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 TWX 710-320-6842 ASTROGRAM CAM ** Brian G. Marsden, Director
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In collaboration with the IAU Central Bureau for Astronomical Telegrams, the Minor Planet Center is pleased to announce the availability of a new service. Arrangements have been made with the Smithsonian Astrophysical Observatory's Computer Center for subscribers to these Circulars who have computer modems to 'dial in' both to receive and to give relevant information. For example, there is a facility for the caller to read the latest IAU Circulars. It would be impractical to include all the Minor Planet Circulars in the system, but it is possible for a caller to obtain orbital elements and ephemerides of selected minor planets and comets. Brief messages (which might include comments on ways in which the service might be improved) can be left, and it is also possible for the caller to 'upload' a prepared file of observations. Callers may also receive from time to time individual messages from the Minor Planet Center. As a special introductory offer the service will cost 30 cents per day (for a minimum of 30 consecutive days). For further information, contact the Minor Planet Center at the postal address or TWX number given above.

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CORRECTED OBSERVATIONS.

The following observations correct those previously published.

Object	Date	UT	R. A. (1950)	Decl.	Reference	Mag.	N	Obs.
1983 TC	1983 10	14.90833	23 49 32.20	+13 14 48.6	MPC 8249	16.0	1	552
1983 TC	1983 10	14.91875	23 49 31.79	+13 14 40.3	MPC 8249		1	552
1983 TC	1983 10	14.93750	23 49 31.34	+13 14 27.4	MPC 8249		1	552
1983 TC	1983 10	26.81806	23 46 02.30	+10 56 41.2	MPC 8249	16.3	1	552
1983 TC	1983 10	26.83194	23 46 02.12	+10 56 33.6	MPC 8249		1	552
1983 TC	1983 10	27.80000	23 45 55.12	+10 46 03.1	MPC 8249	16.3	1	552
1983 TC	1983 10	27.82153	23 45 54.84	+10 45 49.8	MPC 8249		1	552
1983 VB *	1983 11	06.49792	07 11 24.17	+59 55 51.5	MPC 8250	16.0		675
1983 VB	1983 11	06.51181	07 11 15.03	+59 54 07.9	MPC 8250			675
1983 VB	1983 11	08.35625	06 54 31.76	+56 03 26.0	MPC 8250			675

Note 1: originally erroneously designated 1982 TC.

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IDENTIFICATION CHANGES.

Continuation to MPC 8323.

Object	Date	UT	R. A. (1950)	Decl.	Old desig.	Mag.	Obs.
1982 RF2 *	1982 09	13.36805	22 09 37.49	-13 16 08.3	1982 QG1	17	675
1982 RF2	1982 09	13.38888	22 09 36.62	-13 16 16.4	1982 QG1		675

ROMAN NUMERAL DESIGNATIONS OF COMETS IN 1982.

The following tabulation continues that on MPC 7517-7518. In accordance with traditional practice, the single Roman numeral 1982 II is given to both components of P/du Toit-Hartley, of which what appeared to be the primary component received the preliminary designation 1982c, while the secondary component was 1982b. Comet 1982 X (P/Gunn) had no preliminary designation.

Comet	T	Name	Year/letter	Ref.
1982 I	Mar. 12.3	Bowell	1980b	MPC 8051
1982 II	Mar. 30.4	P/du Toit-Hartley	-	MPC 6890
1982 III	May 9.3	P/Peters-Hartley	1982h	IAUC 3715
1982 IV	May 15.0	P/Grigg-Skjellerup	1982a	IAUC 3659
1982 V	July 30.6	P/Vaisala 1	1981l	IAUC 3654
1982 VI	Aug. 24.7	Austin	1982g	MPC 8051
1982 VII	Sept. 14.3	P/d'Arrest	1982e	IAUC 3697
1982 VIII	Nov. 12.1	P/Churyumov-Gerasimenko	1982f	IAUC 3743
1982 IX	Nov. 23.2	P/Russell 3	1983i	MPC 8386
1982 X	Nov. 26.9	P/Gunn	-	MPC 7773

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OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

- 046 Klet. Observers A. Mrkos and Z. Vavrova.
 085 Kiev. Observers G. R. Kastel', V. K. Rozenbush and N. V. Kharchenko.
 From Kiev. Komet. Tsirk. No. 313.
 102 Zvenigorod. Observer V. P. Osipenko. From Kiev. Komet. Tsirk. No. 313.
 168 Kourouvskaia. Observers G. T. Kajzer, S. N. Timofeev and A. R. Tearo.
 From Kiev. Komet. Tsirk. No. 313.
 323 Perth Observatory, Bickley. Observers M. P. Candy and J. Johnston.
 657 Climenhaga Observatory. Observers D. D. Balam and J. B. Tatum.
 0.25-m f/2 Schmidt telescope.
 675 Palomar. 1.2-m Schmidt. Observer J. Gibson.
 688 Lowell Observatory, Anderson Mesa Station. Observers B. Skiff and
 E. Bowell. Measured by Bowell.
 707 Chamberlin Observatory, field station. Observer E. Everhart.
 Measured by Everhart and S. Siegel.
 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).
 808 Felix Aguilar Observatory, El Leoncito. Observer C. Lopez.
 809 European Southern Observatory. 1.0-m Schmidt telescope. Observer
 A. Terzan.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
Comet Bowell (1982 I)							
/1982 I	1981	06 25.20729	12 15 25.88	+00 11 15.4		1	707
Periodic Comet du Toit-Hartley							
/1982 II	1982	05 25.204	17 32 34.52	-32 34 28.5	18.0N	2	809
/1982 II	1982	05 26.230	17 32 11.75	-32 26 40.8	17.0N	2	809
/1982 II	1982	05 26.289	17 32 09.89	-32 26 12.8		2	809
Comet Austin (1982 VI)							
/1982 VI	1982	08 19.79698	10 34 29.94	+41 42 37.5			085
/1982 VI	1982	08 20.76880	10 47 16.17	+42 37 22.5			085

/1982 VI	1982 08 26.76011	11 44 33.93	+44 48 13.1	085
/1982 VI	1982 08 26.76351	11 44 35.24	+44 48 13.3	085
/1982 VI	1982 08 26.76611	11 44 36.28	+44 48 12.8	085
/1982 VI	1982 08 27.76763	11 51 08.28	+44 49 23.9	085
/1982 VI	1982 08 27.77053	11 51 09.33	+44 49 23.8	085
/1982 VI	1982 08 27.77032	11 51 10.22	+44 49 23.6	085
/1982 VI	1982 08 27.78367	11 51 14.22	+44 49 23.6	085
Periodic Comet Tempel 2				
/1982d	1983 12 09.14233	02 14 10.96	-05 31 03.8	801
Periodic Comet Tempel 1				
/1982j	1983 05 10.87257	12 31 57.02	+12 09 11.0	102
/1982j	1983 05 13.85382	12 31 36.26	+11 24 20.7	102
Periodic Comet Kopff				
/1982k	1983 11 28.11808	21 07 56.59	-19 36 14.1	675
Comet IRAS-Araki-Alcock (1983d)				
/1983d	1983 05 09.84738	15 51 38.94	+72 58 53.9	102
/1983d	1983 05 09.84828	15 51 26.86	+72 59 23.5	102
/1983d	1983 05 09.85094	15 50 53.93	+73 00 17.5	102
/1983d	1983 05 09.85363	15 50 18.57	+73 01 13.9	102
/1983d	1983 05 09.90433	15 38 58.07	+73 18 44.5	102
/1983d	1983 05 09.90644	15 38 27.43	+73 19 29.0	102
/1983d	1983 05 09.97030	15 22 54.98	+73 38 26.4	102
/1983d	1983 05 09.97100	15 22 43.41	+73 38 38.7	102
/1983d	1983 05 09.97293	15 22 14.75	+73 39 09.4	102
/1983d	1983 05 10.83280	10 59 44.94	+65 49 17.0	102
/1983d	1983 05 10.83369	10 59 31.63	+65 47 41.6	102
/1983d	1983 05 11.79722	08 58 09.92	+28 15 18.4	168
/1983d	1983 05 11.80075	08 57 56.73	+28 06 23.6	168
/1983d	1983 05 11.80833	08 57 28.91	+27 47 35.9	168
/1983d	1983 05 11.81111	08 57 19.47	+27 40 43.7	168
/1983d	1983 05 11.85706	08 54 35.72	+25 46 33.2	168
Periodic Comet IRAS				
/1983j	1983 09 06.34306	01 13 53.24	+15 36 37.5	688
/1983j	1983 09 06.37361	01 13 49.23	+15 38 05.4	688
/1983j	1983 11 29.19516	22 37 02.20	+42 59 04.6	675
/1983j	1983 12 06.12252	22 41 17.90	+43 22 22.9	801
/1983j	1983 12 23.14933	22 59 09.58	+44 38 52.5	675
Comet Cernis (1983l)				
/1983l	1983 10 09.17184	01 13 50.60	-18 03 29.4	808
/1983l	1983 10 09.19955	01 13 47.09	-18 04 10.4	808
/1983l	1983 10 10.13691	01 11 50.66	-18 27 31.8	808
/1983l	1983 10 10.15561	01 11 48.28	-18 27 59.8	808
/1983l	1983 10 10.21863	01 11 40.47	-18 29 31.6	808
/1983l	1983 10 10.23733	01 11 38.08	-18 29 59.7	808
/1983l	1983 10 11.14803	01 09 44.85	-18 52 20.4	808
/1983l	1983 10 11.16673	01 09 42.46	-18 52 48.1	808
/1983l	1983 12 02.04448	23 47 53.85	-30 10 22.7	808
/1983l	1983 12 02.06822	23 47 52.69	-30 10 28.2	808
Periodic Comet Crommelin				
/1983n	1983 08 30.22642	20 14 14.35	+22 49 30.9	675
/1983n	1983 08 31.25350	20 12 58.87	+22 43 48.3	675

Comet Shoemaker (1983p)

/1983p	1983	11	23.71889	22	03	23.94	-08	56	20.2	15.6T	046
/1983p	1983	11	23.72152	22	03	23.75	-08	56	27.0		046
/1983p	1983	11	24.71707	22	03	03.37	-09	09	34.9		046
/1983p	1983	11	24.72847	22	03	03.07	-09	09	45.4		046
/1983p	1983	12	01.09826	22	01	25.12	-10	27	25.6		707
/1983p	1983	12	03.96104	22	00	58.13	-10	59	01.0		801

Periodic Comet Harrington-Abell

/1983r	1984	01	08.39063	10	58	41.53	+13	42	07.7	3	707
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Periodic Comet Wild 2

/1983s	1983	12	01.26152	04	30	47.48	+17	08	17.5		801
/1983s	1983	12	01.40501	04	30	38.29	+17	07	55.1		657
/1983s	1983	12	09.17083	04	22	19.72	+16	50	54.2	15.5T	688
/1983s	1983	12	09.20833	04	22	17.08	+16	50	49.3		688
/1983s	1983	12	09.21301	04	22	16.79	+16	50	52.3		801
/1983s	1983	12	29.09931	04	02	49.24	+16	19	03.3	15.0T	688
/1983s	1983	12	29.18194	04	02	45.08	+16	18	59.2		688

Periodic Comet Taylor

/1983u	1983	11	30.36367	07	12	02.67	+10	03	34.8		801
/1983u	1983	12	01.35546	07	12	07.43	+10	13	27.3		801

Periodic Comet Hartley-IRAS

/1983v	1983	11	30.11264	21	00	55.20	-03	34	34.7		657
/1983v	1983	12	01.07363	21	00	01.84	-03	02	53.1		657
/1983v	1983	12	03.72122	20	57	48.46	-01	37	29.7	15.2T	046
/1983v	1983	12	03.73047	20	57	48.03	-01	37	18.8		046
/1983v	1983	12	04.10035	20	57	31.28	-01	25	33.5		657
/1983v	1983	12	04.72932	20	57	02.57	-01	05	53.0		046
/1983v	1983	12	04.73849	20	57	02.34	-01	05	43.2		046
/1983v	1983	12	07.71140	20	55	00.79	+00	25	10.4		046
/1983v	1983	12	07.71823	20	55	00.69	+00	25	21.8		046
/1983v	1983	12	08.95854	20	54	15.44	+01	02	13.9		801
/1983v	1983	12	29.06354	20	47	31.21	+10	02	25.4		688
/1983v	1983	12	29.08021	20	47	31.26	+10	02	51.9		688

Periodic Comet Clark

/1983w	1983	12	15.52016	13	56	35.97	-05	16	03.4	19.5N 4	675
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Comet Bradfield (1984a)

/1984a	1984	01	09.82361	16	01	54.70	-48	02	56.7	13 T	323
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Note 1: correction to MPC 6657. 2: this was the primary component 1982c.

3: tail 10" long in p.a. 290 . 4: diffuse with central condensation and tail structure between p.a. 270 and 290 .

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

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
300	1983	12	04.85895	05 19 19.65	+23 44 32.5	046
300	1983	12	04.87301	05 19 18.89	+23 44 31.8	046
300	1983	12	05.93611	05 18 23.48	+23 43 51.2	046
300	1983	12	05.95029	05 18 22.67	+23 43 49.7	046

300	1983	12	08.89236	05	15	47.48	+23	41	46.2	046
300	1983	12	08.90660	05	15	46.73	+23	41	45.5	046
454	1983	12	04.75727	03	17	22.51	+22	41	42.8	046
454	1983	12	04.77156	03	17	21.77	+22	41	40.7	046
454	1983	12	05.81016	03	16	26.28	+22	39	24.1	046
454	1983	12	05.82428	03	16	25.49	+22	39	22.2	046
454	1983	12	08.77529	03	13	54.55	+22	32	50.8	046
454	1983	12	08.78947	03	13	53.83	+22	32	48.8	046
797	1983	12	04.79078	04	19	47.17	+20	09	53.2	046
797	1983	12	04.80495	04	19	46.37	+20	09	50.2	046
797	1983	12	05.85000	04	18	43.52	+20	05	40.9	046
797	1983	12	05.86418	04	18	42.56	+20	05	38.1	046
797	1983	12	08.81016	04	15	48.36	+19	53	56.0	046
797	1983	12	08.82529	04	15	47.51	+19	53	52.4	046
1176	1983	12	03.82855	03	18	55.92	+24	25	41.5	046
1176	1983	12	03.83667	03	18	55.26	+24	25	35.9	046
1176	1983	12	04.75727	03	18	13.13	+24	19	10.3	046
1176	1983	12	04.77156	03	18	12.48	+24	19	03.5	046
1176	1983	12	05.81016	03	17	26.18	+24	11	50.3	046
1176	1983	12	05.82428	03	17	25.51	+24	11	45.2	046
1176	1983	12	08.77529	03	15	22.84	+23	51	21.8	046
1176	1983	12	08.78947	03	15	22.22	+23	51	15.9	046
1232	1983	12	04.85895	05	23	01.94	+24	03	33.6	046
1232	1983	12	04.87301	05	23	01.28	+24	03	30.1	046
1232	1983	12	05.93611	05	22	07.13	+24	00	34.8	046
1232	1983	12	05.95029	05	22	06.36	+24	00	32.6	046
1232	1983	12	08.93171	05	19	32.37	+23	52	04.6	046
1232	1983	12	08.94589	05	19	31.70	+23	52	02.0	046
1293	1983	11	09.83696	02	53	30.81	+18	36	10.8	046
1293	1983	11	09.85100	02	53	29.91	+18	36	03.3	046
1438	1983	12	04.82596	04	36	31.16	+21	20	38.4	046
1438	1983	12	04.84014	04	36	30.42	+21	20	36.2	046
1438	1983	12	05.88762	04	35	33.82	+21	17	58.4	046
1438	1983	12	05.90174	04	35	33.21	+21	17	57.7	046
1438	1983	12	08.84844	04	32	56.40	+21	10	27.8	046
1438	1983	12	08.86262	04	32	55.58	+21	10	25.2	046
1793	1983	12	04.85895	05	15	42.92	+21	42	40.5	046
1793	1983	12	04.87301	05	15	42.06	+21	42	39.1	046
1793	1983	12	05.93611	05	14	28.74	+21	40	28.5	046
1793	1983	12	05.95029	05	14	27.72	+21	40	26.9	046
1793	1983	12	08.93171	05	10	58.65	+21	34	16.6	046
1793	1983	12	08.94589	05	10	57.80	+21	34	14.9	046
2754	1983	12	05.98160	05	18	55.91	+26	40	20.8	046
2754	1983	12	05.99583	05	18	54.86	+26	40	15.2	046
2754	1983	12	08.89236	05	15	18.52	+26	24	13.9	046
2754	1983	12	08.90660	05	15	17.58	+26	24	09.3	046
2847	1983	12	04.79078	04	20	33.30	+21	18	53.3	046
2847	1983	12	04.80495	04	20	32.27	+21	18	51.0	046
2847	1983	12	05.85000	04	19	19.43	+21	14	50.5	046
2847	1983	12	05.86418	04	19	18.34	+21	14	47.4	046
2847	1983	12	08.81115	04	15	55.90	+21	03	22.7	046
2847	1983	12	08.82529	04	15	54.86	+21	03	19.7	046
1976 UF1	1983	12	04.82596	04	40	06.55	+21	44	35.0	046
1976 UF1	1983	12	04.84014	04	40	05.68	+21	44	33.7	046
1976 UF1	1983	12	05.88762	04	38	48.86	+21	44	04.0	046
1976 UF1	1983	12	05.90174	04	38	47.87	+21	44	03.4	046
1976 UF1	1983	12	08.84844	04	35	15.49	+21	42	26.4	046
1976 UF1	1983	12	08.86262	04	35	14.52	+21	42	25.2	046

1977 RE7	1983 12	04.79078	04 20	54.12	+18 27	47.7		046
1977 RE7	1983 12	04.80495	04 20	53.32	+18 27	46.0		046
1977 RE7	1983 12	05.85000	04 19	58.51	+18 25	51.2		046
1977 RE7	1983 12	05.86418	04 19	57.83	+18 25	49.7		046
1977 RE7	1983 12	08.81115	04 17	26.08	+18 20	40.2		046
1977 RE7	1983 12	08.82529	04 17	25.35	+18 20	37.9		046
1979 TM	1983 12	04.82596	04 34	49.52	+20 26	19.5		046
1979 TM	1983 12	04.84014	04 34	48.76	+20 26	16.2		046
1979 TM	1983 12	05.88762	04 33	36.80	+20 24	05.7		046
1979 TM	1983 12	05.90174	04 33	36.11	+20 24	05.2		046
1981 CY	1983 12	04.79078	04 17	32.28	+20 00	01.0		046
1981 CY	1983 12	04.80495	04 17	31.22	+20 00	02.0		046
1981 CY	1983 12	05.85000	04 16	17.89	+20 01	51.9		046
1981 CY	1983 12	05.86418	04 16	16.44	+20 01	53.2		046
1981 CY	1983 12	08.81115	04 12	52.50	+20 07	06.9		046
1981 CY	1983 12	08.82529	04 12	51.85	+20 07	08.6		046
1982 KM	1983 12	08.81115	04 17	21.12	+18 32	41.7		046
1982 KM	1983 12	08.82529	04 17	20.19	+18 32	39.9		046
1983 TF1	1983 10	06.93866	01 31	32.55	+09 07	11.0		046
1983 TF1	1983 10	06.95625	01 31	31.98	+09 07	02.6		046
1983 TF1	1983 10	07.88600	01 30	56.47	+08 57	26.2		046
1983 TF1	1983 10	07.90012	01 30	55.71	+08 57	20.4		046
1983 TC2 *	1983 10	06.93866	01 30	03.58	+08 17	17.9	16.6	046
1983 TC2	1983 10	06.95625	01 30	02.45	+08 17	11.2		046
1983 TC2	1983 10	07.88600	01 29	08.65	+08 11	01.1		046
1983 TC2	1983 10	07.90012	01 29	07.99	+08 10	56.1		046
1983 TC2	1983 10	13.95553	01 23	09.93	+07 30	20.2		046
1983 TC2	1983 10	13.97012	01 23	09.27	+07 30	16.4		046
1983 TC2	1983 10	14.92926	01 22	12.28	+07 23	47.8		046
1983 TC2	1983 10	14.94344	01 22	11.61	+07 23	44.9		046
1983 TC2	1983 10	15.95368	01 21	11.63	+07 16	55.2		046
1983 TC2	1983 10	15.96878	01 21	10.76	+07 16	52.5		046
1983 VS1	1983 11	07.95267	02 49	43.58	+21 04	34.6		046
1983 VS1	1983 11	07.96691	02 49	42.52	+21 04	32.4		046
1983 VY1	1983 11	08.92796	03 25	16.81	+22 04	02.0		046
1983 VY1	1983 11	10.90990	03 23	37.10	+21 51	19.1		046
1983 VF2 *	1983 11	09.94005	03 48	34.37	+28 46	08.2	16.8	046
1983 VF2	1983 11	09.95817	03 48	33.20	+28 46	09.3		046
1983 VF2	1983 11	10.93131	03 47	26.73	+28 47	32.4		046
1983 VF2	1983 11	10.94514	03 47	25.78	+28 47	33.1		046
1983 WJ	1983 12	08.81115	04 15	11.83	+18 48	04.5	16.7	046
1983 WJ	1983 12	08.82529	04 15	11.23	+18 48	03.9		046
1983 WK	1983 12	04.79078	04 18	44.95	+18 29	17.1	16.6	046
1983 WK	1983 12	04.80495	04 18	44.15	+18 29	22.7		046
1983 WK	1983 12	05.85000	04 17	35.91	+18 38	43.0		046
1983 WK	1983 12	05.86418	04 17	35.16	+18 38	48.4		046
1983 WK	1983 12	08.81115	04 14	28.03	+19 04	55.2		046
1983 WK	1983 12	08.82529	04 14	27.39	+19 05	01.2		046
1983 WL	1983 12	04.79078	04 18	15.36	+21 50	42.8	16.6	046
1983 WL	1983 12	04.80495	04 18	14.53	+21 50	44.0		046
1983 WL	1983 12	05.85000	04 16	58.84	+21 54	49.6		046
1983 WL	1983 12	05.86418	04 16	57.89	+21 54	53.1		046
1983 WL	1983 12	08.81115	04 13	27.44	+22 06	03.8		046
1983 WL	1983 12	08.82529	04 13	26.49	+22 06	06.1		046
1983 WV	1983 12	04.82596	04 36	21.84	+21 46	58.8	16.8	046
1983 WV	1983 12	04.84014	04 36	21.11	+21 46	57.6		046
1983 WV	1983 12	05.88762	04 35	23.95	+21 46	19.6		046
1983 WV	1983 12	05.90174	04 35	23.24	+21 46	18.5		046

