10.26181	11	14	31.91	+05	17	34.0		688
2164	1983	09	06.22083	23	11	48.93	-08	30	28.1		688
2164	1983	09	06.25139	23	11	47.56	-08	30	37.4		688
2204	1983	08	31.15972	22	05	12.52	-06	53	49.6	16.8	688
2204	1983	08	31.18889	22	05	10.86	-06	54	15.3		688
2204	1983	10	04.10278	21	41	42.67	-14	02	56.8		688
2204	1983	10	04.18681	21	41	41.03	-14	03	45.5		688
2207	1983	04	10.20208	11	23	35.29	+06	26	04.5		688
2207	1983	04	10.26181	11	23	34.00	+06	26	15.0		688
2226	1983	04	18.13681	12	01	17.25	+02	06	52.6	17.2	688
2226	1983	04	18.16944	12	01	15.99	+02	06	57.8		688
2228	1983	08	13.39167	23	15	11.53	-05	48	26.9		688
2228	1983	08	13.42951	23	15	10.43	-05	48	37.0		688
2228	1983	09	02.21667	23	02	42.24	-07	21	09.1		688
2228	1983	09	02.24722	23	02	40.90	-07	21	18.4		688
2228	1983	09	06.22083	22	59	45.14	-07	41	59.8		688
2228	1983	09	06.25139	22	59	43.71	-07	42	09.1		688
2250	1983	05	06.23264	13	31	40.19	-07	47	33.8		688
2250	1983	05	06.28889	13	31	37.76	-07	47	20.9		688
2258	1983	09	04.35278	00	03	52.53	+02	12	58.6		688
2258	1983	09	04.38333	00	03	50.89	+02	12	52.2		688
2258	1983	09	14.27847	23	56	18.99	+01	29	28.4		688
2258	1983	09	14.35278	23	56	15.16	+01	29	08.7		688
2280	1983	04	19.34583	14	21	32.70	-08	00	19.3		688
2280	1983	04	19.37639	14	21	30.54	-08	00	08.9		688
2316	1983	04	18.13681	12	07	29.15	+01	21	31.1		688
2316	1983	04	18.16944	12	07	27.66	+01	21	40.1		688
2326	1983	06	07.18472	15	41	58.86	+01	54	38.0		688
2326	1983	06	07.22292	15	41	57.20	+01	54	38.2		688
2332	1983	04	18.20347	12	47	05.95	+12	10	21.8	16.5	688
2332	1983	04	18.24167	12	47	04.09	+12	10	22.7		688
2365	1983	09	02.26250	23	13	43.19	+03	06	19.2		688
2365	1983	09	02.29306	23	13	41.63	+03	06	11.9		688
2377	1983	09	14.27847	00	02	18.74	+01	56	21.1		688
2377	1983	09	14.35278	00	02	15.23	+01	55	58.5		688
2392	1983	09	02.21667	23	03	14.18	-08	19	40.1		688
2392	1983	09	02.24722	23	03	12.55	-08	19	55.7		688
2392	1983	09	06.22083	22	59	36.25	-08	49	15.5	16.8	688
2392	1983	09	06.25139	22	59	34.61	-08	49	28.4		688
2405	1983	04	18.13681	12	02	05.02	+02	45	21.3		688
2405	1983	04	18.16944	12	02	03.94	+02	45	26.7		688
2450	1983	07	17.35556	22	23	28.41	-11	36	11.7		688
2450	1983	07	17.40972	22	23	27.10	-11	36	20.6		688
2450	1983	10	04.10278	21	38	03.97	-16	14	59.8		688
2450	1983	10	04.18681	21	38	02.93	-16	15	03.4		688
2468	1983	09	02.26250	23	20	11.25	+05	10	28.5		688

2468	1983	09	02.29306	23	20	09.69	+05	10	15.8			688
2487	1983	04	10.20208	11	27	55.69	+02	21	37.3			688
2487	1983	04	10.26181	11	27	52.89	+02	21	49.4			688
2500	1983	04	18.13681	12	16	27.11	+06	14	36.1			688
2535	1983	04	19.41042	15	33	58.60	-14	31	23.5			688
2535	1983	04	19.46806	15	33	56.01	-14	31	06.4			688
2567	1983	05	07.17361	14	04	48.15	+00	59	37.8		17.0	688
2567	1983	05	07.23056	14	04	45.56	+00	59	49.1			688
2567	1983	05	15.18056	13	58	56.34	+01	24	48.3			688
2567	1983	05	15.24028	13	58	53.83	+01	24	56.2			688
2569	1983	04	18.20347	13	00	42.77	+09	27	58.4			688
2569	1983	04	18.24167	13	00	40.87	+09	28	02.8			688
2591	1983	05	06.23264	13	20	16.78	-09	51	16.1		17.0	688
2591	1983	05	06.28889	13	20	14.40	-09	51	02.3			688
2600	1983	04	18.20347	12	45	04.66	+13	20	59.9			688
2600	1983	04	18.24167	12	45	02.97	+13	21	05.7			688
2625	1983	09	06.22083	23	12	31.59	-10	52	29.0			688
2625	1983	09	06.25139	23	12	29.88	-10	52	45.1			688
2640	1983	09	02.21667	22	56	35.54	-11	36	39.6		17.2	688
2640	1983	09	02.24722	22	56	33.34	-11	36	48.5			688
2640	1983	09	06.22083	22	52	33.71	-11	50	20.1		17.2	688
2640	1983	09	06.25139	22	52	31.86	-11	50	25.5			688
2642	1983	06	07.18472	16	05	15.88	-03	38	57.5			688
2642	1983	06	07.22292	16	05	13.76	-03	38	44.5			688
2654	1983	05	06.23264	13	42	12.56	-09	08	08.1			688
2654	1983	05	06.28889	13	42	10.31	-09	07	47.2			688
2668	1983	07	17.40972	22	13	44.78	-09	15	54.1			688
2674	1983	04	10.20208	11	20	08.70	+04	06	49.2			688
2674	1983	04	10.26181	11	20	07.34	+04	06	57.2			688
2675	1983	08	13.39167	23	12	02.99	-08	12	41.7			688
2675	1983	08	13.42951	23	12	01.57	-08	12	48.0			688
2675	1983	09	02.21667	22	55	32.77	-09	26	05.2			688
2675	1983	09	02.24722	22	55	30.86	-09	26	12.5			688
2675	1983	09	06.22083	22	51	34.33	-09	42	07.5			688
2675	1983	09	06.25139	22	51	32.58	-09	42	13.8			688
2688	1983	09	06.22083	23	09	28.79	-10	46	57.2			688
2688	1983	09	06.25139	23	09	27.37	-10	47	07.0			688
2719	1983	04	10.20208	11	13	55.75	+05	55	00.8			688
2719	1983	04	10.26181	11	13	53.69	+05	55	11.6			688
2731	1983	09	06.22083	23	12	44.41	-10	17	33.2		15.8	688
2731	1983	09	06.25139	23	12	43.15	-10	17	49.8			688
2770	1983	10	04.10278	21	44	25.65	-17	29	51.4			688
2770	1983	10	04.18681	21	44	24.29	-17	29	45.5			688
2775	1983	09	06.22083	23	11	48.76	-11	50	48.3			688
2775	1983	09	06.25139	23	11	46.91	-11	51	00.6			688
2785	1983	09	14.27847	00	14	46.59	+02	37	03.9			688
2785	1983	09	14.35278	00	14	43.03	+02	36	45.2		1	688
2808	1983	07	17.35556	22	12	10.70	-09	51	58.8			688
2808	1983	07	17.40972	22	12	09.18	-09	51	58.5			688
2826	1983	05	06.23264	13	39	41.82	-09	49	23.5		16.8	688
2826	1983	05	06.28889	13	39	39.05	-09	49	23.5			688
2826	1983	05	15.15833	13	33	10.25	-09	52	02.8			688
2826	1983	05	15.21806	13	33	07.84	-09	52	04.3			688
2833	1983	09	06.22083	23	08	02.26	-05	15	11.3			688
2833	1983	09	06.25139	23	08	00.90	-05	15	17.8			688
2869	1983	04	10.20208	11	19	49.78	+03	16	14.8		17.5	688
2869	1983	04	10.26181	11	19	46.97	+03	16	15.4			688
2901	1983	04	18.13681	12	16	14.96	+02	34	33.5		17.2	688
2901	1983	04	18.16944	12	16	13.77	+02	34	37.7			688

