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Smithsonian Astrophysical Observatory
Cambridge, MA 02138, U.S.A.
TWX 710-320-6842 ASTROGRAM CAM ** Brian G. Marsden, Director
Telephone 617-864-5758 ** Conrad M. Bardwell, Associate Director

## IDENTIFICATION CHANGES.

Continuation to MPC 5859.

| Object | Date | UT | R. A. (1950) | Decl. | Old desig. | Mag. | Obs. |
|---|---|---|---|---|---|---|---|
| 1949 QK2 * | 1949 08 | 18.28181 | 22 03 09.04 | -15 13 48.4 | 621 | 13.4 | 690 |
| 1949 QK2 | 1949 08 | 20.28191 | 22 01 36.11 | -15 23 24.5 | 621 | | 690 |
| 1954 OJ * | 1954 07 | 24.90222 | 17 28 27.30 | -17 04 08.6 | 1954 MN | 15.0 | 020 |
| 1954 OJ | 1954 07 | 31.88788 | 17 25 53.36 | -17 47 07.5 | 1954 MN | | 020 |
| 1954 OJ | 1954 08 | 05.90949 | 17 23 56.80 | -18 11 55.2 | 1954 MN | 15.0 | 020 |
| 1957 UP1 * | 1957 10 | 25.89 | 01 41.3 | +26 24 | 1009 | | 062 |
| 1972 VR1 * | 1972 11 | 09.00750 | 05 19 26.57 | +21 00 40.2 | 1633 | | 095 |
| 1972 VR1 | 1972 11 | 09.08770 | 05 19 23.54 | +21 00 37.4 | 1633 | | 095 |

* * * * *

## IDENTIFICATIONS.

The following list of identifications with numbered minor planets continues that on MPC 5860.

| | Note | | Note | | Note |
|---|---|---|---|---|---|
| 1929 US = (1412) | 1 | 1949 UG = (1072) | 2 | 1949 UU = (1072) | 3 |
| 1972 VM1 = (1633) | 4 | | | | |

Note 1: identification by E. Bowell. 2: identification by H. Oishi (JAM 799). 3: double designation 1949 UG = 1949 UU on MPC 782. 4: identification by B. G. Marsden.

* * * * *

## OBSERVATIONS OF COMETS.

Observations are published here for the following observatory codes:

012 Uccle. Observer H. Debehogne.
017 Hoher List. Observer M. Geffert.
020 Nice. Observer B. Milet.
046 Klet. Observers A. Mrkos and Z. Vavrova.
075 Tartu. Observer H. K. Raudsaar.
085 Kiev. Observers S. P. Major, V. K. Rozenbush and G. V. Moroz. From Kiev Komet. Tsirk. No. 272.
119 Abastumani. Observers R. Ya. Inasaridze and G. A. Maisuradze. From Kiev Komet. Tsirk. No. 273.
210 Alma-Ata. Observers A. A. Semenikin, N. S. Gorodetskaya and D. I. Gorodetskij. From Kiev Komet. Tsirk. No. 273.
323 Perth. Observers M. P. Candy, D. Gans, C. Jekabsons and P. Jekabsons.
375 Uzurano. Observer H. Einaga. Measured by M. Takeishi. From Japan Astron. Circ. Nos. 290 and 292.
386 Yatsugatake Observatory. Observer A. Terunuma. Measured by T. Urata.

From Nihondaira Obs. Circ. No. 1181.
391 Sendai Observatory, Ayashi Station. Observer M. Koishikawa.
394 JCPM Hamatonbetsu Station. Observer M. Takeishi. From JCPM Hamaton-betsu Sta. Rep. No. 4.
415 Kambah. Observer D. Herald.
474 Mt John Observatory. Observers A. C. Gilmore and P. M. Kilmartin.
485 Carter Observatory. Observers A. C. Gilmore and P. M. Kilmartin.
519 Meschede. Observer R. Hempel.
558 Warsaw Observatory. Observer M. Bielicki.
578 Linden Observatory. Observer J. Hers.
657 Victoria. Observers J. B. Tatum and D. Balam. Measured by Tatum.
672 Mount Wilson. Observer L. E. Cunningham. Measured by E. Roemer.
675 Palomar. Observer J. Gibson. See Note 1 below.
688 Lowell Observatory, Anderson Mesa station. Observers E. Bowell and B. A. Skiff. Measured by E. Bowell.
691 Steward Observatory, Kitt Peak. Observer E. Roemer. The many assistants are included in the list on MPC 5860.
693 Lunar and Planetary Laboratory, Catalina station. Observer E. Roemer. The many assistants are included in the list on MPC 5860.
711 McDonald Observatory. Observer E. S. Barker.
801 Agassiz Station. Observers R. E. McCrosky, C.-Y. Shao, G. Schwartz and J. Bulger, assisted by C. M. Bardwell, D. W. E. Green and B. G. Marsden.
805 Cerro El Roble. Observer C. Torres. Measured by M. Wischnjewsky.
880 Rio de Janeiro. Observer R. R. de Freitas Mourao.
882 JCPM Oi Station. Observer K. Suzuki. Measured by T. Urata. From Nihondaira Obs. Circ. Nos. 1181 and 1189.

| Object | Date | UT | R. A. (1950) | Decl. | Mag. | N | Obs. |
|---|---|---|---|---|---|---|---|
| | | Periodic Comet Pons-Winnecke | | | | | |
| /1951 VI | 1951 | 02 03.38088 | 11 27 52.85 | +33 28 45.6 | | | 672 |
| /1951 VI | 1951 | 02 03.41421 | 11 27 52.00 | +33 29 16.0 | | | 672 |
| /1951 VI | 1951 | 02 04.37950 | 11 27 27.88 | +33 44 04.1 | | | 672 |
| /1951 VI | 1951 | 02 04.40589 | 11 27 27.16 | +33 44 29.0 | | | 672 |
| /1951 VI | 1951 | 02 05.37325 | 11 27 01.20 | +33 59 23.5 | | | 672 |
| /1951 VI | 1951 | 02 09.47532 | 11 24 49.62 | +35 03 25.2 | | | 672 |
| /1951 VI | 1951 | 03 07.45942 | 10 58 54.13 | +41 14 56.2 | | | 672 |
| /1951 VI | 1951 | 03 07.48234 | 10 58 52.23 | +41 15 10.8 | | | 672 |
| /1951 VI | 1951 | 05 02.31294 | 10 15 08.62 | +40 49 30.0 | | | 672 |
| /1951 VI | 1951 | 05 02.32370 | 10 15 08.74 | +40 49 23.2 | | | 672 |
| /1951 VI | 1951 | 07 08.24192 | 11 44 40.08 | +21 29 58.6 | | | 672 |
| /1951 VI | 1951 | 07 10.22215 | 11 48 55.40 | +20 39 59.6 | | | 672 |
| /1951 VI | 1951 | 07 10.22752 | 11 48 56.10 | +20 39 52.0 | | | 672 |
| /1951 VI | 1951 | 08 04.18589 | 12 48 29.62 | +08 40 59.5 | | | 672 |
| /1951 VI | 1951 | 08 05.18662 | 12 51 06.75 | +08 08 48.7 | | | 672 |
| /1951 VI | 1951 | 09 01.14617 | 14 09 21.81 | -07 28 06.4 | | | 672 |
| /1951 VI | 1951 | 09 01.14895 | 14 09 22.31 | -07 28 13.2 | | | 672 |
| | | Periodic Comet Gunn | | | | | |
| /1969 II | 1954 | 08 08.36667 | 22 31 19.4 | -23 55 49 | 19 | T 1 | 675 |
| /1969 II | 1954 | 08 08.39167 | 22 31 18.5 | -23 55 56 | | 1 | 675 |
| /1969 II | 1971 | 09 14.44554 | 04 27.80 | +19 16.7 | | | 691 |
| /1969 II | 1971 | 09 22.39392 | 04 28.36 | +19 21.9 | | | 691 |
| /1969 II | 1971 | 11 18.40000 | 04 04.28 | +19 08.8 | | | 691 |
| /1969 II | 1972 | 12 03.25972 | 06 29 33.25 | +28 24 46.7 | | | 693 |
| /1969 II | 1972 | 12 03.30486 | 06 29 31.48 | +28 24 52.5 | | | 693 |
| /1969 II | 1972 | 12 13.28449 | 06 22 43.00 | +28 43 12.1 | | | 691 |
| /1969 II | 1972 | 12 13.33044 | 06 22 40.94 | +28 43 16.9 | | | 691 |
| /1969 II | 1973 | 01 08.15000 | 06 03 11.18 | +29 13 27.3 | | | 691 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| /1969 II | 1973 | 01 | 08.19427 | 06 | 03 | 09.26 | +29 | 13 | 29.2 | 691 |
| /1976 III | 1973 | 12 | 30.42002 | 09 | 12 | 36.56 | +27 | 31 | 33.0 | 691 |
| /1976 III | 1973 | 12 | 30.44404 | 09 | 12 | 35.88 | +27 | 31 | 39.6 | 691 |
| /1976 III | 1974 | 02 | 25.31904 | 08 | 33 | 17.31 | +30 | 48 | 38.0 | 691 |
| /1976 III | 1974 | 02 | 25.34287 | 08 | 33 | 16.42 | +30 | 48 | 39.2 | 691 |
| /1976 III | 1974 | 05 | 25.16042 | 08 | 46 | 39.09 | +27 | 23 | 45.3 | 691 |
| /1976 III | 1974 | 05 | 25.18304 | 08 | 46 | 40.13 | +27 | 23 | 39.1 | 691 |
| /1976 III | 1975 | 04 | 11.37986 | 12 | 28 | 51.77 | +11 | 16 | 11.1 | 693 |
| /1976 III | 1975 | 04 | 11.38889 | 12 | 28 | 51.35 | +11 | 16 | 12.0 | 693 |
| /1976 III | 1975 | 06 | 09.22639 | 12 | 13 | 34.69 | +08 | 17 | 35.3 | 693 |
| /1976 III | 1975 | 06 | 09.24375 | 12 | 13 | 35.00 | +08 | 17 | 27.7 | 693 |
| /1976 III | 1981 | 01 | 26.24620 | 09 | 40 | 34.36 | +27 | 14 | 00.5 | 675 |

Periodic Comet du Toit-Neujmin-Delporte

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| /1970 XIII | 1970 | 07 | 27.20567 | 15 | 27 | 07.57 | -14 | 29 | 26.5 | 691 |
| /1970 XIII | 1970 | 07 | 27.23072 | 15 | 27 | 09.10 | -14 | 29 | 34.3 | 691 |
| /1970 XIII | 1970 | 10 | 05.10417 | 17 | 46 | 39.74 | -20 | 41 | 13.1 | 691 |
| /1970 XIII | 1970 | 10 | 05.13432 | 17 | 46 | 44.52 | -20 | 41 | 16.6 | 691 |

Periodic Comet Encke

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| /1971 II | 1971 | 05 | 27.43056 | 22 | 39 | 32.24 | -14 | 52 | 26.9 | 693 |
| /1971 II | 1971 | 05 | 29.42465 | 22 | 39 | 46.17 | -14 | 52 | 16.8 | 691 |
| /1971 II | 1972 | 09 | 13.22083 | 22 | 33 | 27.79 | -07 | 12 | 37.1 | 691 |
| /1971 II | 1972 | 09 | 13.29236 | 22 | 33 | 23.77 | -07 | 12 | 57.6 | 691 |
| /1974 V | 1973 | 09 | 21.22523 | 00 | 01 | 43.51 | +09 | 35 | 05.8 | 691 |
| /1974 V | 1973 | 09 | 21.25110 | 00 | 01 | 41.20 | +09 | 34 | 55.4 | 691 |
| /1974 V | 1973 | 10 | 22.22205 | 23 | 17 | 02.58 | +05 | 24 | 20.4 | 691 |
| /1974 V | 1973 | 10 | 22.26551 | 23 | 16 | 59.28 | +05 | 23 | 58.6 | 691 |
| /1974 V | 1974 | 09 | 12.13194 | 19 | 01 | 36.32 | -30 | 09 | 48.7 | 691 |
| /1974 V | 1974 | 09 | 12.17608 | 19 | 01 | 37.34 | -30 | 09 | 28.6 | 691 |
| /1974 V | 1975 | 09 | 12.21972 | 22 | 12 | 00.82 | -10 | 47 | 47.0 | 691 |
| /1974 V | 1975 | 09 | 12.26419 | 22 | 11 | 58.28 | -10 | 47 | 58.3 | 691 |
| /1974 V | 1976 | 09 | 20.21875 | 23 | 23 | 40.88 | +02 | 15 | 17.8 | 691 |
| /1974 V | 1976 | 09 | 20.26042 | 23 | 23 | 38.00 | +02 | 15 | 01.9 | 691 |