1983 WV	1983	12	08.84844	04	32	44.19	+21	44	21.3	046
1983 WV	1983	12	08.86262	04	32	43.28	+21	44	21.6	046
1983 WZ	1983	12	04.82596	04	43	07.22	+19	38	17.6	17.0 046
1983 WZ	1983	12	04.84014	04	43	06.63	+19	38	18.8	046
1983 WZ	1983	12	05.88762	04	42	13.48	+19	36	52.0	046
1983 WZ	1983	12	05.90174	04	42	12.95	+19	36	51.7	046
1983 WZ	1983	12	08.84844	04	39	44.57	+19	32	46.8	046
1983 WZ	1983	12	08.86262	04	39	43.68	+19	32	45.1	046
1983 WA1	1983	12	04.82596	04	43	10.01	+22	10	37.8	17.0 046
1983 WA1	1983	12	04.84014	04	43	08.98	+22	10	37.7	046
1983 WA1	1983	12	05.88762	04	41	52.20	+22	12	09.8	046
1983 WA1	1983	12	05.90174	04	41	51.15	+22	12	13.1	046
1983 XF	1983	12	04.79078	04	22	25.48	+20	57	47.6	16.7 046
1983 XF	1983	12	04.80495	04	22	24.65	+20	57	50.1	046
1983 XF	1983	12	05.85000	04	21	22.59	+21	00	36.0	046
1983 XF	1983	12	05.86418	04	21	21.52	+21	00	38.5	046
1983 XF	1983	12	08.81115	04	18	26.01	+21	08	27.6	046
1983 XF	1983	12	08.82529	04	18	25.22	+21	08	28.6	046
1983 XR *	1983	12	03.85912	04	53	56.33	+23	32	17.8	16.8 046
1983 XR	1983	12	03.87336	04	53	55.52	+23	32	13.0	046
1983 XS *	1983	12	04.75727	03	14	03.63	+24	39	08.3	17.0 046
1983 XS	1983	12	04.77156	03	14	02.87	+24	39	04.4	046
1983 XS	1983	12	05.81016	03	13	16.61	+24	34	46.5	046
1983 XS	1983	12	05.82428	03	13	15.92	+24	34	44.6	046
1983 XS	1983	12	08.77529	03	11	09.56	+24	22	26.6	046
1983 XS	1983	12	08.78947	03	11	08.74	+24	22	25.3	046
1983 XT *	1983	12	04.82596	04	37	04.52	+21	21	58.0	17.0 046
1983 XT	1983	12	04.84014	04	37	03.74	+21	21	57.3	046
1983 XT	1983	12	05.88762	04	36	07.48	+21	20	50.3	046
1983 XT	1983	12	05.90174	04	36	06.80	+21	20	49.6	046
1983 XU *	1983	12	04.85895	05	14	19.42	+23	12	29.0	17.0 046
1983 XU	1983	12	04.87301	05	14	18.68	+23	12	29.0	046
1983 XU	1983	12	05.93611	05	13	21.23	+23	12	28.1	046
1983 XU	1983	12	05.95029	05	13	20.36	+23	12	27.0	046
1983 XV *	1983	12	04.85895	05	18	34.72	+21	09	16.0	16.7 046
1983 XV	1983	12	04.87301	05	18	33.65	+21	09	13.1	046
1983 XV	1983	12	05.93611	05	17	36.60	+21	09	29.5	046
1983 XV	1983	12	05.95029	05	17	35.68	+21	09	29.8	046
1983 XV	1983	12	08.93171	05	14	53.40	+21	10	19.9	046
1983 XV	1983	12	08.94589	05	14	52.21	+21	10	20.4	046
1983 XW *	1983	12	04.85895	05	23	46.81	+23	37	28.3	16.5 046
1983 XW	1983	12	04.87301	05	23	46.00	+23	37	27.3	046
1983 XW	1983	12	05.93611	05	22	49.34	+23	36	48.0	046
1983 XW	1983	12	05.95029	05	22	48.51	+23	36	47.5	046
1983 XW	1983	12	08.93171	05	20	07.05	+23	34	42.0	046
1983 XW	1983	12	08.94589	05	20	06.34	+23	34	40.7	046
1983 XX *	1983	12	05.98160	05	11	15.38	+25	45	37.5	16.7 046
1983 XX	1983	12	05.99583	05	11	14.32	+25	45	27.3	046
1983 XX	1983	12	08.89236	05	08	04.47	+25	14	03.5	046
1983 XX	1983	12	08.90660	05	08	03.57	+25	13	54.2	046
1983 XY *	1983	12	05.98160	05	14	54.80	+25	32	10.5	16.3 046
1983 XY	1983	12	05.99583	05	14	53.73	+25	32	11.8	046
1983 XY	1983	12	08.89236	05	11	17.00	+25	36	08.9	046
1983 XY	1983	12	08.90660	05	11	15.67	+25	36	08.9	046
1983 XZ *	1983	12	05.98160	05	18	01.13	+24	41	11.5	16.8 046
1983 XZ	1983	12	05.99583	05	18	00.11	+24	41	08.5	046
1983 XA1 *	1983	12	08.84844	04	36	23.85	+21	04	33.3	17.2 046
1983 XA1	1983	12	08.86262	04	36	23.35	+21	04	34.6	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.	Obs.
709	1983 09	03.83454	22 12	14.10	-05 13	23.1	071
709	1983 09	03.84843	22 12	13.40	-05 13	19.9	071
709	1983 09	03.91671	22 12	09.28	-05 13	16.6	071
973	1983 09	09.98194	23 50	59.36	+01 58	11.0	071
973	1983 09	10.96528	23 50	10.60	+01 57	34.3	071
973	1983 09	28.74653	23 34	56.42	+01 39	18.9	071
973	1983 09	28.76042	23 34	55.81	+01 39	15.8	071
973	1983 09	28.79098	23 34	54.25	+01 39	16.3	071
973	1983 09	28.80487	23 34	53.62	+01 39	13.8	071
973	1983 09	28.82014	23 34	52.68	+01 39	12.4	071
973	1983 09	28.83402	23 34	52.00	+01 39	11.1	071
973	1983 09	28.85695	23 34	51.10	+01 39	09.9	071
973	1983 09	28.88750	23 34	49.31	+01 39	07.2	071
973	1983 09	29.73472	23 34	06.72	+01 38	09.4	071
973	1983 09	29.74861	23 34	06.24	+01 38	05.1	071
973	1983 09	29.79166	23 34	04.10	+01 38	02.4	071
973	1983 09	29.81111	23 34	03.02	+01 38	01.4	071
973	1983 09	29.82431	23 34	02.42	+01 38	00.3	071
973	1983 09	29.83333	23 34	01.93	+01 37	59.0	071
973	1983 09	29.84722	23 34	01.32	+01 37	58.0	071
973	1983 09	29.90139	23 33	58.56	+01 37	55.0	071
973	1983 09	30.87750	23 33	10.01	+01 36	45.3	071
973	1983 09	30.89139	23 33	09.29	+01 36	44.8	071
973	1983 09	30.90393	23 33	08.64	+01 36	44.3	071
973	1983 09	30.92014	23 33	07.93	+01 36	43.1	071
973	1983 09	30.93351	23 33	07.30	+01 36	41.8	071
984	1983 09	03.83454	22 18	35.33	-03 39	38.9	071
984	1983 09	03.84843	22 18	34.76	-03 39	39.4	071
984	1983 09	03.91671	22 18	30.69	-03 39	41.4	071
2036	1983 09	29.87500	23 57	21.47	+02 11	26.5	071
2036	1983 09	29.88889	23 57	20.98	+02 11	23.2	071
2036	1983 09	29.91597	23 57	19.13	+02 11	17.0	071
2365	1983 09	03.99947	23 12	13.06	+02 59	24.0	071
2365	1983 09	04.01336	23 12	12.75	+02 59	21.9	071
2365	1983 09	04.05538	23 12	10.46	+02 59	14.0	071
2377	1983 09	29.87500	23 50	11.73	+00 37	12.9	071
2377	1983 09	29.88889	23 50	11.37	+00 37	08.3	071
2377	1983 09	29.91597	23 50	09.86	+00 36	59.1	071
1983 PA	1983 09	04.81597	20 50	30.48	+22 53	59.5	071
1983 PA	1983 09	04.82986	20 50	29.56	+22 54	09.9	071
1983 PA	1983 09	04.83333	20 50	29.28	+22 54	13.3	071
1983 PA	1983 09	04.84028	20 50	28.84	+22 54	17.9	071
1983 PA	1983 09	05.05138	20 50	14.92	+22 56	44.1	071
1983 PA	1983 09	07.97535	20 47	20.17	+23 29	10.6	071
1983 PA	1983 09	07.98229	20 47	19.54	+23 29	16.0	071
1983 RA3 *	1983 09	03.87140	22 44	35.98	-01 10	51.7	071
1983 RA3	1983 09	03.92939	22 44	33.12	-01 11	01.8	071
1983 RB3 *	1983 09	03.89057	22 50	43.01	-05 04	51.6	071
1983 RB3	1983 09	03.94201	22 50	40.38	-05 04	41.4	071
1983 RC3 *	1983 09	03.89057	22 57	04.14	-07 19	08.5	071
1983 RC3	1983 09	03.94201	22 57	01.47	-07 19	28.0	071
1983 RD3 *	1983 09	03.89057	23 04	56.92	-04 57	37.2	071
1983 RD3	1983 09	03.94201	23 04	54.16	-04 57	48.0	071
1983 SC	1983 09	30.79462	23 25	56.76	+00 55	11.3	071
1983 SC	1983 09	30.80851	23 25	56.23	+00 55	09.4	071

1983 SC	1983 09 30.84461	23 25 54.19	+00 55 00.0	071
1983 SL	1983 09 29.81111	23 30 39.65	+03 53 20.1	071

OBSERVATIONS MADE AT GEISEI BY T. SEKI. FROM NIHONDAIRA OBS. CIRC. NOS. 1456 AND 1459.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
1938 WA	1983 11 28.64444		04 14 52.28	+20 01 57.9	16.5	372
1938 WA	1983 11 28.65486		04 14 51.78	+20 01 56.0		372
1938 WA	1983 11 30.54097		04 13 12.59	+19 57 42.2	16.5	372
1938 WA	1983 11 30.55000		04 13 12.25	+19 57 35.9		372
1953 VN2	1983 11 28.64444		04 14 57.7	+19 37 43	16.5	372
1953 VN2	1983 11 28.65486		04 14 57.0	+19 37 45		372
1953 VN2	1983 12 04.69722		04 08 10.54	+19 46 02.4	17	372
1953 VN2	1983 12 04.71007		04 08 09.77	+19 46 04.3		372
1973 SM2	1983 11 12.67812		02 29 29.45	+20 21 01.5	17.5	372
1973 SM2	1983 11 12.68958		02 29 28.88	+20 21 01.5		372
1979 TM	1983 11 13.66424		04 58 03.85	+21 06 48.1	17	372
1979 TM	1983 11 13.67847		04 58 03.23	+21 06 47.2		372
1982 KM	1983 11 12.70556		04 44 47.94	+20 18 02.5	16.5	372
1982 KM	1983 11 12.71667		04 44 47.18	+20 17 58.7		372
1983 WB	1983 12 02.62326		04 13 37.08	+19 32 47.2	15.5	372
1983 WB	1983 12 02.63159		04 13 36.66	+19 32 48.0		372
1983 WB	1983 12 04.69722		04 11 39.38	+19 34 12.1	15.5	372
1983 WB	1983 12 04.71007		04 11 38.74	+19 34 12.9		372
1983 WB	1983 12 05.51597		04 10 53.85	+19 34 47.1	15.5	372
1983 WB	1983 12 05.52986		04 10 53.08	+19 34 49.5		372

OBSERVATIONS MADE WITH THE 1.05-M SCHMIDT TELESCOPE AT THE TOKYO OBSERVATORY'S KISO STATION BY H. KOSAI AND K. HURUKAWA.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
454	1983 11 08.60639		03 43 26.45	+23 26 54.1	14.0	381
454	1983 11 08.63721		03 43 24.75	+23 26 52.3	14.0	381
953	1983 11 08.60639		03 32 37.61	+22 56 07.8	15.5	381
953	1983 11 08.63721		03 32 35.84	+22 56 07.3	15.5	381
1176	1983 11 08.60639		03 41 44.45	+27 01 40.8	15.0	381
1176	1983 11 08.63721		03 41 42.77	+27 01 32.7	15.0	381
1382	1983 11 08.66611		04 11 02.48	+23 24 10.5	16.5	381
2200	1983 11 08.60639		03 39 42.53	+26 27 57.9	18.0	381
2200	1983 11 08.63721		03 39 40.47	+26 27 54.2	18.0	381
2366	1983 11 08.66611		04 01 27.20	+22 45 23.6	16.4	381
2644	1983 11 08.66611		03 58 29.74	+24 53 08.1	17.6	381
2736	1983 11 08.60639		03 28 07.93	+24 23 58.3	16.5	381
2736	1983 11 08.63721		03 28 06.02	+24 23 44.5	16.5	381
2747	1983 11 08.60639		03 41 39.70	+27 32 16.4	16.5	381
2747	1983 11 08.63721		03 41 38.01	+27 32 13.8	16.5	381
1975 PA	1983 11 08.66611		03 53 46.95	+23 53 57.2	18.0	381
1983 VN1	1983 11 08.60639		03 37 02.94	+23 54 00.0	17.5	381
1983 VN1	1983 11 08.63721		03 37 01.19	+23 53 56.5	17.5	381
1983 VO1	1983 11 08.60639		03 38 37.64	+23 36 06.1	17.5	381
1983 VO1	1983 11 08.63721		03 38 35.63	+23 36 01.3	17.5	381
1983 VP1	1983 11 08.60639		03 42 08.18	+22 26 46.1	16.5	381
1983 VP1	1983 11 08.63721		03 42 06.79	+22 26 33.5	16.5	381
1983 VV1	1983 11 08.60639		03 32 09.87	+23 28 40.9	17.0	381
1983 VV1	1983 11 08.63721		03 32 08.29	+23 28 37.3	17.0	381
1983 VG2 *	1983 11 08.60639		03 28 47.02	+25 20 47.5	16.0	381
1983 VG2	1983 11 08.63721		03 28 45.03	+25 20 35.7	16.0	381
1983 VH2 *	1983 11 08.60639		03 30 02.74	+22 20 49.7	17.5	381
1983 VH2	1983 11 08.63721		03 30 00.55	+22 20 42.2	17.5	381
1983 VJ2 *	1983 11 08.60639		03 31 09.90	+26 20 57.7	16.5	381

1983	VJ2		1983	11	08.63721	03	31	07.98	+26	20	55.6	16.5	381
1983	VK2	*	1983	11	08.60639	03	31	30.40	+25	16	22.2	17.5	381
1983	VK2		1983	11	08.63721	03	31	28.40	+25	16	15.6	17.5	381
1983	VL2	*	1983	11	08.60639	03	33	55.54	+24	55	09.7	18.5	381
1983	VL2		1983	11	08.63721	03	33	53.74	+24	55	12.7	18.5	381
1983	VM2	*	1983	11	08.60639	03	34	11.83	+25	46	34.5	18.0	381
1983	VM2		1983	11	08.63721	03	34	09.53	+25	46	25.5	18.0	381
1983	VN2	*	1983	11	08.60639	03	34	55.94	+23	23	03.3	18.0	381
1983	VN2		1983	11	08.63721	03	34	53.99	+23	22	59.3	18.0	381
1983	VO2	*	1983	11	08.60639	03	35	02.96	+23	02	43.5	17.5	381
1983	VO2		1983	11	08.63721	03	35	00.89	+23	02	38.4	17.5	381
1983	VP2	*	1983	11	08.60639	03	36	26.16	+27	34	31.5	18.5	381
1983	VP2		1983	11	08.63721	03	36	23.98	+27	34	25.8	18.5	381
1983	VQ2	*	1983	11	08.60639	03	37	19.58	+27	05	20.7	18.0	381
1983	VQ2		1983	11	08.63721	03	37	17.83	+27	05	17.0	18.0	381
1983	VR2	*	1983	11	08.60639	03	38	14.89	+23	20	37.5	18.0	381
1983	VR2		1983	11	08.63721	03	38	13.26	+23	20	28.1	18.0	381
1983	VS2	*	1983	11	08.60639	03	38	37.77	+26	11	49.2	18.5	381
1983	VS2		1983	11	08.63721	03	38	35.69	+26	11	48.0	18.5	381
1983	VT2	*	1983	11	08.60639	03	38	51.38	+24	27	42.7	18.5	381
1983	VT2		1983	11	08.63721	03	38	49.24	+24	27	39.5	18.5	381
1983	VU2	*	1983	11	08.60639	03	39	25.29	+25	08	01.3	18.5	381
1983	VU2		1983	11	08.63721	03	39	23.58	+25	07	58.4	18.5	381
1983	VV2	*	1983	11	08.60639	03	39	54.39	+23	19	46.2	18.0	381
1983	VV2		1983	11	08.63721	03	39	52.32	+23	19	39.7	18.0	381
1983	VW2	*	1983	11	08.60639	03	41	19.57	+25	59	57.1	18.0	381
1983	VW2		1983	11	08.63721	03	41	17.52	+25	59	54.7	18.0	381
1983	VX2	*	1983	11	08.60639	03	42	14.92	+26	34	46.3	18.0	381
1983	VX2		1983	11	08.63721	03	42	13.06	+26	34	53.0	18.0	381
1983	VY2	*	1983	11	08.60639	03	42	36.85	+22	22	31.4	17.0	381
1983	VY2		1983	11	08.63721	03	42	35.02	+22	22	26.6	17.0	381
1983	VZ2	*	1983	11	08.60639	03	43	11.83	+22	34	24.2	17.5	381
1983	VZ2		1983	11	08.63721	03	43	10.14	+22	34	24.5	17.5	381
1983	VA3	*	1983	11	08.60639	03	45	05.48	+22	49	47.6	17.5	381
1983	VA3		1983	11	08.63721	03	45	03.51	+22	49	47.7	17.5	381
1983	VB3	*	1983	11	08.66611	03	48	43.59	+23	52	26.4	18.5	381
1983	VC3	*	1983	11	08.60639	03	48	52.85	+23	31	43.2	17.5	381
1983	VC3		1983	11	08.63721	03	48	51.31	+23	31	42.5	17.5	381
1983	VC3		1983	11	08.66611	03	48	49.91	+23	31	38.3	17.5	381
1983	VD3	*	1983	11	08.66611	03	48	57.94	+23	27	35.9	18.0	381
1983	VE3	*	1983	11	08.60639	03	49	06.56	+22	46	22.7	17.0	381
1983	VE3		1983	11	08.63721	03	49	05.26	+22	46	13.5	17.0	381
1983	VE3		1983	11	08.66611	03	49	04.06	+22	46	02.3	17.0	381
1983	VF3	*	1983	11	08.66611	03	49	36.55	+22	18	14.6	18.5	381
1983	VG3	*	1983	11	08.60639	03	49	52.65	+22	27	55.3	17.5	381
1983	VG3		1983	11	08.63721	03	49	50.93	+22	27	49.8	17.5	381
1983	VG3		1983	11	08.66611	03	49	49.59	+22	27	46.4	17.5	381
1983	VH3	*	1983	11	08.60639	03	50	31.74	+26	33	47.4	18.0	381
1983	VH3		1983	11	08.63721	03	50	29.53	+26	33	46.6	18.0	381
1983	VH3		1983	11	08.66611	03	50	27.50	+26	33	47.6	18.0	381
1983	VJ3	*	1983	11	08.60639	03	51	32.79	+23	25	52.8	17.5	381
1983	VJ3		1983	11	08.63721	03	51	30.88	+23	26	02.6	17.5	381
1983	VJ3		1983	11	08.66611	03	51	29.08	+23	26	10.2	17.5	381
1983	VK3	*	1983	11	08.60639	03	51	50.06	+26	12	05.3	18.5	381
1983	VK3		1983	11	08.63721	03	51	48.30	+26	11	59.1	18.5	381
1983	VL3	*	1983	11	08.66611	03	52	00.41	+25	16	14.3	18.0	381
1983	VM3	*	1983	11	08.66611	03	52	27.83	+24	22	08.6	18.0	381
1983	VN3	*	1983	11	08.66611	03	53	08.26	+25	43	53.6	19.0	381

1983 VO3 *	1983 11 08.60639	03 53 11.50	+26 54 10.3	18.5	381
1983 VO3	1983 11 08.63721	03 53 09.45	+26 54 10.6	18.5	381
1983 VO3	1983 11 08.66611	03 53 07.73	+26 54 11.8	18.5	381
1983 VP3 *	1983 11 08.66611	03 53 16.95	+23 57 14.9	16.5	381
1983 VQ3 *	1983 11 08.66611	03 54 11.64	+25 40 36.3	19.0	381
1983 VR3 *	1983 11 08.66611	03 54 20.42	+25 28 32.4	19.0	381
1983 VS3 *	1983 11 08.66611	03 54 26.16	+24 10 37.6	19.0	381
1983 VT3 *	1983 11 08.66611	03 54 28.50	+24 10 29.7	19.0	381
1983 VU3 *	1983 11 08.66611	03 54 45.07	+26 15 29.5	18.5	381
1983 VV3 *	1983 11 08.66611	03 57 59.61	+22 26 17.1	18.5	381
1983 VW3 *	1983 11 08.66611	03 58 31.04	+23 15 51.5	18.5	381
1983 VX3 *	1983 11 08.66611	03 58 43.67	+23 29 54.3	18.5	381
1983 VY3 *	1983 11 08.66611	03 59 14.76	+27 34 26.2	18.5	381
1983 VZ3 *	1983 11 08.66611	03 59 23.34	+22 47 21.0	16.5	381
1983 VA4 *	1983 11 08.66611	03 59 58.35	+22 36 10.7	18.5	381
1983 VB4 *	1983 11 08.66611	04 00 02.30	+24 25 43.0	16.5	381
1983 VC4 *	1983 11 08.66611	04 00 04.21	+22 36 58.0	17.5	381
1983 VD4 *	1983 11 08.66611	04 00 55.66	+26 47 31.7	18.5	381
1983 VE4 *	1983 11 08.66611	04 00 55.83	+23 51 23.5	16.5	381
1983 VF4 *	1983 11 08.66611	04 01 00.86	+23 28 49.0	18.0	381
1983 VG4 *	1983 11 08.66611	04 01 04.18	+24 23 49.5	18.5	381
1983 VH4 *	1983 11 08.66611	04 01 26.32	+22 50 13.9	17.5	381
1983 VJ4 *	1983 11 08.66611	04 01 47.43	+25 57 13.0	18.5	381
1983 VK4 *	1983 11 08.66611	04 02 38.12	+26 33 05.9	16.5	381
1983 VL4 *	1983 11 08.66611	04 03 18.80	+26 33 18.1	16.5	381
1983 VM4 *	1983 11 08.66611	04 03 32.85	+25 41 06.5	16.5	381
1983 VN4 *	1983 11 08.66611	04 03 38.52	+24 50 42.3	18.5	381
1983 VO4 *	1983 11 08.66611	04 04 13.34	+22 46 01.7	18.5	381
1983 VP4 *	1983 11 08.66611	04 04 34.99	+26 59 53.0	17.5	381
1983 VQ4 *	1983 11 08.66611	04 04 38.28	+22 59 29.7	18.5	381
1983 VR4 *	1983 11 08.66611	04 04 41.31	+23 57 28.5	18.5	381
1983 VS4 *	1983 11 08.66611	04 05 17.11	+26 25 03.4	19.0	381
1983 VT4 *	1983 11 08.66611	04 05 54.57	+26 52 59.5	18.5	381
1983 VU4 *	1983 11 08.66611	04 06 06.09	+22 57 54.9	18.5	381
1983 VV4 *	1983 11 08.66611	04 06 13.50	+23 35 33.8	19.0	381
1983 VW4 *	1983 11 08.66611	04 06 18.45	+23 12 10.6	16.5	381
1983 VX4 *	1983 11 08.66611	04 06 24.24	+26 42 26.2	17.5	381
1983 VY4 *	1983 11 08.66611	04 06 26.80	+25 53 07.7	18.0	381
1983 VZ4 *	1983 11 08.66611	04 07 14.69	+27 10 15.8	18.0	381
1983 VA5 *	1983 11 08.66611	04 07 27.06	+25 33 48.2	18.5	381
1983 VB5 *	1983 11 08.66611	04 07 34.82	+22 43 36.1	18.0	381
1983 VC5 *	1983 11 08.66611	04 07 37.37	+25 52 06.8	18.5	381
1983 VD5 *	1983 11 08.66611	04 08 34.68	+27 02 04.6	18.0	381
1983 VE5 *	1983 11 08.66611	04 09 34.43	+24 31 55.8	18.5	381
1983 VF5 *	1983 11 08.66611	04 09 38.51	+26 59 20.4	18.5	381
1983 VG5 *	1983 11 08.66611	04 09 39.95	+27 12 46.7	17.0	381
1983 VH5 *	1983 11 08.66611	04 10 37.59	+26 54 33.5	18.0	381
1983 VJ5 *	1983 11 08.66611	04 11 09.83	+23 24 44.1	18.0	381
1983 VK5 *	1983 11 08.66611	04 11 32.08	+23 40 34.3	17.5	381
1983 XS	1983 11 08.60639	03 36 01.31	+26 12 41.8	17.0	381
1983 XS	1983 11 08.63721	03 35 59.69	+26 12 37.0	17.0	381