1940	YF		1983	04	19.34583	14	24	08.17	-03	51	47.0	15.5	688
1940	YF		1983	04	19.37639	14	24	06.20	-03	51	48.3		688
1940	YF		1983	05	07.17361	14	05	19.78	-04	18	05.0	15.5	688
1940	YF		1983	06	07.16528	13	43	49.47	-06	29	51.6	16.5	688
1940	YF		1983	06	07.20417	13	43	48.65	-06	30	05.0		688
1941	UV		1983	08	13.39167	23	20	09.84	-04	01	00.8	17.2	688
1941	UV		1983	08	13.42951	23	20	08.82	-04	01	06.9		688
1941	UV		1983	09	02.21667	23	05	42.79	-05	25	11.8	16.8	688
1941	UV		1983	09	02.24722	23	05	41.09	-05	25	19.6		688
1941	UV		1983	09	06.22083	23	02	05.74	-05	46	24.8	16.5	688
1941	UV		1983	09	06.25139	23	02	04.11	-05	46	32.7		688
1974	SP		1983	08	13.18750	20	33	24.48	-08	30	19.6	17.0	688
1974	SP		1983	08	13.23333	20	33	22.28	-08	30	40.8		688
1976	GN8		1983	08	31.15972	22	08	37.86	-05	29	08.1	16.8	688
1976	GN8		1983	08	31.18889	22	08	36.28	-05	29	11.2		688
1978	NN1		1983	10	04.18681	21	54	11.30	-17	50	16.7	17.5	688
1978	PT2		1983	09	02.21667	22	51	12.95	-05	57	40.9	17.0 1	688
1978	PT2		1983	09	02.24722	22	51	11.08	-05	57	49.3		688
1978	PT2		1983	09	06.22083	22	48	03.46	-06	16	23.9	17.0	688
1978	PT2		1983	09	06.25139	22	48	02.10	-06	16	30.8		688
1978	TB7		1983	07	17.35556	22	21	44.01	-07	37	37.0	16.8	688
1978	TB7		1983	07	17.40972	22	21	43.42	-07	37	49.2		688
1978	TB7		1983	10	04.10278	21	44	38.98	-16	36	12.5	17.0	688
1978	TB7		1983	10	04.18681	21	44	38.49	-16	36	31.9		688
1979	MK2		1983	04	19.41042	15	43	26.12	-07	22	54.6	16.2	688
1979	MK2		1983	04	19.46806	15	43	24.26	-07	22	40.9		688
1980	XM		1983	05	06.23264	13	32	18.25	-12	25	26.0	17.0	688
1980	XM		1983	05	06.28889	13	32	15.61	-12	25	22.1		688
1980	XM		1983	05	15.15833	13	25	51.02	-12	13	08.3	17.2	688
1980	XM		1983	05	15.21806	13	25	48.69	-12	13	03.1		688
1982	BK1		1983	06	07.18472	16	00	12.17	+01	14	39.2	17.0	688
1982	BK1		1983	06	07.22292	16	00	10.52	+01	14	36.8		688
1983	EV		1983	04	10.20208	11	23	07.00	+05	05	31.7	16.8	688
1983	EV		1983	04	10.26181	11	23	04.84	+05	05	37.4		688
1983	EW		1983	04	10.20208	11	33	09.13	+05	02	01.2	16.5	688
1983	EW		1983	04	10.26181	11	33	06.51	+05	02	22.6		688
1983	GS	*	1983	04	10.20208	11	13	18.49	+03	32	29.4	17.0 4	688
1983	GS		1983	04	10.26181	11	13	16.31	+03	32	38.1		688
1983	HF		1983	05	06.23264	13	24	47.23	-09	09	49.3	16.0	688
1983	HF		1983	05	06.28889	13	24	45.29	-09	09	06.6		688
1983	HF		1983	05	15.15833	13	20	43.36	-07	21	05.5	16.5	688
1983	HF		1983	05	15.21806	13	20	41.88	-07	20	24.6		688
1983	HH		1983	05	06.23264	13	30	32.48	-12	26	19.4	16.8	688
1983	HH		1983	05	06.28889	13	30	30.36	-12	25	54.2		688
1983	HJ		1983	05	06.23264	13	32	12.30	-06	05	52.1	16.8	688
1983	HJ		1983	05	06.28889	13	32	10.02	-06	05	42.8		688
1983	HJ		1983	05	15.15833	13	27	22.07	-05	43	00.7	17.0	688
1983	HJ		1983	05	15.21806	13	27	20.58	-05	42	52.5		688
1983	HN		1983	05	07.17361	13	56	59.60	+00	05	41.5	16.5	688
1983	HN		1983	05	07.23056	13	56	57.07	+00	05	50.3		688
1983	HN		1983	05	15.18056	13	51	06.14	+00	22	12.3	16.5	688
1983	HN		1983	05	15.24028	13	51	03.64	+00	22	17.3		688
1983	HO		1983	05	07.17361	14	04	41.57	+00	55	56.4	17.2	688
1983	HO		1983	05	07.23056	14	04	39.41	+00	56	03.8		688
1983	HO		1983	05	15.18056	14	00	08.56	+01	09	24.8	17.5	688
1983	HO		1983	05	15.24028	14	00	06.67	+01	09	28.4		688
1983	HP		1983	05	07.17361	13	54	44.64	-00	12	09.6	17.0	688
1983	HY	*	1983	04	19.34583	14	38	06.05	-10	02	27.7	17.0 4	688
1983	HY		1983	04	19.37639	14	38	04.70	-10	02	02.4		688

1983	HZ	*	1983	04	19.34583	14	40	28.05	-06	24	27.4	16.5	4 688
1983	HZ		1983	04	19.37639	14	40	26.37	-06	24	18.2		688
1983	HA1	*	1983	04	18.13681	12	18	48.38	+03	10	28.7	17.0	4 688
1983	HA1		1983	04	18.16944	12	18	46.92	+03	10	29.5		688
1983	HB1	*	1983	04	18.20347	12	39	57.21	+14	58	38.5	17.2	6 688
1983	HB1		1983	04	18.24167	12	39	55.72	+14	58	43.7		688
1983	HC1	*	1983	04	18.20347	12	40	51.72	+13	35	07.9	16.8	6 688
1983	HC1		1983	04	18.24167	12	40	49.87	+13	35	12.8		688
1983	HD1	*	1983	04	18.20347	12	50	37.44	+10	13	47.8	16.8	6 688
1983	HD1		1983	04	18.24167	12	50	35.77	+10	14	06.0		688
1983	HE1	*	1983	04	19.41042	15	43	38.71	-08	07	14.6	16.8	6 688
1983	HE1		1983	04	19.46806	15	43	36.33	-08	07	01.1		688
1983	HF1	*	1983	04	19.41042	15	44	44.39	-12	27	12.0	16.2	6 688
1983	HF1		1983	04	19.46806	15	44	42.66	-12	26	33.5		688
1983	JK	*	1983	05	07.17361	13	56	35.51	-00	29	21.9	17.2	4 688
1983	JK		1983	05	07.23056	13	56	33.50	-00	29	16.4		688
1983	PK	*	1983	08	13.39167	23	01	57.85	-06	15	48.7	16.8	4 688
1983	PK		1983	08	13.42951	23	01	56.21	-06	15	45.6		688
1983	PK		1983	09	02.21667	22	45	07.80	-06	14	39.4	16.8	688
1983	PK		1983	09	02.24722	22	45	05.96	-06	14	38.7		688
1983	PL	*	1983	08	13.39167	23	02	59.25	-07	27	35.4	16.8	4 688
1983	PL		1983	08	13.42951	23	02	58.12	-07	27	43.2		688
1983	PL		1983	09	02.21667	22	49	50.42	-08	46	41.1	16.8	688
1983	PL		1983	09	02.24722	22	49	49.07	-08	46	50.8		688
1983	PL		1983	09	06.22083	22	46	52.24	-09	03	39.2	16.8	3 688
1983	PL		1983	09	06.25139	22	46	50.81	-09	03	47.9		688
1983	PM	*	1983	08	13.39167	23	06	16.63	-02	18	41.1	17.0	4 688
1983	PM		1983	08	13.42951	23	06	15.29	-02	18	39.3		688
1983	PN	*	1983	08	13.39167	23	06	20.30	-05	17	55.3	17.0	4 688
1983	PN		1983	08	13.42951	23	06	18.84	-05	18	03.0		688
1983	PO	*	1983	08	13.39167	23	08	18.51	-08	10	05.0	17.5	4 688
1983	PO		1983	08	13.42951	23	08	17.29	-08	10	11.5		688
1983	PO		1983	09	02.21667	22	53	06.88	-09	21	47.0	17.0	688
1983	PO		1983	09	02.24722	22	53	05.30	-09	21	52.7		688
1983	PP	*	1983	08	13.39167	23	10	59.80	-04	18	19.1	17.0	4 688
1983	PP		1983	08	13.42951	23	10	58.47	-04	18	33.4		688
1983	PP		1983	09	02.21667	22	56	59.13	-06	45	00.7	16.8	688
1983	PP		1983	09	02.24722	22	56	57.56	-06	45	17.5		688
1983	PP		1983	09	06.22083	22	53	43.72	-07	17	35.5	16.5	688
1983	PP		1983	09	06.25139	22	53	42.21	-07	17	50.4		688
1983	PQ	*	1983	08	13.39167	23	14	48.74	-07	36	42.2	16.5	4 688
1983	PQ		1983	08	13.42951	23	14	47.49	-07	36	50.1		688
1983	PQ		1983	09	02.21667	23	00	44.47	-08	58	23.4	16.2	688
1983	PQ		1983	09	02.24722	23	00	42.87	-08	58	32.7		688
1983	PQ		1983	09	06.22083	22	57	29.39	-09	15	51.8	16.2	688
1983	PQ		1983	09	06.25139	22	57	27.89	-09	15	58.5		688
1983	RB		1983	09	14.24306	22	16	20.48	-06	40	39.5		688
1983	RB		1983	09	14.25069	22	16	21.09	-06	41	04.3		688
1983	RB		1983	09	28.12986	22	36	21.18	-15	46	02.6	16.5	688
1983	RC		1983	09	11.28403	01	03	19.38	-03	55	07.4		688
1983	RC		1983	09	11.31597	01	03	19.51	-03	55	53.0		688
1983	RC		1983	09	12.38542	01	03	26.76	-04	21	30.5		688
1983	RC		1983	09	12.41667	01	03	26.92	-04	22	18.8		688
1983	RD		1983	09	14.32639	01	00	25.99	+08	28	45.7		688
1983	RD		1983	09	14.33056	01	00	28.65	+08	28	23.9		688
1983	RD		1983	09	14.33472	01	00	31.42	+08	28	06.3		688
1983	RD		1983	09	14.33889	01	00	34.19	+08	27	47.3		688
1983	RD		1983	09	14.34306	01	00	36.92	+08	27	28.7		688
1983	RD		1983	09	14.38472	01	01	04.01	+08	24	30.3		688