Periodic Comet Schwassmann-Wachmann 1

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| /1974 II | 1966 | 12 | 10.48394 | 11 | 21 | 57.69 | +00 | 15 | 46.1 | 693 |
| /1974 II | 1966 | 12 | 11.43898 | 11 | 22 | 07.72 | +00 | 13 | 43.2 | 693 |
| /1974 II | 1966 | 12 | 11.45809 | 11 | 22 | 07.90 | +00 | 13 | 40.3 | 693 |
| /1974 II | 1967 | 02 | 12.33692 | 11 | 15 | 57.22 | -00 | 13 | 02.6 | 693 |
| /1974 II | 1968 | 04 | 27.30022 | 12 | 00 | 58.35 | -08 | 44 | 17.8 | 693 |
| /1974 II | 1971 | 03 | 27.46528 | 17 | 22 | 56.64 | -32 | 29 | 01.1 | 693 |
| /1974 II | 1971 | 04 | 20.47072 | 17 | 22 | 57.75 | -32 | 58 | 24.5 | 691 |
| /1974 II | 1971 | 04 | 29.39583 | 17 | 21 | 05.05 | -33 | 06 | 09.5 | 693 |
| /1974 II | 1971 | 06 | 19.29861 | 16 | 57 | 46.75 | -32 | 50 | 18.4 | 693 |
| /1974 II | 1971 | 06 | 20.29514 | 16 | 57 | 16.06 | -32 | 48 | 51.8 | 693 |
| /1974 II | 1972 | 08 | 14.19097 | 19 | 02 | 27.65 | -28 | 21 | 26.3 | 691 |
| /1974 II | 1972 | 08 | 14.21979 | 19 | 02 | 27.03 | -28 | 21 | 24.5 | 691 |
| /1974 II | 1972 | 08 | 15.18333 | 19 | 02 | 08.06 | -28 | 20 | 24.8 | 691 |
| /1974 II | 1972 | 08 | 15.19931 | 19 | 02 | 07.74 | -28 | 20 | 23.7 | 691 |
| /1974 II | 1972 | 09 | 04.16806 | 18 | 58 | 03.40 | -27 | 54 | 40.1 | 693 |
| /1974 II | 1973 | 09 | 30.14167 | 21 | 07 | 00.17 | -15 | 54 | 22.4 | 693 |
| /1974 II | 1973 | 09 | 30.17014 | 21 | 06 | 59.89 | -15 | 54 | 22.1 | 693 |
| /1974 II | 1973 | 10 | 28.13472 | 21 | 07 | 33.26 | -15 | 29 | 29.9 | 693 |
| /1974 II | 1974 | 06 | 16.37888 | 23 | 32 | 57.73 | +01 | 30 | 01.0 | 691 |
| /1974 II | 1974 | 09 | 16.23056 | 23 | 15 | 41.68 | +02 | 00 | 33.2 | 693 |
| /1974 II | 1975 | 10 | 07.26065 | 01 | 10 | 14.52 | +18 | 30 | 13.6 | 691 |
| /1974 II | 1975 | 12 | 26.07572 | 00 | 50 | 24.77 | +15 | 32 | 41.0 | 693 |
| /1974 II | 1976 | 02 | 03.13542 | 01 | 04 | 42.05 | +16 | 05 | 20.7 | 693 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| /1974 II | 1981 | 02 | 15.46182 | 10 | 21 | 31.91 | +05 | 53 | 08.3 | | 2 675 |
| /1974 II | 1981 | 02 | 16.47293 | 10 | 21 | 04.91 | +05 | 54 | 54.9 | | 2 675 |
| /1974 II | 1981 | 02 | 28.88183 | 10 | 15 | 30.00 | +06 | 18 | 04.2 | 16.5T | 046 |
| /1974 II | 1981 | 02 | 28.90377 | 10 | 15 | 29.26 | +06 | 18 | 10.0 | | 046 |
| /1974 II | 1981 | 03 | 28.20418 | 10 | 04 | 55.43 | +07 | 06 | 45.8 | 17.5N | 801 |
| | | | | | | | | | | | |
| | | | Periodic Comet Schwassmann-Wachmann 2 | | | | | | | | |
| /1974 XIII | 1973 | 09 | 04.39236 | 02 | 25 | 11.18 | +09 | 33 | 20.7 | | 693 |
| /1974 XIII | 1973 | 09 | 04.43611 | 02 | 25 | 11.24 | +09 | 33 | 17.6 | | 693 |
| /1974 XIII | 1973 | 09 | 21.34016 | 02 | 22 | 55.30 | +08 | 55 | 11.4 | | 691 |
| /1974 XIII | 1973 | 09 | 21.37112 | 02 | 22 | 54.69 | +08 | 55 | 05.8 | | 691 |
| /1974 XIII | 1973 | 10 | 21.32263 | 02 | 05 | 33.00 | +06 | 51 | 49.4 | | 691 |
| /1974 XIII | 1973 | 10 | 21.32992 | 02 | 05 | 32.65 | +06 | 51 | 47.3 | | 691 |
| /1974 XIII | 1975 | 05 | 09.26597 | 12 | 18 | 25.66 | +03 | 31 | 51.5 | | 693 |
| /1974 XIII | 1975 | 05 | 09.31597 | 12 | 18 | 25.27 | +03 | 31 | 49.8 | | 693 |
| /1974 XIII | 1975 | 06 | 04.22668 | 12 | 22 | 46.30 | +02 | 27 | 06.8 | | 691 |
| /1974 XIII | 1975 | 06 | 04.24983 | 12 | 22 | 46.88 | +02 | 27 | 00.7 | | 691 |
| /1979k | 1980 | 12 | 11.31442 | 06 | 28 | 20.3 | +19 | 22 | 28 | 16.0N | 711 |
| /1979k | 1981 | 01 | 26.27432 | 05 | 57 | 43.48 | +21 | 13 | 14.3 | | 675 |
| /1979k | 1981 | 02 | 28.05851 | 06 | 07 | 59.93 | +22 | 38 | 27.0 | | 801 |
| | | | | | | | | | | | |
| | | | Periodic Comet Smirnova-Chernykh | | | | | | | | |
| /1975 VII | 1980 | 11 | 28.25002 | 00 | 51 | 34.00 | -01 | 23 | 46.4 | | 3 675 |
| | | | | | | | | | | | |
| | | | Comet Suzuki-Saigusa-Mori (1975 X) | | | | | | | | |
| /1975 X | 1975 | 11 | 04.46215 | 18 | 35 | 16.19 | -53 | 07 | 54.5 | | 415 |
| /1975 X | 1975 | 11 | 06.48924 | 19 | 45 | 36.19 | -55 | 06 | 03.9 | | 323 |
| /1975 X | 1975 | 11 | 06.49132 | 19 | 45 | 39.34 | -55 | 06 | 05.9 | | 323 |
| /1975 X | 1975 | 11 | 07.51840 | 20 | 09 | 09.08 | -55 | 10 | 07.5 | | 323 |
| /1975 X | 1975 | 11 | 07.52188 | 20 | 09 | 13.01 | -55 | 10 | 06.4 | | 323 |
| /1975 X | 1975 | 11 | 10.53819 | 20 | 52 | 16.97 | -54 | 33 | 07.2 | | 323 |
| /1975 X | 1975 | 11 | 10.54375 | 20 | 52 | 20.17 | -54 | 33 | 02.7 | | 323 |
| /1975 X | 1975 | 11 | 13.53403 | 21 | 15 | 32.74 | -53 | 48 | 10.0 | | 323 |
| /1975 X | 1975 | 11 | 13.53958 | 21 | 15 | 34.73 | -53 | 48 | 06.2 | | 323 |
| /1975 X | 1975 | 11 | 13.54514 | 21 | 15 | 36.62 | -53 | 48 | 00.3 | | 323 |
| | | | | | | | | | | | |
| | | | Comet Bradfield (1975 XI) | | | | | | | | |
| /1975 XI | 1975 | 11 | 13.83056 | 11 | 10 | 12.40 | -39 | 27 | 29.2 | | 323 |
| /1975 XI | 1975 | 11 | 13.83542 | 11 | 10 | 14.68 | -39 | 27 | 46.2 | | 323 |
| /1975 XI | 1975 | 11 | 16.82433 | 11 | 33 | 05.99 | -42 | 01 | 29.7 | | 323 |
| /1975 XI | 1975 | 11 | 16.82919 | 11 | 33 | 08.49 | -42 | 01 | 45.6 | | 323 |
| /1975 XI | 1975 | 12 | 06.61463 | 15 | 28 | 24.98 | -46 | 41 | 49.8 | | 485 |
| /1975 XI | 1975 | 12 | 06.62465 | 15 | 28 | 32.84 | -46 | 41 | 21.7 | | 485 |
| | | | | | | | | | | | |
| | | | Comet Mori-Sato-Fujikawa (1975 XII) | | | | | | | | |
| /1975 XII | 1975 | 12 | 28.62083 | 05 | 05 | 17.32 | -80 | 37 | 59.9 | | 323 |
| /1975 XII | 1976 | 01 | 08.56181 | 01 | 41 | 03.45 | -79 | 30 | 49.7 | | 323 |
| /1975 XII | 1976 | 01 | 09.79526 | 01 | 26 | 34.24 | -79 | 00 | 48.5 | | 578 |
| /1975 XII | 1976 | 06 | 21.29693 | 20 | 07 | 36.34 | -69 | 29 | 50.6 | | 805 |
| | | | | | | | | | | | |
| | | | Comet Sato (1976 I) | | | | | | | | |
| /1976 I | 1975 | 12 | 13.84236 | 12 | 21 | 28.18 | -05 | 36 | 59.7 | | 391 |
| /1976 I | 1975 | 12 | 14.82639 | 12 | 22 | 43.63 | -10 | 29 | 07.8 | | 323 |
| /1976 I | 1975 | 12 | 15.83611 | 12 | 24 | 12.03 | -16 | 00 | 00.7 | | 391 |
| | | | | | | | | | | | |
| | | | Comet West (1976 VI) | | | | | | | | |
| /1976 VI | 1976 | 03 | 10.17508 | 21 | 28 | 10.24 | +08 | 37 | 33.2 | | 020 |
| /1976 VI | 1976 | 03 | 10.17583 | 21 | 28 | 10.06 | +08 | 37 | 33.8 | | 020 |
| /1976 VI | 1976 | 03 | 10.17669 | 21 | 28 | 09.82 | +08 | 37 | 34.5 | | 020 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| /1976 VI | 1976 | 03 | 10.18223 | 21 | 28 | 08.57 | +08 | 37 | 45.0 | | 020 |
| /1976 VI | 1976 | 03 | 10.18985 | 21 | 28 | 07.03 | +08 | 37 | 55.7 | | 020 |
| /1976 VI | 1976 | 03 | 10.20458 | 21 | 28 | 04.03 | +08 | 38 | 15.9 | | 012 |
| /1976 VI | 1976 | 03 | 11.17101 | 21 | 24 | 54.06 | +09 | 00 | 14.9 | | 020 |
| /1976 VI | 1976 | 03 | 11.17188 | 21 | 24 | 53.73 | +09 | 00 | 16.6 | | 020 |
| /1976 VI | 1976 | 03 | 15.10371 | 21 | 14 | 27.89 | +10 | 13 | 32.3 | | 085 |
| /1976 VI | 1976 | 03 | 15.10978 | 21 | 14 | 26.75 | +10 | 13 | 39.9 | | 085 |
| /1976 VI | 1976 | 03 | 18.15485 | 21 | 08 | 17.49 | +10 | 58 | 54.7 | | 020 |
| /1976 VI | 1976 | 03 | 19.13832 | 21 | 06 | 33.21 | +11 | 12 | 05.1 | | 558 |
| /1976 VI | 1976 | 03 | 22.10682 | 21 | 01 | 51.22 | +11 | 48 | 55.0 | | 085 |
| /1976 VI | 1976 | 03 | 22.10682 | 21 | 01 | 50.61 | +11 | 49 | 02.9 | 4 | 085 |
| /1976 VI | 1976 | 03 | 22.10857 | 21 | 01 | 51.07 | +11 | 48 | 55.7 | | 085 |
| /1976 VI | 1976 | 03 | 22.10857 | 21 | 01 | 50.41 | +11 | 49 | 03.0 | 4 | 085 |
| /1976 VI | 1976 | 03 | 23.89115 | 20 | 59 | 19.84 | +12 | 09 | 35.0 | | 323 |
| /1976 VI | 1976 | 03 | 23.89184 | 20 | 59 | 19.78 | +12 | 09 | 35.5 | | 323 |
| /1976 VI | 1976 | 03 | 23.89245 | 20 | 59 | 19.85 | +12 | 09 | 36.2 | | 323 |
| /1976 VI | 1976 | 03 | 25.15206 | 20 | 57 | 38.90 | +12 | 23 | 23.0 | | 020 |
| /1976 VI | 1976 | 03 | 25.15356 | 20 | 57 | 38.85 | +12 | 23 | 23.7 | | 020 |
| /1976 VI | 1976 | 03 | 29.10504 | 20 | 52 | 45.48 | +13 | 04 | 38.1 | | 085 |
| /1976 VI | 1976 | 03 | 29.10562 | 20 | 52 | 45.27 | +13 | 04 | 38.4 | | 085 |
| /1976 VI | 1976 | 03 | 31.13158 | 20 | 50 | 23.15 | +13 | 24 | 43.0 | | 020 |
| /1976 VI | 1976 | 03 | 31.14497 | 20 | 50 | 22.13 | +13 | 24 | 53.2 | | 020 |
| /1976 VI | 1976 | 04 | 02.16548 | 20 | 48 | 02.79 | +13 | 44 | 18.7 | | 020 |
| /1976 VI | 1976 | 04 | 04.09120 | 20 | 45 | 51.02 | +14 | 02 | 20.9 | | 085 |
| /1976 VI | 1976 | 04 | 04.09120 | 20 | 45 | 50.55 | +14 | 02 | 27.6 | 4 | 085 |
| /1976 VI | 1976 | 04 | 04.09276 | 20 | 45 | 50.81 | +14 | 02 | 22.0 | | 085 |
| /1976 VI | 1976 | 04 | 04.87118 | 20 | 44 | 57.48 | +14 | 09 | 39.2 | | 323 |
| /1976 VI | 1976 | 04 | 04.87240 | 20 | 44 | 57.38 | +14 | 09 | 39.6 | | 323 |
| /1976 VI | 1976 | 04 | 05.07809 | 20 | 44 | 43.20 | +14 | 11 | 27.7 | | 085 |
| /1976 VI | 1976 | 04 | 05.07809 | 20 | 44 | 42.53 | +14 | 11 | 33.2 | 4 | 085 |
| /1976 VI | 1976 | 04 | 05.07896 | 20 | 44 | 43.02 | +14 | 11 | 27.9 | | 085 |
| /1976 VI | 1976 | 04 | 06.05791 | 20 | 43 | 35.63 | +14 | 20 | 19.4 | | 085 |
| /1976 VI | 1976 | 04 | 06.05791 | 20 | 43 | 35.11 | +14 | 20 | 26.6 | 4 | 085 |
| /1976 VI | 1976 | 04 | 06.05921 | 20 | 43 | 35.55 | +14 | 20 | 18.2 | | 085 |
| /1976 VI | 1976 | 04 | 06.05921 | 20 | 43 | 35.14 | +14 | 20 | 26.5 | 4 | 085 |
| /1976 VI | 1976 | 04 | 06.07813 | 20 | 43 | 34.33 | +14 | 20 | 28.4 | | 085 |
| /1976 VI | 1976 | 04 | 06.07813 | 20 | 43 | 33.86 | +14 | 20 | 37.0 | 4 | 085 |
| /1976 VI | 1976 | 04 | 06.09562 | 20 | 43 | 33.11 | +14 | 20 | 38.4 | | 085 |
| /1976 VI | 1976 | 04 | 06.09562 | 20 | 43 | 32.55 | +14 | 20 | 48.2 | 4 | 085 |
| /1976 VI | 1976 | 04 | 06.33572 | 20 | 43 | 16.23 | +14 | 22 | 59.4 | | 880 |
| /1976 VI | 1976 | 04 | 07.07694 | 20 | 42 | 24.55 | +14 | 29 | 21.7 | | 085 |
| /1976 VI | 1976 | 04 | 07.08318 | 20 | 42 | 24.35 | +14 | 29 | 33.0 | | 085 |
| /1976 VI | 1976 | 04 | 07.09444 | 20 | 42 | 23.14 | +14 | 29 | 46.3 | 4 | 085 |
| /1976 VI | 1976 | 04 | 07.85833 | 20 | 41 | 30.05 | +14 | 36 | 32.3 | | 323 |
| /1976 VI | 1976 | 04 | 07.86146 | 20 | 41 | 29.77 | +14 | 36 | 33.5 | | 323 |
| /1976 VI | 1976 | 04 | 07.86389 | 20 | 41 | 29.64 | +14 | 36 | 35.1 | | 323 |
| /1976 VI | 1976 | 04 | 17.01397 | 20 | 30 | 01.48 | +15 | 52 | 43.5 | | 085 |
| /1976 VI | 1976 | 04 | 17.01397 | 20 | 30 | 01.04 | +15 | 52 | 54.9 | 4 | 085 |
| /1976 VI | 1976 | 04 | 17.02195 | 20 | 30 | 00.79 | +15 | 52 | 47.5 | | 085 |
| /1976 VI | 1976 | 04 | 17.02195 | 20 | 30 | 00.22 | +15 | 52 | 57.2 | 4 | 085 |
| /1976 VI | 1976 | 04 | 24.02722 | 20 | 19 | 47.08 | +16 | 43 | 47.5 | | 085 |
| /1976 VI | 1976 | 04 | 24.02722 | 20 | 19 | 46.29 | +16 | 43 | 57.7 | 4 | 085 |
| /1976 VI | 1976 | 04 | 24.02722 | 20 | 19 | 44.94 | +16 | 44 | 06.8 | 5 | 085 |
| /1976 VI | 1976 | 04 | 24.02843 | 20 | 19 | 46.97 | +16 | 43 | 48.1 | | 085 |
| /1976 VI | 1976 | 04 | 24.02843 | 20 | 19 | 46.19 | +16 | 43 | 57.3 | 4 | 085 |
| /1976 VI | 1976 | 04 | 24.04324 | 20 | 19 | 45.57 | +16 | 43 | 53.4 | | 085 |
| /1976 VI | 1976 | 04 | 24.04324 | 20 | 19 | 44.83 | +16 | 44 | 03.9 | 4 | 085 |
| /1976 VI | 1976 | 04 | 25.47501 | 20 | 17 | 28.46 | +16 | 53 | 21.0 | | 693 |
| /1976 VI | 1976 | 04 | 25.47501 | 20 | 17 | 27.60 | +16 | 53 | 32.5 | 4 | 693 |

```
/1976 VI   1976 04 25.47501  20 17 26.27  +16 53 42.1                5 693
/1976 VI   1976 04 25.48404  20 17 27.58  +16 53 24.5                  693
/1976 VI   1976 04 25.48404  20 17 26.73  +16 53 36.0                4 693
/1976 VI   1976 04 25.48404  20 17 25.39  +16 53 45.6                5 693
/1976 VI   1976 05 06.01673  19 58 26.00  +17 48 20.9                  085
/1976 VI   1976 05 06.01673  19 58 24.95  +17 48 32.5                4 085
/1976 VI   1976 05 06.01673  19 58 23.34  +17 48 42.0                5 085
/1976 VI   1976 05 06.01804  19 58 25.87  +17 48 21.3                  085
/1976 VI   1976 05 06.01804  19 58 24.82  +17 48 34.2                4 085
/1976 VI   1976 05 06.01804  19 58 23.18  +17 48 42.5                5 085
/1976 VI   1976 05 08.97258  19 52 23.56  +17 58 13.5                  085
/1976 VI   1976 05 08.97258  19 52 22.35  +17 58 24.8                4 085
/1976 VI   1976 05 08.97258  19 52 20.79  +17 58 35.4                5 085
/1976 VI   1976 05 08.97316  19 52 23.51  +17 58 13.4                  085
/1976 VI   1976 05 08.97316  19 52 22.36  +17 58 26.2                4 085
/1976 VI   1976 05 08.97316  19 52 20.64  +17 58 35.0                5 085
/1976 VI   1976 05 10.01900  19 50 10.98  +18 01 03.7                  085
/1976 VI   1976 05 10.01900  19 50 09.76  +18 01 14.3                4 085
/1976 VI   1976 05 10.01900  19 50 08.25  +18 01 26.1                5 085
/1976 VI   1976 05 10.02912  19 50 09.25  +18 01 03.2                  085
/1976 VI   1976 05 10.02912  19 50 06.44  +18 01 25.1                5 085
/1976 VI   1976 06 02.97930  18 52 53.48  +17 06 25.6                  085
/1976 VI   1976 06 02.97930  18 52 51.73  +17 06 31.7                4 085
/1976 VI   1976 06 02.97930  18 52 50.59  +17 06 50.8                5 085

                Comet Kohler (1977 XIV)
/1977 XIV  1977 09 19.80139  15 54 36.30  +24 18 08.0                  519
/1977 XIV  1977 09 19.80764  15 54 37.50  +24 18 00.0                  519
/1977 XIV  1977 10 12.76137  17 02 29.30  +13 09 29.0                  519
/1977 XIV  1977 10 12.77039  17 02 31.19  +13 09 09.9                  519
/1977 XIV  1977 10 12.79861  17 02 37.23  +13 08 05.2                  017
/1977 XIV  1977 10 13.77188  17 06 09.06  +12 32 00.9                  017
/1977 XIV  1977 10 13.78125  17 06 10.97  +12 31 38.9                  017
/1977 XIV  1977 10 15.75625  17 13 30.97  +11 16 06.8                  519
/1977 XIV  1977 10 15.76458  17 13 32.76  +11 15 46.4                  519
/1977 XIV  1977 10 16.74931  17 17 17.45  +10 36 55.2                  519
/1977 XIV  1977 10 16.78333  17 17 25.30  +10 35 33.4                  519
/1977 XIV  1977 10 17.74167  17 21 07.39  +09 56 57.2                  519
/1977 XIV  1977 10 17.74375  17 21 07.78  +09 56 51.3                  519
/1977 XIV  1977 10 21.75819  17 37 15.02  +07 06 58.3                  012
/1977 XIV  1977 10 21.76719  17 37 17.44  +07 06 34.9                  012
/1977 XIV  1977 10 29.69444  18 12 03.41  +00 52 59.1                  075
/1977 XIV  1977 11 03.74362  18 36 12.13  -03 27 10.2                  020
/1977 XIV  1977 11 04.74659  18 41 10.72  -04 20 19.8                  012
/1977 XIV  1977 11 04.76705  18 41 16.80  -04 21 25.0                  012
/1977 XIV  1977 11 04.78944  18 41 23.51  -04 22 36.9                  012
/1977 XIV  1977 11 07.73250  18 56 19.71  -07 00 23.8                  012
/1977 XIV  1977 11 07.73747  18 56 21.24  -07 00 39.2                  012
/1977 XIV  1977 11 07.74236  18 56 22.67  -07 00 55.3                  012
/1977 XIV  1977 11 07.74271  18 56 22.63  -07 00 45.0                  578
/1977 XIV  1977 11 07.74731  18 56 24.22  -07 01 11.9                  012
/1977 XIV  1977 11 10.73162  19 12 01.56  -09 42 20.2                  012
/1977 XIV  1977 11 10.73444  19 12 02.43  -09 42 29.2                  012
/1977 XIV  1977 11 10.74044  19 12 04.23  -09 42 48.3                  020
/1977 XIV  1977 11 12.72881  19 22 43.48  -11 29 47.8                  012
/1977 XIV  1977 11 12.73978  19 22 46.99  -11 30 23.5                  012
/1977 XIV  1977 11 13.73901  19 28 12.41  -12 23 46.6                  012
/1977 XIV  1977 11 13.74386  19 28 13.93  -12 24 01.8                  012
/1977 XIV  1977 11 22.73659  20 18 40.22  -19 58 32.1                  020
```