OBSERVATIONS MADE AT THE OSSERVATORIO S. VITTORE, BOLOGNA, BY C. VACCHI
AND G. SASSI. SCANNED BY VACCHI, MEASURED AND REDUCED BY VACCHI,
V. GORETTI AND E. COLOMBINI.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
204	1982 03	14.88958	09 41 18.06	+03 46 42.9		552
204	1982 03	14.93056	09 41 16.63	+03 47 00.7		552

233	1982 03	14.88958	09 41	32.13	+02 58	02.5		552
233	1982 03	14.93056	09 41	30.63	+02 58	17.8		552
1275	1982 03	14.88958	09 40	53.09	+02 59	05.3		552
1275	1982 03	14.93056	09 40	51.78	+02 59	25.4		552
1537	1983 11	15.93194	02 30	59.15	+15 22	25.8	15.1	552
1537	1983 11	15.96181	02 30	57.92	+15 22	16.1	15.1	552
1537	1983 12	06.88194	02 22	04.86	+13 46	41.8	15.6	552
1537	1983 12	06.90486	02 22	04.72	+13 46	39.5		552
1537	1983 12	08.88691	02 21	50.29	+13 41	10.4	15.7	552
1537	1983 12	08.91319	02 21	50.16	+13 41	05.7		552
2601	1982 03	14.88958	09 39	04.22	+03 25	51.0		552
2601	1982 03	14.93056	09 39	02.84	+03 25	58.5		552
2967	1983 11	29.90556	02 59	40.38	+28 54	00.3	15.8	552
2967	1983 11	29.92917	02 59	38.91	+28 54	00.8	15.8	552
1932 CN	1983 12	28.86250	03 50	35.34	+19 20	13.4	17.0	552
1932 CN	1983 12	28.88403	03 50	34.69	+19 20	17.4		552
1932 CN	1983 12	29.86389	03 50	04.07	+19 22	54.8	17.0	552
1932 CN	1983 12	29.89028	03 50	03.18	+19 22	57.1		552
1938 WA	1983 12	05.90486	04 08	33.16	+19 45	20.0	17.0	552
1938 WA	1983 12	05.92708	04 08	32.09	+19 45	16.6		552
1938 WA	1983 12	06.92292	04 07	41.61	+19 42	57.7	17.0	552
1938 WA	1983 12	06.94444	04 07	40.44	+19 42	57.0		552
1938 WA	1983 12	08.92639	04 06	01.08	+19 38	31.4	17.0	552
1938 WA	1983 12	08.95139	04 05	59.97	+19 38	30.7		552
1938 WA	1983 12	27.93056	03 53	11.20	+19 04	40.1	17.2	552
1938 WA	1983 12	27.95764	03 53	10.26	+19 04	37.4		552
1938 WA	1983 12	28.86250	03 52	44.97	+19 03	32.8	17.2	552
1938 WA	1983 12	28.88403	03 52	44.23	+19 03	32.0		552
1938 WA	1983 12	29.86389	03 52	18.08	+19 02	27.3	17.2	552
1938 WA	1983 12	29.89028	03 52	17.44	+19 02	24.7		552
1955 RZ	1983 12	29.90556	05 42	01.47	+29 22	28.5	16.5	552
1955 RZ	1983 12	29.92222	05 42	00.44	+29 22	25.0		552
1970 PA	1983 11	29.86458	02 48	02.45	+38 39	59.2	15.5	552
1970 PA	1983 11	29.88472	02 48	01.44	+38 39	48.1	15.5	552
1981 CY	1983 12	05.94722	04 16	10.50	+20 02	03.8	16.4	552
1981 CY	1983 12	05.96667	04 16	09.15	+20 02	05.6		552
1982 JA	1983 11	29.82014	01 36	27.55	+00 34	56.9	17.6	552
1982 JA	1983 11	29.84444	01 36	27.07	+00 35	01.4	17.6	552
1982 QR	1983 12	28.89792	05 39	32.49	+36 28	05.2	16.5	552
1982 QR	1983 12	28.91528	05 39	31.42	+36 27	56.9		552
1983 TC	1983 11	28.81458	23 56	48.11	+06 50	02.4	17.0	552
1983 TC	1983 11	28.83819	23 56	48.87	+06 49	56.7	17.0	552
1983 VE	1983 11	15.93194	02 31	56.67	+15 05	57.5	15.1	552
1983 VE	1983 11	15.96181	02 31	55.34	+15 05	44.9	15.1	552
1983 VE	1983 11	28.89028	02 25	17.81	+13 48	18.9	15.4	552
1983 VE	1983 11	28.90694	02 25	17.41	+13 48	13.1	15.4	552
1983 VE	1983 12	06.88194	02 23	37.16	+13 15	08.5	15.6	552
1983 VE	1983 12	06.90486	02 23	37.00	+13 15	04.9		552
1983 VE	1983 12	27.86806	02 29	41.74	+12 54	40.8	16.3	552
1983 VE	1983 12	27.89444	02 29	42.65	+12 54	42.1		552
1983 VE	1983 12	28.82431	02 30	19.53	+12 55	55.3	16.3	552
1983 VV1	1983 12	05.87361	03 09	22.33	+22 08	53.0	16.7	552
1983 VV1	1983 12	05.89097	03 09	21.46	+22 08	48.4		552
1983 WA	1983 12	06.92292	04 08	07.41	+19 28	52.7	16.5	552
1983 WA	1983 12	06.94444	04 08	06.15	+19 28	44.1		552
1983 WA	1983 12	27.91528	03 52	56.59	+17 23	49.3	17.0	552
1983 WA	1983 12	27.94306	03 52	56.02	+17 23	41.4		552
1983 WB	1983 12	05.90486	04 10	32.34	+19 35	02.3	17.0	552

1983 WB	1983 12 05.92708	04 10 30.94	+19 35 03.3		552
1983 WB	1983 12 06.92292	04 09 35.33	+19 35 43.1	17.0	552
1983 WB	1983 12 06.94444	04 09 34.09	+19 35 43.8		552
1983 WB	1983 12 08.92639	04 07 45.32	+19 37 08.0	17.0	552
1983 WB	1983 12 08.95139	04 07 43.91	+19 37 11.1		552
1983 WB	1983 12 27.93056	03 53 16.92	+19 55 24.2	17.2	552
1983 WB	1983 12 27.95764	03 53 16.00	+19 55 26.9		552
1983 WG	1983 12 27.93056	03 54 22.67	+19 46 18.0	17.0	552
1983 WG	1983 12 27.95764	03 54 21.75	+19 46 26.7		552

OBSERVATIONS MADE AT THE OSSERVATORIO CHAONIS BY C. R. BAUR AND J. M. BAUR.
 SCANNED BY G. CARNIEL, MEASURED AND REDUCED BY J. M. BAUR.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
208	1983 12 28.94896	06 35 09.03	+25 53 01.4		14.1	567
208	1983 12 28.96909	06 35 07.76	+25 53 02.9			567
208	1983 12 28.98924	06 35 06.57	+25 53 03.6			567
1698	1983 12 28.94896	06 35 58.53	+25 22 39.5		16.3	567
1698	1983 12 28.96909	06 35 57.35	+25 22 40.7			567
1698	1983 12 28.98924	06 35 56.35	+25 22 41.9			567
1712	1983 12 29.90208	06 29 36.71	+05 56 44.0		15.9	567
1712	1983 12 29.92153	06 29 35.75	+05 56 41.0			567
1712	1983 12 29.94097	06 29 34.80	+05 56 37.7			567
2180	1983 12 28.88437	06 22 59.58	+14 15 08.2		16.2	567
2180	1983 12 28.90451	06 22 58.57	+14 15 04.1			567
2180	1983 12 28.92465	06 22 57.35	+14 15 01.5			567
2781	1983 12 27.93437	06 53 00.70	+20 15 35.8		16.2	567
2781	1983 12 27.95451	06 52 59.62	+20 15 38.0			567
2798	1983 12 27.88368	04 53 57.61	+16 21 38.2		16.2	567
2798	1983 12 27.90382	04 53 56.58	+16 21 32.0			567
1981 EG19	1983 12 27.99549	07 37 51.03	+16 47 05.6		16.5	567
1981 EG19	1983 12 28.01562	07 37 49.87	+16 47 08.2			567
1983 YA *	1983 12 29.96458	06 28 45.81	+04 36 53.1		17.2	567
1983 YA	1983 12 29.98403	06 28 44.82	+04 36 49.1			567

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

Object	Date	UT	R. A. (1950)	Decl.	Mag.	N	Obs.
2340	1983 10 28.31877	05 01 50.26	+16 15 04.0			1	675
1982 BC1	1983 07 01.32020	17 32 06.64	-37 34 58.4			3	675
1982 BC1	1983 07 02.28897	17 30 59.56	-37 26 16.2			3	675
1983 QC	1983 10 27.19656	23 15 48.02	-14 25 13.5			1	675
1983 RD	1983 12 14.35975	04 36 33.53	-08 53 24.7			1	675
1983 SA	1983 11 30.12986	23 05 15.78	+25 30 16.6			4	675
1983 SA	1983 11 30.15069	23 05 17.08	+25 30 22.7			4	675
1983 SA	1983 12 15.09794	23 24 26.48	+26 50 37.1			1	675
1983 TB	1983 11 30.12986	22 46 17.64	+22 34 33.3			4	675
1983 TB	1983 11 30.15069	22 46 19.89	+22 34 15.7			4	675
1983 TB	1983 12 23.16392	23 25 02.72	+18 53 48.0			1	675
1983 VB	1983 11 08.37014	06 54 24.36	+56 01 39.0			6	675
1984 AB *	1984 01 04.28264	06 05 52.85	+25 36 47.4		16	9	675
1984 AB	1984 01 04.32431	06 05 48.43	+25 37 29.2			4	675
1984 AB	1984 01 05.20208	06 04 16.31	+25 53 32.5			4	675
1984 AB	1984 01 05.22292	06 04 14.31	+25 53 53.0			4	675
1984 AB	1984 01 07.25764	06 00 42.96	+26 30 24.6			4	675
1984 AB	1984 01 07.27986	06 00 40.92	+26 30 46.1			4	675

Note 1: observer J. Gibson. 2: poor reference-star positions. 3 = 1 + 2.

4: observers E. Helin and R. S. Dunbar; measured by S. Swanson. 5:

discoverer Helin. 6: observer C. Kowal. 9 = 4 + 5.

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

Object	Date	UT	R. A. (1950)			Decl.	Mag.	N	Obs.
39	1983 11	29.26597	05 05	23.72	+06 23	20.3		688	
39	1983 11	29.29653	05 05	22.01	+06 23	16.3		688	
39	1983 12	09.18958	04 56	22.43	+06 11	49.6		688	
39	1983 12	09.22708	04 56	20.23	+06 11	49.2		688	
39	1983 12	29.12153	04 40	01.00	+06 37	03.9		688	
39	1983 12	29.15972	04 39	59.41	+06 37	10.8		688	
91	1983 11	29.25069	04 54	17.96	+25 48	31.0		688	
91	1983 11	29.28125	04 54	16.01	+25 48	29.1		688	
91	1983 12	01.32222	04 52	09.43	+25 46	48.3		688	
91	1983 12	01.35833	04 52	07.03	+25 46	46.5		688	
129	1983 12	06.25972	05 25	15.38	+08 44	13.9		688	
129	1983 12	06.30000	05 25	13.34	+08 44	13.5		688	
129	1983 12	09.24236	05 22	42.44	+08 43	59.3		688	
129	1983 12	09.27292	05 22	40.80	+08 43	59.4		688	
231	1983 11	29.31181	05 11	17.77	+30 08	31.8		688	
231	1983 11	29.34306	05 11	15.99	+30 08	32.0		688	
231	1983 12	06.20694	05 04	43.82	+30 04	14.8		688	
231	1983 12	06.24306	05 04	41.71	+30 04	12.9		688	
238	1983 10	04.13750	21 01	14.41	-07 54	17.9		688	
238	1983 10	04.16806	21 01	14.61	-07 54	28.4		688	
303	1983 12	06.20694	04 53	27.56	+33 00	42.9		688	
303	1983 12	06.24306	04 53	25.40	+33 00	40.9		688	
399	1983 09	06.34306	01 17	29.80	+16 33	07.5		688	
399	1983 09	06.37361	01 17	28.86	+16 33	11.1		688	
574	1983 11	29.31181	05 06	23.91	+35 49	47.1		688	
574	1983 11	29.34306	05 06	21.87	+35 49	46.8		688	
574	1983 12	06.20694	04 58	56.23	+35 39	56.4		688	
574	1983 12	06.24306	04 58	53.74	+35 39	52.6		688	
585	1983 10	04.13750	20 53	11.74	-12 21	14.0		688	
585	1983 10	04.16806	20 53	11.87	-12 21	18.2		688	
737	1983 11	29.26597	05 05	28.63	+04 58	22.2		688	
737	1983 11	29.29653	05 05	26.81	+04 58	14.8		688	
737	1983 12	09.18958	04 55	49.26	+04 29	06.4		688	
737	1983 12	09.22708	04 55	47.20	+04 29	02.8	1	688	
788	1983 11	29.26597	04 47	25.45	+03 17	01.3		688	
788	1983 11	29.29653	04 47	24.06	+03 16	55.1		688	
788	1983 12	09.18958	04 39	39.23	+02 52	44.7		688	
788	1983 12	09.22708	04 39	37.51	+02 52	40.6		688	
797	1983 12	09.17083	04 15	27.49	+19 52	33.3		688	
797	1983 12	09.20833	04 15	25.13	+19 52	24.5		688	
797	1983 12	29.09931	03 59	37.16	+18 44	28.1		688	
797	1983 12	29.18194	03 59	34.23	+18 44	15.1		688	
821	1983 12	09.17083	04 19	57.13	+16 34	17.8		688	
821	1983 12	09.20833	04 19	54.98	+16 34	12.2		688	
821	1983 12	29.09931	04 04	55.99	+15 51	03.6		688	
821	1983 12	29.18194	04 04	53.06	+15 50	57.0		688	
829	1983 11	29.31181	05 25	43.51	+37 01	20.2		688	
829	1983 11	29.34306	05 25	41.46	+37 01	23.3		688	
829	1983 12	06.20694	05 17	52.77	+37 06	43.5	15.5	688	
829	1983 12	06.24306	05 17	50.15	+37 06	44.1		688	
891	1983 12	06.25972	05 22	16.46	+13 19	39.5		688	
891	1983 12	06.30000	05 22	14.10	+13 19	46.9		688	
891	1983 12	09.24236	05 19	26.25	+13 27	55.0		688	
891	1983 12	09.27292	05 19	24.51	+13 28	00.8		688	
1122	1983 11	29.25069	04 33	52.24	+22 49	00.2		688	
1122	1983 11	29.28125	04 33	50.26	+22 49	02.0		688	

1122	1983	12	01.32222	04	31	42.04	+22	52	06.3	688
1122	1983	12	01.35833	04	31	39.65	+22	52	09.6	688
1122	1983	12	09.17083	04	23	40.96	+23	02	09.8	688
1122	1983	12	09.20833	04	23	38.67	+23	02	11.9	688
1122	1983	12	29.09931	04	09	05.36	+23	22	51.9	688
1122	1983	12	29.18194	04	09	03.12	+23	22	57.8	688
1153	1983	11	29.25069	04	28	18.47	+24	54	31.4	688
1153	1983	11	29.28125	04	28	16.18	+24	54	23.9	688
1153	1983	12	01.35833	04	25	43.66	+24	45	53.4	688
1153	1983	12	29.09931	03	58	42.00	+22	46	07.5	688
1153	1983	12	29.18194	03	58	39.05	+22	45	51.4	688
1247	1983	12	09.17083	04	08	27.18	+18	29	41.3	688
1247	1983	12	09.20833	04	08	25.35	+18	29	37.0	688
1247	1983	12	29.09931	03	55	19.18	+17	59	11.2	688
1247	1983	12	29.18194	03	55	16.63	+17	59	06.6	688
1328	1983	10	04.13750	20	50	18.10	-10	24	51.0	688
1328	1983	10	04.16806	20	50	18.24	-10	24	54.8	688
1438	1983	11	29.25069	04	41	33.76	+21	34	39.9	688
1438	1983	11	29.28125	04	41	32.05	+21	34	34.7	688
1438	1983	12	01.32222	04	39	41.19	+21	29	30.2	688
1438	1983	12	01.35833	04	39	39.18	+21	29	24.3	688
1516	1983	12	06.30000	05	23	56.60	+13	29	28.6	688
1516	1983	12	09.24236	05	21	05.24	+13	30	02.2	688
1516	1983	12	09.27292	05	21	03.47	+13	30	03.7	688
1525	1983	10	04.13750	20	58	20.81	-08	41	04.4	688
1525	1983	10	04.16806	20	58	21.80	-08	41	03.3	688
1553	1983	12	09.17083	04	03	14.11	+17	14	09.5	688
1553	1983	12	09.20833	04	03	12.09	+17	14	06.5	688
1553	1983	12	29.09931	03	49	22.88	+17	01	45.8	688
1553	1983	12	29.18194	03	49	20.23	+17	01	47.5	688
1586	1983	12	09.17083	04	09	45.65	+15	11	32.1	688
1586	1983	12	09.20833	04	09	43.41	+15	11	30.3	688
1682	1983	11	29.31181	05	24	42.09	+29	52	02.6	688
1682	1983	11	29.34306	05	24	39.80	+29	52	01.4	688
1682	1983	12	06.20694	05	16	02.16	+29	42	09.7	688
1682	1983	12	06.24306	05	15	59.20	+29	42	05.4	688
1695	1983	11	29.26597	04	50	48.90	+07	21	07.2	688
1695	1983	11	29.29653	04	50	47.13	+07	20	52.0	688
1695	1983	12	09.18958	04	41	21.41	+06	04	03.0	688
1695	1983	12	09.22708	04	41	19.42	+06	03	48.2	688
1785	1983	11	29.25069	04	33	43.25	+25	47	51.2	688
1785	1983	11	29.28125	04	33	40.82	+25	47	44.8	688
1785	1983	12	01.32222	04	31	16.35	+25	39	42.3	688
1785	1983	12	01.35833	04	31	13.81	+25	39	34.4	688
1785	1983	12	29.09931	04	03	31.36	+23	31	48.3	688
1785	1983	12	29.18194	04	03	28.07	+23	31	26.4	688
1905	1983	12	09.17083	04	12	03.33	+17	57	54.6	688
1905	1983	12	09.20833	04	12	00.52	+17	57	47.7	688
1957	1983	11	29.31181	05	12	36.66	+29	51	23.9	688
1957	1983	11	29.34306	05	12	34.85	+29	51	26.7	688
1957	1983	12	06.20694	05	05	52.81	+30	04	24.0	688
1957	1983	12	06.24306	05	05	50.53	+30	04	28.1	688
2144	1983	12	09.17083	04	25	49.60	+17	32	09.4	688
2144	1983	12	09.20833	04	25	47.53	+17	32	06.4	688
2144	1983	12	29.09931	04	10	46.54	+17	16	24.8	688
2144	1983	12	29.18194	04	10	43.63	+17	16	23.3	688
2189	1983	11	29.26597	04	54	26.56	+01	16	25.8	688
2189	1983	11	29.29653	04	54	24.40	+01	16	28.6	688
2189	1983	12	09.22708	04	43	37.29	+01	46	54.4	688

16.5

16.8

16.8

3

2230		1983	12	09.17083	04	11	03.75	+17	01	10.1		688
2230		1983	12	09.20833	04	11	01.74	+17	01	06.2		688
2230		1983	12	29.09931	03	57	13.37	+16	39	19.1		688
2230		1983	12	29.18194	03	57	10.79	+16	39	17.9		688
2431		1983	11	29.28125	04	55	58.58	+26	59	27.2		688
2432		1983	11	29.31181	05	26	52.20	+34	48	14.1		688
2432		1983	11	29.34306	05	26	50.08	+34	48	19.7		688
2432		1983	12	06.24306	05	18	57.41	+35	03	55.0		688
2490		1983	11	29.26597	04	58	36.65	+08	20	12.6		688
2490		1983	11	29.29653	04	58	34.94	+08	19	58.1		688
2490		1983	12	09.18958	04	49	29.52	+07	08	31.3		688
2490		1983	12	09.22708	04	49	27.43	+07	08	17.5		688
2490		1983	12	29.12153	04	33	44.83	+05	47	57.7		688
2490		1983	12	29.15972	04	33	43.33	+05	47	53.5		688
2686		1983	09	06.34306	01	16	12.36	+15	51	13.1		688
2686		1983	09	06.37361	01	16	11.62	+15	51	09.7		688
2739		1983	12	09.17083	04	05	12.02	+21	27	31.9		688
2739		1983	12	09.20833	04	05	09.91	+21	27	25.3		688
2753		1983	11	29.31181	05	06	55.56	+33	39	14.9		688
2753		1983	11	29.34306	05	06	53.59	+33	39	14.4		688
2753		1983	12	06.20694	04	59	39.24	+33	35	00.5		688
2753		1983	12	06.24306	04	59	36.84	+33	34	58.5		688
2764		1983	11	29.25069	04	41	29.36	+24	11	53.4		688
2764		1983	11	29.28125	04	41	26.91	+24	11	46.1		688
2764		1983	12	01.32222	04	39	04.22	+24	05	46.3		688
2764		1983	12	01.35833	04	39	01.57	+24	05	39.7		688
2764		1983	12	29.09931	04	10	30.96	+22	30	55.5		688
2764		1983	12	29.18194	04	10	27.43	+22	30	40.5		688
2793		1983	09	06.34306	01	17	16.34	+17	30	15.5		688
2793		1983	09	06.37361	01	17	15.27	+17	30	22.7	3	688
2847		1983	12	09.17083	04	15	31.68	+21	02	01.6		688
2847		1983	12	09.20833	04	15	29.16	+21	01	53.3		688
2847		1983	12	29.09931	03	57	25.00	+19	54	02.1		688
2847		1983	12	29.18194	03	57	21.78	+19	53	47.1		688
2944		1983	11	29.26597	05	04	05.07	+08	10	46.9		688
2944		1983	11	29.29653	05	04	03.40	+08	10	39.2		688
2944		1983	12	09.18958	04	54	39.94	+07	33	17.0		688
2944		1983	12	09.22708	04	54	37.82	+07	33	11.4		688
1932	CN	1983	12	09.17083	04	06	49.59	+18	38	10.9	16.5	688
1932	CN	1983	12	09.20833	04	06	47.11	+18	38	15.1		688
1932	CN	1983	12	29.09931	03	50	27.66	+19	20	50.7	16.8	688
1932	CN	1983	12	29.18194	03	50	24.89	+19	21	05.7		688
1938	WA	1983	12	09.17083	04	05	48.97	+19	37	59.7	16.5	688
1938	WA	1983	12	09.20833	04	05	47.31	+19	37	59.6	3	688
1938	WA	1983	12	29.09931	03	52	38.61	+19	03	14.4	17.0	688
1938	WA	1983	12	29.18194	03	52	36.15	+19	03	08.9		688
1953	VN2	1983	12	09.17083	04	03	26.52	+19	52	17.3	16.8	688
1974	MJ	1983	12	06.20694	05	03	33.92	+34	41	10.5	17.2	688
1974	MJ	1983	12	06.24306	05	03	31.25	+34	41	10.1		688
1976	UF1	1983	11	29.25069	04	46	55.09	+21	46	50.7	16.8	688
1976	UF1	1983	11	29.28125	04	46	52.97	+21	46	48.7		688
1976	UF1	1983	12	01.32222	04	44	23.35	+21	46	07.7	17.0	688
1976	UF1	1983	12	01.35833	04	44	20.76	+21	46	03.9		688
1976	UF1	1983	12	29.09931	04	15	16.28	+21	32	25.9	16.8	688
1976	UF1	1983	12	29.18194	04	15	12.56	+21	32	25.4		688
1977	RE7	1983	12	09.17083	04	17	07.72	+18	20	04.0	16.2	688
1977	RE7	1983	12	09.20833	04	17	05.71	+18	20	00.7		688
1977	RE7	1983	12	29.09931	04	03	18.16	+17	56	02.7	16.8	688
1977	RE7	1983	12	29.18194	04	03	15.54	+17	55	58.7		688