1983	RD		1983	09	14.38889	01	01	06.64	+08	24	12.2	688
1983	RD		1983	09	14.39306	01	01	09.44	+08	23	54.1	688
1983	RE		1983	08	31.15972	21	56	46.18	-04	22	28.5	16.8 688
1983	RE		1983	08	31.18889	21	56	44.57	-04	22	35.1	688
1983	RY		1983	09	02.26250	23	14	59.26	-00	46	36.3	17.0 688
1983	RY		1983	09	02.29306	23	14	57.79	-00	46	42.9	688
1983	RQ1	*	1983	09	02.21667	22	50	56.01	-06	37	51.5	16.8 4 688
1983	RQ1		1983	09	02.24722	22	50	54.13	-06	37	59.2	688
1983	RQ1		1983	09	06.22083	22	46	50.16	-06	55	32.6	16.8 688
1983	RQ1		1983	09	06.25139	22	46	48.33	-06	55	41.4	688
1983	RR1	*	1983	09	02.21667	22	52	20.87	-06	33	07.8	16.5 5 688
1983	RR1		1983	09	02.24722	22	52	17.41	-06	32	43.2	688
1983	RS1	*	1983	09	02.21667	23	01	05.55	-11	37	45.7	17.0 4 688
1983	RS1		1983	09	02.24722	23	01	03.48	-11	37	49.3	688
1983	RS1		1983	09	06.22083	22	56	51.81	-11	46	58.4	16.5 688
1983	RS1		1983	09	06.25139	22	56	49.87	-11	47	02.6	688
1983	RT1	*	1983	09	02.21667	23	04	19.97	-10	13	25.8	17.2 4 688
1983	RT1		1983	09	02.24722	23	04	17.89	-10	13	28.9	688
1983	RT1		1983	09	06.22083	23	00	18.16	-10	19	38.8	17.2 688
1983	RT1		1983	09	06.25139	23	00	16.36	-10	19	40.0	688
1983	RU1	*	1983	09	02.21667	23	04	53.47	-08	17	18.7	17.2 4 688
1983	RU1		1983	09	02.24722	23	04	52.15	-08	17	36.5	688
1983	RU1		1983	09	06.22083	23	02	09.60	-08	56	48.7	17.0 688
1983	RU1		1983	09	06.25139	23	02	08.46	-08	57	12.3	688
1983	RV1	*	1983	09	02.26250	23	19	44.89	+00	28	41.7	16.8 6 688
1983	RV1		1983	09	02.29306	23	19	43.41	+00	28	24.7	688
1983	RW1	*	1983	09	06.22083	23	04	45.63	-05	55	14.9	16.5 4 688
1983	RW1		1983	09	06.25139	23	04	43.62	-05	55	17.3	688
1983	RX1	*	1983	09	06.22083	23	04	57.52	-11	08	15.3	16.8 4 688
1983	RX1		1983	09	06.25139	23	04	55.40	-11	08	19.6	688
1983	RY1	*	1983	09	06.22083	23	05	48.04	-07	12	19.1	16.8 4 688
1983	RY1		1983	09	06.25139	23	05	46.58	-07	12	28.6	688
1983	RZ1	*	1983	09	06.22083	23	10	39.39	-10	14	57.7	16.5 4 688
1983	RZ1		1983	09	06.25139	23	10	37.51	-10	15	03.2	688
1983	SA		1983	09	10.33750	23	44	49.76	-05	29	51.9	688
1983	SA		1983	09	10.37500	23	44	41.30	-05	26	52.8	688
1983	SA		1983	10	04.22778	22	47	21.84	+15	17	09.4	14.5 3 688
1983	SA		1983	10	04.26528	22	47	18.84	+15	18	11.7	688
1983	TB		1983	10	12.12153	17	50	47.78	+59	10	35.3	688
1983	TB		1983	10	12.18472	17	52	10.98	+59	08	45.5	688
1983	TB		1983	10	14.12291	18	32	31.78	+57	53	26.0	688
1983	TB		1983	10	14.13681	18	32	47.92	+57	52	42.2	688

Note 1: right ascension uncertain. 2: declination uncertain. 3 = 1 + 2. 4: discoverer Bowell. 5 = 1 + 4. 6: discoverer N. G. Thomas.

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

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N Obs.
557	1983 09	05.25236	22 22 07.22	-07 09 52.7	16.0	801
557	1983 09	09.15971	22 18 37.61	-07 28 14.2		801
557	1983 09	12.13747	22 16 03.97	-07 41 51.1		801
1983	1976 10	22.32013	04 11 56.73	+28 11 47.9		801
2403	1983 09	08.25334	22 50 15.40	-02 11 46.2	15.0	801
2403	1983 09	09.22427	22 49 25.07	-02 15 55.4		801
2920	1983 09	04.07728	18 55 43.69	-01 08 21.0		801
1932 BG	1983 07	11.24342	19 38 21.64	-20 03 02.9		801
1937 GG	1983 09	09.18357	22 38 02.31	-21 03 07.9		801
1941 UV	1983 09	07.21481	23 01 10.81	-05 51 43.7		801

1949	PP		1983	09	08.17164	21	35	55.29	-15	34	16.2		801
1955	QK		1983	09	07.08602	19	25	54.45	-11	34	34.1		801
1955	QP1		1983	09	08.25334	22	49	57.40	-02	18	26.0		801
1955	QP1		1983	09	09.22427	22	49	00.69	-02	23	28.8		801
1964	VM1		1983	09	05.34769	01	15	04.05	+05	04	50.0		801
1974	OA1		1983	09	04.37345	02	01	35.35	+27	40	01.4	16.0	801
1974	SP		1983	09	08.14041	20	20	33.39	-11	47	15.8		801
1976	UU		1983	09	04.35191	00	39	40.06	-10	23	21.4		801
1978	RF6		1983	09	02.12456	21	06	44.48	-09	16	59.8		801
1978	RF6		1983	09	09.12871	21	03	19.46	-10	01	45.0		801
1978	SR6		1983	09	04.28474	23	34	22.95	-05	58	47.1		801
1978	TB7		1983	09	05.20438	21	55	00.29	-13	48	18.9		801
1978	WM14		1983	09	07.16811	21	51	04.88	-05	11	17.3		801
1978	WM14		1983	09	08.22761	21	50	23.40	-05	16	59.9		801
1978	WN14		1983	09	07.26306	23	24	02.96	-07	10	31.5		801
1979	MM5		1983	09	05.25236	22	22	01.75	-06	54	35.5		801
1979	MM5		1983	09	09.15971	22	18	46.57	-07	14	08.5		801
1979	MM5		1983	09	12.13747	22	16	25.35	-07	28	42.1		801
1981	JM		1983	09	09.27907	00	30	48.11	+00	51	29.9		801
1982	BT1		1983	09	08.27772	22	59	07.68	-06	28	46.6		801
1982	BX1		1983	08	16.28394	23	32	43.80	-08	52	16.3		801
1982	BX1		1983	09	07.24250	23	12	43.72	-10	37	45.0		801
1982	HN1		1983	09	07.18743	22	16	43.53	-13	58	23.2		801
1983	LU	*	1983	06	11.16029	14	11	43.46	-15	33	03.6	18.0	801
1983	NE	*	1983	07	10.22017	19	07	51.13	-09	54	08.1	18.0	801
1983	NF	*	1983	07	14.13490	16	45	25.81	-09	41	23.0	18.5 1	801
1983	NG	*	1983	07	15.11041	18	01	41.11	-10	38	43.5	18.0 2	801
1983	PA		1983	09	04.16449	20	51	12.38	+22	46	02.9		801
1983	PA		1983	09	08.19530	20	47	08.08	+23	31	24.4		801
1983	PA		1983	09	09.10505	20	46	19.42	+23	40	25.3	3	801
1983	QG		1983	09	02.33038	02	44	58.19	-10	03	10.5		801
1983	QG		1983	09	03.27634	02	45	45.50	-10	05	04.8		801
1983	QG		1983	09	05.36718	02	47	22.58	-10	09	30.0		801
1983	QG		1983	09	08.31291	02	49	22.26	-10	16	04.5		801
1983	QH	*	1983	08	16.34679	23	45	51.10	-07	34	04.2	18.0	801
1983	RE		1983	09	07.16811	21	50	25.00	-04	46	41.7		801
1983	RE		1983	09	12.11735	21	46	37.06	-05	03	46.3		801
1983	RG1	*	1983	09	03.24331	00	29	35.42	+10	30	30.0	17.0	801
1983	RH1	*	1983	09	05.22434	22	17	00.62	+04	32	19.9	16.5	801
1983	RJ1	*	1983	09	05.25236	22	22	05.47	-07	11	50.3	17.0	801
1983	RJ1		1983	09	09.15971	22	18	37.22	-07	25	48.9	2	801
1983	RK1	*	1983	09	08.22761	21	47	22.83	-05	44	12.2	17.0	801
1983	RL1	*	1983	09	08.27772	22	58	54.61	-06	25	37.1	18.5	801
1983	RM1	*	1983	09	09.18357	22	38	54.32	-21	06	33.5	18.5	801
1983	RN1	*	1983	09	09.22427	22	48	51.10	-02	25	39.3	19.5	801
1983	RO1	*	1983	09	09.22427	22	50	00.36	-02	17	33.5	19.5	801
1983	RP1	*	1983	09	09.24599	23	46	06.98	+00	31	02.2	18.0	801
3042	P-L		1983	09	07.14181	21	29	48.56	-04	58	51.4		801

Note 1: poor plate, few reference stars. 2: measured in one direction only; images weak and difficult to measure. 3: poor focus.

OBSERVATIONS MADE WITH THE MAKSUTOV ASTROGRAPH AT THE UNIVERSITY OF CHILE'S CERRO EL ROBLE STATION BY C. TORRES, J. MAZA, H. WROBLEWSKI AND L. E. GONZALEZ. MEASURED BY TORRES AND M. WISCHNJEWSKY.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
158	1980	07 11.12403	18 25 11.39	-23 16 51.1			805
609	1980	03 19.28028	13 39 04.22	-06 56 22.1	15.5		805
609	1980	03 20.21708	13 38 35.14	-06 51 59.2			805
609	1980	03 23.30840	13 36 52.62	-06 36 59.9			805