Comet Bradfield (1978 VII)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| /1978 VII | 1978 | 02 | 11.72708 | 19 | 07 | 44.54 | -44 | 54 | 06.9 | | | 415 |
| /1978 VII | 1978 | 03 | 06.87870 | 21 | 25 | 53.35 | -14 | 18 | 47.5 | | | 323 |
| /1978 VII | 1978 | 03 | 08.87373 | 21 | 37 | 37.59 | -10 | 54 | 47.7 | | | 323 |
| /1978 VII | 1978 | 03 | 08.87442 | 21 | 37 | 37.84 | -10 | 54 | 43.2 | | | 323 |
| /1978 VII | 1978 | 03 | 08.87517 | 21 | 37 | 38.09 | -10 | 54 | 38.6 | | | 323 |
| /1978 VII | 1978 | 03 | 08.87581 | 21 | 37 | 38.36 | -10 | 54 | 34.5 | | | 323 |
| /1978 VII | 1978 | 03 | 12.88623 | 22 | 02 | 08.28 | -04 | 03 | 05.0 | | | 323 |

Comet Bowell (1980b)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| /1980b | 1981 | 01 | 03.60347 | 12 | 30 | 35.90 | -01 | 38 | 16.6 | 14 | N | 6 474 |
| /1980b | 1981 | 01 | 03.61528 | 12 | 30 | 36.22 | -01 | 38 | 16.8 | | | 6 474 |
| /1980b | 1981 | 03 | 28.28395 | 12 | 22 | 56.09 | -00 | 17 | 45.3 | | | 7 801 |
| /1980b | 1981 | 03 | 29.51563 | 12 | 22 | 24.35 | -00 | 14 | 09.8 | 12.5T | | 394 |
| /1980b | 1981 | 03 | 29.52222 | 12 | 22 | 23.99 | -00 | 14 | 09.7 | | | 394 |
| /1980b | 1981 | 03 | 30.27153 | 12 | 22 | 04.67 | -00 | 11 | 59.1 | | | 688 |
| /1980b | 1981 | 03 | 30.31736 | 12 | 22 | 03.48 | -00 | 11 | 51.2 | | | 688 |
| /1980b | 1981 | 03 | 30.51667 | 12 | 21 | 58.33 | -00 | 11 | 14.3 | 12.5T | | 394 |
| /1980b | 1981 | 03 | 30.55747 | 12 | 21 | 57.23 | -00 | 11 | 07.1 | | | 394 |
| /1980b | 1981 | 04 | 01.21181 | 12 | 21 | 14.40 | -00 | 06 | 22.5 | | | 688 |
| /1980b | 1981 | 04 | 01.25069 | 12 | 21 | 13.38 | -00 | 06 | 15.5 | | | 688 |
| /1980b | 1981 | 04 | 03.29265 | 12 | 20 | 20.43 | -00 | 00 | 21.4 | | | 7 801 |
| /1980b | 1981 | 04 | 05.19236 | 12 | 19 | 31.52 | +00 | 04 | 58.8 | | | 688 |
| /1980b | 1981 | 04 | 05.23611 | 12 | 19 | 30.38 | +00 | 05 | 06.8 | | | 688 |
| /1980b | 1981 | 04 | 09.20556 | 12 | 17 | 49.68 | +00 | 16 | 04.3 | | | 688 |
| /1980b | 1981 | 04 | 09.22292 | 12 | 17 | 49.37 | +00 | 16 | 08.9 | | | 688 |
| /1980b | 1981 | 04 | 09.24097 | 12 | 17 | 48.76 | +00 | 16 | 10.0 | | | 688 |
| /1980b | 1981 | 04 | 09.25764 | 12 | 17 | 48.41 | +00 | 16 | 13.8 | | | 688 |

Periodic Comet Brooks 2

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| /1980f | 1981 | 01 | 26.17085 | 00 | 59 | 23.81 | +02 | 12 | 57.6 | | | 675 |

Periodic Comet Stephan-Oterma

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| /1980g | 1980 | 12 | 02.77083 | 05 | 31 | 20.33 | +20 | 28 | 05.0 | | | 119 |
| /1980g | 1980 | 12 | 04.80000 | 05 | 31 | 32.93 | +21 | 34 | 55.8 | | | 119 |
| /1980g | 1980 | 12 | 05.56771 | 05 | 31 | 36.26 | +22 | 00 | 33.6 | | | 882 |
| /1980g | 1980 | 12 | 05.57118 | 05 | 31 | 36.24 | +22 | 00 | 40.9 | | | 882 |
| /1980g | 1980 | 12 | 19.06944 | 05 | 31 | 42.71 | +29 | 26 | 24.5 | | | 119 |
| /1980g | 1981 | 01 | 26.18092 | 05 | 49 | 19.33 | +42 | 39 | 23.3 | | | 675 |
| /1980g | 1981 | 01 | 27.18780 | 05 | 50 | 28.40 | +42 | 48 | 41.3 | | | 657 |
| /1980g | 1981 | 02 | 15.14596 | 06 | 18 | 10.22 | +44 | 20 | 29.6 | | | 675 |

Periodic Comet Tuttle

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| /1980h | 1980 | 11 | 06.97006 | 10 | 06 | 52.56 | +37 | 14 | 21.8 | 8.0T | | 210 |
| /1980h | 1980 | 11 | 06.98117 | 10 | 06 | 53.89 | +37 | 13 | 35.3 | 8.1T | | 210 |
| /1980h | 1980 | 11 | 08.93935 | 10 | 10 | 26.02 | +34 | 42 | 23.4 | 8.2T | | 210 |
| /1980h | 1980 | 11 | 11.93120 | 10 | 15 | 39.05 | +30 | 27 | 40.4 | 8.3T | | 210 |
| /1980h | 1980 | 11 | 11.98415 | 10 | 15 | 44.59 | +30 | 22 | 50.2 | | | 210 |
| /1980h | 1980 | 11 | 15.90980 | 10 | 22 | 18.98 | +23 | 58 | 25.8 | | | 210 |
| /1980h | 1980 | 11 | 15.92404 | 10 | 22 | 20.50 | +23 | 56 | 54.1 | | | 210 |
| /1980h | 1980 | 11 | 15.95911 | 10 | 22 | 23.58 | +23 | 53 | 09.6 | 8.0T | | 210 |

Periodic Comet Borrelly

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| /1980i | 1981 | 01 | 26.12050 | 00 | 52 | 08.71 | -07 | 58 | 17.1 | | | 675 |
| /1980i | 1981 | 01 | 27.10644 | 00 | 54 | 23.78 | -07 | 19 | 26.5 | | | 675 |
| /1980i | 1981 | 02 | 05.43264 | 01 | 16 | 15.34 | -01 | 11 | 30.6 | 11 | T | 375 |
| /1980i | 1981 | 02 | 05.43628 | 01 | 16 | 15.95 | -01 | 11 | 18.7 | | | 375 |
| /1980i | 1981 | 03 | 18.17222 | 03 | 06 | 34.88 | +23 | 24 | 42.9 | | | 657 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| /1980i | 1981 | 03 | 30.46528 | 03 45 50.37 | +29 14 21.6 | | 12.5T | | 394 |
| /1980i | 1981 | 03 | 30.47222 | 03 45 51.46 | +29 14 30.4 | | | | 394 |
| | | | | Comet Meier (1980q) | | | | | |
| /1980q | 1981 | 01 | 26.54828 | 17 48 15.42 | +21 12 15.0 | | | 8 | 675 |
| /1980q | 1981 | 01 | 26.55731 | 17 48 15.26 | +21 12 15.4 | | | 9 | 675 |
| /1980q | 1981 | 02 | 16.51182 | 17 34 26.49 | +21 19 54.6 | | | 2 | 675 |
| /1980q | 1981 | 03 | 15.11424 | 16 48 02.36 | +22 59 15.9 | | 10 T | | 017 |
| /1980q | 1981 | 03 | 30.42639 | 15 58 30.20 | +23 25 18.3 | | | | 688 |
| | | | | Periodic Comet West-Kohoutek-Ikemura | | | | | |
| /1980r | 1981 | 02 | 15.12571 | 01 22 37.67 | -07 30 15.6 | | | 2 | 675 |
| | | | | Periodic Comet Lovas | | | | | |
| /1980s | 1981 | 04 | 03.08213 | 08 19 41.68 | +24 53 41.2 | | 19.5N | 2 | 801 |
| | | | | Comet Bradfield (1980t) | | | | | |
| /1980t | 1981 | 01 | 26.11061 | 21 28 14.34 | +05 23 52.7 | | | | 675 |
| | | | | Comet Panther (1980u) | | | | | |
| /1980u | 1980 | 12 | 30.70180 | 18 49 24.50 | +40 07 45.7 | | | | 046 |
| /1980u | 1980 | 12 | 30.70406 | 18 49 24.61 | +40 07 48.5 | | | | 046 |
| /1980u | 1981 | 01 | 04.83229 | 18 52 12.40 | +41 37 22.7 | | 9.5T | | 375 |
| /1980u | 1981 | 01 | 16.81563 | 18 59 34.69 | +46 05 53.9 | | | | 882 |
| /1980u | 1981 | 01 | 16.82083 | 18 59 34.90 | +46 06 02.4 | | | | 882 |
| /1980u | 1981 | 01 | 16.82951 | 18 59 35.27 | +46 06 15.3 | | | | 882 |
| /1980u | 1981 | 01 | 26.56495 | 19 06 22.38 | +50 55 51.2 | | | | 675 |
| /1980u | 1981 | 01 | 30.80810 | 19 09 33.58 | +53 25 18.5 | | | | 386 |
| /1980u | 1981 | 02 | 03.81655 | 19 12 42.25 | +56 00 49.5 | | | | 386 |
| /1980u | 1981 | 02 | 03.81852 | 19 12 42.32 | +56 00 54.9 | | | | 386 |
| /1980u | 1981 | 02 | 03.81979 | 19 12 42.22 | +56 00 58.4 | | | | 386 |
| /1980u | 1981 | 02 | 10.80903 | 19 18 32.48 | +61 07 25.6 | | 8 T | | 375 |
| /1980u | 1981 | 02 | 10.82292 | 19 18 33.47 | +61 08 07.8 | | | | 375 |
| /1980u | 1981 | 02 | 15.55505 | 19 22 49.77 | +65 02 09.9 | | | | 675 |
| /1980u | 1981 | 02 | 15.56269 | 19 22 50.22 | +65 02 34.4 | | | | 675 |
| /1980u | 1981 | 03 | 02.14618 | 19 40 39.8 | +79 12 47.7 | | | | 657 |
| /1980u | 1981 | 03 | 18.18333 | 07 27 56.7 | +82 40 40.3 | | | | 657 |
| /1980u | 1981 | 03 | 29.47778 | 07 47 54.49 | +70 05 59.7 | | 8.5T | | 394 |
| /1980u | 1981 | 03 | 29.50000 | 07 47 56.11 | +70 04 33.7 | | | | 394 |
| /1980u | 1981 | 03 | 30.49444 | 07 49 07.25 | +69 01 14.4 | | 8.5T | | 394 |
| /1980u | 1981 | 03 | 30.50000 | 07 49 07.96 | +69 00 53.4 | | | | 394 |
| | | | | Periodic Comet Longmore | | | | | |
| /1981a | 1981 | 02 | 06.32296 | 10 49 49.35 | +38 52 08.9 | | 18.5N | 6 | 801 |

Note 1: these images were found and measured by J. Dengel and R. Weinberger on Palomar Sky Survey prints; the identification with P/Gunn is by T. Nomura (IAUC 3540, 3588). 2: comet image weak. 3: star trails tapered. 4: nucleus D. 5: nucleus B. 6: comet image diffuse with slight condensation. 7: bright comet, strong condensation. 8: comet image very weak, measurement difficult. 9: images elongated.

* * * * *

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

| Object | Date | UT | R. A. (1950) | Decl. | Mag. | Obs. |
|---|---|---|---|---|---|---|
| 709 | 1981 | 02 28.88183 | 10 19 36.87 | +05 04 06.9 | | 046 |
| 709 | 1981 | 02 28.91395 | 10 19 35.02 | +05 04 08.7 | | 046 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1653 | | 1981 | 02 | 28.88183 | 10 | 15 | 15.76 | +07 | 26 | 42.7 | 046 |
| 1653 | | 1981 | 02 | 28.91395 | 10 | 15 | 13.89 | +07 | 26 | 50.5 | 046 |
| 1856 | | 1981 | 02 | 28.88183 | 10 | 10 | 07.15 | +06 | 43 | 56.8 | 046 |
| 1856 | | 1981 | 02 | 28.91395 | 10 | 10 | 05.05 | +06 | 44 | 12.2 | 046 |
| 1984 | | 1981 | 02 | 28.88183 | 10 | 12 | 09.29 | +07 | 19 | 16.6 | 16.8 046 |
| 1984 | | 1981 | 02 | 28.91395 | 10 | 12 | 08.44 | +07 | 19 | 25.4 | 046 |
| 2325 | | 1981 | 01 | 26.81163 | 07 | 26 | 24.12 | +20 | 45 | 53.2 | 046 |
| 2325 | | 1981 | 01 | 26.82616 | 07 | 26 | 23.20 | +20 | 45 | 55.3 | 046 |
| 2325 | | 1981 | 01 | 27.78978 | 07 | 25 | 38.38 | +20 | 48 | 08.5 | 046 |
| 2325 | | 1981 | 01 | 27.80419 | 07 | 25 | 37.70 | +20 | 48 | 10.7 | 046 |
| 2365 | | 1981 | 02 | 27.80356 | 07 | 38 | 52.17 | +17 | 22 | 43.1 | 046 |
| 2365 | | 1981 | 02 | 27.81769 | 07 | 38 | 52.06 | +17 | 22 | 42.0 | 046 |
| 2365 | | 1981 | 02 | 28.78437 | 07 | 38 | 43.19 | +17 | 22 | 09.6 | 046 |
| 2365 | | 1981 | 02 | 28.79855 | 07 | 38 | 43.07 | +17 | 22 | 09.3 | 046 |
| 1980 | XE | 1981 | 02 | 27.84139 | 07 | 23 | 52.54 | +14 | 33 | 02.1 | 046 |
| 1980 | XE | 1981 | 02 | 27.85562 | 07 | 23 | 52.22 | +14 | 32 | 56.7 | 046 |
| 1981 | CH | 1981 | 02 | 27.87698 | 08 | 37 | 58.55 | +11 | 02 | 54.9 | 046 |
| 1981 | CH | 1981 | 02 | 27.89109 | 08 | 37 | 57.76 | +11 | 02 | 44.6 | 046 |

OBSERVATIONS MADE AT TURKU. MEASURED BY H. RANTASEPPA-HELENIUS, M.-O. SNARE, J. LEHTINEN AND S. MIKKOLA. COMMUNICATED BY L. OTERMA.

| Object | Date | UT | R. A. (1950) | Decl. | Mag. | N | Obs. |
|---|---|---|---|---|---|---|---|
| 1947 | 1940 | 02 02.93008 | 07 35 32.82 | +29 08 06.3 | | | 062 |
| 1947 | 1940 | 02 02.98205 | 07 35 30.32 | +29 08 17.8 | | | 062 |
| 1939 UF | 1939 | 10 18.90468 | 01 33 40.60 | +11 28 20.0 | | 1 | 062 |
| 1939 UF | 1939 | 10 20.88011 | 01 32 02.39 | +11 19 40.0 | | | 062 |
| 1940 EF | 1940 | 04 04.86124 | 12 25 04.43 | +02 41 58.5 | | 1 | 062 |
| 1940 EF | 1940 | 04 04.87050 | 12 25 04.35 | +02 41 58.1 | | 1 | 062 |
| 1940 EF | 1940 | 04 12.92632 | 12 19 11.83 | +03 12 11.2 | | 1 | 062 |
| 1941 SY | 1941 | 09 20.97679 | 00 44 12.14 | +04 49 42.5 | | | 062 |
| 1941 SY | 1941 | 09 25.89878 | 00 39 43.24 | +04 42 39.9 | | | 062 |
| 1941 SY | 1941 | 09 27.86979 | 00 37 58.41 | +04 39 17.3 | | | 062 |
| 1942 EE | 1942 | 03 06.81596 | 09 28 39.76 | +10 21 10.7 | | | 062 |
| 1942 EE | 1942 | 03 06.84200 | 09 28 38.69 | +10 21 12.9 | | | 062 |
| 1957 UP1 | 1957 | 10 25.87956 | 01 41 18.16 | +26 23 28.8 | 15.2 | | 062 |
| 1957 UP1 | 1957 | 10 25.90051 | 01 41 17.18 | +26 23 05.4 | | | 062 |

Note 1: near edge of plate.