1979 SD7	1983 11 29.31181	05 16 25.48	+29 27 25.0	16.5	1	688
1979 SD7	1983 11 29.34306	05 16 23.57	+29 27 29.2			688
1979 SF11	1983 11 29.25069	04 37 01.08	+27 04 49.3	16.5	1	688
1979 SF11	1983 11 29.28125	04 36 59.35	+27 04 48.6			688
1979 SF11	1983 12 01.32222	04 34 39.40	+27 02 12.0	17.0		688
1979 SF11	1983 12 01.35833	04 34 36.98	+27 02 10.5			688
1979 TM	1983 11 29.25069	04 41 16.08	+20 37 58.6	17.0		688
1979 TM	1983 11 29.28125	04 41 14.00	+20 37 54.7			688
1979 TM	1983 12 01.32222	04 38 52.08	+20 33 39.8	17.2		688
1979 TM	1983 12 01.35833	04 38 49.76	+20 33 39.6			688
1979 TM	1983 12 29.09931	04 11 54.32	+19 43 41.0	17.5		688
1979 TM	1983 12 29.18194	04 11 50.75	+19 43 36.4			688
1981 CY	1983 12 09.17083	04 12 28.44	+20 07 45.8	16.5		688
1981 CY	1983 12 09.20833	04 12 25.70	+20 07 50.2			688
1981 CY	1983 12 29.09931	03 54 42.60	+20 48 57.4	16.8		688
1981 CY	1983 12 29.18194	03 54 39.60	+20 49 09.8			688
1982 HQ1	1983 12 09.17083	04 01 06.40	+22 23 17.4	17.5		688
1982 HQ1	1983 12 09.20833	04 01 03.64	+22 23 18.6			688
1982 KM	1983 12 09.17083	04 16 58.82	+18 31 18.8	17.2		688
1982 KM	1983 12 09.20833	04 16 56.37	+18 31 10.5			688
1982 KM	1983 12 29.09931	04 00 30.93	+17 28 16.8	17.2		688
1982 KM	1983 12 29.18194	04 00 27.98	+17 28 06.0			688
1983 TA2	1983 09 12.40139	01 15 45.15	+24 08 00.4	17.0		688
1983 TA2	1983 09 12.43194	01 15 44.35	+24 07 54.6			688
1983 TB2 *	1983 10 04.13750	21 09 00.02	-10 43 09.3	17.5	8	688
1983 TB2	1983 10 04.16806	21 09 00.94	-10 43 10.9		2	688
1983 WA	1983 12 09.17083	04 06 04.78	+19 13 48.9	17.2		688
1983 WA	1983 12 09.20833	04 06 02.54	+19 13 35.0			688
1983 WB	1983 12 09.17083	04 07 32.16	+19 37 19.6	15.8		688
1983 WB	1983 12 09.20833	04 07 30.06	+19 37 21.4			688
1983 WB	1983 12 29.09931	03 52 37.98	+19 56 56.2	16.2		688
1983 WB	1983 12 29.18194	03 52 35.10	+19 57 03.0			688
1983 WC	1983 12 09.17083	04 09 17.81	+18 09 09.0	16.8		688
1983 WC	1983 12 09.20833	04 09 15.94	+18 09 07.4			688
1983 WE	1983 12 09.17083	04 09 00.42	+21 22 47.2	17.0		688
1983 WE	1983 12 09.20833	04 08 58.49	+21 22 43.5			688
1983 WG	1983 12 09.17083	04 09 54.82	+18 24 53.2	16.5		688
1983 WG	1983 12 09.20833	04 09 52.43	+18 25 03.1			688
1983 WG	1983 12 29.09931	03 53 43.72	+19 51 46.9	17.0		688
1983 WG	1983 12 29.18194	03 53 40.99	+19 52 10.8			688
1983 WH	1983 12 09.17083	04 10 16.38	+20 17 55.0	16.8		688
1983 WH	1983 12 09.20833	04 10 13.88	+20 17 40.1			688
1983 WH	1983 12 29.09931	03 55 15.92	+18 39 53.5	17.2		688
1983 WH	1983 12 29.18194	03 55 13.71	+18 39 36.0			688
1983 WJ	1983 12 09.17083	04 14 52.76	+18 47 44.9	17.2		688
1983 WJ	1983 12 09.20833	04 14 50.36	+18 47 43.0		1	688
1983 WK	1983 12 09.17083	04 14 06.11	+19 08 07.1	16.5		688
1983 WK	1983 12 09.20833	04 14 03.78	+19 08 27.0			688
1983 WK	1983 12 29.09931	03 58 58.05	+21 56 59.8	17.0		688
1983 WK	1983 12 29.18194	03 58 55.64	+21 57 42.1			688
1983 WL	1983 12 09.17083	04 13 02.38	+22 07 24.8	16.8		688
1983 WL	1983 12 09.20833	04 12 59.80	+22 07 32.8			688
1983 WL	1983 12 29.09931	03 54 34.29	+23 18 25.5	17.0		688
1983 WL	1983 12 29.18194	03 54 31.28	+23 18 42.9			688
1983 WM	1983 11 29.25069	04 30 12.02	+22 48 16.5	16.8		688
1983 WM	1983 11 29.28125	04 30 10.09	+22 48 04.7			688
1983 WM	1983 12 01.32222	04 27 56.83	+22 35 51.7	16.8		688
1983 WM	1983 12 01.35833	04 27 54.28	+22 35 39.8			688

1983 WM	1983 12 09.17083	04 19 35.12	+21 47 48.0	17.0	688
1983 WM	1983 12 09.20833	04 19 32.69	+21 47 33.9		688
1983 WM	1983 12 29.09931	04 03 41.58	+19 57 11.9	17.5	2 688
1983 WM	1983 12 29.18194	04 03 38.86	+19 56 49.6		688
1983 WN	1983 11 29.25069	04 31 31.37	+23 01 45.6	17.0	688
1983 WN	1983 11 29.28125	04 31 29.23	+23 01 28.0		688
1983 WN	1983 12 01.32222	04 29 12.86	+22 41 52.8	17.0	688
1983 WN	1983 12 09.17083	04 20 53.05	+21 27 30.6	16.8	688
1983 WN	1983 12 09.20833	04 20 50.36	+21 27 04.8		688
1983 WO	1983 11 29.25069	04 31 56.26	+20 11 04.7	17.0	688
1983 WO	1983 11 29.28125	04 31 54.53	+20 11 07.8		688
1983 WO	1983 12 09.17083	04 20 56.09	+20 27 54.9	17.5	688
1983 WO	1983 12 09.20833	04 20 53.78	+20 27 57.5		688
1983 WP	1983 12 09.17083	04 24 23.93	+17 28 08.0	16.5	688
1983 WP	1983 12 09.20833	04 24 21.22	+17 28 17.6		688
1983 WP	1983 12 29.09931	04 05 39.00	+18 53 19.1	17.0	688
1983 WP	1983 12 29.18194	04 05 35.44	+18 53 38.2		688
1983 WQ *	1983 11 29.25069	04 31 58.90	+25 26 50.1	16.8	4 688
1983 WQ	1983 11 29.28125	04 31 56.81	+25 26 54.8		688
1983 WQ	1983 12 01.32222	04 29 40.72	+25 30 16.7	17.0	688
1983 WQ	1983 12 01.35833	04 29 38.43	+25 30 20.8		688
1983 WR *	1983 11 29.25069	04 34 57.56	+26 23 02.0	16.0	4 688
1983 WR	1983 11 29.28125	04 34 55.55	+26 23 06.0		688
1983 WR	1983 12 01.32222	04 32 49.84	+26 27 26.4	16.5	688
1983 WR	1983 12 01.35833	04 32 47.48	+26 27 30.0		688
1983 WS *	1983 11 29.25069	04 36 32.97	+27 06 01.5	17.0	4 688
1983 WS	1983 11 29.28125	04 36 31.24	+27 06 10.5		688
1983 WS	1983 12 01.32222	04 34 19.75	+27 13 13.5	17.2	1 688
1983 WS	1983 12 01.35833	04 34 17.19	+27 13 20.3		688
1983 WT *	1983 11 29.25069	04 36 56.28	+21 30 22.5	17.0	4 688
1983 WT	1983 11 29.28125	04 36 54.07	+21 30 26.2		688
1983 WU *	1983 11 29.25069	04 39 15.48	+25 15 56.0	17.0	4 688
1983 WU	1983 11 29.28125	04 39 13.54	+25 16 08.8		688
1983 WU	1983 12 01.32222	04 37 01.23	+25 29 46.7	17.2	688
1983 WU	1983 12 01.35833	04 36 59.00	+25 29 59.1		688
1983 WV *	1983 11 29.25069	04 41 24.53	+21 50 11.8	16.5	4 688
1983 WV	1983 11 29.28125	04 41 22.84	+21 50 09.9		688
1983 WV	1983 12 01.32222	04 39 32.51	+21 49 04.2	16.2	688
1983 WV	1983 12 01.35833	04 39 30.53	+21 49 03.3		688
1983 WW *	1983 11 29.25069	04 42 06.75	+26 38 44.7	17.0	4 688
1983 WW	1983 11 29.28125	04 42 04.73	+26 38 42.9		688
1983 WX *	1983 11 29.25069	04 42 28.00	+23 46 20.5	16.8	5 688
1983 WX	1983 11 29.28125	04 42 26.06	+23 46 10.4		688
1983 WX	1983 12 01.32222	04 40 05.84	+23 36 41.1	17.0	688
1983 WX	1983 12 01.35833	04 40 03.01	+23 36 30.7		688
1983 WY *	1983 11 29.25069	04 46 27.05	+20 22 22.8	16.8	4 688
1983 WY	1983 11 29.28125	04 46 24.60	+20 21 49.0		688
1983 WZ *	1983 11 29.25069	04 47 46.82	+19 46 06.4	16.8	4 688
1983 WZ	1983 11 29.28125	04 47 45.48	+19 46 03.4		688
1983 WA1 *	1983 11 29.25069	04 49 56.14	+22 01 38.8	17.0	4 688
1983 WA1	1983 11 29.28125	04 49 53.83	+22 01 41.3		688
1983 WA1	1983 12 01.32222	04 47 25.50	+22 05 08.9	17.2	688
1983 WA1	1983 12 01.35833	04 47 22.84	+22 05 10.6		688
1983 WB1 *	1983 11 29.25069	04 51 12.64	+25 37 27.6	17.2	4 688
1983 WB1	1983 11 29.28125	04 51 10.19	+25 37 27.3		688
1983 WC1 *	1983 11 29.25069	04 52 57.93	+27 29 20.7	17.0	4 688
1983 WC1	1983 11 29.28125	04 52 56.01	+27 29 17.8		688
1983 WC1	1983 12 01.32222	04 50 34.53	+27 26 57.4	17.0	688

1984 AB 1984 01 08.14722 05 59 13.62 +26 46 00.6 16.8 688
 1984 AB 1984 01 08.19306 05 59 08.61 +26 46 50.6 688
 Note 1: right ascension uncertain. 2: declination uncertain. 3 = 1 + 2. 4:
 discoverer Bowell. 5 = 1 + 4. 7 = 3 + 4. 8: discoverer Thomas.

OBSERVATIONS MADE AT THE CHAMBERLIN OBSERVATORY'S FIELD STATION BY E.
 EVERHART.

Object	Date	UT	R. A. (1950)	Decl.	Obs.
1983 SA	1983 11 04.20382		22 41 40.71	+22 55 11.7	707
1983 XF	1984 01 02.12118		04 00 36.30	+22 33 10.4	707

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.
774	1983 12 06.41522		07 54 25.22	+16 35 23.6	16.0		801
989	1983 12 06.39263		07 09 09.67	+09 57 27.5	16.5		801
999	1983 11 30.36367		07 11 57.62	+10 14 27.0			801
999	1983 12 01.35546		07 11 24.97	+10 10 47.2			801
999	1983 12 04.26007		07 09 40.85	+10 00 36.2			801
999	1983 12 06.39263		07 08 16.24	+09 53 41.9	16.5		801
999	1983 12 08.25942		07 06 57.27	+09 48 03.9			801
999	1983 12 09.26393		07 06 12.81	+09 45 11.4			801
1082	1983 11 30.31699		06 11 23.38	+21 07 31.7			801
1620	1983 12 04.05497		00 51 20.40	+35 01 15.4			801
1884	1983 12 04.08291		00 59 57.76	+42 59 35.9			801
2499	1983 12 04.10770		02 24 19.30	+13 44 36.1			801
2967	1983 12 01.17277		02 58 29.20	+28 54 37.6			801
2980	1983 12 04.03465		23 30 22.05	-07 10 01.2			801
1943 EM	1983 12 06.20010		02 55 39.48	+00 05 39.0			801
1964 TH1	1983 11 30.31699		06 11 00.34	+20 53 26.8			801
1964 TH1	1983 12 09.28809		06 03 33.65	+20 41 54.2			801
1970 PA	1983 12 06.14369		02 43 50.86	+37 39 48.8			801
1973 SM2	1983 11 07.30656		02 35 38.76	+20 38 55.2			801
1973 SM2	1983 12 04.14349		02 12 15.07	+19 11 57.6			801
1974 MJ	1983 12 06.30704		05 03 26.21	+34 41 06.4			801
1975 PA	1983 12 08.19679		03 22 16.17	+22 19 20.3			801
1975 TR3	1983 12 01.37915		07 27 16.84	+17 42 02.2			801
1976 UF1	1983 12 01.28566		04 44 25.86	+21 46 08.1			801
1976 YJ3	1983 12 08.14592		02 19 06.49	+14 38 13.3			801
1977 RE7	1983 12 02.22883		04 23 09.69	+18 32 30.3			801
1977 RE7	1983 12 04.23247		04 21 23.33	+18 28 48.5			801
1977 RE7	1983 12 06.24689		04 19 37.58	+18 25 09.1	17		801
1977 TA1	1983 12 01.32907		05 56 24.72	+13 16 24.3			801
1978 PQ2	1983 12 01.31200		05 39 08.96	+20 31 24.7			801
1978 QK	1983 11 30.34144		06 16 44.02	-00 27 58.4			801
1978 TR3	1983 12 08.43541		10 38 39.06	+24 55 59.3			801
1978 TZ6	1983 12 09.04128		00 39 40.98	-10 05 28.2			801
1978 TZ6	1983 12 09.08460		00 39 41.35	-10 05 11.3			801
1979 SD7	1983 12 08.21745		05 06 35.90	+29 31 24.6			801
1979 TM	1983 11 03.37295		05 06 22.03	+21 20 55.3			801
1979 UC	1983 11 30.41333		06 18 25.77	+26 53 11.2			801
1980 DC	1983 12 06.28875		04 57 11.39	+35 58 05.7			801
1981 CY	1983 12 01.23309		04 21 44.40	+19 53 50.6			801
1981 DD	1983 12 06.33238		05 40 56.91	+16 53 38.2			801
1981 DE1	1983 11 30.43715		09 01 28.49	+12 53 51.2			801
1981 EG	1983 11 30.39377		06 14 54.79	+25 00 09.3			801
1981 EC9	1983 12 04.18848		03 06 00.53	+27 47 58.3			801
1981 EJ10	1983 12 09.06168		00 06 40.79	+04 19 15.2			801

1981 EA11	1983 11 10.20645	02 44 42.45	+34 47 01.9		801
1981 EA11	1983 12 09.17253	02 20 33.68	+32 39 15.1		801
1981 EH16	1983 12 08.40694	09 33 13.89	+14 23 24.7		801
1981 EF23	1983 12 08.29513	07 37 18.18	+17 21 59.9		801
1981 EN27	1983 12 04.16560	02 35 18.67	+11 01 47.9		801
1982 HV	1983 12 06.22249	03 41 16.35	+14 58 28.1		801
1982 KM	1983 12 06.24689	04 20 01.16	+18 42 52.4		801
1982 QR	1983 12 06.35099	06 03 46.11	+38 33 20.7		801
1983 PA	1983 12 03.94723	22 40 37.60	+25 14 28.8		801
1983 QG	1983 12 06.08511	02 04 39.05	-01 09 48.4		801
1983 RD	1983 12 09.23386	04 38 30.09	-10 40 27.4		801
1983 SA	1983 11 30.04561	23 05 09.78	+25 29 47.3		801
1983 TB	1983 12 03.98539	22 53 17.89	+21 38 41.9		801
1983 VE2 *	1983 11 08.16341	02 50 50.17	+08 18 57.3	18	801
1983 WJ1 *	1983 11 30.43715	09 02 08.87	+13 00 45.7	18.5	801
1983 XE	1983 12 06.24689	04 18 24.72	+18 49 05.7	18.5	801
1983 XL *	1983 12 04.10770	02 24 53.64	+13 30 05.6	18.5	801
1983 XM *	1983 12 04.16560	02 35 24.33	+10 58 48.1	18.5	801
1983 XN *	1983 12 06.22249	03 41 41.48	+14 45 30.9	19	801
1983 XO *	1983 12 06.24689	04 20 34.95	+18 38 27.3	18.5	801
1983 XP *	1983 12 08.19679	03 21 09.41	+22 10 41.0	18.5	801
1983 XQ *	1983 12 08.23956	05 30 35.32	+27 43 41.9	18	1 801
1983 XB1 *	1983 12 01.26152	04 29 27.13	+16 56 05.9	19.0	801
2540 P-L	1983 11 08.16341	02 50 49.41	+08 24 22.5		801
2540 P-L	1983 12 08.17005	02 30 35.93	+06 05 38.2	17.5	801
2630 P-L	1983 12 08.23956	05 26 22.44	+27 33 16.8		801
6547 P-L	1983 12 04.20704	04 06 15.47	+23 39 02.7		801

Note 1: measured in one direction only.

OBSERVATIONS MADE WITH THE 0.4-M ASTROGRAPH AT THE EUROPEAN SOUTHERN OBSERVATORY BY H. DEBEHOGNE AND E. R. NETTO. SCANNED AND MEASURED BY DEBEHOGNE.

Object	Date	UT	R. A. (1950)	Decl.	Mag.	Obs.
438	1983 09 01.25454	21 49 23.74	-25 57 48.0			809
438	1983 09 01.26008	21 49 23.40	-25 57 47.9			809
438	1983 09 01.26498	21 49 23.14	-25 57 48.5			809
438	1983 09 04.06004	21 46 59.19	-26 01 48.7			809
438	1983 09 04.06559	21 46 58.87	-26 01 49.2			809
438	1983 09 04.07113	21 46 58.60	-26 01 50.3			809
438	1983 09 06.04766	21 45 21.27	-26 03 39.6			809
438	1983 09 06.05355	21 45 20.95	-26 03 40.2			809
438	1983 09 06.05943	21 45 20.66	-26 03 40.0			809
438	1983 09 07.03801	21 44 34.13	-26 04 14.8			809
438	1983 09 07.04632	21 44 33.73	-26 04 15.2			809
438	1983 09 07.05463	21 44 33.34	-26 04 15.4			809
438	1983 09 08.02777	21 43 48.24	-26 04 39.3			809
438	1983 09 08.03608	21 43 47.80	-26 04 39.8			809
438	1983 09 08.04439	21 43 47.41	-26 04 40.4			809
438	1983 09 09.06510	21 43 01.36	-26 04 51.1			809
438	1983 09 09.07064	21 43 01.13	-26 04 51.4			809
438	1983 09 09.07630	21 43 00.83	-26 04 51.6			809
438	1983 09 10.07899	21 42 16.92	-26 04 50.7			809
438	1983 09 10.08384	21 42 16.73	-26 04 51.1			809
438	1983 09 10.09976	21 42 16.02	-26 04 52.1			809
438	1983 09 11.99527	21 40 56.96	-26 04 13.2			809
438	1983 09 12.00358	21 40 56.60	-26 04 12.6			809
438	1983 09 12.01189	21 40 56.26	-26 04 12.8			809
736	1983 09 02.03158	15 17 44.74	-14 33 46.9			809
736	1983 09 02.04128	15 17 45.64	-14 33 51.8			809
736	1983 09 02.05037	15 17 46.54	-14 33 56.6			809

736	1983	09	03.01776	15	19	20.29	-14	41	53.2	809
736	1983	09	03.02746	15	19	21.24	-14	41	59.0	809
736	1983	09	03.03716	15	19	22.18	-14	42	04.1	809
736	1983	09	05.02062	15	22	37.33	-14	58	18.3	809
736	1983	09	05.03170	15	22	38.23	-14	58	23.5	809
736	1983	09	05.03931	15	22	38.96	-14	58	27.7	809
736	1983	09	06.99507	15	25	54.76	-15	14	24.1	809
736	1983	09	07.00338	15	25	55.52	-15	14	28.0	809
736	1983	09	07.01187	15	25	56.27	-15	14	33.5	809
736	1983	09	10.00211	15	31	02.14	-15	38	44.7	809
736	1983	09	10.00783	15	31	02.72	-15	38	47.1	809
736	1983	09	10.01371	15	31	03.31	-15	38	50.2	809
1619	1983	09	01.25454	21	54	10.46	-25	49	00.5	809
1619	1983	09	01.26008	21	54	10.09	-25	49	02.4	809
1619	1983	09	01.26498	21	54	09.74	-25	49	03.3	809
1619	1983	09	04.06004	21	51	30.70	-25	56	56.2	809
1619	1983	09	04.06559	21	51	30.38	-25	56	57.4	809
1619	1983	09	04.07113	21	51	30.03	-25	56	59.0	809
1619	1983	09	06.04766	21	49	42.11	-26	01	12.0	809
1619	1983	09	06.05355	21	49	41.75	-26	01	13.0	809
1619	1983	09	06.05943	21	49	41.44	-26	01	13.6	809
1619	1983	09	07.03801	21	48	49.86	-26	02	52.4	809
1619	1983	09	07.04632	21	48	49.40	-26	02	52.5	809
1619	1983	09	07.05463	21	48	48.95	-26	02	53.4	809
1619	1983	09	08.02777	21	47	58.95	-26	04	17.0	809
1619	1983	09	08.03608	21	47	58.46	-26	04	18.6	809
1619	1983	09	08.04439	21	47	58.05	-26	04	18.9	809
1619	1983	09	09.06510	21	47	06.95	-26	05	27.8	809
1619	1983	09	09.07064	21	47	06.66	-26	05	28.7	809
1619	1983	09	09.07630	21	47	06.36	-26	05	29.2	809
1619	1983	09	10.07899	21	46	17.86	-26	06	16.4	809
1619	1983	09	10.08384	21	46	17.63	-26	06	16.9	809
1619	1983	09	10.09976	21	46	16.84	-26	06	17.4	809
1619	1983	09	11.99527	21	44	50.06	-26	06	58.5	809
1619	1983	09	12.00358	21	44	49.68	-26	06	58.6	809
1619	1983	09	12.01189	21	44	49.28	-26	06	58.9	809
1663	1983	09	01.25454	21	48	43.20	-24	20	21.5	809
1663	1983	09	01.26008	21	48	42.88	-24	20	23.5	809
1663	1983	09	01.26498	21	48	42.60	-24	20	24.6	809
1663	1983	09	02.12508	21	48	01.86	-24	23	50.9	809
1663	1983	09	02.13062	21	48	01.61	-24	23	52.7	809
1663	1983	09	02.13616	21	48	01.28	-24	23	54.1	809
1663	1983	09	03.08563	21	47	16.88	-24	27	25.3	809
1663	1983	09	03.09118	21	47	16.62	-24	27	27.0	809
1663	1983	09	03.09672	21	47	16.33	-24	27	28.0	809
1663	1983	09	04.06004	21	46	32.31	-24	30	47.4	809
1663	1983	09	04.06559	21	46	32.03	-24	30	48.5	809
1663	1983	09	04.07113	21	46	31.77	-24	30	49.6	809
1663	1983	09	06.04766	21	45	05.14	-24	36	48.0	809
1663	1983	09	06.05355	21	45	04.85	-24	36	49.2	809
1663	1983	09	06.05943	21	45	04.63	-24	36	50.8	809
1663	1983	09	07.03801	21	44	23.87	-24	39	20.0	809
1663	1983	09	07.04632	21	44	23.47	-24	39	22.9	809
1663	1983	09	07.05463	21	44	23.12	-24	39	24.2	809
1663	1983	09	08.02777	21	43	44.12	-24	41	35.9	809
1663	1983	09	08.03608	21	43	43.76	-24	41	38.6	809
1663	1983	09	08.04439	21	43	43.43	-24	41	40.3	809
1663	1983	09	09.06510	21	43	04.03	-24	43	38.5	809
1663	1983	09	09.07064	21	43	03.81	-24	43	40.9	809