621		1980	04	14.02561	13	22	59.62	-06	08	31.6		16	805
621		1980	04	15.09505	13	22	10.11	-06	04	12.2			805
621		1980	04	16.15952	13	21	21.04	-05	59	54.2			805
792		1980	07	11.09139	18	15	25.25	-20	17	43.4		15.5	805
792		1980	07	12.09069	18	14	32.83	-20	15	55.8			805
792		1980	07	12.10597	18	14	32.00	-20	15	53.9			805
792		1980	07	12.12194	18	14	31.11	-20	15	52.7			805
792		1980	07	12.29381	18	14	21.46	-20	15	33.9			805
792		1980	07	13.15388	18	13	36.91	-20	14	03.0			805
792		1980	07	13.22541	18	13	33.15	-20	13	55.9			805
976		1980	07	11.09139	18	03	24.48	-17	47	04.6		15	805
976		1980	07	12.09069	18	02	42.47	-17	46	09.8			805
976		1980	07	12.10597	18	02	41.82	-17	46	08.8			805
976		1980	07	12.12194	18	02	41.08	-17	46	07.6			805
976		1980	07	12.29381	18	02	33.28	-17	45	58.7			805
1609		1980	07	11.09139	18	21	54.90	-21	03	02.0		14	805
1609		1980	07	11.12403	18	21	52.82	-21	03	30.5			805
1609		1980	07	12.09069	18	20	54.97	-21	16	35.7			805
1609		1980	07	12.10597	18	20	54.03	-21	16	48.1			805
1609		1980	07	12.12194	18	20	52.96	-21	17	01.1			805
1609		1980	07	12.29381	18	20	41.91	-21	19	21.5			805
1609		1980	07	13.15388	18	19	51.18	-21	31	02.1			805
1609		1980	07	13.22541	18	19	46.67	-21	31	59.4			805
1761		1980	03	19.28028	13	32	20.35	-06	03	59.5		16.0	805
1761		1980	03	23.30840	13	29	45.62	-05	48	25.8			805
1846		1980	04	14.02561	13	15	21.21	-08	17	10.6		17	805
1846		1980	04	15.09505	13	14	17.33	-08	12	25.9			805
1846		1980	04	16.15952	13	13	13.91	-08	07	43.4			805
2087		1980	03	19.28028	13	36	33.58	-06	46	58.1		17.0	805
2087		1980	03	20.21708	13	35	53.80	-06	42	32.1			805
2087		1980	03	23.30840	13	33	32.26	-06	26	57.2			805
1978	RA6	1980	04	14.02561	13	09	23.93	-06	39	10.6		17.5	805
1978	RA6	1980	04	15.09505	13	08	16.63	-06	35	17.7			805
1978	RA6	1980	04	16.15952	13	07	10.41	-06	31	32.0			805
1980	FB12*	1980	03	19.28028	13	37	02.41	-08	52	54.4		17.5	805
1980	FB12	1980	03	20.21708	13	36	31.45	-08	48	29.5			805
1980	FB12	1980	03	23.30840	13	34	39.14	-08	33	06.1			805
1980	FB12	1980	04	14.02561	13	16	45.24	-06	16	17.7		16.5	805
1980	FB12	1980	04	15.09505	13	15	45.97	-06	09	01.2			805
1980	FB12	1980	04	16.15952	13	14	47.12	-06	01	46.7			805
1980	FC12*	1980	03	19.28028	13	26	26.65	-06	52	42.6		16.0	1 805
1980	FC12	1980	03	20.21708	13	24	21.91	-07	13	15.1			1 805
1980	GV *	1980	04	14.02561	13	08	01.15	-08	17	44.0		16.5	805
1980	GV	1980	04	15.09505	13	07	04.95	-08	09	30.2			805
1980	GV	1980	04	16.15952	13	06	09.76	-08	01	22.5			805
1980	GW *	1980	04	14.02561	13	10	18.79	-08	30	46.8		19	805
1980	GW	1980	04	15.09505	13	09	26.56	-08	25	57.3			805
1980	GW	1980	04	16.15952	13	08	34.88	-08	21	10.2			805
1980	GX *	1980	04	14.02561	13	12	38.06	-08	31	54.2		19.5	805
1980	GX	1980	04	15.09505	13	11	40.60	-08	23	33.6			805
1980	GX	1980	04	16.15952	13	10	43.61	-08	15	12.9			805
1980	GY *	1980	04	14.02561	13	13	02.58	-08	59	02.0		18.5	805
1980	GY	1980	04	15.09505	13	12	11.30	-08	53	36.4			805
1980	GY	1980	04	16.15952	13	11	20.41	-08	48	10.9			805
1980	GZ *	1980	04	14.02561	13	13	21.81	-05	49	48.5		18.5	805
1980	GZ	1980	04	15.09505	13	12	23.24	-05	40	50.5			805
1980	GZ	1980	04	16.15952	13	11	24.99	-05	31	56.4			805
1980	GA1 *	1980	04	14.02561	13	14	48.49	-08	56	16.5		18.5	805
1980	GA1	1980	04	15.09505	13	13	57.82	-08	51	38.0			805

1980	GA1		1980	04	16.15952	13	13	07.75	-08	46	57.6	805
1980	GB1	*	1980	04	14.02561	13	15	40.11	-09	22	35.7	18 805
1980	GB1		1980	04	15.09505	13	14	48.81	-09	17	07.7	805
1980	GB1		1980	04	16.15952	13	13	58.26	-09	11	38.6	805
1980	GC1	*	1980	04	14.02561	13	15	42.05	-09	06	43.7	19.5 805
1980	GC1		1980	04	15.09505	13	14	52.67	-09	02	14.8	805
1980	GC1		1980	04	16.15952	13	14	03.67	-08	57	44.5	805
1980	GD1	*	1980	04	14.02561	13	18	15.82	-05	52	44.4	19 805
1980	GD1		1980	04	15.09505	13	17	13.35	-05	47	46.3	805
1980	GD1		1980	04	16.15952	13	16	11.61	-05	42	52.9	805
1980	GE1	*	1980	04	14.02561	13	19	54.70	-08	30	17.6	19 805
1980	GE1		1980	04	15.09505	13	18	56.73	-08	21	52.9	805
1980	GE1		1980	04	16.15952	13	17	59.55	-08	13	31.1	805
1980	GF1	*	1980	04	14.02561	13	20	02.63	-08	46	50.4	16.5 805
1980	GF1		1980	04	15.09505	13	19	11.63	-08	41	23.1	805
1980	GF1		1980	04	16.15952	13	18	21.25	-08	35	54.7	805
1980	GG1	*	1980	04	14.02561	13	20	02.48	-05	46	47.5	19.5 805
1980	GG1		1980	04	15.09505	13	19	20.69	-05	35	22.7	805
1980	GG1		1980	04	16.15952	13	18	39.14	-05	23	57.4	805
1980	GH1	*	1980	04	14.02561	13	20	41.92	-06	05	13.2	16 805
1980	GH1		1980	04	15.09505	13	19	57.30	-05	52	35.1	805
1980	GH1		1980	04	16.15952	13	19	13.17	-05	40	01.8	805
1980	GJ1	*	1980	04	14.02561	13	22	29.77	-08	24	27.9	16 805
1980	GJ1		1980	04	15.09505	13	21	34.12	-08	22	26.2	805
1980	GJ1		1980	04	16.15952	13	20	38.77	-08	20	22.9	805
1980	GK1	*	1980	04	14.02561	13	24	01.99	-08	23	10.4	19 805
1980	GK1		1980	04	15.09505	13	22	56.15	-08	17	26.6	805
1980	GK1		1980	04	16.15952	13	21	51.06	-08	11	44.6	805
1980	NA	*	1980	07	11.09139	18	05	23.44	-21	34	53.8	20 805
1980	NA		1980	07	12.15736	18	04	33.15	-21	38	33.8	805
1980	NA		1980	07	12.29381	18	04	26.11	-21	39	02.2	805
1980	NA		1980	07	13.15388	18	03	46.12	-21	41	59.8	805
1980	NA		1980	07	13.22541	18	03	42.63	-21	42	14.3	805
1980	NB	*	1980	07	11.09139	18	06	44.40	-21	21	12.5	18.5 805
1980	NB		1980	07	12.09069	18	05	59.79	-21	20	49.6	805
1980	NB		1980	07	12.10597	18	05	59.02	-21	20	48.9	805
1980	NB		1980	07	12.12194	18	05	58.14	-21	20	48.3	805
1980	NB		1980	07	12.29381	18	05	49.72	-21	20	43.8	805
1980	NB		1980	07	13.15388	18	05	12.56	-21	20	25.5	805
1980	NB		1980	07	13.22541	18	05	09.25	-21	20	23.8	805
1980	NC	*	1980	07	11.09139	18	07	59.67	-20	24	19.0	18.5 805
1980	NC		1980	07	12.29381	18	06	57.93	-20	25	41.5	805
1980	NC		1980	07	13.15388	18	06	15.29	-20	26	41.5	805
1980	NC		1980	07	13.22541	18	06	11.58	-20	26	46.5	805
1980	ND	*	1980	07	11.09139	18	08	04.30	-18	14	34.5	17.5 805
1980	ND		1980	07	12.09069	18	07	18.44	-18	12	04.7	805
1980	ND		1980	07	12.10597	18	07	17.71	-18	12	02.5	805
1980	ND		1980	07	12.12194	18	07	16.95	-18	12	00.1	805
1980	ND		1980	07	12.29381	18	07	08.44	-18	11	34.7	805
1980	ND		1980	07	13.15388	18	06	29.71	-18	09	29.3	805
1980	ND		1980	07	13.22541	18	06	26.42	-18	09	19.3	805
1980	NE	*	1980	07	11.09139	18	08	36.09	-20	34	40.1	17 805
1980	NE		1980	07	12.09069	18	07	44.99	-20	30	26.1	805
1980	NE		1980	07	12.10597	18	07	44.17	-20	30	22.1	805
1980	NE		1980	07	12.12194	18	07	43.29	-20	30	17.5	805
1980	NE		1980	07	12.29381	18	07	33.86	-20	29	35.0	805
1980	NE		1980	07	13.15388	18	06	50.83	-20	25	59.5	805
1980	NE		1980	07	13.22541	18	06	47.11	-20	25	41.4	805
1980	NF	*	1980	07	11.09139	18	08	40.81	-19	40	48.6	18 805