OBSERVATIONS MADE AT THE PURPLE MOUNTAIN OBSERVATORY BY J.-X. YANG, S.-L. WEI, Q. WANG, J.-Q. ZHENG, Y.-L. GE AND C.-L. YUAN. FROM PUBL. PURPLE MOUNTAIN OBS. 1980 NOS. 1 AND 3.

| Object | Date | UT | R. A. (1950) | Decl. | O - C | | Obs. |
|---|---|---|---|---|---|---|---|
| 6 | 1979 | 05 28.64929 | 16 09 08.15 | +02 01 08.4 | 0.0 | 0 | 330 |
| 10 | 1979 | 09 25.57853 | 23 26 35.58 | +02 07 41.7 | 0.0 | 0 | 330 |
| 10 | 1979 | 09 28.58478 | 23 24 30.49 | +01 53 43.6 | 0.0 | 0 | 330 |
| 10 | 1979 | 10 10.49663 | 23 17 12.84 | +01 01 05.7 | 0.0 | 0 | 330 |
| 12 | 1979 | 12 13.57925 | 05 35 13.94 | +17 09 49.6 | 0.0 | 0 | 330 |
| 14 | 1978 | 11 27.64854 | 05 13 42.75 | +19 50 29.9 | 0.0 | 0 | 330 |
| 14 | 1978 | 11 28.64229 | 05 12 44.02 | +19 52 15.3 | 0.0 | 0 | 330 |
| 16 | 1978 | 05 01.60412 | 15 05 32.87 | -12 56 38.0 | 0.0 | 0 | 330 |
| 16 | 1978 | 05 06.65897 | 15 01 30.61 | -12 37 40.3 | 0.0 | 0 | 330 |
| 17 | 1978 | 12 05.62978 | 03 54 54.44 | +12 41 02.1 | 0.0 | 1- | 330 |
| 21 | 1979 | 01 04.70273 | 07 45 52.08 | +23 37 50.8 | 0.0 | 0 | 330 |
| 21 | 1979 | 01 18.53742 | 07 30 52.97 | +24 24 52.2 | 0.0 | 0 | 330 |
| 21 | 1979 | 01 25.52138 | 07 23 36.29 | +24 43 51.3 | 0.1- | 0 | 330 |
| 22 | 1979 | 05 22.64378 | 16 06 33.85 | -19 36 59.5 | 0.0 | 0 | 330 |
| 22 | 1979 | 05 28.59999 | 16 01 01.13 | -19 42 03.2 | 0.0 | 0 | 330 |
| 24 | 1979 | 12 12.65564 | 05 54 03.74 | +24 19 08.5 | 0.0 | 0 | 330 |
| 27 | 1979 | 12 12.65564 | 05 34 36.94 | +22 37 26.4 | 0.1- | 0 | 330 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 27 | 1979 | 12 | 14.67091 | 05 | 32 | 28.01 | +22 | 38 | 40.9 | 0.0 | 0 | 330 |
| 27 | 1979 | 12 | 26.63258 | 05 | 19 | 59.14 | +22 | 44 | 29.0 | 0.0 | 0 | 330 |
| 35 | 1979 | 01 | 25.57693 | 08 | 24 | 22.06 | +29 | 21 | 39.5 | 0.1- | 1+ | 330 |
| 35 | 1979 | 02 | 20.54206 | 08 | 00 | 33.75 | +29 | 14 | 43.8 | 0.1- | 0 | 330 |
| 42 | 1979 | 12 | 12.49869 | 04 | 38 | 06.05 | +19 | 37 | 36.6 | 0.1- | 0 | 330 |
| 42 | 1979 | 12 | 14.62091 | 04 | 35 | 46.96 | +19 | 40 | 35.9 | 0.0 | 0 | 330 |
| 43 | 1978 | 04 | 06.66597 | 13 | 26 | 27.87 | -15 | 29 | 12.0 | 0.0 | 0 | 330 |
| 43 | 1978 | 04 | 13.70484 | 13 | 19 | 33.09 | -14 | 46 | 10.8 | 0.0 | 0 | 330 |
| 44 | 1979 | 09 | 25.62922 | 00 | 20 | 42.88 | -03 | 02 | 51.1 | 0.0 | 0 | 330 |
| 44 | 1979 | 10 | 26.54455 | 23 | 56 | 16.34 | -05 | 49 | 45.8 | 0.0 | 0 | 330 |
| 45 | 1978 | 05 | 01.68120 | 15 | 10 | 49.39 | -06 | 39 | 19.5 | 0.0 | 0 | 330 |
| 45 | 1979 | 09 | 19.60771 | 22 | 54 | 53.48 | -10 | 28 | 32.0 | 0.0 | 0 | 330 |
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| 46 | 1978 | 10 | 31.70396 | 04 | 02 | 47.03 | +17 | 33 | 02.2 | 0.0 | 0 | 330 |
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| 46 | 1978 | 11 | 30.60061 | 03 | 34 | 43.60 | +15 | 40 | 00.8 | 0.0 | 0 | 330 |
| 46 | 1978 | 12 | 05.57908 | 03 | 30 | 29.24 | +15 | 25 | 06.6 | 0.0 | 0 | 330 |
| 48 | 1978 | 09 | 29.50366 | 23 | 29 | 35.69 | -02 | 01 | 02.0 | 0.1- | 1- | 330 |
| 48 | 1979 | 12 | 13.57925 | 05 | 32 | 20.63 | +13 | 37 | 21.8 | 0.0 | 0 | 330 |
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| 50 | 1978 | 12 | 02.50895 | 03 | 43 | 09.86 | +14 | 35 | 35.0 | 0.0 | 1+ | 330 |
| 50 | 1978 | 12 | 06.67839 | 03 | 39 | 58.29 | +14 | 26 | 55.2 | 0.0 | 1+ | 330 |
| 52 | 1979 | 05 | 24.63543 | 16 | 18 | 20.66 | -11 | 33 | 37.2 | 0.1- | 0 | 330 |
| 53 | 1979 | 10 | 12.57094 | 01 | 38 | 22.69 | +02 | 12 | 04.1 | 0.0 | 0 | 330 |
| 65 | 1978 | 10 | 28.60826 | 02 | 29 | 23.76 | +10 | 12 | 32.7 | 0.0 | 0 | 330 |
| 65 | 1978 | 11 | 03.54701 | 02 | 25 | 10.17 | +09 | 49 | 41.2 | 0.0 | 0 | 330 |
| 65 | 1979 | 12 | 26.68015 | 06 | 05 | 23.77 | +19 | 08 | 55.2 | 0.0 | 0 | 330 |
| 67 | 1979 | 12 | 13.57925 | 05 | 33 | 11.36 | +15 | 06 | 17.3 | 0.0 | 0 | 330 |
| 70 | 1979 | 03 | 27.64853 | 12 | 18 | 08.72 | +12 | 12 | 13.2 | 0.1- | 0 | 330 |
| 74 | 1978 | 09 | 30.63815 | 01 | 35 | 56.36 | +10 | 01 | 51.6 | 1.2+ | 8+ | 330 |
| 76 | 1978 | 04 | 29.58538 | 14 | 20 | 24.50 | -13 | 17 | 14.0 | 0.0 | 0 | 330 |
| 77 | 1978 | 04 | 12.65208 | 13 | 47 | 32.67 | -12 | 48 | 14.4 | 0.0 | 0 | 330 |
| 88 | 1978 | 12 | 23.63193 | 07 | 00 | 08.76 | +22 | 18 | 05.2 | 0.1- | 0 | 330 |
| 88 | 1978 | 12 | 29.65691 | 06 | 54 | 20.84 | +22 | 17 | 59.1 | 0.1- | 0 | 330 |
| 88 | 1979 | 01 | 04.64023 | 06 | 48 | 27.81 | +22 | 17 | 22.8 | 0.0 | 0 | 330 |
| 88 | 1979 | 01 | 18.48736 | 06 | 35 | 33.65 | +22 | 13 | 32.9 | 0.0 | 0 | 330 |
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| 90 | 1978 | 10 | 30.58400 | 02 | 27 | 01.31 | +12 | 39 | 38.7 | 0.1- | 0 | 330 |
| 90 | 1978 | 11 | 07.61505 | 02 | 20 | 29.56 | +12 | 12 | 10.7 | 0.1- | 0 | 330 |
| 92 | 1979 | 02 | 27.58124 | 10 | 02 | 40.68 | +22 | 44 | 08.7 | 0.0 | 0 | 330 |
| 94 | 1979 | 09 | 19.60771 | 23 | 07 | 48.93 | -08 | 56 | 03.8 | 0.0 | 0 | 330 |
| 102 | 1979 | 03 | 03.61488 | 11 | 08 | 02.04 | -00 | 00 | 41.8 | 0.0 | 0 | 330 |
| 102 | 1979 | 03 | 24.54180 | 10 | 51 | 42.27 | +02 | 04 | 01.1 | 0.0 | 0 | 330 |
| 105 | 1978 | 10 | 09.68329 | 02 | 40 | 24.21 | +02 | 03 | 16.2 | 0.0 | 0 | 330 |
| 105 | 1978 | 10 | 29.57146 | 02 | 23 | 56.71 | -01 | 50 | 26.2 | 0.0 | 0 | 330 |
| 108 | 1978 | 02 | 02.66197 | 10 | 08 | 34.46 | +14 | 31 | 06.8 | 0.0 | 0 | 330 |
| 110 | 1979 | 05 | 18.67438 | 15 | 26 | 50.02 | -18 | 30 | 21.4 | 0.1- | 0 | 330 |
| 111 | 1979 | 09 | 28.58478 | 23 | 29 | 36.75 | +03 | 27 | 17.1 | 0.0 | 0 | 330 |
| 111 | 1979 | 10 | 10.49663 | 23 | 20 | 27.61 | +02 | 30 | 56.8 | 0.0 | 0 | 330 |
| 114 | 1979 | 02 | 26.61424 | 10 | 35 | 45.38 | +07 | 46 | 47.3 | 0.1+ | 0 | 330 |
| 116 | 1978 | 12 | 24.58823 | 06 | 31 | 23.94 | +26 | 16 | 16.6 | 0.2+ | 0 | 330 |
| 122 | 1979 | 01 | 26.55471 | 08 | 07 | 17.97 | +18 | 10 | 35.0 | 0.0 | 0 | 330 |
| 122 | 1979 | 02 | 17.60596 | 07 | 51 | 29.85 | +19 | 07 | 10.8 | 0.0 | 0 | 330 |
| 124 | 1979 | 09 | 26.58547 | 00 | 57 | 36.62 | +05 | 54 | 19.8 | 0.0 | 0 | 330 |
| 124 | 1979 | 10 | 21.59108 | 00 | 37 | 27.40 | +03 | 19 | 43.0 | 0.1- | 1- | 330 |
| 124 | 1979 | 10 | 26.57649 | 00 | 34 | 02.40 | +02 | 53 | 10.6 | 0.0 | 0 | 330 |
| 125 | 1979 | 01 | 25.62693 | 08 | 50 | 50.71 | +13 | 02 | 01.1 | 0.1- | 0 | 330 |
| 127 | 1979 | 02 | 20.54206 | 07 | 58 | 38.41 | +33 | 12 | 06.4 | 0.1- | 0 | 330 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 128 | 1979 | 03 | 27.54853 | 11 | 33 | 40.28 | +12 | 41 | 32.3 | 0.0 | 0 | 330 |
| 136 | 1978 | 04 | 29.63400 | 14 | 35 | 32.98 | -05 | 37 | 35.4 | 0.0 | 0 | 330 |
| 137 | 1978 | 03 | 12.60866 | 10 | 16 | 33.94 | -02 | 17 | 03.2 | 0.0 | 0 | 330 |
| 137 | 1979 | 05 | 24.56598 | 14 | 43 | 23.69 | -06 | 22 | 38.6 | 0.0 | 0 | 330 |
| 140 | 1978 | 10 | 09.73259 | 03 | 06 | 19.13 | +12 | 43 | 24.0 | 0.0 | 0 | 330 |
| 142 | 1979 | 12 | 12.65564 | 05 | 54 | 31.58 | +24 | 58 | 24.3 | 0.1- | 0 | 330 |
| 143 | 1978 | 10 | 02.55481 | 00 | 15 | 29.48 | +12 | 50 | 44.6 | 0.0 | 0 | 330 |
| 147 | 1979 | 03 | 27.59992 | 11 | 58 | 07.99 | -02 | 34 | 39.8 | 0.0 | 1- | 330 |
| 149 | 1978 | 11 | 28.58882 | 03 | 59 | 26.53 | +18 | 42 | 55.8 | 0.0 | 0 | 330 |
| 149 | 1978 | 12 | 06.67839 | 03 | 50 | 46.62 | +18 | 18 | 22.1 | 0.0 | 0 | 330 |
| 149 | 1978 | 12 | 23.52013 | 03 | 37 | 50.66 | +17 | 44 | 16.0 | 0.0 | 0 | 330 |
| 149 | 1978 | 12 | 29.56733 | 03 | 35 | 33.16 | +17 | 40 | 23.8 | | | 330 |
| 150 | 1978 | 10 | 02.61176 | 01 | 13 | 59.92 | +08 | 31 | 22.3 | 0.0 | 1- | 330 |
| 151 | 1979 | 10 | 12.52580 | 00 | 54 | 42.03 | +01 | 22 | 57.2 | 0.0 | 0 | 330 |
| 151 | 1979 | 10 | 16.53483 | 00 | 51 | 01.96 | +01 | 10 | 30.7 | 0.0 | 0 | 330 |
| 151 | 1979 | 10 | 21.59108 | 00 | 46 | 35.36 | +00 | 56 | 41.2 | 0.0 | 0 | 330 |
| 151 | 1979 | 10 | 26.57649 | 00 | 42 | 31.63 | +00 | 45 | 41.0 | 0.1+ | 0 | 330 |
| 153 | 1978 | 10 | 31.70396 | 03 | 54 | 56.00 | +19 | 00 | 17.7 | 0.0 | 0 | 330 |
| 153 | 1978 | 11 | 30.60061 | 03 | 35 | 59.54 | +17 | 26 | 32.5 | 0.0 | 0 | 330 |
| 153 | 1978 | 12 | 05.57908 | 03 | 32 | 58.60 | +17 | 11 | 27.9 | 0.0 | 0 | 330 |
| 153 | 1978 | 12 | 23.52013 | 03 | 24 | 07.62 | +16 | 25 | 50.4 | 0.0 | 0 | 330 |
| 153 | 1978 | 12 | 29.56733 | 03 | 22 | 04.97 | +16 | 14 | 32.4 | | | 330 |
| 162 | 1978 | 09 | 30.58780 | 00 | 16 | 43.02 | -03 | 12 | 38.6 | 0.0 | 0 | 330 |
| 162 | 1979 | 12 | 13.53133 | 05 | 18 | 46.33 | +29 | 50 | 26.5 | 0.1+ | 0 | 330 |
| 167 | 1978 | 10 | 09.73259 | 03 | 04 | 13.64 | +14 | 45 | 05.8 | 0.0 | 1- | 330 |
| 170 | 1979 | 01 | 26.55471 | 08 | 01 | 08.99 | +20 | 24 | 53.9 | 0.0 | 0 | 330 |
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| 174 | 1979 | 09 | 28.68478 | 01 | 19 | 49.07 | +23 | 31 | 43.1 | 0.0 | 0 | 330 |
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| 184 | 1978 | 10 | 31.70396 | 04 | 04 | 34.45 | +22 | 24 | 24.0 | 0.0 | 0 | 330 |
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| 189 | 1978 | 10 | 30.60896 | 03 | 37 | 23.09 | +15 | 43 | 15.6 | 0.0 | 0 | 330 |
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| 196 | 1978 | 04 | 06.60139 | 12 | 47 | 03.41 | +05 | 04 | 40.5 | 0.0 | 1- | 330 |
| 200 | 1979 | 09 | 27.62645 | 23 | 47 | 31.36 | +06 | 12 | 49.0 | 0.0 | 0 | 330 |
| 200 | 1979 | 10 | 11.50219 | 23 | 36 | 09.98 | +05 | 25 | 37.5 | 0.0 | 0 | 330 |