1663		1983 09 09.07630	21 43 03.58	-24 43 43.3	809
1663		1983 09 10.07899	21 42 26.90	-24 45 21.7	809
1663		1983 09 10.08384	21 42 26.73	-24 45 22.5	809
1663		1983 09 10.09976	21 42 26.10	-24 45 24.0	809
1663		1983 09 11.99527	21 41 22.01	-24 47 41.7	809
1663		1983 09 12.00358	21 41 21.74	-24 47 42.6	809
1663		1983 09 12.01189	21 41 21.42	-24 47 43.3	809
1983 OD		1983 09 02.12508	21 52 04.63	-23 51 54.6	16.6 809
1983 OD		1983 09 02.13062	21 52 04.43	-23 51 59.9	809
1983 OD		1983 09 02.13616	21 52 04.20	-23 52 04.4	809
1983 OD		1983 09 04.06004	21 51 05.54	-24 18 55.7	809
1983 OD		1983 09 04.06559	21 51 05.34	-24 19 00.8	809
1983 OD		1983 09 04.07113	21 51 05.16	-24 19 04.8	809
1983 OD		1983 09 06.04766	21 50 09.08	-24 45 15.4	809
1983 OD		1983 09 06.05355	21 50 08.93	-24 45 19.4	809
1983 OD		1983 09 06.05943	21 50 08.77	-24 45 24.8	809
1983 OD		1983 09 07.03801	21 49 42.77	-24 57 47.7	809
1983 OD		1983 09 07.04632	21 49 42.55	-24 57 53.4	809
1983 OD		1983 09 07.05463	21 49 42.30	-24 57 59.8	809
1983 OD		1983 09 08.02777	21 49 17.84	-25 09 55.0	809
1983 OD		1983 09 08.03608	21 49 17.61	-25 10 01.7	809
1983 OD		1983 09 08.04439	21 49 17.39	-25 10 08.9	809
1983 OD		1983 09 09.06510	21 48 53.15	-25 22 14.7	809
1983 OD		1983 09 09.07064	21 48 53.05	-25 22 19.1	809
1983 OD		1983 09 09.07630	21 48 52.90	-25 22 22.1	809
1983 OD		1983 09 10.07899	21 48 30.76	-25 33 52.3	809
1983 OD		1983 09 10.08384	21 48 30.66	-25 33 55.1	809
1983 OD		1983 09 10.09976	21 48 30.28	-25 34 05.4	809
1983 OD		1983 09 11.99527	21 47 53.26	-25 54 38.1	809
1983 OD		1983 09 12.00358	21 47 53.12	-25 54 43.3	809
1983 OD		1983 09 12.01189	21 47 52.98	-25 54 48.5	809
1983 RX2 *		1983 09 01.25454	21 51 34.64	-24 41 40.6	17.2 809
1983 RX2		1983 09 01.26008	21 51 34.27	-24 41 41.7	809
1983 RX2		1983 09 01.26498	21 51 34.11	-24 41 42.0	809
1983 RX2		1983 09 02.12508	21 50 51.50	-24 44 23.4	809
1983 RX2		1983 09 02.13062	21 50 51.16	-24 44 24.7	809
1983 RX2		1983 09 02.13616	21 50 50.89	-24 44 25.3	809
1983 RX2		1983 09 03.08563	21 50 04.30	-24 47 10.2	809
1983 RX2		1983 09 03.09118	21 50 04.01	-24 47 11.4	809
1983 RX2		1983 09 03.09672	21 50 03.75	-24 47 12.1	809
1983 RX2		1983 09 04.06004	21 49 17.40	-24 49 45.7	809
1983 RX2		1983 09 04.06559	21 49 17.13	-24 49 46.9	809
1983 RX2		1983 09 04.07113	21 49 16.84	-24 49 47.1	809
1983 RX2		1983 09 06.04766	21 47 44.92	-24 54 21.0	809
1983 RX2		1983 09 06.05355	21 47 44.69	-24 54 21.1	809
1983 RX2		1983 09 06.05943	21 47 44.42	-24 54 22.0	809
1983 RX2		1983 09 07.03801	21 47 00.69	-24 56 14.8	809
1983 RX2		1983 09 07.04632	21 47 00.28	-24 56 15.7	809
1983 RX2		1983 09 07.05463	21 46 59.92	-24 56 16.6	809
1983 RX2		1983 09 08.02777	21 46 17.59	-24 57 53.7	809
1983 RX2		1983 09 08.03608	21 46 17.20	-24 57 54.6	809
1983 RX2		1983 09 08.04439	21 46 16.79	-24 57 55.0	809
1983 RX2		1983 09 09.06510	21 45 33.95	-24 59 23.0	809
1983 RX2		1983 09 09.07064	21 45 33.69	-24 59 23.8	809
1983 RX2		1983 09 09.07630	21 45 33.44	-24 59 24.8	809
1983 RX2		1983 09 10.07899	21 44 52.76	-25 00 34.1	809
1983 RX2		1983 09 10.08384	21 44 52.54	-25 00 34.6	809
1983 RX2		1983 09 10.09976	21 44 51.90	-25 00 36.1	809
1983 RX2		1983 09 11.99527	21 43 39.41	-25 02 05.7	809

1983 RX2	1983 09 12.00358	21 43 39.10	-25 02 06.3	809
1983 RX2	1983 09 12.01189	21 43 38.69	-25 02 07.0	809
1983 RY2 *	1983 09 01.25454	21 54 03.69	-25 37 16.1	17.6 809
1983 RY2	1983 09 01.26008	21 54 03.37	-25 37 13.9	809
1983 RY2	1983 09 01.26498	21 54 03.13	-25 37 10.4	809
1983 RY2	1983 09 02.12508	21 53 29.45	-25 38 29.1	809
1983 RY2	1983 09 02.13062	21 53 29.16	-25 38 29.6	809
1983 RY2	1983 09 02.13616	21 53 28.85	-25 38 30.8	809
1983 RY2	1983 09 04.06004	21 52 15.00	-25 39 39.9	809
1983 RY2	1983 09 04.06559	21 52 14.75	-25 39 39.7	809
1983 RY2	1983 09 04.07113	21 52 14.54	-25 39 40.0	809
1983 RY2	1983 09 06.04766	21 51 03.02	-25 39 47.2	809
1983 RY2	1983 09 06.05355	21 51 02.86	-25 39 46.6	809
1983 RY2	1983 09 06.05943	21 51 02.70	-25 39 45.0	809
1983 RY2	1983 09 07.03801	21 50 29.19	-25 39 22.9	809
1983 RY2	1983 09 07.04632	21 50 28.94	-25 39 23.0	809
1983 RY2	1983 09 07.05463	21 50 28.57	-25 39 23.5	809
1983 RY2	1983 09 08.02777	21 49 56.80	-25 38 44.2	809
1983 RY2	1983 09 08.03608	21 49 56.51	-25 38 44.9	809
1983 RY2	1983 09 08.04439	21 49 56.24	-25 38 44.4	809
1983 RY2	1983 09 09.06510	21 49 24.46	-25 37 46.0	809
1983 RY2	1983 09 09.07064	21 49 24.24	-25 37 47.3	809
1983 RY2	1983 09 09.07630	21 49 24.07	-25 37 46.7	809
1983 RY2	1983 09 10.07899	21 48 54.46	-25 36 32.0	809
1983 RY2	1983 09 10.08384	21 48 54.27	-25 36 31.5	809
1983 RY2	1983 09 10.09976	21 48 53.75	-25 36 31.4	809
1983 RZ2 *	1983 09 02.12508	21 52 30.45	-23 58 04.0	17.3 809
1983 RZ2	1983 09 02.13062	21 52 30.23	-23 58 06.1	809
1983 RZ2	1983 09 02.13616	21 52 30.04	-23 58 09.3	809
1983 RZ2	1983 09 04.06004	21 51 15.82	-24 10 27.3	809
1983 RZ2	1983 09 04.06559	21 51 15.56	-24 10 30.1	809
1983 RZ2	1983 09 04.07113	21 51 15.37	-24 10 32.4	809
1983 RZ2	1983 09 06.04766	21 50 03.02	-24 22 07.4	809
1983 RZ2	1983 09 06.05355	21 50 02.83	-24 22 10.2	809
1983 RZ2	1983 09 06.05943	21 50 02.59	-24 22 12.0	809
1983 RZ2	1983 09 07.03801	21 49 28.53	-24 27 31.4	809
1983 RZ2	1983 09 07.04632	21 49 28.23	-24 27 34.2	809
1983 RZ2	1983 09 07.05463	21 49 27.92	-24 27 37.0	809
1983 RZ2	1983 09 08.02777	21 48 55.27	-24 32 38.2	809
1983 RZ2	1983 09 08.03608	21 48 54.98	-24 32 40.3	809
1983 RZ2	1983 09 08.04439	21 48 54.68	-24 32 42.9	809
1983 RZ2	1983 09 09.06510	21 48 21.75	-24 37 42.5	809
1983 RZ2	1983 09 09.07064	21 48 21.58	-24 37 44.0	809
1983 RZ2	1983 09 09.07630	21 48 21.38	-24 37 46.1	809
1983 RZ2	1983 09 11.99527	21 46 55.99	-24 50 19.7	809
1983 RZ2	1983 09 12.00358	21 46 55.81	-24 50 21.6	809
1983 RZ2	1983 09 12.01189	21 46 55.51	-24 50 23.6	809

OBSERVATIONS MADE WITH THE 0.4-M ASTROGRAPH AT THE EUROPEAN SOUTHERN OBSERVATORY BY C.-I. LAGERKVIST, K. OLOFFSON, G. HAMMARBACK, P. MAGNUSSEN AND O. MORELL (WITH ASSISTANCE FROM G. ROMAN AND H. VEGA).

Object	Date	UT	R. A. (1950)	Decl.	N Obs.
706	1982 08 17.06458	22 57 23.99	-01 42 29.2	809	
706	1982 08 17.07222	22 57 23.56	-01 42 26.8	809	
706	1982 08 17.07986	22 57 23.18	-01 42 24.7	809	
706	1982 08 19.21319	22 55 27.78	-01 32 30.0	809	
706	1982 08 19.22083	22 55 27.35	-01 32 28.0	809	
706	1982 08 19.22847	22 55 26.92	-01 32 25.8	809	

706		1982	08	22.25556	22	52	34.85	-01	19	12.4	809
706		1982	08	22.26319	22	52	34.41	-01	19	10.2	809
706		1982	08	22.27083	22	52	33.96	-01	19	08.2	809
1295		1982	08	21.26250	01	06	39.46	+07	05	15.8	809
1295		1982	08	21.27153	01	06	39.36	+07	05	14.8	809
1295		1982	08	21.28056	01	06	39.31	+07	05	14.6	809
2232		1982	08	17.06458	22	56	53.50	-00	39	17.4	809
2232		1982	08	17.07222	22	56	53.27	-00	39	20.0	809
2232		1982	08	17.07986	22	56	52.96	-00	39	21.3	809
2232		1982	08	19.21319	22	55	27.05	-00	48	15.4	809
2232		1982	08	19.22083	22	55	26.76	-00	48	17.1	809
2232		1982	08	19.22847	22	55	26.42	-00	48	19.4	809
2232		1982	08	22.25556	22	53	18.04	-01	02	12.4	809
2232		1982	08	22.26319	22	53	17.75	-01	02	15.1	809
2232		1982	08	22.27083	22	53	17.43	-01	02	17.2	809
2744		1982	08	23.13819	00	06	53.44	+09	17	18.8	1 809
2744		1982	08	23.14583	00	06	53.49	+09	17	24.3	1 809
2744		1982	08	23.15347	00	06	53.47	+09	17	30.6	1 809
1982	OK	1982	08	16.20903	22	31	54.25	-09	44	12.8	809
1982	OK	1982	08	16.21667	22	31	53.95	-09	44	16.7	809
1982	OK	1982	08	16.22431	22	31	53.63	-09	44	20.8	809
1982	OK	1982	08	18.29306	22	30	35.15	-10	02	28.3	809
1982	OK	1982	08	18.30069	22	30	34.86	-10	02	32.3	809
1982	OK	1982	08	18.30833	22	30	34.50	-10	02	36.8	809
1982	OK	1982	08	20.09097	22	29	24.69	-10	18	31.9	809
1982	OK	1982	08	20.09861	22	29	24.41	-10	18	35.8	809
1982	OK	1982	08	20.10625	22	29	24.03	-10	18	40.5	809
1982	OK	1982	08	22.14444	22	28	00.32	-10	37	06.6	809
1982	OK	1982	08	22.15208	22	27	59.97	-10	37	10.7	809
1982	OK	1982	08	22.15972	22	27	59.60	-10	37	15.0	809
1982	QG1	1982	08	18.29306	22	29	18.62	-10	35	18.4	809
1982	QG1	1982	08	18.30069	22	29	18.37	-10	35	23.0	809
1982	QG1	1982	08	18.30833	22	29	18.04	-10	35	27.8	809
1982	QP1 *	1982	08	16.20903	22	29	43.30	-09	45	43.2	809
1982	QP1	1982	08	16.21667	22	29	43.00	-09	45	46.9	809
1982	QP1	1982	08	16.22431	22	29	42.65	-09	45	50.6	809
1982	QP1	1982	08	18.29306	22	28	15.64	-10	01	51.3	809
1982	QP1	1982	08	18.30069	22	28	15.35	-10	01	55.0	809
1982	QP1	1982	08	18.30833	22	28	14.96	-10	01	58.5	809
1982	QP1	1982	08	22.14444	22	25	25.92	-10	32	29.8	809
1982	QP1	1982	08	22.15208	22	25	25.53	-10	32	34.0	809
1982	QP1	1982	08	22.15972	22	25	25.18	-10	32	36.7	809
1982	QQ1 *	1982	08	17.22083	00	19	27.65	+03	59	45.0	809
1982	QQ1	1982	08	17.22847	00	19	27.20	+03	59	51.5	809
1982	QQ1	1982	08	17.23611	00	19	26.87	+03	59	59.0	809
1982	QR1 *	1982	08	18.29306	22	31	19.71	-08	54	14.2	809
1982	QR1	1982	08	18.30069	22	31	19.40	-08	54	16.6	809
1982	QR1	1982	08	18.30833	22	31	19.05	-08	54	19.9	809
1982	QS1 *	1982	08	18.29306	22	32	59.54	-09	30	23.1	809
1982	QS1	1982	08	18.30069	22	32	59.05	-09	30	24.6	809
1982	QS1	1982	08	18.30833	22	32	58.62	-09	30	26.8	809
1982	QT1 *	1982	08	21.10556	21	47	15.41	-13	04	23.1	809
1982	QT1	1982	08	21.11319	21	47	14.82	-13	04	20.9	809
1982	QT1	1982	08	21.12083	21	47	14.33	-13	04	19.4	809
1982	QU1 *	1982	08	22.14444	22	27	19.99	-10	23	26.3	809
1982	QU1	1982	08	22.15208	22	27	19.49	-10	23	28.7	809
1982	QU1	1982	08	22.15972	22	27	19.08	-10	23	30.3	809
1982	QV1 *	1982	08	22.14444	22	28	49.29	-09	04	17.7	809

1982 QV1 1982 08 22.15208 22 28 48.86 -09 04 20.2 809
 1982 QV1 1982 08 22.15972 22 28 48.56 -09 04 22.6 809
 Note 1: correction to MPC 8206.

OBSERVATIONS MADE AT KARASUYAMA BY Y. BANNO. MEASURED BY T. URATA. FROM
 NIHONDAIRA OBS. CIRC. NO. 1456.

Object	Date	UT	R. A. (1950)			Decl.		Mag.	N	Obs.
1979 TM	1983 11	28.52591	04 42	06.26	+20 39	27.6	17		889	
1979 TM	1983 11	28.56758	04 42	03.32	+20 39	23.9			889	
1981 CY	1983 11	28.51619	04 24	57.73	+19 49	00.6	16.5	3	889	
1981 CY	1983 11	28.55786	04 24	54.56	+19 49	07.9		3	889	
1982 KM	1983 11	28.51619	04 28	23.87	+19 14	30.7	17		889	
1982 KM	1983 11	28.55786	04 28	21.21	+19 14	21.2			889	
1983 WB	1983 11	28.50508	04 17	32.21	+19 30	04.5	16	1	889	
1983 WB	1983 11	28.54675	04 17	29.85	+19 30	06.2		1	889	

Note 1: near edge of film. 2: poor distribution of reference stars.
 3 = 1 + 2.

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ORBITAL ELEMENTS OF ONE-OPPOSITION MINOR PLANETS.

The orbit computers and authors of double designations are b = F. N. Bowman, E = E. Bowell and M = B. G. Marsden. See also MPC 7828.

Planet	B(1,0)	Epoch	M	Peri.	Node	Incl.	e	a	Arc	O	N	C
1982 QP1	15.5	820819	6.28	174.01	146.43	3.61	0.1852	2.2966	28	0	1	M
1983 OD	15.0	830814	345.81	214.96	131.47	13.81	0.2315	2.3622	57	0		M
1983 QC	17.5	830923	359.53	191.13	162.08	7.24	0.4325	2.5939	58	7		M
1983 RL	15.0	830903	344.45	22.48	339.73	27.99	0.1588	2.3217	5	6	3	M
1983 RX2	15.0	830903	345.17	277.69	71.69	6.11	0.1348	2.4613	11	0		M
1983 RY2	16.5	830903	351.61	288.84	58.82	5.60	0.3022	2.6067	9	0		M
1983 RZ2	15.5	830903	5.04	210.30	112.83	8.98	0.1952	2.5702	10	0		M
1983 TC	14.0	831102	14.67	125.67	228.66	11.91	0.1946	2.6941	47	0		M
1983 TF1	14.0	831013	353.63	191.13	199.02	14.84	0.1437	3.0417	8	8		M
1983 TC2	14.0	831013	83.66	99.18	178.30	1.71	0.1711	2.2918	9	0		M
1983 VN1	15.0	831122	15.21	65.24	330.42	2.24	0.1530	2.3253	2	6	2	M
1983 VS1	16.5	831102	14.79	8.56	10.22	3.42	0.2250	2.2058	2	5	2	M
1983 VV1	13.0	831122	308.99	125.01	344.49	3.09	0.0346	3.0986	27	9		M
1983 VY1	13.5	831102	358.27	165.77	245.57	7.78	0.1524	2.9438	2	5	2	M
1983 WA	14.5	831212	325.46	240.51	241.96	7.84	0.2220	2.7223	30	0		M
1983 WB	12.0	831212	306.70	55.17	72.98	9.46	0.0676	3.0094	31	0		M
1983 WC	14.0	831212	6.55	294.15	124.57	2.05	0.2305	3.1733	11	0		M
1983 WE	14.0	831212	334.72	40.43	62.71	2.20	0.1439	2.9415	11	8		M
1983 WG	14.0	831212	337.31	28.74	76.60	11.27	0.2184	2.8052	31	0		M
1983 WH	15.0	831212	340.30	209.02	245.12	4.85	0.0850	2.2790	31	0		M
1983 WJ	13.5	831122	24.51	302.04	95.28	3.52	0.0655	2.8874	11	8		M
1983 WK	15.0	831212	16.66	325.81	74.88	13.41	0.2885	2.6908	31	0		M
1983 WL	14.5	831212	347.10	19.23	67.56	10.53	0.0910	2.3339	31	0		M
1983 WM	15.0	831212	352.39	187.97	252.91	5.75	0.0782	2.3205	31	0		M
1983 WN	15.0	831212	46.36	108.87	251.26	9.63	0.2534	2.3547	11	0		M
1983 WO	16.0	831212	22.13	323.60	77.76	4.60	0.1728	2.2439	11	0		M
1983 WP	13.5	831212	305.62	56.69	80.67	14.10	0.1172	2.6290	31	0		M
1983 WV	13.0	831122	357.66	356.62	74.49	2.78	0.1676	3.1390	10	0		M
1983 WZ	12.0	831122	216.73	83.02	136.75	2.06	0.1058	3.1934	10	8		M
1983 WA1	13.5	831122	127.71	208.44	72.31	13.04	0.2943	2.2975	7	8		M
1983 WF1	13.1	831212	33.71	275.18	95.79	21.10	0.3119	3.1864	30	6		E
1983 WH1	12.4	831212	299.77	13.44	128.18	13.65	0.0610	3.1120	30	6		E
1983 XC	15.5	831212	27.88	307.05	83.78	7.72	0.1744	2.3004	11	0		M

1983 XE 15.0 831212 8.47 181.31 238.06 7.26 0.1576 2.6049 8 7 M
 1983 XS 12.5 831212 247.96 246.41 299.94 5.23 0.1547 3.1095 30 8 M
 1983 XV 13.5 831212 3.07 337.97 97.00 3.70 0.1102 3.0807 4 6 2 M
 1983 XW 13.5 831212 10.58 34.19 29.75 0.36 0.1902 3.1265 4 6 2 M
 Note 1: double designations 1982 QP1 = 1982 RF2 (M), 1983 RL = 1983 RR1 (b).
 2: e assumed. 3 = 1 + 2.

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

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

(2988)* 1943 EM = 1931 KN = 1951 AS = 1979 WM3 = 1979 YV6

Discovered 1943 Mar. 1 by L. Oterma at Turku.

Epoch 1984 Oct. 27.0 ET = JDE 2446000.5

M	255.36093		(1950.0)		P		Q
n	0.23402212	Peri.	130.82716		-0.59765551		+0.76205250
a	2.6079431	Node	100.71356		-0.79052841		-0.50828772
e	0.1256419	Incl.	14.68985		-0.13368885		-0.40114782
P	4.21	B(1,0)	13.0				

Residuals in seconds of arc

310519	690	4.1+	0.4-	430303	062	0.8-	0.9+	791116	095	1.1-	3.1-
310520	690	3.9-	0.6-	430325	062	0.9+	0.6+	791223	095	0.4-	0.5+
310522	690	1.0-	0.4-	430325	062	0.7+	1.9-	831110	801	0.7+	1.8+
430301	062	1.3-	1.1+	510109	012	3.7-	2.3-	831206	801	0.2+	0.9+
430303	062	1.1+	1.3+	510109	012	4.8+	0.3-				

(2989)* 1976 UF1 = 1952 JL = 1972 JK = 1982 HA2

Discovered 1976 Oct. 22 by P. Wild at Zimmerwald. The key identifications 1976 UF1 = 1952 JL = 1972 JK are by L. D. Schmadel (MPC 7469).