1980	NF		1980	07	12.15736	18	07	52.36	-19	38	30.2	805
1980	NF		1980	07	12.29381	18	07	45.63	-19	38	11.9	805
1980	NF		1980	07	13.15388	18	07	07.10	-19	36	21.6	805
1980	NF		1980	07	13.22541	18	07	03.67	-19	36	10.6	805
1980	NG	*	1980	07	11.09139	18	11	21.18	-17	58	43.6	18.5 805
1980	NG		1980	07	12.15736	18	10	32.24	-17	57	26.0	805
1980	NG		1980	07	12.29381	18	10	25.51	-17	57	15.6	805
1980	NG		1980	07	13.15388	18	09	46.68	-17	56	15.5	805
1980	NG		1980	07	13.22541	18	09	43.34	-17	56	09.9	805
1980	NH	*	1980	07	11.09139	18	17	00.47	-19	07	42.2	17.5 805
1980	NH		1980	07	12.09069	18	16	12.72	-19	05	33.1	805
1980	NH		1980	07	12.10597	18	16	12.00	-19	05	30.4	805
1980	NH		1980	07	12.12194	18	16	11.20	-19	05	28.2	805
1980	NH		1980	07	12.29381	18	16	02.35	-19	05	06.8	805
1980	NH		1980	07	13.15388	18	15	21.93	-19	03	17.9	805
1980	NH		1980	07	13.22541	18	15	18.19	-19	03	05.0	805
1980	NJ	*	1980	07	11.09139	18	17	13.42	-20	25	44.2	18 805
1980	NJ		1980	07	12.15736	18	16	22.95	-20	29	32.3	805
1980	NJ		1980	07	12.29381	18	16	15.90	-20	30	00.2	805
1980	NJ		1980	07	13.15388	18	15	35.69	-20	33	05.2	805
1980	NJ		1980	07	13.22541	18	15	32.23	-20	33	20.3	805
1980	NK	*	1980	07	11.09139	18	17	20.44	-20	39	56.6	18 805
1980	NK		1980	07	12.15736	18	16	28.46	-20	40	38.6	805
1980	NK		1980	07	12.29381	18	16	21.30	-20	40	42.9	805
1980	NK		1980	07	13.15388	18	15	40.17	-20	41	18.2	805
1980	NK		1980	07	13.22541	18	15	36.60	-20	41	20.0	805
1980	NL	*	1980	07	11.09139	18	17	47.96	-21	39	30.4	18 805
1980	NL		1980	07	11.12403	18	17	46.01	-21	39	37.6	805
1980	NL		1980	07	12.15736	18	16	45.99	-21	42	51.7	805
1980	NL		1980	07	12.29381	18	16	37.31	-21	43	16.8	805
1980	NM	*	1980	07	11.09139	18	18	19.50	-20	22	43.6	18 805
1980	NM		1980	07	12.09069	18	17	31.87	-20	23	34.1	805
1980	NM		1980	07	12.10597	18	17	31.08	-20	23	34.7	805
1980	NM		1980	07	12.12194	18	17	30.25	-20	23	36.2	805
1980	NM		1980	07	12.29381	18	17	21.43	-20	23	44.6	805
1980	NM		1980	07	13.22541	18	16	37.42	-20	24	34.2	805
1980	NN	*	1980	07	11.09139	18	20	06.09	-18	16	48.4	19.5 805
1980	NN		1980	07	12.15736	18	19	17.36	-18	20	46.6	805
1980	NN		1980	07	12.29381	18	19	10.40	-18	21	16.4	805
1980	NN		1980	07	13.15388	18	18	32.76	-18	24	32.5	805
1980	NN		1980	07	13.22541	18	18	29.45	-18	24	50.4	805
1980	NO	*	1980	07	11.09139	18	20	14.32	-18	04	23.6	19 805
1980	NO		1980	07	12.15736	18	19	21.70	-18	08	50.8	805
1980	NO		1980	07	12.29381	18	19	14.52	-18	09	24.5	805
1980	NO		1980	07	13.15388	18	18	32.82	-18	13	00.5	805
1980	NO		1980	07	13.22541	18	18	29.16	-18	13	17.2	805
1980	NP	*	1980	07	11.09139	18	21	32.84	-19	17	34.3	18 805
1980	NP		1980	07	12.09069	18	20	39.85	-19	12	02.3	805
1980	NP		1980	07	12.10597	18	20	38.93	-19	11	57.8	805
1980	NP		1980	07	12.12194	18	20	38.05	-19	11	52.5	805
1980	NP		1980	07	12.29381	18	20	28.20	-19	10	55.9	805
1980	NP		1980	07	13.15388	18	19	43.62	-19	06	14.2	805
1980	NP		1980	07	13.22541	18	19	39.69	-19	05	50.6	805
1980	NQ	*	1980	07	11.09139	18	21	48.68	-18	03	23.3	19 805
1980	NQ		1980	07	12.15736	18	20	54.25	-18	09	42.5	805
1980	NQ		1980	07	12.29381	18	20	46.87	-18	10	28.0	805
1980	NR	*	1980	07	11.09139	18	22	01.37	-18	30	26.4	20 805
1980	NR		1980	07	12.15736	18	20	59.26	-18	28	10.9	805
1980	NR		1980	07	13.15388	18	20	01.71	-18	26	07.4	805

1980	NR		1980	07	13.22541	18	19	57.41	-18	25	58.6	805
1983	DJ		1980	04	14.02561	13	17	03.60	-07	40	16.0	17 805
1983	DJ		1980	04	15.09505	13	15	53.87	-07	36	31.7	805
1983	DJ		1980	04	16.15952	13	14	44.82	-07	32	49.4	805

Note 1: fast-moving object.

OBSERVATIONS MADE AT WITH THE 0.4-M ASTROGRAPH AT THE EUROPEAN SOUTHERN OBSERVATORY BY K. OLOFSSON AND C.-I. LAGERKVIST.

Object		Date	UT	R. A. (1950)	Decl.	Obs.
2744		1982 08	16.30208	00 05 39.95	+07 38 30.0	809
2744		1982 08	16.30972	00 05 40.02	+07 38 37.2	809
2744		1982 08	16.31736	00 05 40.35	+07 38 46.6	809
2744		1982 08	18.32361	00 06 12.51	+08 08 28.4	809
2744		1982 08	18.33125	00 06 12.56	+08 08 35.5	809
2744		1982 08	18.33889	00 06 12.66	+08 08 41.6	809
2744		1982 08	20.14861	00 06 34.73	+08 35 01.1	809
2744		1982 08	20.15625	00 06 34.87	+08 35 08.4	809
2744		1982 08	20.16389	00 06 34.88	+08 35 14.2	809
2744		1982 08	20.32222	00 06 35.63	+08 37 31.1	809
2744		1982 08	20.32986	00 06 35.66	+08 37 38.8	809
2744		1982 08	20.33750	00 06 35.74	+08 37 44.4	809
2744		1982 08	21.35208	00 06 44.10	+08 52 13.7	809
2744		1982 08	21.35972	00 06 44.14	+08 52 20.9	809
2744		1982 08	21.36736	00 06 44.28	+08 52 26.8	809
2744		1982 08	23.13919	00 06 52.60	+09 17 22.2	809
2744		1982 08	23.14583	00 06 52.86	+09 17 28.1	809
2744		1982 08	23.15347	00 06 52.61	+09 17 34.7	809
1982	QN1 *	1982 08	16.06111	21 19 55.71	-01 36 53.0	809
1982	QN1	1982 08	16.06875	21 19 55.33	-01 36 57.0	809
1982	QN1	1982 08	16.07639	21 19 54.99	-01 37 01.2	809
1982	QN1	1982 08	18.13681	21 18 22.27	-01 57 02.2	809
1982	QN1	1982 08	18.14444	21 18 21.87	-01 57 07.0	809
1982	QN1	1982 08	18.15208	21 18 21.48	-01 57 11.4	809
1982	QN1	1982 08	20.06181	21 16 57.00	-02 16 33.0	809
1982	QN1	1982 08	20.06944	21 16 56.67	-02 16 38.4	809
1982	QN1	1982 08	20.07708	21 16 56.35	-02 16 48.8	809
1982	QN1	1982 08	21.13194	21 16 09.99	-02 27 41.8	809
1982	QN1	1982 08	21.13958	21 16 09.65	-02 27 43.6	809
1982	QN1	1982 08	21.14722	21 16 09.26	-02 27 54.7	809
1982	QO1 *	1982 08	16.24514	22 39 50.35	-03 50 42.3	809
1982	QO1	1982 08	16.25278	22 39 49.94	-03 50 44.2	809
1982	QO1	1982 08	16.26042	22 39 49.53	-03 50 45.4	809
1982	QO1	1982 08	18.26319	22 38 02.94	-03 58 50.6	809
1982	QO1	1982 08	18.27083	22 38 02.60	-03 58 52.2	809
1982	QO1	1982 08	18.27847	22 38 02.14	-03 58 54.2	809
1982	QO1	1982 08	20.11875	22 36 21.59	-04 06 46.9	809
1982	QO1	1982 08	20.12639	22 36 21.10	-04 06 49.6	809
1982	QO1	1982 08	20.13403	22 36 20.71	-04 06 51.1	809
1982	QO1	1982 08	22.16944	22 34 26.24	-04 16 01.2	809
1982	QO1	1982 08	22.17708	22 34 25.87	-04 16 02.5	809
1982	QO1	1982 08	22.18472	22 34 25.26	-04 16 06.0	809
4006	P-L	1982 08	16.12986	21 13 29.40	-03 53 48.0	809
4006	P-L	1982 08	16.13750	21 13 29.08	-03 53 50.5	809
4006	P-L	1982 08	16.14514	21 13 28.70	-03 53 52.7	809
4006	P-L	1982 08	18.20347	21 12 01.45	-04 04 15.2	809
4006	P-L	1982 08	18.21111	21 12 01.13	-04 04 17.3	809
4006	P-L	1982 08	18.21875	21 12 00.82	-04 04 19.7	809
4006	P-L	1982 08	20.03472	21 10 45.44	-04 13 42.9	809
4006	P-L	1982 08	20.04236	21 10 45.09	-04 13 45.6	809

4006 P-L 1982 08 20.05000 21 10 44.77 -04 13 47.1 809
4006 P-L 1982 08 22.08750 21 09 21.27 -04 24 30.9 809
4006 P-L 1982 08 22.09514 21 09 20.96 -04 24 33.3 809
4006 P-L 1982 08 22.10278 21 09 20.61 -04 24 36.3 809

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ORBITAL ELEMENTS OF ONE-OPPOSITION MINOR PLANETS.

The orbit computers are E = E. Bowell and M = B. G. Marsden. For further information see MPC 7828.