| 201 | 1978 | 02 | 02.60988 | 09 | 48 | 55.70 | +10 | 55 | 10.5 | 0.3+ | 2- | 330 |
| 201 | 1978 | 02 | 27.54485 | 09 | 28 | 08.08 | +13 | 16 | 17.8 | 0.3+ | 1- | 330 |
| 206 | 1979 | 10 | 19.66469 | 02 | 21 | 40.88 | +08 | 17 | 49.5 | 0.0 | 0 | 330 |
| 207 | 1979 | 10 | 18.59490 | 01 | 14 | 29.51 | +06 | 59 | 24.8 | 0.0 | 0 | 330 |
| 207 | 1979 | 10 | 21.53899 | 01 | 11 | 30.82 | +06 | 47 | 25.4 | 0.0 | 0 | 330 |
| 207 | 1979 | 11 | 19.55892 | 00 | 50 | 39.78 | +05 | 35 | 27.9 | 0.0 | 0 | 330 |
| 208 | 1978 | 11 | 26.75201 | 06 | 21 | 51.09 | +25 | 52 | 04.5 | 0.1- | 0 | 330 |
| 209 | 1979 | 09 | 19.60771 | 23 | 09 | 33.66 | -07 | 46 | 56.0 | 0.0 | 0 | 330 |
| 214 | 1979 | 09 | 28.63617 | 01 | 11 | 50.62 | +10 | 47 | 54.4 | 0.0 | 0 | 330 |
| 214 | 1979 | 10 | 17.51330 | 00 | 55 | 06.71 | +09 | 29 | 57.8 | 0.0 | 0 | 330 |
| 216 | 1979 | 05 | 30.60413 | 16 | 40 | 35.66 | -11 | 18 | 08.8 | 0.0 | 0 | 330 |
| 222 | 1979 | 10 | 19.66469 | 02 | 31 | 14.31 | +12 | 39 | 08.0 | 0.5+ | 3+ | 330 |
| 223 | 1978 | 11 | 28.64229 | 05 | 09 | 43.76 | +24 | 15 | 57.8 | 0.0 | 0 | 330 |
| 226 | 1979 | 03 | 01.53295 | 09 | 59 | 58.86 | +18 | 59 | 04.6 | 0.0 | 0 | 330 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 227 | 1978 | 10 | 31.85382 | 01 | 59 | 52.91 | +24 | 35 | 06.6 | 0.0 | 0 | 330 |
| 229 | 1978 | 11 | 26.75201 | 06 | 10 | 41.43 | +25 | 47 | 46.7 | 0.0 | 0 | 330 |
| 237 | 1979 | 01 | 04.70273 | 07 | 44 | 33.06 | +27 | 43 | 20.5 | 0.2- | 0 | 330 |
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| 240 | 1978 | 04 | 12.59514 | 13 | 20 | 03.82 | -05 | 05 | 44.0 | 0.0 | 0 | 330 |
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| 243 | 1978 | 02 | 02.54322 | 09 | 20 | 16.63 | +15 | 49 | 02.0 | 0.0 | 1- | 330 |
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| 248 | 1979 | 09 | 25.57853 | 23 | 11 | 59.35 | +01 | 46 | 29.2 | 0.0 | 1+ | 330 |
| 251 | 1978 | 10 | 09.68329 | 02 | 34 | 56.39 | +01 | 53 | 06.3 | 0.1- | 0 | 330 |
| 251 | 1978 | 10 | 29.57146 | 02 | 21 | 26.34 | -00 | 15 | 18.1 | 0.0 | 0 | 330 |
| 252 | 1979 | 05 | 30.60413 | 16 | 58 | 21.93 | -11 | 18 | 41.1 | 0.0 | 0 | 330 |
| 253 | 1979 | 05 | 30.60413 | 16 | 52 | 08.91 | -11 | 30 | 36.5 | 0.0 | 0 | 330 |
| 255 | 1979 | 10 | 19.61816 | 02 | 13 | 40.89 | +18 | 37 | 23.9 | 0.2- | 0 | 330 |
| 255 | 1979 | 10 | 22.60983 | 02 | 10 | 51.10 | +18 | 33 | 07.3 | 0.2- | 1+ | 330 |
| 255 | 1979 | 10 | 26.64108 | 02 | 06 | 57.00 | +18 | 25 | 52.0 | 0.2- | 1+ | 330 |
| 255 | 1979 | 11 | 19.61726 | 01 | 45 | 26.05 | +17 | 27 | 30.2 | 0.1- | 0 | 330 |
| 259 | 1979 | 02 | 20.54206 | 08 | 04 | 37.87 | +29 | 52 | 15.7 | 0.0 | 0 | 330 |
| 260 | 1978 | 01 | 10.55369 | 06 | 00 | 46.27 | +15 | 21 | 38.6 | 0.0 | 0 | 330 |
| 260 | 1979 | 02 | 28.57532 | 09 | 44 | 17.69 | +10 | 54 | 12.3 | 0.1+ | 1- | 330 |
| 261 | 1979 | 12 | 12.65564 | 05 | 47 | 57.91 | +22 | 02 | 35.0 | 0.0 | 0 | 330 |
| 263 | 1979 | 09 | 28.63617 | 01 | 06 | 54.83 | +07 | 59 | 41.1 | 0.0 | 0 | 330 |
| 263 | 1979 | 10 | 13.50774 | 00 | 55 | 22.53 | +06 | 41 | 01.3 | 0.0 | 1- | 330 |
| 263 | 1979 | 10 | 17.51330 | 00 | 52 | 16.20 | +06 | 19 | 21.7 | 0.0 | 0 | 330 |
| 269 | 1978 | 01 | 10.55369 | 05 | 55 | 56.99 | +16 | 39 | 34.9 | 0.1- | 0 | 330 |
| 269 | 1979 | 03 | 03.66384 | 11 | 27 | 02.36 | +05 | 20 | 26.5 | 0.1- | 0 | 330 |
| 272 | 1979 | 12 | 13.53133 | 05 | 09 | 18.00 | +27 | 39 | 02.8 | 0.0 | 0 | 330 |
| 275 | 1978 | 10 | 28.60826 | 02 | 27 | 17.33 | +07 | 09 | 55.7 | 0.0 | 0 | 330 |
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| 288 | 1979 | 10 | 12.52580 | 00 | 50 | 00.35 | -01 | 02 | 49.1 | 0.0 | 0 | 330 |
| 288 | 1979 | 10 | 16.53483 | 00 | 46 | 53.57 | -01 | 21 | 57.6 | 0.0 | 0 | 330 |
| 288 | 1979 | 10 | 21.59108 | 00 | 43 | 07.55 | -01 | 43 | 56.0 | 0.0 | 1- | 330 |
| 288 | 1979 | 10 | 26.57649 | 00 | 39 | 39.91 | -02 | 02 | 57.6 | 0.0 | 0 | 330 |
| 289 | 1978 | 02 | 27.59693 | 11 | 20 | 23.89 | +01 | 35 | 13.2 | 0.0 | 0 | 330 |
| 289 | 1979 | 05 | 18.61812 | 14 | 59 | 54.78 | -09 | 42 | 57.1 | 0.0 | 0 | 330 |
| 295 | 1979 | 09 | 25.57853 | 23 | 31 | 22.34 | +01 | 39 | 59.2 | 0.2- | 2- | 330 |
| 295 | 1979 | 09 | 28.58478 | 23 | 28 | 59.34 | +01 | 24 | 15.8 | 0.2- | 2- | 330 |
| 295 | 1979 | 10 | 10.49663 | 23 | 20 | 39.08 | +00 | 24 | 39.9 | 0.2- | 1- | 330 |
| 297 | 1978 | 02 | 02.60988 | 09 | 52 | 37.42 | +14 | 46 | 28.3 | 0.1+ | 1- | 330 |
| 297 | 1978 | 02 | 27.54485 | 09 | 32 | 53.91 | +15 | 47 | 54.9 | 0.1+ | 0 | 330 |
| 299 | 1979 | 02 | 17.60596 | 08 | 02 | 10.77 | +18 | 02 | 39.2 | 0.0 | 0 | 330 |
| 303 | 1979 | 01 | 18.58458 | 08 | 25 | 54.86 | +26 | 25 | 59.8 | 0.0 | 0 | 330 |
| 303 | 1979 | 01 | 25.57693 | 08 | 19 | 22.21 | +26 | 36 | 23.1 | 0.0 | 0 | 330 |
| 303 | 1979 | 02 | 20.59796 | 07 | 58 | 35.58 | +26 | 34 | 19.8 | 0.0 | 0 | 330 |
| 305 | 1979 | 05 | 18.67438 | 15 | 25 | 59.55 | -15 | 58 | 58.6 | 0.1- | 0 | 330 |
| 308 | 1978 | 05 | 01.60412 | 14 | 54 | 03.61 | -11 | 50 | 12.0 | 0.0 | 0 | 330 |
| 308 | 1978 | 05 | 06.65897 | 14 | 49 | 50.67 | -11 | 24 | 26.1 | 0.0 | 0 | 330 |
| 309 | 1978 | 03 | 10.78986 | 13 | 00 | 59.43 | -07 | 39 | 23.7 | 0.0 | 0 | 330 |
| 309 | 1978 | 04 | 03.59101 | 12 | 41 | 54.48 | -06 | 15 | 21.1 | 0.0 | 0 | 330 |
| 310 | 1978 | 04 | 29.58538 | 14 | 05 | 19.89 | -14 | 02 | 13.5 | 0.0 | 0 | 330 |
| 311 | 1978 | 01 | 10.60439 | 06 | 13 | 20.68 | +24 | 53 | 01.4 | 0.1- | 1+ | 330 |
| 312 | 1978 | 04 | 06.66597 | 13 | 25 | 56.58 | -13 | 09 | 30.4 | 0.0 | 1- | 330 |
| 312 | 1979 | 09 | 19.60771 | 23 | 10 | 23.46 | -10 | 07 | 06.0 | 0.0 | 0 | 330 |
| 313 | 1978 | 07 | 04.57834 | 17 | 18 | 53.36 | -04 | 54 | 15.4 | 0.0 | 0 | 330 |
| 314 | 1978 | 02 | 27.59693 | 11 | 15 | 40.60 | +03 | 19 | 36.1 | 0.0 | 0 | 330 |
| 320 | 1978 | 04 | 06.66597 | 13 | 41 | 29.99 | -14 | 15 | 56.9 | 0.1- | 0 | 330 |
| 321 | 1979 | 09 | 26.63478 | 00 | 46 | 15.92 | +02 | 41 | 02.7 | 0.6- | 4- | 330 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 321 | | 1979 | 10 | 11.55080 | 00 | 34 | 15.54 | +01 | 36 | 50.2 | 0.6- 4- 330 |
| 321 | | 1979 | 10 | 15.53760 | 00 | 31 | 09.46 | +01 | 21 | 00.4 | 0.6- 4- 330 |
| 321 | | 1979 | 10 | 19.51469 | 00 | 28 | 12.83 | +01 | 06 | 22.7 | 0.6- 4- 330 |
| 321 | | 1979 | 10 | 22.54108 | 00 | 26 | 06.21 | +00 | 56 | 12.6 | 0.6- 4- 330 |
| 329 | | 1978 | 05 | 11.56661 | 15 | 02 | 17.59 | +03 | 40 | 27.8 | 0.1- 0 330 |
| 331 | | 1978 | 09 | 30.63815 | 01 | 37 | 34.20 | +09 | 38 | 48.8 | 0.1- 0 330 |
| 332 | | 1979 | 01 | 04.70273 | 07 | 53 | 37.60 | +25 | 07 | 25.8 | 0.0 0 330 |
| 332 | | 1979 | 01 | 18.53742 | 07 | 40 | 09.99 | +25 | 43 | 48.1 | 0.0 0 330 |
| 332 | | 1979 | 01 | 25.52138 | 07 | 33 | 26.96 | +25 | 57 | 24.9 | 0.0 0 330 |
| 333 | | 1979 | 05 | 18.56708 | 14 | 44 | 13.97 | -20 | 24 | 29.9 | 0.0 0 330 |
| 334 | | 1978 | 11 | 28.58882 | 03 | 47 | 35.07 | +13 | 59 | 15.0 | 0.0 0 330 |
| 334 | | 1978 | 12 | 02.50895 | 03 | 44 | 57.76 | +13 | 52 | 56.5 | 0.0 0 330 |
| 334 | | 1978 | 12 | 05.62978 | 03 | 42 | 56.27 | +13 | 48 | 25.3 | 0.0 0 330 |
| 334 | | 1978 | 12 | 23.52013 | 03 | 33 | 15.03 | +13 | 33 | 24.6 | 0.0 0 330 |
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| 338 | | 1979 | 02 | 26.55521 | 09 | 58 | 37.32 | +05 | 31 | 56.3 | 0.0 0 330 |
| 343 | | 1978 | 09 | 30.63815 | 01 | 44 | 00.38 | +08 | 05 | 05.3 | 0.0 0 330 |
| 343 | | 1978 | 10 | 02.66523 | 01 | 42 | 38.65 | +08 | 01 | 52.2 | 0.0 0 330 |
| 343 | | 1978 | 10 | 30.53326 | 01 | 18 | 44.86 | +07 | 05 | 44.3 | 0.0 0 330 |
| 346 | | 1979 | 05 | 24.56598 | 14 | 30 | 03.90 | -05 | 01 | 48.9 | 0.0 0 330 |
| 349 | | 1979 | 03 | 01.58226 | 10 | 58 | 18.48 | +17 | 01 | 32.1 | 0.0 0 330 |
| 350 | | 1978 | 07 | 05.57765 | 17 | 20 | 48.62 | -21 | 10 | 21.5 | 0.1- 0 330 |
| 357 | | 1979 | 07 | 28.60284 | 20 | 25 | 05.77 | -13 | 55 | 32.2 | 0.0 0 330 |
| 361 | | 1979 | 03 | 01.61281 | 11 | 21 | 20.30 | +15 | 13 | 15.6 | 0.0 0 330 |
| 363 | | 1979 | 01 | 04.70273 | 07 | 57 | 34.88 | +27 | 27 | 22.0 | 0.1- 0 330 |
| 364 | | 1979 | 03 | 27.54853 | 11 | 22 | 27.54 | +14 | 24 | 59.7 | 0.0 0 330 |
| 365 | | 1978 | 04 | 29.63400 | 14 | 45 | 09.48 | -04 | 48 | 32.6 | 0.0 1- 330 |
| 365 | | 1979 | 07 | 28.55214 | 19 | 37 | 59.70 | -03 | 07 | 00.7 | 0.0 0 330 |
| 366 | | 1979 | 11 | 18.51066 | 01 | 44 | 36.44 | +23 | 46 | 28.8 | 0.1- 1- 330 |
| 367 | | 1979 | 05 | 22.64378 | 16 | 20 | 06.27 | -19 | 41 | 06.2 | 0.2+ 1- 330 |
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| 375 | | 1979 | 02 | 26.61424 | 10 | 28 | 39.86 | +09 | 50 | 07.0 | 0.0 0 330 |
| 377 | | 1979 | 02 | 26.55521 | 10 | 10 | 41.05 | +02 | 07 | 47.2 | 0.0 0 330 |
| 382 | | 1979 | 09 | 25.57853 | 23 | 19 | 56.59 | +03 | 15 | 57.7 | 0.0 0 330 |
| 382 | | 1979 | 09 | 28.58478 | 23 | 17 | 48.42 | +03 | 04 | 12.2 | 0.0 0 330 |
| 382 | | 1979 | 10 | 10.49663 | 23 | 10 | 21.20 | +02 | 19 | 05.2 | 0.0 0 330 |
| 383 | | 1979 | 05 | 28.59999 | 15 | 46 | 45.64 | -17 | 55 | 11.4 | 0.1+ 0 330 |
| 385 | | 1978 | 09 | 29.61037 | 01 | 16 | 21.04 | +19 | 59 | 55.7 | 0.0 0 330 |
| 388 | | 1978 | 04 | 06.66597 | 13 | 38 | 03.81 | -15 | 17 | 08.1 | 0.0 0 330 |
| 388 | | 1978 | 04 | 13.70484 | 13 | 32 | 16.54 | -14 | 58 | 23.8 | 0.0 0 330 |
| 389 | | 1978 | 02 | 01.47928 | 07 | 36 | 05.74 | +17 | 28 | 47.1 | 0.0 0 330 |