Epoch 1984 Oct. 27.0 ET = JDE 2446000.5

M	186.15284		(1950.0)		P		Q
n	0.29432279	Peri.	246.71325		+0.78790371		+0.61273866
a	2.2383094	Node	75.44323		-0.53927818		+0.73463698
e	0.1737081	Incl.	3.63182		-0.29729916		+0.29130713
P	3.35	B(1,0)	14.5				

Residuals in seconds of arc

520501	760	0.9-	0.7+	820427	046	2.7-	0.7-	831204	046	1.1-	0.4+
520501	760	0.3+	1.0+	820427	046	0.3-	1.4-	831204	046	1.5+	0.6-
720509	095	3.0+	0.0	831103	801	0.2-	0.3+	831205	046	2.4-	0.6+
761022	026	0.3+	0.2+	831129	688	0.2+	1.8+	831205	046	1.5-	0.4+
761024	026	0.8-	1.4-	831129	688	2.7+	0.2+	831208	046	0.4+	1.2-
761126	026	0.4-	0.2+	831201	801	0.8-	1.2+	831208	046	1.3+	2.0-
761214	026	0.9+	0.8-	831201	688	0.6-	0.6+	831229	688	0.5-	0.4+
761214	026	1.3+	1.2+	831201	688	1.5+	2.3-	831229	688	0.9-	0.6+

(2990)* 1981 EN27 = 1973 AQ1 = 1977 GL

Discovered 1981 Mar. 2 by S. J. Bus at Siding Spring in the course of the U.K.-Caltech Asteroid Survey.

Epoch 1984 Oct. 27.0 ET = JDE 2446000.5

M	22.60328		(1950.0)		P		Q
n	0.25878431	Peri.	316.83900		-0.61942883		-0.78501934
a	2.4388069	Node	171.42663		+0.73282499		-0.58150682
e	0.1242318	Incl.	2.78733		+0.28155897		-0.21352856
P	3.81	B(1,0)	14.5				

Residuals in seconds of arc

730101	095	0.7-	2.7-	810311	413	0.2-	0.0	810406	413	0.4+	0.1-
770410	381	0.6+	0.8+	810311	413	0.1+	0.6+	810407	413	1.7-	0.1-
770410	381	0.8+	1.7+	810315	413	0.1-	0.8-	810407	413	0.9+	1.2-
810302	413	0.5-	0.8+	810315	413	0.0	0.3-	810410	413	0.8-	0.9+
810302	413	0.3-	0.4+	810405	413	1.0-	0.7+	831109	801	1.1-	1.4+
810306	413	0.6-	0.2+	810405	413	3.4+	1.3-	831204	801	0.5+	1.5+
810306	413	0.9+	0.3+	810406	413	0.9-	0.6+				

(2991)* 1982 HV = 1982 KB2 = 1975 JC = 1979 SY3

Discovered 1982 Apr. 21 by M. Watt at the Anderson Mesa Station of the Lowell Observatory. The double designation 1982 HV = 1982 KB2 was found by E. Bowell (MPC 7374).

Epoch 1984 Oct. 27.0 ET = JDE 2446000.5

M	197.08430		(1950.0)		P		Q
n	0.27574569	Peri.	197.36291	+0.39942377		+0.91240218	
a	2.3377437	Node	96.25431	-0.83004298		+0.40129444	
e	0.2206577	Incl.	5.15683	-0.38921627		+0.08052973	
P	3.57	B(1,0)	15.0				

Residuals in seconds of arc

750510	095	0.1-	1.6+	820421	688	0.2-	2.2+	820520	688	0.9+	1.9-
750514	095	0.5+	0.4+	820428	688	0.8-	1.0-	831108	801	1.4+	1.1+
790924	095	0.6+	1.3-	820428	688	0.8-	0.4+	831206	801	1.4-	1.5-
820421	688	2.5-	1.9-	820520	688	2.3+	1.3-				

(2992)* 2540 P-L = 1978 QV1

Discovered 1960 Sept. 24 by C. J. van Houten and I. van Houten-Groeneveld on Palomar Schmidt plates taken by T. Gehrels. The identification is by E. Bowell (MPC 5980).

Epoch 1984 Oct. 27.0 ET = JDE 2446000.5

M	43.33877		(1950.0)		P		Q
n	0.21660948	Peri.	266.89409	-0.02997903		-0.99949645	
a	2.7458981	Node	184.86049	+0.95886156		-0.02581940	
e	0.1890530	Incl.	7.04870	+0.28228665		-0.01844471	
P	4.55	B(1,0)	14.5				

Residuals in seconds of arc

600924	675	0.1-	1.2-	601022	675	0.2-	1.3-	820720	801	0.3+	1.1-
600926	675	0.0	1.3-	601025	675	0.4+	1.3-	820816	801	0.3+	2.4-
600928	675	0.4+	0.2+	601026	675	0.1-	0.5-	831108	801	0.6+	0.5+
600929	675	0.6+	0.3-	780831	095	1.1-	4.2+	831208	801	1.0-	0.2+
601017	675	0.7+	0.6-	780905	095	1.2-	3.7+				

1983 VE = 1966 VQ = 1979 YF8

Epoch 1984 Oct. 27.0 ET = JDE 2446000.5 (J-P)

M	77.04111		(1950.0)		P		Q
n	0.23125405	Peri.	184.44877	+0.61294875		-0.78863629	
a	2.6287181	Node	227.75713	+0.72689228		+0.58686812	
e	0.2785919	Incl.	3.75185	+0.30971185		+0.18340830	
P	4.26	B(1,0)	14.0				

Residuals in seconds of arc

661111	095	0.7+	5.0-	831109	552	0.8+	2.3-	831206	552	0.0	0.1+
791223	095	0.0	0.1-	831110	552	0.1+	0.4+	831206	552	0.0	1.1+
831105	552	0.5-	1.2+	831110	552	0.7+	0.1+	831227	552	0.9-	0.9+
831105	552	2.3-	0.5+	831115	552	0.3+	2.0+	831227	552	1.6-	0.3+
831108	552	0.9+	0.5-	831115	552	0.6-	1.6+	831228	552	1.5+	0.4+
831108	552	2.7-	2.8-	831128	552	2.0+	0.6+				
831109	552	0.1+	0.5+	831128	552	1.7+	0.2-				

1983 XD = 1955 SP

Epoch 1984 Oct. 27.0 ET = JDE 2446000.5 (J-P)

M 114.12557	(1950.0)		P	Q
n 0.18026806	Peri. 104.06280		+0.99516962	+0.03907555
a 3.1035427	Node 253.75675		-0.07001192	+0.92556653
e 0.1433772	Incl. 5.38242		+0.06881689	+0.37656299
P 5.47	B(1,0) 13.0			

Residuals in seconds of arc

550917 760	1.1-	0.5-	831201 688	0.7-	0.0	831209 688	1.5+	0.1+
550917 760	0.7-	0.3+	831201 688	1.7+	0.8+	831209 688	0.1+	1.5+
551010 760	1.0-	0.4+	831205 688	0.6+	0.1-	831229 688	0.7+	0.4+
551010 760	0.4-	0.3-	831205 688	0.6+	0.3-	831229 688	0.4+	2.7+
831128 688	0.1-	0.0	831206 688	1.6-	0.2+			
831128 688	0.4-	0.0	831206 688	0.8+	1.0+			

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

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

Periodic Comet Hartley-IRAS (1983v)

T 1984 Jan. 8.73855 ET

q 1.2821694	(1950.0)		P	Q
n 0.04617983	Peri. 47.14237		+0.68113806	-0.73202151
a 7.6942776	Node 0.80506		-0.34844446	-0.34089951
e 0.8333606	Incl. 95.71798		+0.64392344	+0.58985763
P 21.34				

From 22 observations 1983 Nov. 4-Dec. 29.

(2993)* 1970 PA = A916 QA = 1979 YJ2 = 1981 DG1

Discovered 1970 Aug. 4 at Perth. The identification 1970 PA = A916 QA was independently found by L. D. Schmadel.

Epoch 1984 Oct. 27.0 ET = JDE 2446000.5

M 99.57930	(1950.0)		P	Q
n 0.23691183	Peri. 73.67419		+0.87502611	-0.45865999
a 2.5866930	Node 313.32496		+0.32141451	+0.78959842
e 0.1964512	Incl. 12.28526		+0.36196964	+0.40763384
P 4.16	B(1,0) 13.5			

Residuals in seconds of arc

160823 094(28.6- 28.7+)X		700908 323	0.6-	0.1+	810407 413	1.4-	1.4+	
700730 095	2.2+	1.9-	700909 323	1.9-	0.5+	810407 413	2.0+	0.1-
700804 323	0.2-	0.8-	700909 323	0.3-	0.2-	810408 413	1.0-	1.8+
700804 323	0.2-	2.8+	791224 095	0.7-	1.1+	810408 413	0.3+	1.2+
700805 323	0.1+	0.4+	810228 413	0.9-	0.1-	810409 413	0.4-	1.6+
700805 323	0.6+	1.2+	810228 413	1.7+	0.2-	810409 413	1.0+	1.1+
700809 095	1.5-	0.7-	810306 413	0.1+	1.0+	831103 801	0.8-	0.8+
700811 095 (2.4+ 9.6+)		810306 413	0.7+	1.3-	831107 688	0.3+	0.3-	
700820 323	0.7+	0.5-	810308 413	0.2-	0.4+	831107 688	1.6+	1.8+
700820 323	1.4+	0.8+	810308 413	1.1+	0.5-	831129 552	0.7-	0.1+
700829 095	3.1-	2.6+	810312 413	0.1-	0.1+	831129 552	0.9-	0.0
700908 323	0.2+	0.4+	810312 413	1.4+	0.1-	831206 801	0.0	0.9+

(2994)* 1975 PA = 1979 SM9

Discovered 1975 Aug. 14 at Perth. The identification is by G. R. Kastel' (MPC 7155).

Epoch 1984 Oct. 27.0 ET = JDE 2446000.5

M	162.04565		(1950.0)		P		Q
n	0.26218849	Peri.	320.86786	+0.75213656		+0.65900538	
a	2.4176511	Node	357.90605	-0.59318577		+0.67596383	
e	0.2299710	Incl.	2.48562	-0.28709099		+0.32982541	
P	3.76	B(1,0)	15.5				

Residuals in seconds of arc

750814	323	0.5+	0.5+	750908	323	1.4-	0.1+	791016	095	4.2+	2.1-
750814	323	0.1+	0.0	750908	323	0.6-	0.4-	831108	801	0.3+	0.8-
750824	323	1.1+	2.1-	750912	323	0.3+	0.0	831108	801	0.6-	0.1+
750828	323	1.9-	1.3-	750923	323	0.2-	0.4+	831108	381	(0.4-	2.8-)
750901	323	2.8+	0.9-	751005	323	2.1-	3.8+	831109	801	0.2-	0.4+
750902	323	0.2+	1.0+	790922	095	0.3-	1.8+	831208	801	0.3+	0.2+
750902	323	0.2+	0.1+	790928	095	3.2-	0.5-				

(2995)* 1978 QK = 1951 JS = 1955 FU = 1955 FD2 = 1959 EE

Discovered 1978 Aug. 31 by N. S. Chernykh at the Crimean Astrophysical Observatory. The identification 1978 QK = 1959 EE was independently found by L. D. Schmadel (MPC 7839).

Epoch 1984 Oct. 27.0 ET = JDE 2446000.5

M	34.06941		(1950.0)		P		Q
n	0.23330966	Peri.	329.30300	-0.75507555		-0.65395401	
a	2.6132497	Node	169.45634	+0.64150099		-0.75169020	
e	0.1393018	Incl.	14.86982	+0.13541565		-0.08547514	
P	4.22	B(1,0)	14.0				

Residuals in seconds of arc

510503	711	(79.8-	88.7-)	Y	590304	760	(1.5+	24.1-)		780928	095	1.3+	0.3+
550321	388	1.3+	0.1-		590304	760	0.1+	0.8-		781004	095	0.6-	1.0-
550329	760	1.3-	0.0		780831	095	1.0-	2.2+		831108	801	0.2-	0.1+
550329	760	1.3-	0.8-		780905	095	0.4-	0.7+		831130	801	0.2+	1.0+
550422	760	0.3+	0.9-		780907	095	1.3+	2.4-					
550422	760	1.2+	3.5+		780912	095	0.9-	1.0+					

A923 NB = 1951 YO = 1978 NP3 = 1984 AA

The key identification A923 NB = 1984 AA is by E. Bowell.

Epoch 1984 Oct. 27.0 ET = JDE 2446000.5 (J-P)

M	101.45095		(1950.0)		P		Q
n	0.21534105	Peri.	113.56904	+0.96295730		-0.14545043	
a	2.7566758	Node	255.42037	+0.06369703		+0.94091711	
e	0.3204971	Incl.	13.56908	+0.26202277		+0.30580901	
P	4.58	B(1,0)	12.5				

Residuals in seconds of arc

230712	024	6.7-	3.5-		230805	024	2.3+	0.8+		780712	095	3.2+	0.8+
230715	024	3.1+	1.9-		230806	045	5.2-	0.0		831229	688	1.2-	0.2+
230720	024	8.0-	1.7-		230806	024	2.0+	0.2+		831229	688	0.7-	0.1+
230804	045	3.7+	2.3-		230808	045	0.5+	0.9+		840102	688	1.2-	0.2+
230804	024	1.1+	1.4+		230810	045	1.6+	4.2+		840104	688	1.4-	0.2-
230804	045	2.4-	1.1-		511223	711	3.9+	3.0+	Y	840104	688	0.9-	3.4-

1978 RD6 = 1978 SK5 = 1978 VG12 = 1982 NC = 1983 WG1

The identifications 1978 RD6 = 1982 NC = 1983 WG1 are by E. Bowell.

Epoch 1984 Oct. 27.0 ET = JDE 2446000.5 (J-P)

M	161.46175		(1950.0)		P		Q
n	0.21729701	Peri.	127.23398	+0.82047218		+0.56659152	
a	2.7401084	Node	198.63953	-0.57024765		+0.80166863	
e	0.1600474	Incl.	13.78443	-0.04053400		+0.19052942	
P	4.54	B(1,0)	14.0				

Residuals in seconds of arc

780913	095	0.1+	0.4+	820715	688	0.3-	0.6+	831209	688	1.1-	1.3-
780927	095	0.4-	0.9+	820715	688	0.3+	0.7-	831209	688	3.9+	2.6+
781003	095	0.2+	0.9-	831129	688	2.5-	0.5-				
781102	095	0.1+	0.3-	831129	688	0.3-	0.7-				

1983 QG

Epoch 1984 Oct. 27.0 ET = JDE 2446000.5

M	98.79866		(1950.0)		P		Q
n	0.22938305	Peri.	279.54521	+0.96988853		+0.00888892	
a	2.6429879	Node	80.23553	+0.09814426		+0.90033654	
e	0.3463195	Incl.	14.29797	-0.22289894		+0.43510355	
P	4.30	B(1,0)	14.5				

From 8 observations 1983 Sept. 2-Dec. 6, mean residual 1".0.

1983 XF

Epoch 1984 Oct. 27.0 ET = JDE 2446000.5

M	41.82791		(1950.0)		P		Q
n	0.17945558	Peri.	54.65469	-0.61189265		-0.78788238	
a	3.1128969	Node	73.22114	+0.70004772		-0.58037251	
e	0.5345812	Incl.	4.16213	+0.36813118		-0.20593469	
P	5.49	B(1,0)	16.0				

From 24 observations 1983 Nov. 28-1984 Jan. 4, mean residual 1".5.

1984 AB

Epoch 1984 Jan. 1.0 ET = JDE 2445700.5

M	274.20944		(1950.0)		P		Q
n	0.51930978	Peri.	97.66399	-0.95306706		+0.21554685	
a	1.5329161	Node	94.96328	-0.28289966		-0.88416652	
e	0.0862900	Incl.	12.32224	+0.10784693		-0.41447451	
P	1.90	B(1,0)	16.5				

From 10 observations 1984 Jan. 4-8.

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EPHEMERIDES.

A923 NB		a,e,i = 2.76, 0.32, 14				Elements MPC 8466		
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 01 01		03 51.34	+19 46.6	1.352	2.202	140.7	16.4	15.2
1984 01 11		03 51.99	+18 41.2					
1984 01 21		03 55.65	+17 56.4	1.601	2.269	120.9	21.9	15.8
1984 01 31		04 01.93	+17 29.0					
1984 02 10		04 10.43	+17 15.2	1.895	2.337	103.9	24.2	16.3
1984 02 20		04 20.76	+17 11.0					
1984 03 01		04 32.59	+17 12.8	2.210	2.406	89.0	24.3	16.7
1984 03 11		04 45.64	+17 17.7					
1984 03 21		04 59.66	+17 23.0	2.530	2.476	75.5	22.9	17.0
1984 03 31		05 14.44	+17 26.8					
1984 04 10		05 29.82	+17 27.6	2.838	2.546	63.1	20.5	17.3

1983 XD		a,e,i = 3.10, 0.14, 5				Elements MPC 8465		
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 01 01		03 57.21	+20 30.9	2.095	2.934	142.2	11.9	17.2
1984 01 11		03 54.62	+20 07.8					
1984 01 21		03 54.56	+19 53.8	2.332	2.962	121.0	16.5	17.6
1984 01 31		03 56.92	+19 48.7					
1984 02 10		04 01.51	+19 51.2	2.620	2.990	102.3	18.8	17.9
1984 02 20		04 08.07	+20 00.0					

1984 03 01	04 16.32	+20 13.1	2.927	3.018	85.7	19.1	18.2
1984 03 11	04 26.05	+20 28.8					
1984 03 21	04 37.01	+20 45.4	3.229	3.046	70.6	18.0	18.4

1983 XF		a,e,i = 3.11, 0.53, 4			Elements MPC 8467			
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 01 01	04 01.06	+22 28.7	0.703	1.604	143.4	21.4	16.8	
1984 01 11	04 00.34	+23 17.2						
1984 01 21	04 05.27	+24 15.2	0.740	1.528	124.3	32.1	17.0	
1984 01 31	04 15.90	+25 19.7						
1984 02 10	04 31.94	+26 26.0	0.807	1.476	110.3	38.8	17.3	
1984 02 20	04 52.83	+27 27.4						
1984 03 01	05 17.84	+28 16.2	0.894	1.451	100.5	42.2	17.5	
1984 03 11	05 46.20	+28 45.6						
1984 03 21	06 16.98	+28 49.8	1.000	1.455	93.6	43.1	17.8	
1984 03 31	06 49.22	+28 25.1						
1984 04 10	07 22.01	+27 30.6	1.131	1.489	88.3	42.3	18.1	
1984 04 20	07 54.53	+26 07.9						
1984 04 30	08 26.16	+24 20.5	1.293	1.549	83.7	40.3	18.4	
1984 05 10	08 56.53	+22 13.0						
1984 05 20	09 25.40	+19 50.6	1.490	1.631	78.8	37.5	18.8	
1984 05 30	09 52.75	+17 18.2						
1984 06 09	10 18.65	+14 39.7	1.719	1.728	73.4	34.3	19.2	
1984 06 19	10 43.19	+11 58.8						
1984 06 29	11 06.54	+09 18.1	1.975	1.837	67.2	30.7	19.5	
1984 07 09	11 28.88	+06 39.4						
1984 07 19	11 50.32	+04 04.6	2.249	1.954	60.2	26.8	19.8	
1984 07 29	12 11.04	+01 34.5						
1984 08 08	12 31.14	-00 50.0	2.532	2.075	52.4	22.8	20.1	

1978 RD6		a,e,i = 2.74, 0.16, 14			Elements MPC 8466			
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 01 01	04 38.43	+04 33.4	1.991	2.855	145.2	11.3	18.0	
1984 01 11	04 33.42	+04 47.1						
1984 01 21	04 30.81	+05 13.9	2.201	2.885	125.4	16.1	18.4	
1984 01 31	04 30.66	+05 50.6						
1984 02 10	04 32.88	+06 34.0	2.469	2.914	106.9	18.9	18.7	
1984 02 20	04 37.26	+07 21.1						
1984 03 01	04 43.55	+08 09.5	2.764	2.942	90.3	19.7	19.0	
1984 03 11	04 51.50	+08 57.2						
1984 03 21	05 00.87	+09 42.3	3.060	2.969	75.3	18.9	19.2	

1984 AB		a,e,i = 1.53, 0.09, 12			Elements MPC 8467			
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 01 01	06 11.73	+24 35.9	0.554	1.535	173.3	4.3	16.2	
1984 01 11	05 54.57	+27 35.0						
1984 01 21	05 41.28	+30 08.0	0.592	1.511	145.7	21.5	16.8	
1984 01 31	05 34.15	+32 11.0						
1984 02 10	05 34.01	+33 47.5	0.691	1.487	123.9	33.4	17.3	
1984 02 20	05 40.52	+35 02.2						
1984 03 01	05 52.75	+35 57.6	0.816	1.465	107.9	40.1	17.8	
1984 03 11	06 09.80	+36 33.7						
1984 03 21	06 30.71	+36 49.4	0.946	1.444	96.0	43.3	18.2	
1984 03 31	06 54.58	+36 42.7						
1984 04 10	07 20.69	+36 11.7	1.072	1.427	86.9	44.5	18.4	
1984 04 20	07 48.30	+35 15.2						
1984 04 30	08 16.78	+33 52.6	1.189	1.414	79.7	44.5	18.7	
1984 05 10	08 45.66	+32 04.2						
1984 05 20	09 14.50	+29 51.3	1.298	1.405	73.7	43.8	18.8	

1981 PA		a,e,i = 2.37, 0.36, 22				Elements MPC 8392		
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 10		19 11.76	-42 56.0	2.920	3.177	95.6	18.3	19.8
1984 04 20		19 17.27	-43 30.8					
1984 04 30		19 20.19	-44 10.4	2.635	3.157	112.2	17.2	19.5
1984 05 10		19 20.11	-44 53.6					
1984 05 20		19 16.76	-45 37.5	2.386	3.132	129.9	14.4	19.2
1984 05 30		19 09.96	-46 17.7					
1984 06 09		18 59.86	-46 47.8	2.202	3.104	147.1	10.2	18.9
1984 06 19		18 47.08	-47 00.9					
1984 06 29		18 32.71	-46 51.5	2.112	3.071	156.4	7.6	18.7
1984 07 09		18 18.26	-46 17.0					
1984 07 19		18 05.22	-45 19.5	2.129	3.034	147.2	10.4	18.8
1984 07 29		17 54.75	-44 04.5					
1984 08 08		17 47.56	-42 39.0	2.244	2.993	129.6	15.1	19.0
1984 08 18		17 43.83	-41 09.8					
1984 08 28		17 43.42	-39 41.7	2.426	2.948	111.3	18.6	19.2
1984 09 07		17 46.04	-38 17.7					
1984 09 17		17 51.29	-36 58.9	2.645	2.899	94.3	20.2	19.4

1969 DA		a,e,i = 2.80, 0.13, 8				Elements MPC 8148		
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 10		18 53.35	-24 46.7	2.147	2.489	97.7	23.5	17.2
1984 04 20		19 01.41	-24 14.9					
1984 04 30		19 06.94	-23 42.7	1.921	2.507	114.1	21.5	16.9
1984 05 10		19 09.66	-23 11.2					
1984 05 20		19 09.44	-22 41.1	1.728	2.527	132.7	17.1	16.6
1984 05 30		19 06.25	-22 12.7					
1984 06 09		19 00.32	-21 45.6	1.597	2.548	153.9	10.1	16.3
1984 06 19		18 52.27	-21 19.3					
1984 06 29		18 42.98	-20 53.6	1.556	2.571	176.2	1.5	15.8
1984 07 09		18 33.58	-20 28.6					
1984 07 19		18 25.23	-20 05.1	1.618	2.595	159.7	7.8	16.3
1984 07 29		18 18.79	-19 44.1					
1984 08 08		18 14.88	-19 26.4	1.776	2.620	138.2	14.9	16.7
1984 08 18		18 13.70	-19 12.1					
1984 08 28		18 15.23	-19 00.6	2.003	2.646	119.1	19.5	17.1
1984 09 07		18 19.30	-18 50.9					
1984 09 17		18 25.61	-18 41.6	2.273	2.673	102.2	21.6	17.4