Planet	B(1,0)	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1980 FB12	14.5	800322	294.34	106.44	176.61	2.24	0.1967	2.4206	28	6		M
1980 GV	14.5	800411	50.09	278.52	210.49	3.21	0.2054	2.3417	2	3		M
1980 GW	16.0	800411	345.25	229.84	349.37	1.11	0.1192	2.8564	2	3	1	M
1980 GX	18.0	800411	358.11	353.59	209.48	2.92	0.0929	2.2056	2	3	1	M
1980 GY	18.0	800411	338.09	339.71	262.05	0.56	0.2990	2.3386	2	3		M
1980 GZ	17.5	800411	320.25	81.89	184.77	2.88	0.2768	2.2678	2	3	1	M
1980 GA1	15.0	800411	359.35	211.16	350.73	1.17	0.0845	3.0045	2	3	1	M
1980 GB1	15.0	800411	359.56	310.01	251.88	1.00	0.1255	2.8598	2	3	1	M
1980 GC1	16.0	800411	358.56	212.63	350.50	1.25	0.1181	3.1191	2	3	1	M
1980 GD1	16.0	800411	92.05	34.03	48.91	2.96	0.2371	2.4285	2	3	1	M
1980 GE1	17.5	800411	359.24	359.16	203.39	3.03	0.0935	2.2085	2	3	1	M
1980 GF1	13.5	800411	359.52	346.34	216.08	0.81	0.1308	2.8784	2	3	1	M
1980 GG1	15.0	800411	359.12	4.94	197.49	21.35	0.0636	3.2131	2	3	1	M
1980 GH1	13.0	800411	340.09	28.86	197.49	16.65	0.1104	2.8471	2	3	1	M
1980 GJ1	12.5	800411	357.75	180.87	23.93	8.13	0.0894	3.0221	2	3	1	M
1980 GK1	16.0	800411	158.10	7.39	32.03	1.60	0.1299	2.2146	2	3	1	M
1980 NA	17.5	800720	0.57	170.71	110.31	5.27	0.1313	2.5709	2	5	1	M
1980 NB	15.5	800720	354.09	46.02	242.59	2.17	0.1429	2.9438	2	7	1	M
1980 ND	14.5	800720	358.88	27.01	255.68	7.95	0.1258	2.8380	2	7	1	M
1980 NE	15.5	800720	0.45	15.43	267.75	6.51	0.1213	2.2630	2	7	1	M
1980 NF	15.0	800720	0.46	21.86	258.76	6.58	0.1375	2.8781	2	5	1	M
1980 NG	15.5	800720	0.04	37.08	244.50	5.74	0.1260	2.8414	2	5	1	M
1980 NH	14.5	800720	359.81	23.85	258.81	7.07	0.1224	2.8356	2	7	1	M
1980 NJ	15.0	800720	359.79	166.61	115.84	6.43	0.1238	2.8414	2	5	1	M
1980 NK	15.5	800720	0.72	86.97	195.42	1.51	0.1390	2.6036	2	5	1	M
1980 NM	15.0	800720	0.49	100.69	181.10	1.82	0.1130	2.8075	2	6	1	M
1980 NN	18.5	800720	350.06	158.66	143.82	3.43	0.2258	2.3113	2	5		M
1980 NO	16.5	800720	0.89	152.00	130.49	5.94	0.1265	2.5670	2	5	1	M
1980 NP	14.5	800720	62.11	293.32	272.26	18.49	0.1353	2.8992	2	7	1	M
1980 NR	16.5	800720	182.00	198.11	262.56	10.10	0.1432	2.3966	2	4	1	M
1982 QN1		820819	331.83	186.79	182.42	10.06	0.2495	2.4690	5	0		M
1982 QO1		820819	203.86	222.53	269.58	2.80	0.0584	2.2483	6	0		M
1983 HJ	13.0	830416	20.17	57.64	122.60	2.17	0.1315	3.1810	27	6		E
1983 PA	14.0	830814	339.29	84.90	288.11	20.14	0.3928	2.4058	32	0		M
1983 PP	13.4	830814	226.03	318.22	161.22	8.35	0.1080	2.5437	24	6		E
1983 QA	15.0	830903	350.01	31.11	321.74	8.75	0.2573	2.3659	21	0		M
1983 QD	12.5	830903	303.49	122.76	312.68	11.80	0.1710	2.6623	17	4		M
1983 QE	15.5	830903	8.28	151.54	171.37	12.27	0.1931	2.4144	4	8		M
1983 QF	12.5	830903	323.52	277.46	167.34	22.66	0.2164	2.6909	26	6		M
1983 QG	14.5	830903	359.63	287.74	77.83	14.31	0.2927	2.4243	6	5		M
1983 RC	14.0	830903	355.41	199.07	165.70	19.15	0.3129	2.5684	7	8		M
1983 RE	15.0	830903	52.05	337.62	289.13	5.52	0.1542	2.1922	12	5		M
1983 RK	15.5	830903	356.59	159.95	200.52	6.10	0.0108	2.3226	2	3	1	M
1983 RO	15.0	830903	13.66	111.11	204.04	1.13	0.1569	2.1683	3	6	1	M
1983 RQ	14.0	830903	34.39	6.23	294.96	0.94	0.1222	2.9115	3	6	1	M
1983 RR	14.0	830903	178.41	343.86	182.61	4.77	0.1186	2.2413	3	6	1	M

1983 RS	15.5	830903	357.93	129.00	218.04	1.40	0.1748	2.1897	3	6	1	M
1983 RT	13.0	830903	178.47	195.84	333.89	4.59	0.1270	2.4465	3	6	1	M
1983 RU	13.5	830903	357.54	139.82	211.72	0.97	0.1214	3.1326	3	6	1	M
1983 RV	14.0	830903	358.94	96.94	252.67	1.04	0.3330	3.1588	3	6	1	M
1983 RY	14.5	830903	317.93	115.44	297.95	3.00	0.2668	2.8521	7	6		M
1983 TA	17.5	831013	339.27	57.89	6.05	28.54	0.4601	2.6069	11	6		M

Note 1: e assumed.

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

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

Comet Cernis (1983l)
T 1983 July 20.95304 ET

		(1950.0)	P	Q
q 3.3170629	Peri.	186.15652	+0.90702899	+0.24381230
	Node	208.87798	+0.41025161	-0.32809820
e 1.0	Incl.	134.69646	+0.09482627	-0.91263746

From 52 observations 1983 July 21-Oct. 1.

Periodic Comet IRAS (1983j)
T 1983 Aug. 23.80037 ET

		(1950.0)	P	Q
q 1.6968712	Peri.	356.89066	+0.99544217	+0.08841804
n 0.07485203	Node	357.16100	-0.06421447	+0.34437904
a 5.5761398	Incl.	46.18094	-0.07050808	+0.93465786
e 0.6956907				
P 13.17				

From 39 observations 1983 June 30-Oct. 1.

Comet Shoemaker (1983p)
T 1983 Nov. 23.86220 ET

		(1950.0)	P	Q
q 3.3446360	Peri.	176.05314	+0.97293037	-0.13711367
	Node	163.98410	-0.22616445	-0.39947735
e 1.0	Incl.	137.60421	-0.04749888	-0.90643129

From 19 observations 1983 Sept. 7-Oct. 5.

(1907) Rudneva
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

		(1950.0)	P	Q
M 48.83112				
n 0.24256481	Peri.	62.40498	-0.82619173	+0.56276780
a 2.5463466	Node	151.81865	-0.53461359	-0.76831623
e 0.0459165	Incl.	3.21072	-0.17775135	-0.30493043
P 4.06	B(1,0)	13.3		

From 34 observations at 12 oppositions 1938-1983, mean residual 1".4.

(2928)* 1976 GN8 = 1976 HU = 1968 UD = 1981 EX2

Discovered 1976 Apr. 5 at the El Leoncito Station of the Felix Aguilar Observatory. The double designation 1976 GN8 = 1976 HU is by O. Kippes (MPC 5217).

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

		(1950.0)	P	Q
M 238.96804				
n 0.18915233	Peri.	154.87796	-0.26833247	-0.95503186
a 3.0055798	Node	310.42155	+0.85344270	-0.17494407
e 0.0675907	Incl.	9.53757	+0.44680334	-0.23939238
P 5.21	B(1,0)	12.5		

Residuals in seconds of arc

681022	095	0.7+	1.3-	810310	413	0.4-	0.6+	830814	801	1.2+	1.6+
760405	808	0.5-	0.5+	810310	413	0.6+	0.2-	830831	688	(2.0+	0.4+)
760405	808	0.3+	0.7+	810312	413	0.9-	1.1-	830831	688	(0.3+	1.4+)
760423	808	0.8+	1.5+	810312	413	0.8+	1.5-	830902	801	0.8+	0.8+
760423	808	0.5-	0.6+	810407	413	1.0-	0.3-	830903	046	0.3+	0.7-
760426	808	0.3+	0.7-	810407	413	0.1+	0.7-	830903	046	1.2+	0.9-
760426	808	0.6+	0.3-	810408	413	0.8-	0.2-	830904	046	0.7+	0.8+
810302	413	1.5-	0.1-	810408	413	0.4+	0.7-	830904	046	3.1+	0.4-
810302	413	0.5+	0.3-	810409	413	1.2-	0.0	830905	046	0.2-	1.0+
810307	413	0.4-	0.5+	810409	413	0.3+	1.1-	830905	046	2.6-	0.7-
810307	413	0.6+	0.3-	830714	801	3.4-	4.6-				

(2929)* 1982 BK1 = 1938 DH1 = 1965 AU

Discovered 1982 Jan. 24 by E. Bowell at the Anderson Mesa Station of the Lowell Observatory. The identifications were found independently by L. D. Schmadel.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	79.20699		(1950.0)	P	Q
n	0.17835864	Peri.	34.16063	-0.98674698	-0.04259905
a	3.1256472	Node	142.42729	+0.01092474	-0.98017623
e	0.0652491	Incl.	14.87897	+0.16189828	-0.19349384
P	5.53	B(1,0)	12.5		

Residuals in seconds of arc

380219	062	0.4+	1.4+	820124	688	0.6+	0.5-	820321	688	0.2+	0.4-
380224	062	0.8+	0.5+	820130	688	0.4-	0.7-	820321	688	2.8-	0.7+
380307	062	0.0	0.5+	820130	688	0.9+	0.9-	830607	688	0.5+	2.0-
380330	062	3.1+	0.3+	820220	688	0.0	1.4-	830607	688	0.7+	1.9-
380404	062	3.5-	3.1+	820220	688	0.3+	1.3-	830609	801	0.6-	1.5+
650108	330	0.7+	1.0+	820228	688	0.4-	0.2+	830713	801	0.9-	0.7+
820124	688	0.1-	1.0-	820228	688	0.3+	0.9-				

(2930)* 6554 P-L = 1979 UX = 1983 PO

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels. The identification 6554 P-L = 1983 PO is by E. Bowell.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	244.61049		(1950.0)	P	Q
n	0.21271499	Peri.	103.00114	-0.21310163	-0.97702965
a	2.7793121	Node	359.30128	+0.86662429	-0.18861203
e	0.0239626	Incl.	4.06684	+0.45116519	-0.09918949
P	4.63	B(1,0)	14.0		

Residuals in seconds of arc

600924	675	0.3+	0.7-	601024	675	0.1-	0.3+	791025	046	0.3-	0.0
600926	675	0.0	0.8-	601026	675	1.0-	0.9+	791025	046	0.1-	0.4+
600927	675	0.8+	0.0	791019	046	0.3+	0.9-	830813	688	2.1-	0.2+
600928	675	0.1-	0.3-	791019	046	1.7+	0.1+	830813	688	2.0+	0.7+
601017	675	0.1+	0.8+	791020	046	0.3-	0.3+	830902	688	0.0	1.2-
601022	675	0.8-	0.3+	791020	046	1.0-	0.2+	830902	688	0.3+	0.1+

1948 KF = 1983 HP

The identification is by E. Bowell.