| 391 | | 1978 | 04 | 29.58538 | 14 | 19 | 47.52 | -10 | 46 | 23.9 | 0.1- 0 330 |
| 394 | | 1979 | 02 | 27.66700 | 10 | 36 | 30.73 | +18 | 13 | 11.4 | 0.0 0 330 |
| 395 | | 1978 | 11 | 26.75201 | 06 | 27 | 25.16 | +22 | 45 | 19.6 | 0.0 1- 330 |
| 405 | | 1979 | 09 | 28.68478 | 01 | 09 | 45.41 | +22 | 42 | 14.2 | 0.0 0 330 |
| 410 | | 1978 | 03 | 12.67671 | 12 | 45 | 07.45 | +14 | 09 | 44.4 | 0.0 1+ 330 |
| 410 | | 1978 | 04 | 06.55278 | 12 | 24 | 24.99 | +16 | 49 | 35.7 | 0.0 1+ 330 |
| 413 | | 1978 | 12 | 23.63193 | 06 | 55 | 20.43 | +19 | 29 | 34.6 | 0.1- 0 330 |
| 413 | | 1978 | 12 | 29.65691 | 06 | 48 | 12.41 | +20 | 24 | 50.1 | 0.1- 0 330 |
| 413 | | 1979 | 01 | 04.64023 | 06 | 41 | 04.98 | +21 | 18 | 30.2 | 0.1- 0 330 |
| 413 | | 1979 | 01 | 18.48736 | 06 | 26 | 09.36 | +23 | 12 | 18.5 | 0.1- 0 330 |
| 413 | | 1979 | 01 | 22.56097 | 06 | 22 | 31.16 | +23 | 42 | 02.3 | 0.1- 0 330 |
| 419 | | 1978 | 02 | 01.47928 | 07 | 30 | 17.02 | +16 | 31 | 05.2 | 0.0 0 330 |
| 420 | | 1979 | 10 | 21.64385 | 02 | 43 | 28.70 | +19 | 59 | 47.7 | 0.1- 0 330 |
| 420 | | 1979 | 10 | 27.72649 | 02 | 39 | 12.37 | +19 | 32 | 58.1 | 0.1- 0 330 |
| 421 | | 1979 | 03 | 24.65292 | 11 | 52 | 21.17 | -00 | 45 | 57.2 | 0.5- 3- 330 |
| 425 | | 1979 | 12 | 12.49869 | 04 | 26 | 04.47 | +22 | 52 | 18.1 | 0.1- 0 330 |
| 425 | | 1979 | 12 | 14.62091 | 04 | 24 | 08.15 | +22 | 50 | 18.4 | 0.1- 0 330 |
| 435 | | 1979 | 12 | 13.53133 | 05 | 14 | 44.72 | +25 | 40 | 11.9 | 0.0 0 330 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 439 | 1979 | 05 | 24.56598 | 14 | 43 | 17.34 | -03 | 41 | 45.7 | 0.0 | 0 330 |
| 440 | 1979 | 05 | 18.56708 | 14 | 53 | 23.66 | -19 | 09 | 15.4 | 0.0 | 0 330 |
| 441 | 1978 | 11 | 28.70132 | 05 | 22 | 47.56 | +22 | 45 | 07.6 | 0.1+ | 0 330 |
| 442 | 1978 | 02 | 02.60988 | 09 | 51 | 19.72 | +14 | 03 | 49.5 | 0.0 | 0 330 |
| 442 | 1978 | 02 | 27.54485 | 09 | 28 | 09.16 | +17 | 20 | 19.8 | 0.0 | 0 330 |
| 442 | 1979 | 07 | 28.60284 | 20 | 24 | 13.90 | -17 | 20 | 37.6 | 0.0 | 1- 330 |
| 444 | 1979 | 09 | 28.63617 | 01 | 23 | 42.70 | +09 | 01 | 11.1 | 0.0 | 0 330 |
| 444 | 1979 | 10 | 17.51330 | 01 | 10 | 44.00 | +05 | 49 | 49.5 | 0.0 | 0 330 |
| 447 | 1979 | 03 | 01.61281 | 11 | 32 | 43.52 | +10 | 35 | 34.3 | 0.0 | 0 330 |
| 449 | 1979 | 05 | 22.64378 | 16 | 06 | 50.46 | -18 | 52 | 53.6 | 0.1- | 0 330 |
| 449 | 1979 | 05 | 28.59999 | 16 | 00 | 55.25 | -18 | 43 | 06.7 | 0.1- | 0 330 |
| 454 | 1979 | 12 | 13.53133 | 05 | 09 | 36.46 | +30 | 10 | 10.0 | 0.0 | 0 330 |
| 456 | 1979 | 05 | 24.63543 | 16 | 25 | 56.17 | -14 | 22 | 10.9 | 0.5- | 0 330 |
| 461 | 1979 | 02 | 28.57532 | 09 | 38 | 12.87 | +13 | 45 | 32.4 | 0.0 | 0 330 |
| 462 | 1978 | 11 | 03.54701 | 02 | 05 | 28.88 | +07 | 40 | 50.4 | 0.1+ | 1+ 330 |
| 462 | 1978 | 11 | 07.61505 | 02 | 02 | 12.54 | +07 | 27 | 04.3 | 0.1+ | 1+ 330 |
| 462 | 1978 | 11 | 26.59090 | 01 | 50 | 13.75 | +06 | 48 | 06.0 | 0.1+ | 1+ 330 |
| 465 | 1978 | 04 | 06.66597 | 13 | 30 | 44.57 | -17 | 43 | 35.3 | 0.1+ | 1- 330 |
| 465 | 1978 | 04 | 13.70484 | 13 | 25 | 15.73 | -17 | 19 | 08.3 | 0.1+ | 1- 330 |
| 470 | 1979 | 02 | 26.61424 | 10 | 36 | 21.31 | +05 | 12 | 42.6 | 0.0 | 0 330 |
| 476 | 1979 | 09 | 28.68478 | 01 | 07 | 41.22 | +25 | 38 | 58.1 | 0.0 | 0 330 |
| 477 | 1978 | 01 | 30.52434 | 07 | 40 | 40.41 | +29 | 14 | 23.4 | 0.1- | 0 330 |
| 479 | 1979 | 03 | 01.53295 | 09 | 56 | 37.82 | +16 | 12 | 08.9 | 0.1+ | 1+ 330 |
| 484 | 1978 | 12 | 06.72908 | 05 | 29 | 32.26 | +08 | 46 | 26.3 | 0.0 | 0 330 |
| 485 | 1979 | 03 | 24.59389 | 11 | 14 | 17.55 | -02 | 54 | 53.3 | 0.0 | 0 330 |
| 487 | 1979 | 03 | 01.58226 | 10 | 58 | 40.73 | +18 | 39 | 13.4 | 0.0 | 0 330 |
| 492 | 1979 | 10 | 12.52580 | 00 | 47 | 25.66 | +03 | 34 | 47.8 | 0.1- | 0 330 |
| 492 | 1979 | 10 | 16.53483 | 00 | 44 | 26.15 | +03 | 18 | 54.7 | 0.1- | 0 330 |
| 492 | 1979 | 10 | 21.59108 | 00 | 40 | 53.39 | +03 | 00 | 30.9 | 0.1- | 1- 330 |
| 492 | 1979 | 10 | 26.57649 | 00 | 37 | 45.00 | +02 | 44 | 49.7 | 0.1- | 1- 330 |
| 496 | 1979 | 05 | 18.67438 | 15 | 14 | 39.94 | -14 | 59 | 09.9 | 0.1- | 1- 330 |
| 498 | 1978 | 03 | 12.67671 | 12 | 47 | 22.11 | +09 | 43 | 57.8 | 0.0 | 0 330 |
| 498 | 1978 | 04 | 06.55278 | 12 | 27 | 11.28 | +12 | 06 | 05.5 | 0.0 | 0 330 |
| 500 | 1979 | 01 | 18.48736 | 06 | 35 | 02.64 | +24 | 30 | 54.8 | 0.0 | 0 330 |
| 500 | 1979 | 01 | 19.51653 | 06 | 34 | 06.17 | +24 | 27 | 47.4 | 0.0 | 0 330 |
| 500 | 1979 | 01 | 22.56097 | 06 | 31 | 27.11 | +24 | 18 | 13.9 | 0.0 | 0 330 |
| 503 | 1978 | 10 | 28.72285 | 03 | 53 | 33.72 | +17 | 31 | 44.6 | 0.3- | 1- 330 |
| 503 | 1978 | 10 | 29.69333 | 03 | 52 | 53.54 | +17 | 31 | 19.0 | 0.3- | 1- 330 |
| 503 | 1978 | 10 | 31.65014 | 03 | 51 | 28.07 | +17 | 30 | 17.0 | 0.3- | 1- 330 |
| 503 | 1978 | 10 | 31.70396 | 03 | 51 | 25.70 | +17 | 30 | 14.5 | 0.3- | 1- 330 |
| 503 | 1978 | 11 | 03.70326 | 03 | 49 | 03.98 | +17 | 28 | 17.7 | 0.3- | 2- 330 |
| 503 | 1978 | 11 | 07.76018 | 03 | 45 | 34.74 | +17 | 25 | 10.9 | 0.3- | 2- 330 |
| 503 | 1978 | 11 | 26.69715 | 03 | 27 | 11.02 | +17 | 07 | 39.1 | 0.4- | 2- 330 |
| 503 | 1978 | 11 | 30.60061 | 03 | 23 | 28.85 | +17 | 04 | 38.7 | 0.4- | 1- 330 |
| 503 | 1978 | 12 | 05.57908 | 03 | 19 | 04.85 | +17 | 01 | 53.5 | 0.4- | 2- 330 |
| 505 | 1979 | 01 | 04.70273 | 07 | 58 | 04.32 | +26 | 52 | 16.0 | 0.0 | 0 330 |
| 507 | 1979 | 09 | 28.68478 | 01 | 25 | 20.19 | +24 | 09 | 41.4 | 0.2- | 1- 330 |
| 509 | 1978 | 04 | 29.58538 | 14 | 01 | 22.88 | -13 | 37 | 44.5 | 0.2+ | 1- 330 |
| 513 | 1979 | 02 | 26.55521 | 10 | 05 | 25.33 | +03 | 50 | 10.1 | 0.0 | 0 330 |
| 518 | 1979 | 05 | 22.56323 | 15 | 51 | 42.84 | -13 | 05 | 32.2 | 0.0 | 0 330 |
| 521 | 1978 | 04 | 29.53399 | 14 | 02 | 21.68 | +00 | 59 | 32.3 | 0.0 | 1- 330 |
| 522 | 1978 | 10 | 29.63326 | 03 | 24 | 12.74 | +12 | 35 | 28.0 | 0.1+ | 0 330 |
| 522 | 1978 | 11 | 03.60118 | 03 | 20 | 47.60 | +12 | 21 | 56.6 | 0.1+ | 0 330 |
| 522 | 1978 | 11 | 07.66296 | 03 | 17 | 52.42 | +12 | 11 | 03.2 | 0.1+ | 0 330 |
| 522 | 1978 | 11 | 26.64715 | 03 | 04 | 14.81 | +11 | 27 | 56.5 | 0.0 | 1+ 330 |
| 522 | 1978 | 11 | 30.51520 | 03 | 01 | 45.28 | +11 | 21 | 42.6 | 0.0 | 1+ 330 |
| 523 | 1979 | 10 | 21.64385 | 02 | 28 | 01.82 | +19 | 48 | 06.2 | 0.1- | 1- 330 |
| 523 | 1979 | 10 | 27.72649 | 02 | 23 | 07.47 | +19 | 19 | 18.9 | 0.1- | 0 330 |
| 528 | 1979 | 03 | 27.64853 | 12 | 05 | 54.77 | +14 | 39 | 31.0 | 0.0 | 0 330 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 530 | | 1978 | 02 | 02.66197 | 10 | 13 | 01.43 | +14 | 37 | 09.6 | 0.0 | 0 | 330 |
| 532 | | 1978 | 05 | 11.61522 | 15 | 17 | 29.02 | +07 | 00 | 36.6 | 0.1- | 1- | 330 |
| 533 | | 1978 | 09 | 30.63815 | 01 | 43 | 28.27 | +07 | 14 | 18.8 | 0.1- | 0 | 330 |
| 533 | | 1978 | 10 | 02.66523 | 01 | 42 | 09.48 | +07 | 02 | 22.3 | 0.1- | 0 | 330 |
| 533 | | 1978 | 10 | 30.53326 | 01 | 22 | 02.09 | +04 | 16 | 10.2 | 0.1- | 1- | 330 |
| 537 | | 1979 | 05 | 30.60413 | 16 | 58 | 24.74 | -10 | 17 | 41.0 | 0.0 | 0 | 330 |
| 539 | | 1979 | 02 | 26.55521 | 09 | 58 | 41.28 | +03 | 24 | 08.0 | 0.0 | 0 | 330 |
| 541 | | 1978 | 03 | 12.60866 | 10 | 17 | 30.24 | +01 | 17 | 11.7 | 0.7+ | 6- | 330 |
| 551 | | 1978 | 04 | 29.58538 | 14 | 03 | 39.77 | -12 | 51 | 33.6 | 0.0 | 1- | 330 |
| 552 | | 1979 | 02 | 28.62602 | 10 | 40 | 47.91 | -03 | 12 | 03.5 | 0.0 | 0 | 330 |
| 562 | | 1979 | 05 | 22.64378 | 16 | 20 | 01.06 | -19 | 35 | 54.5 | 0.0 | 0 | 330 |
| 565 | | 1979 | 10 | 19.61816 | 02 | 09 | 08.69 | +17 | 36 | 41.8 | 0.0 | 0 | 330 |
| 565 | | 1979 | 10 | 22.60983 | 02 | 06 | 29.13 | +17 | 11 | 10.9 | 0.0 | 0 | 330 |
| 565 | | 1979 | 10 | 26.64108 | 02 | 02 | 49.23 | +16 | 35 | 05.4 | 0.0 | 0 | 330 |
| 565 | | 1979 | 11 | 19.61726 | 01 | 43 | 19.42 | +12 | 54 | 53.5 | 0.0 | 0 | 330 |
| 565 | | 1979 | 11 | 23.60440 | 01 | 41 | 02.93 | +12 | 22 | 24.1 | 0.0 | 0 | 330 |
| 567 | | 1979 | 10 | 12.57094 | 01 | 34 | 35.73 | +01 | 24 | 29.4 | 0.0 | 0 | 330 |
| 572 | | 1979 | 07 | 28.55214 | 19 | 39 | 23.84 | -03 | 21 | 50.7 | 0.0 | 0 | 330 |
| 577 | | 1979 | 01 | 04.70273 | 07 | 49 | 14.10 | +25 | 36 | 27.2 | 0.1+ | 0 | 330 |
| 577 | | 1979 | 01 | 18.53742 | 07 | 37 | 04.51 | +25 | 54 | 52.0 | 0.0 | 0 | 330 |
| 577 | | 1979 | 01 | 25.52138 | 07 | 31 | 01.54 | +26 | 00 | 20.9 | 0.1+ | 0 | 330 |
| 580 | | 1979 | 09 | 19.57993 | 23 | 08 | 23.78 | -10 | 56 | 14.2 | 0.0 | 0 | 330 |
| 583 | | 1979 | 10 | 21.64385 | 02 | 35 | 25.01 | +22 | 54 | 02.6 | 0.0 | 0 | 330 |
| 583 | | 1979 | 10 | 27.72649 | 02 | 30 | 46.79 | +22 | 27 | 07.8 | 0.0 | 0 | 330 |
| 584 | | 1978 | 12 | 23.63193 | 07 | 01 | 13.14 | +23 | 54 | 00.9 | 0.0 | 0 | 330 |
| 584 | | 1978 | 12 | 29.65691 | 06 | 53 | 38.51 | +23 | 30 | 38.8 | 0.0 | 0 | 330 |
| 584 | | 1979 | 01 | 04.64023 | 06 | 46 | 05.89 | +23 | 06 | 20.0 | 0.1- | 0 | 330 |
| 584 | | 1979 | 01 | 18.48736 | 06 | 30 | 33.66 | +22 | 08 | 23.9 | 0.0 | 0 | 330 |
| 584 | | 1979 | 01 | 22.56097 | 06 | 26 | 52.69 | +21 | 51 | 45.1 | 0.0 | 0 | 330 |
| 589 | | 1978 | 02 | 27.59693 | 11 | 05 | 42.97 | +01 | 49 | 30.1 | 0.2+ | 0 | 330 |
| 591 | | 1978 | 10 | 02.55481 | 00 | 19 | 52.82 | +13 | 41 | 26.2 | 0.0 | 1- | 330 |
| 596 | | 1979 | 12 | 12.49869 | 04 | 38 | 57.65 | +23 | 18 | 41.3 | 0.0 | 1- | 330 |