(2855) 1931 TB2		a,e,i = 2.46, 0.17, 8				Elements MPC 7774		
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 10		19 04.24	-31 26.2	2.579	2.862	96.0	20.4	18.8
1984 04 20		19 10.85	-31 41.0					
1984 04 30		19 15.13	-31 59.9	2.309	2.857	112.9	19.0	18.5
1984 05 10		19 16.76	-32 23.0					
1984 05 20		19 15.51	-32 49.5	2.073	2.849	131.8	15.4	18.2
1984 05 30		19 11.28	-33 17.3					
1984 06 09		19 04.16	-33 42.8	1.901	2.839	152.2	9.6	17.9
1984 06 19		18 54.67	-34 01.7					
1984 06 29		18 43.62	-34 09.8	1.823	2.827	168.7	4.0	17.6
1984 07 09		18 32.19	-34 04.4					
1984 07 19		18 21.65	-33 45.7	1.852	2.813	156.3	8.4	17.8
1984 07 29		18 13.05	-33 16.1					
1984 08 08		18 07.13	-32 39.4	1.980	2.796	135.6	14.7	18.1
1984 08 18		18 04.22	-31 59.5					
1984 08 28		18 04.33	-31 18.9	2.178	2.777	116.3	19.0	18.3
1984 09 07		18 07.31	-30 39.4					
1984 09 17		18 12.84	-30 01.2	2.415	2.756	98.9	21.1	18.6

1975 WK1		a,e,i = 2.23, 0.09, 2				Elements MPC		6300
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 10		19 01.77	-21 51.7	2.129	2.438	95.5	24.1	19.1
1984 04 20		19 10.00	-21 28.1					
1984 04 30		19 15.84	-21 06.2	1.881	2.440	111.7	22.6	18.8
1984 05 10		19 18.96	-20 47.6					
1984 05 20		19 19.13	-20 33.5	1.662	2.440	130.2	18.5	18.5
1984 05 30		19 16.17	-20 24.6					
1984 06 09		19 10.15	-20 20.8	1.498	2.438	151.4	11.5	18.1
1984 06 19		19 01.52	-20 21.2					
1984 06 29		18 51.10	-20 24.0	1.421	2.435	174.4	2.3	17.6
1984 07 09		18 40.09	-20 27.6					
1984 07 19		18 29.85	-20 31.2	1.447	2.429	160.8	7.9	17.9
1984 07 29		18 21.53	-20 34.5					
1984 08 08		18 15.96	-20 37.8	1.568	2.422	138.5	16.1	18.3
1984 08 18		18 13.54	-20 41.4					
1984 08 28		18 14.29	-20 45.1	1.757	2.413	118.9	21.5	18.6
1984 09 07		18 18.04	-20 48.3					
1984 09 17		18 24.49	-20 49.9	1.985	2.403	101.9	24.2	18.9

1981 UL		a,e,i = 2.61, 0.13, 12				Elements MPC		6711
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 10		19 10.19	-20 28.1	2.665	2.902	93.4	20.2	18.4
1984 04 20		19 16.03	-19 44.9					
1984 04 30		19 19.70	-19 01.9	2.403	2.913	110.5	18.9	18.2
1984 05 10		19 21.00	-18 20.2					
1984 05 20		19 19.81	-17 40.7	2.173	2.923	129.5	15.5	17.9
1984 05 30		19 16.10	-17 04.1					
1984 06 09		19 10.03	-16 31.3	2.004	2.930	150.5	9.8	17.6
1984 06 19		19 02.05	-16 02.6					
1984 06 29		18 52.80	-15 38.2	1.928	2.936	170.7	3.2	17.2
1984 07 09		18 43.18	-15 18.7					
1984 07 19		18 34.14	-15 04.0	1.962	2.940	160.6	6.6	17.4
1984 07 29		18 26.50	-14 54.3					
1984 08 08		18 20.90	-14 49.3	2.099	2.943	139.2	13.0	17.8
1984 08 18		18 17.68	-14 48.2					
1984 08 28		18 16.95	-14 50.1	2.313	2.943	119.4	17.4	18.1
1984 09 07		18 18.64	-14 53.6					
1984 09 17		18 22.58	-14 57.4	2.571	2.942	101.6	19.6	18.3

1983 BA		a,e,i = 2.24, 0.04, 7				Elements MPC		7769
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 10		18 58.47	-30 26.1	1.796	2.162	97.1	27.4	17.8
1984 04 20		19 09.94	-30 29.7					
1984 04 30		19 18.73	-30 35.4	1.579	2.169	112.1	25.5	17.5
1984 05 10		19 24.39	-30 44.4					
1984 05 20		19 26.56	-30 57.2	1.389	2.177	129.4	21.0	17.1
1984 05 30		19 24.92	-31 12.5					
1984 06 09		19 19.44	-31 27.3	1.249	2.185	149.5	13.6	16.7
1984 06 19		19 10.59	-31 36.4					
1984 06 29		18 59.38	-31 34.7	1.186	2.194	169.5	4.9	16.3
1984 07 09		18 47.38	-31 18.5					
1984 07 19		18 36.37	-30 47.9	1.219	2.203	160.4	8.9	16.5
1984 07 29		18 27.79	-30 06.5					
1984 08 08		18 22.59	-29 19.0	1.342	2.213	139.4	17.3	17.0
1984 08 18		18 21.09	-28 30.0					
1984 08 28		18 23.14	-27 41.9	1.531	2.223	120.6	23.0	17.4
1984 09 07		18 28.44	-26 55.6					
1984 09 17		18 36.51	-26 10.5	1.760	2.233	104.4	25.8	17.8

1979 QP8		a,e,i = 3.13, 0.20, 2				Elements MPC		6883
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 10		18 57.85	-21 41.9	2.495	2.790	96.4	20.9	18.2
1984 04 20		19 05.73	-21 21.8					
1984 04 30		19 11.63	-21 02.9	2.206	2.755	112.7	19.7	17.9
1984 05 10		19 15.28	-20 46.4					
1984 05 20		19 16.49	-20 33.6	1.951	2.722	130.8	16.3	17.5
1984 05 30		19 15.13	-20 25.2					
1984 06 09		19 11.24	-20 21.4	1.756	2.690	151.1	10.5	17.1
1984 06 19		19 05.16	-20 21.6					
1984 06 29		18 57.47	-20 24.7	1.649	2.661	173.1	2.6	16.6
1984 07 09		18 49.05	-20 29.5					
1984 07 19		18 40.98	-20 34.8	1.643	2.633	163.4	6.3	16.8
1984 07 29		18 34.22	-20 40.0					
1984 08 08		18 29.60	-20 44.9	1.736	2.608	141.7	13.9	17.1
1984 08 18		18 27.58	-20 49.3					
1984 08 28		18 28.33	-20 52.9	1.902	2.586	122.2	19.3	17.4
1984 09 07		18 31.84	-20 55.2					
1984 09 17		18 37.90	-20 55.1	2.115	2.567	105.0	22.2	17.7

(2859) 1978 RW1		a,e,i = 2.24, 0.12, 4				Elements MPC		7775
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 10		19 08.28	-18 27.0	2.034	2.324	93.6	25.5	18.0
1984 04 20		19 17.19	-17 57.1					
1984 04 30		19 23.67	-17 29.5	1.813	2.348	109.3	23.9	17.7
1984 05 10		19 27.41	-17 06.5					
1984 05 20		19 28.18	-16 50.3	1.616	2.371	127.4	19.8	17.4
1984 05 30		19 25.82	-16 42.2					
1984 06 09		19 20.38	-16 43.4	1.469	2.392	148.2	12.9	17.0
1984 06 19		19 12.28	-16 53.3					
1984 06 29		19 02.30	-17 10.7	1.403	2.412	170.3	4.1	16.7
1984 07 09		18 51.59	-17 33.3					
1984 07 19		18 41.46	-17 58.7	1.439	2.430	163.1	7.0	16.9
1984 07 29		18 33.08	-18 25.0					
1984 08 08		18 27.29	-18 50.9	1.572	2.446	141.1	15.1	17.3
1984 08 18		18 24.52	-19 15.4					
1984 08 28		18 24.81	-19 37.8	1.778	2.460	121.4	20.5	17.7
1984 09 07		18 28.03	-19 57.2					
1984 09 17		18 33.88	-20 12.7	2.027	2.472	104.1	23.2	18.0

1978 SZ7		a,e,i = 2.26, 0.10, 5				Elements MPC		7835
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 10		19 10.73	-27 47.2	2.080	2.374	94.2	24.9	18.5
1984 04 20		19 20.21	-27 47.6					
1984 04 30		19 27.21	-27 51.8	1.851	2.391	110.0	23.3	18.3
1984 05 10		19 31.34	-28 01.2					
1984 05 20		19 32.32	-28 16.1	1.647	2.407	128.1	19.3	17.9
1984 05 30		19 29.91	-28 35.8					
1984 06 09		19 24.13	-28 58.0	1.496	2.422	148.7	12.6	17.6
1984 06 19		19 15.37	-29 18.5					
1984 06 29		19 04.47	-29 32.7	1.427	2.435	170.1	4.1	17.2
1984 07 09		18 52.72	-29 36.8					
1984 07 19		18 41.61	-29 29.5	1.460	2.446	161.9	7.4	17.4
1984 07 29		18 32.45	-29 12.1					
1984 08 08		18 26.16	-28 47.7	1.589	2.456	140.3	15.3	17.8
1984 08 18		18 23.16	-28 19.5					
1984 08 28		18 23.45	-27 50.0	1.790	2.464	120.7	20.6	18.2
1984 09 07		18 26.84	-27 20.1					
1984 09 17		18 32.95	-26 50.0	2.034	2.470	103.5	23.3	18.5

(2857) 1942 DA		a,e,i = 2.40, 0.09, 6				Elements MPC		7774
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 10		19 12.66	-16 36.1	2.329	2.573	92.4	22.9	18.4
1984 04 20		19 20.51	-16 07.7					
1984 04 30		19 26.20	-15 42.0	2.083	2.585	108.4	21.7	18.2
1984 05 10		19 29.45	-15 21.2					
1984 05 20		19 30.07	-15 07.1	1.862	2.595	126.6	18.3	17.8
1984 05 30		19 27.92	-15 01.5					
1984 06 09		19 23.04	-15 05.3	1.693	2.604	147.1	12.2	17.5
1984 06 19		19 15.76	-15 18.9					
1984 06 29		19 06.71	-15 41.0	1.608	2.612	168.6	4.4	17.2
1984 07 09		18 56.84	-16 10.0					
1984 07 19		18 47.27	-16 43.1	1.626	2.618	164.1	6.1	17.3
1984 07 29		18 39.05	-17 18.2					
1984 08 08		18 33.00	-17 53.1	1.745	2.622	142.4	13.6	17.6
1984 08 18		18 29.63	-18 26.5					
1984 08 28		18 29.08	-18 57.4	1.941	2.625	122.4	19.0	18.0
1984 09 07		18 31.32	-19 24.7					
1984 09 17		18 36.13	-19 47.7	2.185	2.626	104.7	21.7	18.3

1982 BD3		a,e,i = 3.14, 0.07, 6				Elements MPC		6951
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 10		19 15.80	-16 59.6	3.175	3.357	91.7	17.4	18.5
1984 04 20		19 21.18	-16 40.7					
1984 04 30		19 24.80	-16 24.8	2.892	3.356	108.9	16.5	18.3
1984 05 10		19 26.47	-16 13.1					
1984 05 20		19 26.11	-16 06.6	2.638	3.354	127.7	13.8	18.1
1984 05 30		19 23.68	-16 06.3					
1984 06 09		19 19.27	-16 12.4	2.445	3.352	148.3	9.2	17.8
1984 06 19		19 13.19	-16 24.8					
1984 06 29		19 05.89	-16 42.5	2.344	3.348	169.4	3.2	17.5
1984 07 09		18 58.00	-17 04.4					
1984 07 19		18 50.27	-17 28.9	2.352	3.344	165.0	4.5	17.5
1984 07 29		18 43.39	-17 54.5					
1984 08 08		18 37.99	-18 20.1	2.469	3.340	143.6	10.4	17.8
1984 08 18		18 34.48	-18 44.8					
1984 08 28		18 33.06	-19 07.8	2.671	3.334	123.3	14.7	18.1
1984 09 07		18 33.80	-19 28.6					
1984 09 17		18 36.63	-19 46.6	2.927	3.328	104.8	17.0	18.3

(2901) 1973 DP		a,e,i = 2.86, 0.05, 3				Elements MPC		8058
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 10		19 10.40	-23 25.8	2.502	2.755	93.7	21.3	17.7
1984 04 20		19 18.60	-23 22.8					
1984 04 30		19 24.77	-23 23.5	2.236	2.748	110.0	20.2	17.4
1984 05 10		19 28.62	-23 29.4					
1984 05 20		19 29.96	-23 41.3	1.998	2.742	128.2	16.9	17.1
1984 05 30		19 28.63	-23 59.5					
1984 06 09		19 24.65	-24 23.0	1.818	2.736	148.6	11.2	16.7
1984 06 19		19 18.30	-24 49.9					
1984 06 29		19 10.14	-25 17.1	1.723	2.731	170.7	3.4	16.4
1984 07 09		19 01.08	-25 41.6					
1984 07 19		18 52.18	-26 00.8	1.731	2.727	165.4	5.4	16.5
1984 07 29		18 44.48	-26 13.7					
1984 08 08		18 38.83	-26 20.5	1.841	2.723	143.4	12.8	16.8
1984 08 18		18 35.77	-26 22.1					
1984 08 28		18 35.47	-26 19.6	2.029	2.720	123.5	18.0	17.1
1984 09 07		18 37.93	-26 13.8					
1984 09 17		18 42.93	-26 04.7	2.267	2.718	105.8	20.8	17.4

1955 RY	a, e, i = 2.19, 0.24, 5				Elements MPC		7605	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 10		18 36.49	-26 59.9	1.498	1.963	101.7	30.0	18.5
1984 04 20		18 51.04	-26 39.7					
1984 04 30		19 03.48	-26 14.5	1.250	1.909	115.1	28.5	18.0
1984 05 10		19 13.33	-25 45.9					
1984 05 20		19 20.12	-25 15.2	1.034	1.858	130.5	24.4	17.5
1984 05 30		19 23.35	-24 43.4					
1984 06 09		19 22.65	-24 10.7	0.864	1.811	149.0	16.8	16.9
1984 06 19		19 18.09	-23 36.2					
1984 06 29		19 10.24	-22 58.4	0.758	1.769	170.8	5.3	16.2
1984 07 09		19 00.49	-22 16.4					
1984 07 19		18 50.86	-21 30.9	0.730	1.733	165.7	8.3	16.2
1984 07 29		18 43.28	-20 44.6					
1984 08 08		18 39.34	-20 00.9	0.777	1.705	144.0	20.5	16.6
1984 08 18		18 39.74	-19 21.5					
1984 08 28		18 44.51	-18 46.2	0.880	1.685	126.1	29.0	17.0
1984 09 07		18 53.34	-18 13.1					
1984 09 17		19 05.63	-17 39.0	1.019	1.676	111.8	33.8	17.4

1949 PL	a, e, i = 2.49, 0.04, 2				Elements MPC		8212	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 10		19 07.90	-20 12.7	2.100	2.388	93.9	24.7	17.6
1984 04 20		19 17.61	-19 48.8					
1984 04 30		19 25.08	-19 27.0	1.862	2.393	109.3	23.4	17.3
1984 05 10		19 30.00	-19 09.5					
1984 05 20		19 32.12	-18 58.1	1.649	2.398	126.9	19.7	16.9
1984 05 30		19 31.26	-18 54.2					
1984 06 09		19 27.38	-18 58.5	1.487	2.403	147.1	13.3	16.6
1984 06 19		19 20.79	-19 10.2					
1984 06 29		19 12.14	-19 27.8	1.403	2.410	169.6	4.4	16.2
1984 07 09		19 02.45	-19 48.8					
1984 07 19		18 53.01	-20 10.5	1.418	2.417	166.2	5.8	16.3
1984 07 29		18 44.99	-20 31.2					
1984 08 08		18 39.34	-20 49.8	1.530	2.424	144.0	14.2	16.7
1984 08 18		18 36.59	-21 05.8					
1984 08 28		18 36.88	-21 18.9	1.717	2.433	124.2	20.1	17.1
1984 09 07		18 40.14	-21 28.6					
1984 09 17		18 46.09	-21 34.2	1.951	2.441	106.9	23.2	17.4

1981 RG1	a, e, i = 2.27, 0.19, 6				Elements MPC		6951	
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation	Mag.	
1984 04 10		19 00.07	-29 57.9	1.944	2.289	-1.49	-2.0	18.8
1984 04 20		19 11.91	-30 17.0					
1984 04 30		19 21.67	-30 40.2	1.671	2.245	-1.78	-3.5	18.4
1984 05 10		19 28.90	-31 09.6					
1984 05 20		19 33.18	-31 46.2	1.428	2.201	-2.18	-4.9	18.0
1984 05 30		19 34.04	-32 29.8					
1984 06 09		19 31.14	-33 18.1	1.234	2.157	-2.64	-5.3	17.5
1984 06 19		19 24.50	-34 05.7					
1984 06 29		19 14.62	-34 45.2	1.114	2.113	-3.00	-3.8	17.0
1984 07 09		19 02.76	-35 08.5					
1984 07 19		18 50.76	-35 10.4	1.084	2.070	-2.99	-1.2	17.0
1984 07 29		18 40.52	-34 50.6					
1984 08 08		18 33.61	-34 13.4	1.141	2.029	-2.64	+0.3	17.2
1984 08 18		18 30.85	-33 24.9					
1984 08 28		18 32.37	-32 30.0	1.260	1.990	-2.23	-0.0	17.6
1984 09 07		18 37.97	-31 31.7					
1984 09 17		18 47.11	-30 31.0	1.418	1.954	-1.90	-1.4	17.9

(2925) Beatty		a,e,i = 2.39, 0.19, 2				Elements MPC		8146
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 10		19 26.47	-20 04.6	2.455	2.645	89.6	22.3	19.6
1984 04 20		19 34.16	-19 37.9					
1984 04 30		19 39.67	-19 14.2	2.217	2.675	105.9	21.2	19.4
1984 05 10		19 42.74	-18 55.3					
1984 05 20		19 43.20	-18 42.4	2.000	2.703	124.3	18.0	19.1
1984 05 30		19 40.90	-18 36.3					
1984 06 09		19 35.87	-18 37.3	1.833	2.728	145.1	12.3	18.8
1984 06 19		19 28.43	-18 44.6					
1984 06 29		19 19.15	-18 56.6	1.749	2.751	167.8	4.5	18.5
1984 07 09		19 08.94	-19 11.3					
1984 07 19		18 58.88	-19 26.7	1.771	2.772	167.4	4.6	18.5
1984 07 29		18 49.97	-19 41.4					
1984 08 08		18 43.07	-19 54.7	1.899	2.789	144.9	12.1	18.9
1984 08 18		18 38.68	-20 06.3					
1984 08 28		18 36.99	-20 16.0	2.109	2.805	124.2	17.3	19.3
1984 09 07		18 37.97	-20 23.6					
1984 09 17		18 41.45	-20 28.7	2.371	2.817	105.9	20.1	19.6

1983 AJ		a,e,i = 1.94, 0.11, 17				Elements MPC		7766
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.
1984 04 10		19 19.45	-34 40.7	1.793	2.101	-1.47	-9.6	18.5
1984 04 20		19 32.28	-34 14.0					
1984 04 30		19 42.45	-33 45.6	1.548	2.084	-1.69	-12.3	18.2
1984 05 10		19 49.47	-33 16.3					
1984 05 20		19 52.87	-32 46.2	1.322	2.065	-2.03	-14.8	17.7
1984 05 30		19 52.13	-32 13.9					
1984 06 09		19 46.91	-31 36.3	1.135	2.044	-2.48	-16.4	17.2
1984 06 19		19 37.31	-30 48.2					
1984 06 29		19 24.09	-29 44.0	1.018	2.020	-2.84	-15.8	16.7
1984 07 09		19 08.86	-28 20.7					
1984 07 19		18 53.81	-26 40.3	0.996	1.996	-2.78	-13.6	16.6
1984 07 29		18 41.01	-24 50.3					
1984 08 08		18 32.00	-23 00.2	1.068	1.970	-2.37	-12.0	17.0
1984 08 18		18 27.38	-21 17.6					
1984 08 28		18 27.11	-19 45.8	1.210	1.944	-1.91	-11.3	17.5
1984 09 07		18 30.83	-18 25.1					
1984 09 17		18 37.98	-17 13.1	1.389	1.916	-1.55	-11.0	17.8

1983 CS2		a,e,i = 2.87, 0.23, 3				Elements MPC		8062
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 30		19 41.91	-25 17.6	2.475	2.924	106.4	19.3	18.2
1984 05 10		19 44.67	-25 21.2					
1984 05 20		19 44.91	-25 30.3	2.270	2.969	125.0	16.2	18.0
1984 05 30		19 42.55	-25 44.7					
1984 06 09		19 37.67	-26 02.8	2.119	3.013	145.7	10.9	17.8
1984 06 19		19 30.60	-26 22.2					
1984 06 29		19 21.90	-26 40.0	2.054	3.055	167.8	4.0	17.5
1984 07 09		19 12.41	-26 53.5					
1984 07 19		19 03.08	-27 00.8	2.097	3.097	167.3	4.1	17.6
1984 07 29		18 54.80	-27 01.6					
1984 08 08		18 48.32	-26 56.6	2.248	3.136	145.4	10.6	18.0
1984 08 18		18 44.09	-26 47.1					
1984 08 28		18 42.28	-26 34.3	2.485	3.174	125.0	15.1	18.3
1984 09 07		18 42.88	-26 19.4					
1984 09 17		18 45.74	-26 02.7	2.778	3.211	106.5	17.5	18.7
1984 09 27		18 50.63	-25 44.4					
1984 10 07		18 57.30	-25 24.2	3.096	3.245	89.5	17.9	18.9

1983	EV	a,e,i = 2.73, 0.11, 4					Elements MPC		8213
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1984 04 30		19 40.74	-25 46.1	2.367	2.826	106.7	20.0	18.6	
1984 05 10		19 44.34	-25 53.4						
1984 05 20		19 45.40	-26 06.8	2.143	2.846	125.0	16.9	18.3	
1984 05 30		19 43.76	-26 26.0						
1984 06 09		19 39.44	-26 49.5	1.972	2.866	145.4	11.6	18.0	
1984 06 19		19 32.72	-27 14.8						
1984 06 29		19 24.11	-27 38.4	1.885	2.885	167.1	4.5	17.7	
1984 07 09		19 14.47	-27 56.9						
1984 07 19		19 04.84	-28 08.0	1.903	2.902	167.1	4.5	17.8	
1984 07 29		18 56.24	-28 11.0						
1984 08 08		18 49.52	-28 06.4	2.027	2.919	145.5	11.4	18.1	
1984 08 18		18 45.22	-27 55.9						
1984 08 28		18 43.55	-27 41.3	2.235	2.935	125.1	16.3	18.5	
1984 09 07		18 44.53	-27 23.7						
1984 09 17		18 47.97	-27 03.9	2.497	2.949	106.8	19.0	18.8	
1984 09 27		18 53.62	-26 42.0						
1984 10 07		19 01.22	-26 17.6	2.784	2.963	90.3	19.7	19.0	