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

M	358.16892		(1950.0)	P	Q
n	0.28040252	Peri.	218.78218	+0.23406018	+0.95677512
a	2.3117932	Node	65.36543	-0.83792462	+0.28856576
e	0.2805085	Incl.	10.94711	-0.49304985	-0.03621014
P	3.51	B(1,0)	14.0		

Residuals in seconds of arc

480531	078	1.7+	0.5+	480626	078	2.3-	0.6-	830418	688	0.5-	0.7+
480609	078	0.9-	0.6+	480630	078	1.3+	0.2+	830507	688	0.5-	1.9-
480613	078	0.3+	0.2-	830418	688	0.8+	0.7+				

1977 NQ = 1980 BJ5 = 1983 PL
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	355.69896		(1950.0)	P	Q
n	0.17135976	Peri.	316.66937	+0.98588500	+0.16716166
a	3.2101921	Node	33.71114	-0.14862478	+0.89957320
e	0.1413890	Incl.	0.96708	-0.07708076	+0.40351583
P	5.75	B(1,0)	13.0		

Residuals in seconds of arc

770714	095	1.0+	1.1+	830813	688	0.8-	0.4-	830906	688	1.0-	1.8+
770722	095	0.1+	0.5-	830813	688	1.5+	0.5-	830906	688	1.3-	0.8+
770818	095	0.6-	0.4+	830902	688	0.1-	0.5+				
800122	095	0.2-	1.4-	830902	688	0.7+	1.3-				

1978 PT2 = 1964 WA1
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	11.84915		(1950.0)	P	Q
n	0.19846294	Peri.	56.84947	+0.88298056	+0.46916825
a	2.9108331	Node	275.16617	-0.43553097	+0.80687340
e	0.0586624	Incl.	0.86582	-0.17509457	+0.35893797
P	4.97	B(1,0)	13.5		

Residuals in seconds of arc

641127	330	0.1-	2.3-	780903	095	4.3-	2.4+	780928	095	5.6+	5.7+
780808	095	3.4-	0.6-	780906	809	1.0-	0.3+	830902	688	3.3+	0.8-
780902	809	1.2-	0.4-	780910	809	0.2-	3.0+	830902	688	2.4-	0.6-
780902	809	2.2-	0.5-	780910	809	0.1-	0.6-	830906	688	2.0-	1.0-
780902	809	0.7-	0.0	780910	809	0.8+	1.0+	830906	688	0.0	0.7+
780902	809	1.2-	0.1+	780910	809	1.0+	0.0				

1983 RB
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	22.85157		(1950.0)	P	Q
n	0.29779490	Peri.	114.70518	+0.24523175	+0.96735168
a	2.2208772	Node	168.90361	-0.96532268	+0.24974476
e	0.5068375	Incl.	19.41323	-0.08951823	-0.04310786
P	3.31	B(1,0)	17.0		

From 13 observations 1983 Sept. 7-28.

1983 RD
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	358.63654		(1950.0)	P	Q
n	0.32424738	Peri.	192.92432	+0.99351146	-0.11213744
a	2.0983845	Node	173.42522	+0.11339351	+0.96379980
e	0.4884116	Incl.	9.54079	+0.00876890	+0.24189902
P	3.04	B(1,0)	18.0		

From 36 observations 1983 Sept. 7-Oct. 8.

1983 SA
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	6.77685		(1950.0)	P	Q
n	0.11499891	Peri.	316.48714	+0.61237554	+0.78565083
a	4.1880023	Node	350.07730	-0.50961500	+0.30716839
e	0.7120770	Incl.	30.72003	-0.60439122	+0.53702919
P	8.57	B(1,0)	14.5		

From 9 observations 1983 Sept. 10-Oct. 4.

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

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

(2931)* 1969 UC = 1977 JR = 1979 VP3 = 1979 YF2 = 1983 PQ

Discovered 1969 Oct. 16 by L. I. Chernykh at the Crimean Astrophysical observatory. The double designation 1979 VP3 = 1979 YF2 is by N. Chernykh.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	32.33111		(1950.0)	P	Q
n	0.20223842	Peri.	284.71479	+0.64208380	+0.76645594
a	2.8744865	Node	25.25579	-0.68757525	+0.58527892
e	0.0562650	Incl.	2.22215	-0.33907029	+0.26456355
P	4.87	B(1,0)	13.0		

Residuals in seconds of arc

691016	095	5.2-	0.1-	791114	095	0.6+	1.2+	830902	688	1.1+	0.8+
691018	095	0.6+	0.2-	791223	095	0.8-	0.3-	830902	688	0.0	0.4-
691105	095	4.8+	0.5-	830813	688	0.6-	0.0	830906	688	1.0-	0.7-
770515	095	0.0	0.1-	830813	688	0.8+	0.1+	830906	688	0.4-	0.5+

(2932)* 1980 TK4 = 1980 RQ4 = 1980 TN10 = 1953 VM2 = 1973 SK6 = 1973 UN = 1979 OV

Discovered 1980 Oct. 9 by C. Shoemaker at Palomar. The key identifications and double designation 1980 TK4 = 1973 SK6 = 1973 UN = 1979 OV are by W. Landgraf. The double designations 1980 TK4 = 1980 RQ4 (MPC 8136) and 1980 TK4 = 1980 TN10 (MPC 7589) are by E. Bowell and F. Bowman, respectively.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	161.17111		(1950.0)	P	Q
n	0.14277070	Peri.	193.05640	+0.99904580	-0.04307726
a	3.6255730	Node	169.40463	+0.04275786	+0.93109324
e	0.1033735	Incl.	2.24397	+0.00890212	+0.36222882
P	6.90	B(1,0)	13.0		

Residuals in seconds of arc

531109	024	0.0	0.2-	790725	675	0.8-	0.3+	801009	675	0.8-	0.8+
730928	095	2.1+	0.9+	800907	095	0.2+	2.7+	801010	675	1.7-	0.3+
731026	095	0.7-	5.0-	800909	095	0.0	1.6+	801015	095	1.9+	1.8-
790724	675	1.4-	0.2-	801007	675	0.7-	0.5-				
790724	413	2.3+	0.6-	801008	675	0.5-	1.1+				

(2933)* 1983 HN = A917 TE = 1938 RB = 1940 CE = 1949 FT = 1950 NE1 = 1951 WT = 1978 EB1 = 1980 TE2

Discovered 1983 Apr. 18 by N. G. Thomas at the Anderson Mesa Station of the Lowell Obervatory.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	271.02611		(1950.0)	P	Q
n	0.23374382	Peri.	219.01985	+0.93579503	+0.33570213
a	2.6100127	Node	121.04363	-0.28370890	+0.89838769
e	0.0487737	Incl.	7.21905	-0.20927716	+0.28320245
P	4.22	B(1,0)	13.0		

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

171011	094	(0.01+ | 0.03+)X	511129	711	2.4+	2.2-	Y	830507	688	0.9-	1.0-
380902	031	(76.4- | 21.7-)X	780305	095	1.9-	0.9+		830507	688	3.0+	1.7-
400202	062	0.8+	1.6-	801005	809	0.7-	1.0-		830515	688	0.4-	0.7-
400202	062	0.2+	0.3+	801013	095	0.4-	0.3-		830515	688	0.3-	0.5-
490331	012	1.6-	4.0+	830418	688	0.7-	0.6-					
500710	078	(2.5+ | 11.5+)Y	830418	688	0.2+	2.3-					

(2934)* 4006 P-L = 1971 OQ1 = 1977 RM5 = 1980 FC9

Discovered 1960 Sept. 25 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels.

Epoch 1983 Sept. 23.0 ET = JDE 2445600.5

M	120.41955		(1950.0)	P	Q
n	0.17477309	Peri.	63.42710	-0.07114066	+0.99570143
a	3.1682517	Node	202.72862	-0.96102832	-0.08434521
e	0.0450133	Incl.	8.83021	-0.26713961	+0.03826943
P	5.64	B(1,0)	12.5		

Residuals in seconds of arc

600925	675	0.8-	0.6-	601026	675	0.9+	0.1-	820818 809	0.3- 0.1+
600926	675	0.4-	1.0-	710729	095	0.1-	1.8-	820818 809	0.0 0.0
600926	675	0.1+	0.3-	770909	095	0.0	0.8+	820820 809	1.9+ 0.7-
600928	675	0.3+	0.2-	800316	095	0.7-	2.5-	820820 809	1.5+ 1.0-
600928	675	0.0	0.4-	820816	809	0.8-	0.5+	820820 809	1.5+ 0.1-
601017	675	0.2+	0.3+	820816	809	0.5-	0.2+	820822 809	0.3- 0.4+
601022	675	0.5+	0.2+	820816	809	1.2-	0.3+	820822 809	0.1- 0.5+
601024	675	0.1-	1.0+	820818	809	0.5-	0.2-	820822 809	0.6- 0.1-

1949 PL = 1980 NC

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

M	331.38722		(1950.0)	P	Q
n	0.25104446	Peri.	79.91442	-0.53538199	+0.84449761
a	2.4886844	Node	157.69904	-0.78840795	-0.49383763
e	0.0436803	Incl.	2.08120	-0.30295053	-0.20723943
P	3.93	B(1,0)	13.5		

Residuals in seconds of arc

490802	024	1.0+	1.7-	490824	690	3.0-	3.7-	800712 805	0.3+ 0.5-
490821	024	1.7-	0.4+	490826	690	1.7+	2.6+	800713 805	0.4- 0.0
490822	024	2.5+	1.6+	800711	805	0.1+	0.4-	800713 805	0.8- 0.3-

1977 RA6 = 1977 TG4 = A909 BH = 1929 EF = 1942 BE = 1952 BJ2
= 1976 JA5 = 1979 FB3 = 1980 RA4

The key identifications 1977 RA6 = 1976 JA5 = 1979 FB3 are by W. Landgraf. The double designation 1977 RA6 = 1977 TG4 was found by H. Oishi (JAM 1423). The double designation A909 BH = A909 DB (AN 180, 200) is invalid.