| 596 | | 1979 | 12 | 14.62091 | 04 | 36 | 57.06 | +23 | 21 | 11.9 | 0.0 | 1- | 330 |
| 600 | | 1979 | 03 | 27.54853 | 11 | 37 | 57.63 | +13 | 01 | 50.6 | 0.0 | 0 | 330 |
| 606 | | 1979 | 02 | 28.67532 | 11 | 19 | 35.15 | -02 | 25 | 38.4 | 0.0 | 0 | 330 |
| 606 | | 1979 | 03 | 24.54180 | 10 | 58 | 14.24 | -00 | 55 | 00.0 | 0.0 | 0 | 330 |
| 609 | | 1979 | 01 | 26.55471 | 08 | 12 | 48.48 | +15 | 45 | 56.7 | 0.0 | 0 | 330 |
| 609 | | 1979 | 02 | 17.60596 | 07 | 56 | 40.56 | +17 | 02 | 40.0 | 0.0 | 1+ | 330 |
| 611 | | 1978 | 09 | 30.63815 | 01 | 24 | 49.95 | +06 | 08 | 17.7 | 0.0 | 0 | 330 |
| 611 | | 1978 | 10 | 02.61176 | 01 | 23 | 34.34 | +05 | 50 | 32.0 | 0.0 | 0 | 330 |
| 622 | | 1979 | 03 | 03.66384 | 11 | 32 | 58.68 | +09 | 15 | 55.7 | 0.0 | 0 | 330 |
| 624 | | 1978 | 02 | 27.59693 | 11 | 17 | 54.42 | +02 | 13 | 31.2 | 0.0 | 0 | 330 |
| 629 | | 1979 | 02 | 27.58124 | 10 | 08 | 05.18 | +25 | 31 | 10.0 | 0.0 | 0 | 330 |
| 630 | | 1979 | 01 | 04.70273 | 07 | 40 | 03.70 | +22 | 59 | 56.4 | 0.0 | 0 | 330 |
| 630 | | 1979 | 01 | 18.53742 | 07 | 26 | 10.93 | +25 | 08 | 18.3 | 0.0 | 0 | 330 |
| 630 | | 1979 | 01 | 25.52138 | 07 | 19 | 20.55 | +26 | 07 | 43.9 | 0.0 | 0 | 330 |
| 631 | | 1979 | 10 | 19.61816 | 02 | 11 | 25.45 | +19 | 30 | 15.4 | 0.0 | 0 | 330 |
| 631 | | 1979 | 10 | 22.60983 | 02 | 09 | 03.67 | +19 | 01 | 15.8 | 0.1- | 0 | 330 |
| 631 | | 1979 | 10 | 26.64108 | 02 | 05 | 48.90 | +18 | 20 | 23.3 | 0.0 | 0 | 330 |
| 631 | | 1979 | 11 | 19.61726 | 01 | 48 | 26.29 | +14 | 08 | 14.8 | 0.1- | 0 | 330 |
| 631 | | 1979 | 11 | 23.60440 | 01 | 46 | 21.48 | +13 | 29 | 37.4 | 0.0 | 0 | 330 |
| 636 | | 1979 | 10 | 12.57094 | 01 | 26 | 27.64 | +05 | 36 | 47.9 | 0.1- | 0 | 330 |
| 636 | | 1979 | 10 | 18.59490 | 01 | 20 | 57.16 | +05 | 26 | 35.5 | 0.1- | 0 | 330 |
| 636 | | 1979 | 10 | 21.53899 | 01 | 18 | 18.26 | +05 | 22 | 04.8 | 0.1- | 0 | 330 |
| 636 | | 1979 | 10 | 27.67858 | 01 | 13 | 01.61 | +05 | 14 | 22.4 | 0.1- | 0 | 330 |
| 636 | | 1979 | 11 | 19.55892 | 00 | 59 | 21.00 | +05 | 18 | 18.6 | 0.1- | 0 | 330 |
| 637 | | 1978 | 10 | 31.70396 | 03 | 58 | 31.92 | +20 | 52 | 12.2 | 0.0 | 0 | 330 |
| 638 | | 1979 | 03 | 27.64853 | 12 | 07 | 19.79 | +13 | 01 | 10.8 | 0.0 | 0 | 330 |
| 639 | | 1978 | 01 | 30.57430 | 08 | 29 | 35.87 | +13 | 07 | 47.5 | 0.0 | 0 | 330 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 642 | 1978 | 03 | 10.78986 | 12 | 52 | 18.83 | -05 | 24 | 13.3 | 0.1+ | 1- 330 |
| 642 | 1978 | 04 | 03.59101 | 12 | 33 | 51.90 | -04 | 28 | 15.7 | 0.1+ | 1- 330 |
| 655 | 1979 | 09 | 27.67645 | 00 | 26 | 37.87 | -05 | 59 | 50.6 | 0.2- | 1- 330 |
| 655 | 1979 | 10 | 10.54316 | 00 | 17 | 15.76 | -07 | 12 | 07.1 | 0.2- | 1- 330 |
| 655 | 1979 | 10 | 15.59108 | 00 | 13 | 52.32 | -07 | 34 | 33.4 | 0.2- | 1- 330 |
| 655 | 1979 | 10 | 19.56955 | 00 | 11 | 25.43 | -07 | 49 | 20.0 | 0.2- | 1- 330 |
| 655 | 1979 | 10 | 26.54455 | 00 | 07 | 44.86 | -08 | 08 | 22.2 | 0.1- | 0 330 |
| 657 | 1978 | 10 | 31.58382 | 02 | 07 | 54.70 | +29 | 19 | 35.0 | 0.0 | 0 330 |
| 658 | 1979 | 12 | 13.53133 | 05 | 16 | 09.98 | +25 | 27 | 22.0 | 0.0 | 0 330 |
| 659 | 1978 | 02 | 02.66197 | 10 | 08 | 23.22 | +13 | 49 | 13.4 | 0.1+ | 0 330 |
| 662 | 1979 | 12 | 26.68015 | 06 | 04 | 04.71 | +19 | 22 | 22.7 | 0.0 | 0 330 |
| 666 | 1978 | 05 | 01.60412 | 14 | 59 | 42.99 | -15 | 04 | 58.0 | 0.3- | 0 330 |
| 666 | 1978 | 05 | 06.61105 | 14 | 55 | 22.51 | -14 | 36 | 45.5 | 0.2- | 0 330 |
| 673 | 1979 | 09 | 26.58547 | 01 | 01 | 38.37 | +09 | 15 | 44.1 | 0.0 | 0 330 |
| 673 | 1979 | 10 | 13.50774 | 00 | 48 | 24.44 | +07 | 39 | 59.1 | 0.0 | 0 330 |
| 677 | 1978 | 09 | 29.61037 | 01 | 05 | 08.81 | +19 | 52 | 52.9 | 0.0 | 0 330 |
| 683 | 1978 | 01 | 10.55369 | 05 | 50 | 59.76 | +16 | 26 | 04.4 | 0.0 | 0 330 |
| 688 | 1978 | 02 | 01.54525 | 08 | 49 | 49.88 | +07 | 59 | 58.0 | 0.0 | 0 330 |
| 689 | 1979 | 05 | 30.60413 | 16 | 43 | 52.49 | -12 | 11 | 52.4 | 0.0 | 0 330 |
| 691 | 1978 | 01 | 10.60439 | 06 | 16 | 53.60 | +27 | 14 | 27.5 | 0.1+ | 0 330 |
| 692 | 1978 | 05 | 01.68120 | 15 | 19 | 24.50 | -06 | 34 | 29.7 | 0.0 | 0 330 |
| 700 | 1978 | 11 | 28.70132 | 05 | 36 | 16.34 | +19 | 23 | 42.2 | 0.0 | 0 330 |
| 710 | 1978 | 04 | 12.59514 | 13 | 12 | 52.71 | -05 | 10 | 48.8 | 0.2+ | 1- 330 |
| 725 | 1979 | 03 | 03.66384 | 11 | 39 | 02.31 | +08 | 23 | 55.6 | 0.0 | 0 330 |
| 727 | 1978 | 02 | 02.66197 | 10 | 02 | 03.32 | +16 | 06 | 43.4 | 0.2+ | 0 330 |
| 727 | 1979 | 05 | 28.64929 | 16 | 06 | 53.19 | +01 | 21 | 29.2 | 0.1+ | 0 330 |
| 736 | 1979 | 01 | 26.61027 | 09 | 44 | 17.41 | +13 | 46 | 22.5 | 0.0 | 0 330 |
| 750 | 1978 | 05 | 06.61105 | 15 | 13 | 40.56 | -15 | 23 | 13.8 | 0.0 | 0 330 |
| 752 | 1978 | 01 | 30.52434 | 07 | 46 | 21.65 | +27 | 18 | 40.9 | 0.7- | 1+ 330 |
| 753 | 1978 | 10 | 29.63326 | 03 | 22 | 07.13 | +14 | 10 | 12.3 | 0.1- | 0 330 |
| 753 | 1978 | 11 | 03.60118 | 03 | 16 | 45.30 | +14 | 04 | 19.7 | 0.0 | 0 330 |
| 753 | 1978 | 11 | 26.64715 | 02 | 51 | 40.21 | +13 | 40 | 54.9 | 0.0 | 0 330 |
| 753 | 1978 | 11 | 30.51520 | 02 | 48 | 03.64 | +13 | 39 | 21.0 | 0.0 | 0 330 |
| 755 | 1978 | 10 | 02.66523 | 01 | 52 | 16.44 | +09 | 24 | 44.6 | 0.1- | 0 330 |
| 755 | 1978 | 10 | 30.53326 | 01 | 32 | 50.57 | +07 | 17 | 03.7 | 0.1- | 0 330 |
| 755 | 1979 | 12 | 14.67091 | 05 | 25 | 22.38 | +18 | 43 | 23.2 | 0.0 | 0 330 |
| 755 | 1979 | 12 | 26.63258 | 05 | 15 | 24.65 | +18 | 35 | 09.7 | 0.0 | 0 330 |
| 758 | 1979 | 02 | 20.59796 | 08 | 06 | 06.52 | +23 | 31 | 47.8 | 0.0 | 0 330 |
| 761 | 1978 | 01 | 10.60439 | 06 | 06 | 21.64 | +26 | 29 | 00.0 | 0.0 | 0 330 |
| 769 | 1979 | 02 | 27.66700 | 10 | 42 | 38.47 | +17 | 57 | 53.3 | 0.1+ | 0 330 |
| 770 | 1978 | 05 | 06.61105 | 15 | 11 | 16.14 | -18 | 20 | 41.7 | 0.0 | 1- 330 |
| 770 | 1979 | 09 | 27.67645 | 00 | 06 | 52.59 | -05 | 42 | 58.4 | 0.0 | 1- 330 |
| 774 | 1979 | 01 | 25.62693 | 08 | 52 | 12.24 | +10 | 38 | 53.1 | 0.0 | 0 330 |
| 790 | 1979 | 12 | 26.68015 | 05 | 57 | 03.72 | +14 | 16 | 41.7 | 0.1- | 0 330 |
| 791 | 1978 | 01 | 30.57430 | 08 | 29 | 56.33 | +17 | 45 | 32.3 | 0.0 | 1+ 330 |
| 797 | 1979 | 12 | 12.49869 | 04 | 33 | 04.40 | +20 | 05 | 29.7 | 0.0 | 0 330 |
| 797 | 1979 | 12 | 14.62091 | 04 | 31 | 00.36 | +19 | 58 | 07.6 | 0.0 | 0 330 |
| 798 | 1979 | 03 | 03.61488 | 11 | 01 | 21.86 | -04 | 45 | 59.9 | 0.0 | 0 330 |
| 801 | 1978 | 03 | 12.60866 | 10 | 28 | 18.68 | -00 | 04 | 52.9 | 0.1- | 0 330 |
| 806 | 1978 | 03 | 12.67671 | 12 | 37 | 47.99 | +12 | 16 | 16.6 | 0.0 | 0 330 |
| 806 | 1978 | 04 | 06.55278 | 12 | 17 | 17.30 | +13 | 02 | 53.4 | 0.0 | 2+ 330 |
| 808 | 1979 | 12 | 13.57925 | 05 | 48 | 50.35 | +15 | 30 | 27.4 | 0.0 | 0 330 |
| 809 | 1979 | 01 | 25.62693 | 08 | 50 | 43.76 | +12 | 32 | 56.7 | 0.0 | 0 330 |
| 811 | 1978 | 05 | 01.60412 | 14 | 58 | 04.13 | -11 | 53 | 11.3 | 0.0 | 0 330 |
| 811 | 1978 | 05 | 06.65897 | 14 | 53 | 54.50 | -11 | 34 | 24.2 | 0.0 | 0 330 |
| 813 | 1978 | 10 | 09.73259 | 02 | 59 | 58.57 | +13 | 22 | 08.8 | 0.6- | 4- 330 |
| 813 | 1978 | 10 | 30.58400 | 02 | 40 | 06.39 | +12 | 58 | 51.8 | 0.6- | 3- 330 |
| 817 | 1979 | 03 | 27.54853 | 11 | 27 | 22.50 | +17 | 28 | 48.9 | 0.2+ | 0 330 |
| 820 | 1979 | 10 | 19.56955 | 00 | 20 | 09.42 | -06 | 41 | 20.3 | 0.0 | 0 330 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 820 | 1979 | 10 | 26.54455 | 00 | 16 | 17.97 | -06 | 58 | 40.9 | 0.1- | 0 | 330 |
| 826 | 1978 | 02 | 01.54525 | 08 | 42 | 55.12 | +07 | 25 | 32.6 | 0.3- | 1+ | 330 |
| 827 | 1978 | 10 | 28.72285 | 03 | 46 | 30.79 | +14 | 28 | 17.0 | 0.0 | 0 | 330 |
| 827 | 1978 | 10 | 29.69333 | 03 | 45 | 46.04 | +14 | 23 | 17.5 | 0.0 | 0 | 330 |
| 827 | 1978 | 10 | 31.65014 | 03 | 44 | 10.50 | +14 | 12 | 57.1 | 0.0 | 0 | 330 |
| 827 | 1978 | 11 | 03.67549 | 03 | 41 | 32.51 | +13 | 57 | 10.4 | 0.0 | 0 | 330 |
| 827 | 1978 | 11 | 07.73241 | 03 | 37 | 43.39 | +13 | 35 | 42.1 | 0.0 | 0 | 330 |
| 833 | 1979 | 11 | 18.51066 | 02 | 02 | 03.37 | +25 | 01 | 49.3 | 0.0 | 0 | 330 |
| 835 | 1979 | 09 | 27.62645 | 23 | 33 | 05.69 | +01 | 38 | 22.6 | 0.0 | 0 | 330 |
| 838 | 1979 | 05 | 22.64378 | 16 | 15 | 44.56 | -20 | 12 | 27.8 | 0.0 | 0 | 330 |
| 841 | 1979 | 03 | 27.59992 | 12 | 03 | 28.35 | -01 | 34 | 20.2 | 0.1- | 1+ | 330 |
| 845 | 1979 | 03 | 27.64853 | 12 | 08 | 15.56 | +13 | 01 | 40.6 | 0.1- | 1+ | 330 |
| 846 | 1979 | 02 | 26.61424 | 10 | 20 | 39.24 | +09 | 56 | 34.4 | 0.0 | 0 | 330 |
| 847 | 1979 | 05 | 28.59999 | 15 | 48 | 02.51 | -21 | 50 | 57.2 | 0.0 | 0 | 330 |
| 850 | 1979 | 05 | 30.66385 | 17 | 01 | 32.42 | -03 | 34 | 42.3 | 0.1- | 1+ | 330 |
| 851 | 1979 | 02 | 20.64900 | 11 | 16 | 28.25 | +06 | 16 | 52.2 | 0.0 | 0 | 330 |
| 851 | 1979 | 02 | 26.66562 | 11 | 11 | 24.60 | +07 | 00 | 48.0 | 0.0 | 0 | 330 |
| 854 | 1978 | 04 | 12.59514 | 13 | 19 | 49.39 | -06 | 07 | 36.2 | 0.1- | 1+ | 330 |
| 859 | 1979 | 09 | 27.67645 | 00 | 25 | 22.36 | -09 | 54 | 50.5 | 0.1- | 1- | 330 |
| 859 | 1979 | 10 | 10.54316 | 00 | 14 | 28.76 | -10 | 02 | 50.5 | 0.1- | 2- | 330 |
| 859 | 1979 | 10 | 15.59108 | 00 | 10 | 31.34 | -09 | 59 | 42.0 | 0.1- | 1- | 330 |
| 859 | 1979 | 10 | 19.56955 | 00 | 07 | 38.25 | -09 | 54 | 30.4 | 0.1- | 1- | 330 |
| 859 | 1979 | 10 | 26.54455 | 00 | 03 | 13.39 | -09 | 39 | 22.3 | 0.2- | 0 | 330 |