1980	TH3	a,e,i = 2.84, 0.08, 1					Elements MPC		7357
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.	
1984 04 30		19 33.13	-23 17.1	2.191	2.680	-1.17	-2.7	18.3	
1984 05 10		19 37.89	-23 10.3						
1984 05 20		19 40.15	-23 08.9	1.947	2.668	-1.33	-3.3	18.0	
1984 05 30		19 39.73	-23 13.3						
1984 06 09		19 36.56	-23 23.1	1.755	2.656	-1.52	-3.6	17.6	
1984 06 19		19 30.87	-23 37.0						
1984 06 29		19 23.13	-23 52.6	1.643	2.646	-1.65	-3.2	17.2	
1984 07 09		19 14.18	-24 06.9						
1984 07 19		19 05.11	-24 17.7	1.633	2.637	-1.66	-2.5	17.2	
1984 07 29		18 57.01	-24 23.6						
1984 08 08		18 50.84	-24 24.6	1.723	2.628	-1.53	-1.8	17.6	
1984 08 18		18 47.21	-24 21.3						
1984 08 28		18 46.39	-24 14.6	1.895	2.621	-1.35	-1.5	17.9	
1984 09 07		18 48.42	-24 04.8						
1984 09 17		18 53.09	-23 52.1	2.120	2.616	-1.19	-1.5	18.2	
1984 09 27		19 00.15	-23 36.0						
1984 10 07		19 09.31	-23 15.9	2.370	2.612	-1.05	-1.8	18.5	

(2854) 1964	JE	a,e,i = 2.20, 0.12, 6					Elements MPC		7772
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1984 04 30		19 35.13	-25 33.8	1.465	2.017	107.9	28.4	17.2	
1984 05 10		19 42.71	-25 05.0						
1984 05 20		19 46.85	-24 39.9	1.289	2.040	124.5	24.1	16.9	
1984 05 30		19 47.23	-24 19.4						
1984 06 09		19 43.70	-24 03.3	1.155	2.065	144.2	16.7	16.5	
1984 06 19		19 36.58	-23 49.9						
1984 06 29		19 26.62	-23 36.5	1.088	2.092	167.1	6.2	16.1	
1984 07 09		19 15.19	-23 20.4						
1984 07 19		19 04.01	-23 00.4	1.113	2.119	168.7	5.4	16.2	
1984 07 29		18 54.62	-22 37.2						
1984 08 08		18 48.18	-22 12.4	1.231	2.147	146.0	15.3	16.7	
1984 08 18		18 45.24	-21 47.6						
1984 08 28		18 45.81	-21 23.7	1.420	2.176	126.2	22.0	17.2	
1984 09 07		18 49.66	-21 00.2						
1984 09 17		18 56.38	-20 36.1	1.657	2.204	109.4	25.5	17.6	
1984 09 27		19 05.52	-20 10.1						
1984 10 07		19 16.68	-19 40.6	1.918	2.232	94.6	26.5	18.0	

(2883) 1978 RG6		a,e,i = 2.25, 0.08, 1			Elements MPC		7936	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 30		19 38.06	-22 41.4	1.642	2.161	106.8	26.5	17.9
1984 05 10		19 45.03	-22 34.7					
1984 05 20		19 48.94	-22 35.5	1.448	2.179	123.7	22.7	17.5
1984 05 30		19 49.49	-22 45.2					
1984 06 09		19 46.51	-23 03.7	1.297	2.197	143.5	16.0	17.1
1984 06 19		19 40.19	-23 29.2					
1984 06 29		19 31.11	-23 57.8	1.216	2.216	166.1	6.3	16.8
1984 07 09		19 20.38	-24 25.0					
1984 07 19		19 09.53	-24 46.5	1.228	2.235	169.5	4.8	16.8
1984 07 29		19 00.02	-25 00.3					
1984 08 08		18 53.08	-25 06.3	1.336	2.254	146.8	14.3	17.2
1984 08 18		18 49.39	-25 05.7					
1984 08 28		18 49.13	-25 00.0	1.519	2.272	126.7	20.9	17.7
1984 09 07		18 52.17	-24 50.0					
1984 09 17		18 58.15	-24 35.8	1.751	2.291	109.4	24.4	18.1
1984 09 27		19 06.68	-24 17.0					
1984 10 07		19 17.37	-23 53.0	2.008	2.308	94.2	25.6	18.4

1982 BB1		a,e,i = 2.97, 0.09, 24			Elements MPC		7840	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 30		19 43.48	+03 44.1	2.775	3.108	99.8	18.6	17.6
1984 05 10		19 46.65	+04 44.0					
1984 05 20		19 47.87	+05 37.5	2.523	3.094	115.3	17.2	17.4
1984 05 30		19 47.04	+06 21.0					
1984 06 09		19 44.14	+06 50.6	2.312	3.079	131.5	14.3	17.1
1984 06 19		19 39.34	+07 02.3					
1984 06 29		19 32.97	+06 53.1	2.167	3.064	146.2	10.6	16.9
1984 07 09		19 25.56	+06 20.8					
1984 07 19		19 17.82	+05 25.7	2.112	3.048	152.3	8.9	16.7
1984 07 29		19 10.48	+04 10.4					
1984 08 08		19 04.30	+02 39.4	2.156	3.032	143.5	11.5	16.8
1984 08 18		18 59.83	+00 58.5					
1984 08 28		18 57.42	-00 46.6	2.291	3.016	127.6	15.4	17.1
1984 09 07		18 57.27	-02 30.7					
1984 09 17		18 59.38	-04 09.8	2.493	2.999	110.6	18.3	17.3
1984 09 27		19 03.62	-05 40.9					
1984 10 07		19 09.86	-07 02.1	2.734	2.982	94.4	19.5	17.5

(2862) 1977 JP		a,e,i = 2.20, 0.11, 3			Elements MPC		7777	
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 30		19 52.94	-17 45.1	1.906	2.341	102.5	24.8	17.8
1984 05 10		19 58.75	-17 07.6					
1984 05 20		20 01.83	-16 36.1	1.692	2.361	119.5	21.9	17.5
1984 05 30		20 01.92	-16 12.4					
1984 06 09		19 58.88	-15 58.1	1.517	2.379	139.1	16.2	17.2
1984 06 19		19 52.84	-15 53.7					
1984 06 29		19 44.23	-15 58.7	1.410	2.395	161.2	7.9	16.8
1984 07 09		19 33.91	-16 11.4					
1984 07 19		19 23.08	-16 29.4	1.400	2.410	171.8	3.4	16.6
1984 07 29		19 13.04	-16 50.0					
1984 08 08		19 04.95	-17 11.1	1.491	2.422	150.0	12.1	17.1
1984 08 18		18 59.57	-17 31.0					
1984 08 28		18 57.25	-17 48.7	1.666	2.433	129.1	18.8	17.5
1984 09 07		18 58.04	-18 03.1					
1984 09 17		19 01.71	-18 13.3	1.896	2.441	110.8	22.6	17.8
1984 09 27		19 07.96	-18 18.5					
1984 10 07		19 16.46	-18 17.7	2.153	2.447	94.7	24.0	18.2

(2826) Ahti a,e,i = 3.23, 0.03, 16 Elements MPC 7603

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 30		19 54.23	-37 00.1	2.787	3.204	105.4	17.6	17.2
1984 05 10		19 58.78	-37 51.8					
1984 05 20		20 00.93	-38 50.3	2.551	3.210	122.5	15.4	16.9
1984 05 30		20 00.47	-39 54.0					
1984 06 09		19 57.29	-40 59.5	2.370	3.216	140.2	11.7	16.7
1984 06 19		19 51.49	-42 02.1					
1984 06 29		19 43.47	-42 56.0	2.271	3.222	155.2	7.6	16.5
1984 07 09		19 33.93	-43 35.8					
1984 07 19		19 23.89	-43 57.4	2.272	3.229	156.3	7.3	16.5
1984 07 29		19 14.45	-43 59.5					
1984 08 08		19 06.61	-43 43.6	2.374	3.235	142.1	11.1	16.7
1984 08 18		19 01.10	-43 12.9					
1984 08 28		18 58.28	-42 31.5	2.560	3.241	124.5	14.9	16.9
1984 09 07		18 58.24	-41 43.0					
1984 09 17		19 00.86	-40 50.3	2.802	3.247	107.3	17.2	17.2
1984 09 27		19 05.86	-39 55.1					
1984 10 07		19 12.98	-38 58.2	3.074	3.253	91.2	17.9	17.4

1979 YB a,e,i = 2.14, 0.28, 26 Elements MPC 7600

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 30		20 15.95	-12 25.7	2.136	2.454	95.9	24.1	19.7
1984 05 10		20 19.39	-10 31.6					
1984 05 20		20 20.13	-08 37.4	1.925	2.501	113.0	21.9	19.4
1984 05 30		20 17.98	-06 45.3					
1984 06 09		20 12.84	-04 58.3	1.751	2.543	131.8	17.3	19.1
1984 06 19		20 04.87	-03 20.1					
1984 06 29		19 54.51	-01 55.0	1.648	2.582	150.5	11.2	18.9
1984 07 09		19 42.56	-00 47.6					
1984 07 19		19 30.14	-00 00.5	1.644	2.616	158.4	8.2	18.9
1984 07 29		19 18.41	+00 25.5					
1984 08 08		19 08.43	+00 32.4	1.748	2.646	145.5	12.5	19.1
1984 08 18		19 00.93	+00 24.1					
1984 08 28		18 56.24	+00 05.2	1.938	2.672	127.1	17.5	19.5
1984 09 07		18 54.45	-00 19.6					
1984 09 17		18 55.38	-00 46.1	2.185	2.694	109.6	20.6	19.8
1984 09 27		18 58.78	-01 11.2					
1984 10 07		19 04.37	-01 32.4	2.458	2.711	93.6	21.6	20.1

(2881) 1983 AA1 a,e,i = 2.25, 0.15, 5 Elements MPC 7843

Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 30		19 59.18	-15 09.6	2.077	2.469	100.5	23.7	19.1
1984 05 10		20 04.56	-14 36.3					
1984 05 20		20 07.40	-14 10.1	1.857	2.492	117.6	21.1	18.8
1984 05 30		20 07.47	-13 52.9					
1984 06 09		20 04.65	-13 46.7	1.673	2.514	137.1	16.0	18.5
1984 06 19		19 59.04	-13 52.2					
1984 06 29		19 50.99	-14 09.1	1.558	2.533	158.9	8.3	18.2
1984 07 09		19 41.24	-14 35.9					
1984 07 19		19 30.84	-15 09.6	1.538	2.549	172.3	3.1	17.9
1984 07 29		19 20.94	-15 46.8					
1984 08 08		19 12.66	-16 24.5	1.625	2.563	151.8	10.8	18.3
1984 08 18		19 06.77	-17 00.2					
1984 08 28		19 03.70	-17 32.1	1.800	2.575	130.6	17.3	18.7
1984 09 07		19 03.55	-17 59.2					
1984 09 17		19 06.19	-18 20.7	2.035	2.583	111.9	21.2	19.1
1984 09 27		19 11.37	-18 36.0					
1984 10 07		19 18.79	-18 44.4	2.300	2.589	95.2	22.6	19.4

1983 AK		a, e, i = 2.30, 0.14, 7				Elements MPC		7766
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation	Mag.	
1984 04 30		19 57.75	-20 22.5	1.955	2.377	-1.18	-0.7	18.6
1984 05 10		20 04.05	-20 28.4					
1984 05 20		20 07.69	-20 44.5	1.746	2.406	-1.35	-1.2	18.3
1984 05 30		20 08.37	-21 12.3					
1984 06 09		20 05.93	-21 52.0	1.576	2.434	-1.57	-1.6	18.0
1984 06 19		20 00.43	-22 41.9					
1984 06 29		19 52.23	-23 38.4	1.476	2.460	-1.76	-1.4	17.7
1984 07 09		19 42.12	-24 35.9					
1984 07 19		19 31.29	-25 28.7	1.473	2.485	-1.81	-0.6	17.5
1984 07 29		19 21.04	-26 12.3					
1984 08 08		19 12.61	-26 44.6	1.574	2.508	-1.68	+0.4	17.9
1984 08 18		19 06.84	-27 05.8					
1984 08 28		19 04.13	-27 17.2	1.761	2.529	-1.46	+0.7	18.4
1984 09 07		19 04.56	-27 20.4					
1984 09 17		19 07.93	-27 16.7	2.005	2.548	-1.25	+0.5	18.7
1984 09 27		19 13.91	-27 06.8					
1984 10 07		19 22.18	-26 50.8	2.278	2.564	-1.08	+0.1	19.1

1983 HJ		a, e, i = 3.18, 0.13, 2				Elements MPC		8207
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation	Mag.	
1984 04 30		20 05.83	-19 24.8	2.878	3.208	-0.73	-1.7	18.2
1984 05 10		20 09.79	-19 14.3					
1984 05 20		20 11.73	-19 10.3	2.635	3.233	-0.80	-1.9	18.0
1984 05 30		20 11.53	-19 13.4					
1984 06 09		20 09.15	-19 23.7	2.435	3.258	-0.88	-2.1	17.8
1984 06 19		20 04.73	-19 40.6					
1984 06 29		19 58.55	-20 02.7	2.311	3.282	-0.96	-2.1	17.5
1984 07 09		19 51.10	-20 27.9					
1984 07 19		19 43.08	-20 53.6	2.290	3.305	-0.98	-1.8	17.1
1984 07 29		19 35.23	-21 17.6					
1984 08 08		19 28.32	-21 38.2	2.380	3.328	-0.95	-1.4	17.7
1984 08 18		19 22.94	-21 54.5					
1984 08 28		19 19.48	-22 06.2	2.570	3.351	-0.87	-1.1	18.0
1984 09 07		19 18.17	-22 13.3					
1984 09 17		19 19.01	-22 16.0	2.830	3.372	-0.78	-1.0	18.3
1984 09 27		19 21.90	-22 14.2					
1984 10 07		19 26.67	-22 08.0	3.130	3.393	-0.70	-1.0	18.5

1980 TF4		a, e, i = 2.76, 0.10, 4				Elements MPC		7614
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.
1984 04 30		19 57.94	-24 52.6	2.135	2.554	102.7	22.6	17.7
1984 05 10		20 05.34	-24 56.4					
1984 05 20		20 10.39	-25 07.9	1.887	2.540	119.3	20.3	17.4
1984 05 30		20 12.80	-25 28.0					
1984 06 09		20 12.36	-25 56.9	1.680	2.528	138.0	15.6	17.0
1984 06 19		20 09.01	-26 32.8					
1984 06 29		20 02.97	-27 12.6	1.542	2.517	158.7	8.4	16.6
1984 07 09		19 54.80	-27 51.3					
1984 07 19		19 45.51	-28 23.7	1.496	2.507	172.4	3.1	16.3
1984 07 29		19 36.27	-28 45.8					
1984 08 08		19 28.34	-28 55.8	1.551	2.499	153.3	10.5	16.7
1984 08 18		19 22.71	-28 53.9					
1984 08 28		19 19.95	-28 42.1	1.694	2.493	132.8	17.3	17.0
1984 09 07		19 20.28	-28 22.1					
1984 09 17		19 23.61	-27 55.6	1.898	2.489	114.5	21.5	17.4
1984 09 27		19 29.65	-27 23.5					
1984 10 07		19 38.10	-26 45.9	2.136	2.487	98.4	23.4	17.7

1965 AK1		a,e,i = 3.18, 0.10, 18					Elements MPC		6707
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1984 04 30		20 19.33	-13 37.7	3.082	3.332	95.4	17.5	18.0	
1984 05 10		20 23.64	-13 38.7						
1984 05 20		20 26.15	-13 48.3	2.820	3.349	113.1	16.1	17.7	
1984 05 30		20 26.72	-14 07.6						
1984 06 09		20 25.29	-14 37.8	2.594	3.365	132.6	12.8	17.5	
1984 06 19		20 21.89	-15 18.8						
1984 06 29		20 16.70	-16 09.7	2.437	3.381	154.0	7.6	17.2	
1984 07 09		20 10.07	-17 08.3						
1984 07 19		20 02.56	-18 11.4	2.381	3.396	176.3	1.1	16.8	
1984 07 29		19 54.83	-19 15.3						
1984 08 08		19 47.62	-20 16.4	2.440	3.410	160.0	5.9	17.2	
1984 08 18		19 41.58	-21 12.0						
1984 08 28		19 37.22	-22 00.3	2.605	3.423	138.0	11.4	17.5	
1984 09 07		19 34.85	-22 40.5						
1984 09 17		19 34.59	-23 12.5	2.850	3.436	117.8	15.0	17.8	
1984 09 27		19 36.43	-23 36.5						
1984 10 07		19 40.25	-23 52.9	3.141	3.448	99.4	16.6	18.1	

1981 SH		a,e,i = 2.25, 0.16, 7					Elements MPC		6645
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1984 04 30		20 16.42	-11 25.0	2.206	2.513	95.6	23.5	19.3	
1984 05 10		20 23.58	-10 30.2						
1984 05 20		20 28.66	-09 40.0	1.937	2.490	111.3	22.2	18.9	
1984 05 30		20 31.37	-08 56.8						
1984 06 09		20 31.46	-08 23.6	1.697	2.465	129.0	18.7	18.5	
1984 06 19		20 28.82	-08 03.0						
1984 06 29		20 23.44	-07 57.5	1.511	2.438	148.9	12.5	18.1	
1984 07 09		20 15.67	-08 08.7						
1984 07 19		20 06.21	-08 36.2	1.408	2.409	167.2	5.4	17.7	
1984 07 29		19 56.09	-09 17.7						
1984 08 08		19 46.55	-10 09.3	1.405	2.379	158.7	8.9	17.8	
1984 08 18		19 38.76	-11 05.8						
1984 08 28		19 33.55	-12 02.4	1.497	2.346	137.9	16.8	18.1	
1984 09 07		19 31.42	-12 55.1						
1984 09 17		19 32.47	-13 41.1	1.657	2.312	118.6	22.4	18.4	
1984 09 27		19 36.59	-14 18.4						
1984 10 07		19 43.51	-14 45.6	1.855	2.277	101.6	25.5	18.7	

1983 DJ		a,e,i = 2.19, 0.10, 5					Elements MPC		7836
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1984 04 30		20 24.19	-25 24.1	2.064	2.404	97.0	24.6	18.5	
1984 05 10		20 32.96	-25 22.8						
1984 05 20		20 39.41	-25 30.3	1.816	2.398	112.9	22.9	18.2	
1984 05 30		20 43.18	-25 48.5						
1984 06 09		20 43.93	-26 17.9	1.598	2.390	131.0	18.7	17.8	
1984 06 19		20 41.43	-26 57.5						
1984 06 29		20 35.62	-27 44.3	1.437	2.380	151.4	11.8	17.4	
1984 07 09		20 26.83	-28 32.7						
1984 07 19		20 15.92	-29 15.5	1.360	2.368	170.1	4.2	17.1	
1984 07 29		20 04.14	-29 46.0						
1984 08 08		19 53.07	-30 00.2	1.385	2.354	157.6	9.4	17.3	
1984 08 18		19 44.10	-29 57.6						
1984 08 28		19 38.17	-29 40.5	1.501	2.338	136.4	17.3	17.6	
1984 09 07		19 35.76	-29 12.0						
1984 09 17		19 36.85	-28 35.3	1.682	2.321	117.3	22.6	18.0	
1984 09 27		19 41.16	-27 52.1						
1984 10 07		19 48.34	-27 03.2	1.899	2.303	100.6	25.3	18.3	

1983 AF2		a,e,i = 1.96, 0.14, 22					Elements MPC		7935
Date	ET	R. A. (1950)	Decl.	Delta	r	Variation		Mag.	
1984 04 30		20 39.89	-34 36.4	1.817	2.165	-1.22	-13.2	18.1	
1984 05 10		20 50.07	-33 56.8						
1984 05 20		20 57.38	-33 20.1	1.566	2.143	-1.41	-16.2	17.7	
1984 05 30		21 01.34	-32 47.0						
1984 06 09		21 01.41	-32 16.4	1.337	2.118	-1.73	-19.1	17.3	
1984 06 19		20 57.15	-31 45.3						
1984 06 29		20 48.32	-31 08.7	1.156	2.091	-2.14	-20.9	16.8	
1984 07 09		20 35.25	-30 19.2						
1984 07 19		20 19.13	-29 09.7	1.053	2.061	-2.42	-20.3	16.3	
1984 07 29		20 01.93	-27 37.2						
1984 08 08		19 46.01	-25 45.1	1.053	2.030	-2.30	-18.2	16.4	
1984 08 18		19 33.33	-23 42.2						
1984 08 28		19 24.96	-21 38.3	1.149	1.997	-1.91	-16.4	16.8	
1984 09 07		19 21.21	-19 39.9						
1984 09 17		19 21.77	-17 49.9	1.307	1.963	-1.51	-15.2	17.2	
1984 09 27		19 26.11	-16 07.8						
1984 10 07		19 33.68	-14 31.5	1.495	1.928	-1.23	-14.4	17.5	

1983 FC		a,e,i = 2.69, 0.12, 11					Elements MPC		8062
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1984 04 30		20 36.61	-28 47.6	2.481	2.760	95.1	21.3	18.2	
1984 05 10		20 43.50	-28 38.1						
1984 05 20		20 48.06	-28 35.9	2.247	2.784	111.6	19.7	17.9	
1984 05 30		20 50.05	-28 41.2						
1984 06 09		20 49.25	-28 53.6	2.044	2.808	130.2	16.0	17.7	
1984 06 19		20 45.63	-29 11.1						
1984 06 29		20 39.28	-29 30.5	1.901	2.830	150.5	10.2	17.4	
1984 07 09		20 30.65	-29 47.4						
1984 07 19		20 20.53	-29 57.0	1.848	2.852	168.9	3.9	17.1	
1984 07 29		20 09.93	-29 56.0						
1984 08 08		20 00.02	-29 42.6	1.903	2.873	159.0	7.3	17.3	
1984 08 18		19 51.77	-29 17.7						
1984 08 28		19 45.87	-28 43.3	2.059	2.892	138.3	13.4	17.7	
1984 09 07		19 42.68	-28 02.2						
1984 09 17		19 42.22	-27 16.5	2.291	2.911	118.7	17.6	18.0	
1984 09 27		19 44.33	-26 27.7						
1984 10 07		19 48.77	-25 36.4	2.569	2.928	101.0	19.6	18.3	

(2922) 1976 GY1		a,e,i = 2.37, 0.14, 3					Elements MPC		8145
Date	ET	R. A. (1950)	Decl.	Delta	r	Elong.	Phase	Mag.	
1984 04 30		20 31.38	-15 27.5	2.172	2.442	93.0	24.3	18.7	
1984 05 10		20 39.15	-14 46.8						
1984 05 20		20 44.67	-14 13.2	1.952	2.472	108.9	22.8	18.4	
1984 05 30		20 47.69	-13 48.7						
1984 06 09		20 47.98	-13 35.4	1.755	2.502	127.1	18.9	18.1	
1984 06 19		20 45.48	-13 34.6						
1984 06 29		20 40.23	-13 46.7	1.610	2.529	147.9	12.3	17.8	
1984 07 09		20 32.62	-14 10.7						
1984 07 19		20 23.37	-14 43.8	1.548	2.555	170.3	3.8	17.5	
1984 07 29		20 13.47	-15 22.2						
1984 08 08		20 04.07	-16 01.7	1.590	2.580	164.1	6.2	17.7	
1984 08 18		19 56.24	-16 38.5						
1984 08 28		19 50.72	-17 10.1	1.732	2.603	141.9	13.9	18.1	
1984 09 07		19 47.92	-17 35.0						
1984 09 17		19 47.95	-17 52.4	1.951	2.624	121.8	19.0	18.5	
1984 09 27		19 50.65	-18 02.0						
1984 10 07		19 55.79	-18 03.6	2.217	2.642	104.0	21.5	18.8	