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

M	253.27811		(1950.0)	P	Q
n	0.29666600	Peri.	65.23307	+0.60802498	-0.79379748
a	2.2265121	Node	347.29159	+0.70377783	+0.54696923
e	0.1032711	Incl.	3.60353	+0.36742671	+0.26591392
P	3.32	B(1,0)	14.0		

Residuals in seconds of arc

090129	024	(94.3-	42.6+)X	520130	760	(70.3+	20.3+)X	771006 095	4.1- 0.7+
290312	024	(25.8+	5.3-)	760503	809	3.0-	2.1+	790331 095	2.8+ 0.8+
420120	062	0.6+	1.9+	770909	095	1.8+	0.7+	800907 095	1.9+ 3.5+
420120	062	0.4+	0.3+	770918	095	0.4+	0.5-		

1983 AU2 = 1942 YB = 1977 FF3 = 1978 PA2 = 1978 QE1

The key identifications and double designation 1983 AU2 = 1977 FF3 = 1978 PA2 = 1978 QE1 are by W. Landgraf.

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

M	112.92049		(1950.0)	P	Q
n	0.29709326	Peri.	116.53294	+0.43990167	-0.89709985
a	2.2243769	Node	307.30845	+0.80435792	+0.41400183
e	0.1043005	Incl.	2.97001	+0.39936806	+0.15431898
P	3.32	B(1,0)	15.0		

Residuals in seconds of arc

421231	062	0.6+	2.7+	830110	675	1.2-	2.1-	830210	675	2.0-	4.6+
421231	062	1.6-	4.0+	830110	675	0.7+	1.4-	830211	675	0.7-	2.5-
770326	095	1.4+	3.4+	830111	675	0.1-	1.0-	830215	675	2.5-	0.1-
780808	095	1.8+	1.1+	830112	675	1.0+	1.0-				
780831	095	2.0-	0.5-	830112	675	2.9+	1.7-				

1983 EV = 1938 DB2 = 1974 EF = 1976 SZ10 = 1981 UL5
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	55.43854		(1950.0)	P	Q
n	0.21882724	Peri.	145.93215	-0.92280772	-0.38505699
a	2.7273194	Node	11.44094	+0.33787747	-0.82451130
e	0.1088583	Incl.	3.62210	+0.18510735	-0.41462299
P	4.50	B(1,0)	14.0		

Residuals in seconds of arc

380228	053	(1.5+	19.4-)X	811030	381	0.0	0.8+	830312	046	1.0-	0.5+
380306	053	(30.4+	3.9-)X	811030	381	1.1+	0.0	830312	046	4.4+	2.2+
740313	095	1.5+	2.6+	811030	381	0.7+	1.6+	830313	046	1.8-	0.5-
760929	095	0.9+	1.9-	811030	381	0.1-	1.0+	830313	046	2.0-	0.1-
811030	381	0.8-	0.1+	830310	688	0.4-	0.8-	830410	688	0.0	1.4-
811030	381	0.2+	0.1-	830310	688	0.6-	2.5-	830410	688	0.5-	1.3-

1983 EW = 1980 ML = 1981 WR2
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	9.25528		(1950.0)	P	Q
n	0.30157382	Peri.	71.56221	-0.51497250	+0.85711340
a	2.2022899	Node	167.41888	-0.80672321	-0.47960318
e	0.1490861	Incl.	3.32848	-0.28982922	-0.18798246
P	3.27	B(1,0)	14.5		

Residuals in seconds of arc

800616	095	0.1-	0.3-	830310	688	0.6-	1.2+	830410	688	1.9-	1.6+
811124	033	0.7+	0.7-	830310	688	0.5+	1.8-	830506	688	0.5-	1.7-
811124	033	0.4-	0.5-	830410	688	1.1+	2.0+	830506	688	1.3+	2.3-

1983 HF = 1980 TA12 = 1980 UP
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	1.11053		(1950.0)	P	Q
n	0.21437654	Peri.	37.39436	-0.36785217	+0.91275089
a	2.7649381	Node	212.16047	-0.91324891	-0.39059627
e	0.1382089	Incl.	19.49981	-0.17510342	+0.11966771
P	4.60	B(1,0)	13.0		

Residuals in seconds of arc

801010	095	0.6-	0.5-	830418	688	0.7-	0.3+	830515	688	0.5+	0.3-
801017	095	0.5+	0.3+	830506	688	0.0	1.0+	830515	688	0.6-	0.0
830418	688	1.1+	0.4-	830506	688	0.1+	0.0				

1983 HO = 1977 QT
Epoch 1983 Sept. 23.0 ET = JDE 2445600.5 (J-P)

M	303.07846		(1950.0)	P	Q
n	0.12435651	Peri.	184.83712	+0.53669438	+0.83066866
a	3.9751900	Node	117.69328	-0.76839009	+0.55369521
e	0.1344755	Incl.	9.63189	-0.34861985	+0.05840541
P	7.93	B(1,0)	12.0		

Residuals in seconds of arc

770818	095	0.1+	1.5+	830418	688	0.1+	0.7+	830515	688	1.0-	0.3+
770819	095	0.1-	1.4-	830507	688	1.0+	0.2-	830515	688	0.3+	0.5-
830418	688	0.2-	0.2-	830507	688	0.1-	0.0				

EPHEMERIDES.

Comet Shoemaker (1983p) Elements MPC 8208

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	m1
1983	10 13	22 43.29	+05 00.6	2.511	3.368	143.8	10.1	11.3
1983	10 23	22 28.71	+00 47.7					
1983	11 02	22 17.40	-02 53.6	2.790	3.351	116.4	15.4	11.5
1983	11 12	22 09.28	-05 59.9					
1983	11 22	22 04.03	-08 33.2	3.172	3.345	91.4	17.2	11.8
1983	12 02	22 01.26	-10 37.6					
1983	12 12	22 00.56	-12 18.2	3.573	3.349	69.0	15.9	12.0
1983	12 22	22 01.55	-13 39.7					
1984	01 01	22 03.91	-14 46.4	3.932	3.364	48.6	12.7	12.2
1984	01 11	22 07.34	-15 41.9					
1984	01 21	22 11.60	-16 29.4	4.209	3.389	29.7	8.3	12.4
1984	01 31	22 16.46	-17 11.5					
1984	02 10	22 21.75	-17 50.8	4.379	3.424	12.9	3.7	12.6
1984	02 20	22 27.30	-18 29.7					
1984	03 01	22 32.95	-19 10.2	4.433	3.469	11.9	3.4	12.6

1983 SA a,e,i = 4.19, 0.71, 31 Elements MPC 8210

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	10 13	22 39.91	+18 36.5	0.658	1.570	142.1	23.0	15.1
1983	10 23	22 37.74	+21 01.9					
1983	11 02	22 40.56	+22 38.0	0.944	1.729	126.5	27.5	16.2
1983	11 12	22 47.08	+23 48.2					
1983	11 22	22 56.32	+24 46.3	1.270	1.896	113.7	28.5	17.1
1983	12 02	23 07.57	+25 40.0					
1983	12 12	23 20.34	+26 33.4	1.626	2.066	101.8	27.8	17.8
1983	12 22	23 34.24	+27 29.2					
1984	01 01	23 49.01	+28 27.9	2.001	2.236	90.4	26.1	18.4
1984	01 11	00 04.47	+29 30.1					
1984	01 21	00 20.45	+30 35.6	2.386	2.405	79.2	23.7	18.8
1984	01 31	00 36.84	+31 43.6					
1984	02 10	00 53.59	+32 53.7	2.768	2.570	68.2	20.9	19.2
1984	02 20	01 10.60	+34 05.1					
1984	03 01	01 27.85	+35 16.9	3.135	2.732	57.4	17.8	19.6
1984	03 11	01 45.29	+36 28.6					
1984	03 21	02 02.88	+37 39.3	3.476	2.891	47.0	14.6	19.8
1984	03 31	02 20.60	+38 48.4					
1984	04 10	02 38.42	+39 55.5	3.779	3.045	37.4	11.5	20.1

1983 RD a,e,i = 2.10, 0.49, 10 Elements MPC 8210

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1983	10 13	04 30.48	-16 07.5	0.148	1.089	124.9	48.8	15.2
1983	10 23	04 49.26	-18 06.9					
1983	11 02	04 55.41	-18 31.5	0.223	1.149	130.4	41.1	16.0
1983	11 12	04 53.88	-17 41.5					
1983	11 22	04 48.55	-15 46.9	0.310	1.244	141.2	29.9	16.6
1983	12 02	04 42.31	-13 01.9					
1983	12 12	04 37.37	-09 43.4	0.428	1.361	146.2	23.7	17.4
1983	12 22	04 35.13	-06 10.6					
1984	01 01	04 36.02	-02 40.1	0.595	1.490	140.2	25.0	18.3
1984	01 11	04 40.06	+00 38.1					
1984	01 21	04 46.95	+03 38.0	0.815	1.622	128.5	28.3	19.3
1984	01 31	04 56.21	+06 17.2					
1984	02 10	05 07.48	+08 35.5	1.084	1.754	115.8	30.4	20.1
1984	02 20	05 20.35	+10 33.6					
1984	03 01	05 34.48	+12 12.5	1.390	1.883	103.3	30.8	20.8