| 861 | 1979 | 03 | 27.54853 | 11 | 22 | 19.74 | +14 | 16 | 01.3 | 0.0 | 0 | 330 |
| 866 | 1979 | 05 | 24.56598 | 14 | 41 | 55.34 | -06 | 43 | 01.4 | 0.0 | 0 | 330 |
| 867 | 1979 | 09 | 26.63478 | 00 | 41 | 27.11 | -01 | 36 | 10.1 | 0.1- | 1- | 330 |
| 875 | 1978 | 04 | 12.59514 | 13 | 19 | 23.91 | -06 | 01 | 59.0 | 0.0 | 0 | 330 |
| 875 | 1979 | 09 | 28.58478 | 23 | 23 | 58.96 | +04 | 47 | 27.5 | 0.0 | 0 | 330 |
| 875 | 1979 | 10 | 10.49663 | 23 | 18 | 06.33 | +02 | 11 | 24.3 | 0.0 | 0 | 330 |
| 890 | 1978 | 09 | 30.58780 | 00 | 02 | 43.22 | -05 | 48 | 59.3 | 0.0 | 0 | 330 |
| 894 | 1978 | 04 | 12.59514 | 13 | 27 | 31.70 | -05 | 07 | 06.2 | 0.1- | 0 | 330 |
| 894 | 1979 | 07 | 28.55214 | 19 | 43 | 11.44 | -02 | 07 | 02.8 | 0.1- | 0 | 330 |
| 899 | 1978 | 10 | 31.58382 | 01 | 57 | 54.72 | +25 | 34 | 06.8 | 0.1- | 2+ | 330 |
| 903 | 1979 | 01 | 26.50679 | 07 | 13 | 45.95 | +10 | 19 | 36.8 | 0.0 | 0 | 330 |
| 905 | 1979 | 02 | 27.58124 | 10 | 04 | 06.59 | +20 | 35 | 38.7 | 0.1- | 0 | 330 |
| 905 | 1979 | 03 | 01.53295 | 10 | 02 | 01.80 | +20 | 42 | 11.1 | 0.1- | 0 | 330 |
| 915 | 1979 | 01 | 25.57693 | 08 | 14 | 46.69 | +29 | 40 | 17.9 | 0.3- | 1+ | 330 |
| 915 | 1979 | 02 | 20.54206 | 07 | 50 | 17.80 | +29 | 11 | 33.5 | 0.2- | 1+ | 330 |
| 916 | 1979 | 03 | 24.54180 | 10 | 48 | 07.44 | +01 | 20 | 04.2 | 0.1- | 1+ | 330 |
| 924 | 1978 | 05 | 01.68120 | 15 | 13 | 39.44 | -05 | 01 | 44.3 | 0.0 | 1- | 330 |
| 929 | 1978 | 09 | 29.50366 | 23 | 22 | 20.81 | +01 | 56 | 28.4 | 0.1- | 1- | 330 |
| 932 | 1978 | 09 | 30.58780 | 00 | 07 | 49.95 | -02 | 17 | 48.5 | 0.1+ | 0 | 330 |
| 933 | 1978 | 02 | 02.60988 | 09 | 42 | 10.44 | +13 | 12 | 34.6 | 0.0 | 0 | 330 |
| 933 | 1978 | 02 | 27.54485 | 09 | 21 | 35.61 | +16 | 45 | 26.6 | 0.0 | 0 | 330 |
| 940 | 1978 | 01 | 10.60439 | 06 | 08 | 44.38 | +27 | 18 | 42.2 | 0.1- | 0 | 330 |
| 940 | 1979 | 02 | 27.58124 | 09 | 59 | 58.68 | +20 | 54 | 41.3 | 0.1- | 0 | 330 |
| 946 | 1979 | 09 | 19.57993 | 23 | 07 | 18.99 | -07 | 51 | 26.1 | 0.0 | 0 | 330 |
| 949 | 1978 | 02 | 02.54322 | 09 | 10 | 08.96 | +18 | 31 | 58.5 | 0.2- | 2+ | 330 |
| 953 | 1978 | 10 | 02.66523 | 01 | 44 | 50.83 | +06 | 40 | 53.7 | 0.0 | 0 | 330 |
| 953 | 1978 | 10 | 30.53326 | 01 | 19 | 13.34 | +05 | 47 | 00.8 | 0.0 | 0 | 330 |
| 958 | 1978 | 01 | 30.52434 | 07 | 52 | 51.17 | +26 | 30 | 38.3 | 1.5- | 6+ | 330 |
| 958 | 1979 | 03 | 24.65292 | 11 | 55 | 28.69 | -01 | 57 | 21.1 | 0.1- | 1- | 330 |
| 968 | 1979 | 10 | 13.50774 | 00 | 43 | 20.27 | +09 | 01 | 08.8 | 0.0 | 0 | 330 |
| 976 | 1978 | 01 | 10.55369 | 05 | 46 | 56.75 | +18 | 18 | 16.8 | 0.1+ | 1- | 330 |
| 979 | 1979 | 10 | 21.64385 | 02 | 43 | 14.86 | +19 | 26 | 07.4 | 0.0 | 0 | 330 |
| 979 | 1979 | 10 | 27.72649 | 02 | 38 | 42.03 | +18 | 46 | 31.5 | 0.0 | 0 | 330 |
| 981 | 1979 | 01 | 19.48875 | 06 | 40 | 03.62 | +25 | 35 | 15.3 | 0.0 | 0 | 330 |
| 988 | 1978 | 10 | 30.58400 | 02 | 26 | 31.88 | +14 | 19 | 10.2 | 0.1- | 0 | 330 |
| 1002 | 1979 | 09 | 25.57853 | 23 | 12 | 35.76 | -01 | 31 | 26.2 | 0.0 | 0 | 330 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1003 | 1979 | 09 | 25.62922 | 00 | 28 | 51.17 | +00 | 59 | 46.3 | 0.1+ | 1+ | 330 |
| 1003 | 1979 | 10 | 11.55080 | 00 | 17 | 18.72 | -00 | 20 | 05.7 | 0.1+ | 0 | 330 |
| 1003 | 1979 | 10 | 15.53760 | 00 | 14 | 35.64 | -00 | 38 | 18.3 | 0.1+ | 0 | 330 |
| 1003 | 1979 | 10 | 19.51469 | 00 | 12 | 03.22 | -00 | 55 | 01.5 | 0.1+ | 0 | 330 |
| 1003 | 1979 | 10 | 22.54108 | 00 | 10 | 15.12 | -01 | 06 | 42.6 | 0.0 | 0 | 330 |
| 1003 | 1979 | 10 | 27.63066 | 00 | 07 | 32.59 | -01 | 23 | 55.6 | 0.0 | 0 | 330 |
| 1007 | 1978 | 01 | 10.60439 | 06 | 05 | 01.44 | +25 | 23 | 56.7 | 0.0 | 0 | 330 |
| 1010 | 1978 | 10 | 03.61315 | 01 | 01 | 18.50 | -00 | 15 | 42.7 | 0.4- | 3- | 330 |
| 1012 | 1979 | 02 | 27.66700 | 10 | 45 | 14.00 | +15 | 33 | 40.6 | 0.0 | 0 | 330 |
| 1022 | 1978 | 12 | 24.68610 | 07 | 29 | 28.84 | +18 | 10 | 24.1 | 0.0 | 0 | 330 |
| 1037 | 1978 | 09 | 29.50366 | 23 | 30 | 47.95 | +01 | 40 | 02.4 | | | 330 |
| 1044 | 1979 | 10 | 19.66469 | 02 | 30 | 59.71 | +11 | 46 | 20.1 | 0.0 | 0 | 330 |
| 1047 | 1979 | 01 | 04.70273 | 07 | 39 | 03.71 | +26 | 45 | 59.7 | 0.0 | 0 | 330 |
| 1047 | 1979 | 01 | 18.53742 | 07 | 22 | 14.24 | +27 | 55 | 34.3 | 0.0 | 0 | 330 |
| 1047 | 1979 | 01 | 25.52138 | 07 | 14 | 30.80 | +28 | 19 | 50.3 | 0.0 | 0 | 330 |
| 1048 | 1978 | 10 | 31.70396 | 04 | 00 | 29.00 | +21 | 31 | 41.0 | 0.0 | 0 | 330 |
| 1056 | 1979 | 12 | 14.67091 | 05 | 29 | 59.95 | +19 | 54 | 52.9 | 0.0 | 0 | 330 |
| 1056 | 1979 | 12 | 26.63258 | 05 | 16 | 01.68 | +20 | 11 | 56.4 | 0.0 | 0 | 330 |
| 1057 | 1979 | 07 | 28.57506 | 20 | 29 | 02.24 | -14 | 34 | 54.7 | 0.0 | 0 | 330 |
| 1062 | 1979 | 01 | 18.58458 | 08 | 33 | 19.16 | +24 | 24 | 52.7 | 0.0 | 0 | 330 |
| 1062 | 1979 | 01 | 25.57693 | 08 | 26 | 43.01 | +24 | 37 | 38.7 | 0.0 | 0 | 330 |
| 1062 | 1979 | 02 | 20.59796 | 08 | 05 | 16.25 | +24 | 48 | 11.4 | 0.1- | 0 | 330 |
| 1067 | 1979 | 07 | 28.60284 | 20 | 31 | 39.44 | -14 | 10 | 10.0 | 0.0 | 0 | 330 |
| 1069 | 1979 | 07 | 28.60284 | 20 | 17 | 01.59 | -13 | 15 | 58.8 | 0.0 | 0 | 330 |
| 1071 | 1978 | 10 | 02.66523 | 01 | 47 | 27.47 | +06 | 13 | 33.6 | 0.0 | 0 | 330 |
| 1071 | 1978 | 10 | 30.53326 | 01 | 23 | 47.38 | +04 | 49 | 32.2 | 0.0 | 0 | 330 |
| 1074 | 1979 | 09 | 28.63617 | 01 | 08 | 21.33 | +06 | 40 | 08.2 | 0.0 | 0 | 330 |
| 1074 | 1979 | 10 | 13.50774 | 00 | 57 | 17.49 | +05 | 36 | 00.7 | 0.0 | 0 | 330 |
| 1074 | 1979 | 10 | 17.51330 | 00 | 54 | 15.93 | +05 | 18 | 33.7 | 0.0 | 0 | 330 |
| 1081 | 1978 | 01 | 30.52434 | 07 | 52 | 53.82 | +27 | 18 | 19.2 | 0.0 | 0 | 330 |
| 1082 | 1979 | 01 | 26.55471 | 08 | 19 | 88.68 | +18 | 29 | 53.5 | 0.1- | 0 | 330 |
| 1082 | 1979 | 02 | 17.60596 | 08 | 03 | 42.93 | +19 | 30 | 28.1 | 0.1+ | 1+ | 330 |
| 1083 | 1978 | 04 | 06.60139 | 12 | 52 | 00.46 | +03 | 53 | 24.3 | 0.0 | 0 | 330 |
| 1086 | 1978 | 10 | 02.55481 | 00 | 30 | 31.30 | +14 | 31 | 23.8 | 0.1- | 1- | 330 |
| 1088 | 1978 | 04 | 06.60139 | 12 | 47 | 50.77 | +03 | 51 | 30.6 | 0.1- | 1+ | 330 |
| 1092 | 1979 | 02 | 28.67532 | 11 | 34 | 22.75 | -03 | 09 | 26.1 | 0.0 | 1+ | 330 |
| 1092 | 1979 | 03 | 24.59389 | 11 | 14 | 55.27 | -01 | 40 | 19.5 | 0.1- | 0 | 330 |
| 1098 | 1979 | 02 | 28.67532 | 11 | 33 | 28.44 | -05 | 17 | 13.4 | 0.3+ | 3- | 330 |
| 1098 | 1979 | 03 | 24.59389 | 11 | 10 | 37.96 | -04 | 32 | 59.3 | 0.3+ | 4- | 330 |
| 1101 | 1979 | 05 | 28.64929 | 16 | 08 | 11.58 | -00 | 01 | 45.7 | 0.0 | 0 | 330 |
| 1109 | 1978 | 11 | 28.64229 | 04 | 54 | 33.79 | +24 | 13 | 35.9 | 0.2- | 0 | 330 |
| 1121 | 1979 | 03 | 27.59992 | 12 | 00 | 16.17 | -00 | 51 | 56.6 | 0.0 | 0 | 330 |
| 1124 | 1978 | 09 | 30.58780 | 00 | 02 | 12.51 | -04 | 22 | 14.5 | 0.1- | 0 | 330 |
| 1126 | 1979 | 10 | 19.61816 | 01 | 57 | 15.73 | +17 | 54 | 24.8 | 0.0 | 0 | 330 |
| 1126 | 1979 | 10 | 22.60983 | 01 | 53 | 54.92 | +17 | 47 | 05.1 | 0.0 | 0 | 330 |
| 1126 | 1979 | 10 | 26.64108 | 01 | 49 | 19.86 | +17 | 35 | 30.9 | 0.0 | 0 | 330 |
| 1130 | 1979 | 09 | 28.63617 | 01 | 21 | 17.17 | +10 | 27 | 28.9 | 0.0 | 0 | 330 |
| 1130 | 1979 | 10 | 17.51330 | 01 | 04 | 42.67 | +08 | 10 | 34.8 | 0.0 | 0 | 330 |
| 1135 | 1979 | 01 | 26.61027 | 09 | 49 | 19.43 | +17 | 05 | 05.5 | 0.0 | 0 | 330 |
| 1137 | 1978 | 10 | 30.53326 | 01 | 29 | 15.27 | +03 | 00 | 22.9 | 0.1+ | 1+ | 330 |
| 1142 | 1978 | 09 | 30.61037 | 01 | 35 | 37.64 | +07 | 13 | 49.7 | 0.0 | 0 | 330 |
| 1142 | 1979 | 12 | 12.65564 | 05 | 35 | 55.42 | +20 | 53 | 39.7 | 0.1- | 0 | 330 |
| 1142 | 1979 | 12 | 14.67091 | 05 | 34 | 11.78 | +20 | 52 | 57.9 | 0.0 | 0 | 330 |
| 1142 | 1979 | 12 | 26.60446 | 05 | 24 | 02.61 | +20 | 49 | 17.2 | 0.1- | 0 | 330 |
| 1144 | 1978 | 10 | 29.57146 | 02 | 11 | 21.56 | +01 | 29 | 00.4 | 0.0 | 0 | 330 |
| 1147 | 1978 | 11 | 26.72424 | 06 | 13 | 38.38 | +23 | 36 | 16.4 | 0.0 | 0 | 330 |
| 1150 | 1978 | 11 | 28.70132 | 05 | 27 | 12.59 | +19 | 56 | 14.6 | 0.0 | 0 | 330 |
| 1152 | 1978 | 12 | 24.58823 | 06 | 43 | 06.04 | +30 | 04 | 34.5 | 0.0 | 0 | 330 |
| 1153 | 1978 | 01 | 30.57430 | 08 | 25 | 31.37 | +16 | 45 | 26.7 | 0.0 | 0 | 330 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1154 | | 1978 | 04 | 06.60139 | 12 | 51 | 06.40 | +01 | 09 | 47.6 | 0.1- 0 330 |
| 1157 | | 1978 | 02 | 02.54322 | 09 | 21 | 59.04 | +20 | 17 | 43.9 | 0.2+ 2- 330 |
| 1159 | | 1979 | 02 | 27.66700 | 10 | 27 | 39.25 | +14 | 44 | 14.7 | 0.0 0 330 |
| 1164 | | 1979 | 02 | 26.66562 | 11 | 23 | 48.55 | +09 | 52 | 07.2 | 0.0 1- 330 |
| 1164 | | 1979 | 03 | 01.61281 | 11 | 22 | 08.86 | +11 | 14 | 35.5 | 0.0 1- 330 |
| 1178 | | 1979 | 01 | 26.50679 | 07 | 29 | 34.60 | +12 | 17 | 40.8 | 0.0 0 330 |
| 1180 | | 1979 | 05 | 24.56598 | 14 | 31 | 44.92 | -07 | 55 | 21.7 | 0.1+ 0 330 |
| 1181 | | 1978 | 12 | 23.63193 | 07 | 04 | 16.48 | +19 | 30 | 45.1 | 0.0 0 330 |
| 1181 | | 1978 | 12 | 29.65691 | 06 | 58 | 14.48 | +19 | 20 | 05.6 | 0.0 0 330 |
| 1181 | | 1979 | 01 | 04.64023 | 06 | 52 | 03.57 | +19 | 10 | 35.4 | 0.0 0 330 |
| 1183 | | 1978 | 04 | 12.65208 | 13 | 53 | 43.89 | -12 | 50 | 30.6 | 0.1- 1- 330 |
| 1202 | | 1978 | 10 | 02.66523 | 01 | 51 | 11.60 | +09 | 00 | 20.2 | 0.1+ 1+ 330 |
| 1202 | | 1978 | 10 | 30.53326 | 01 | 32 | 43.75 | +07 | 39 | 29.5 | 0.1+ 1+ 330 |
| 1211 | | 1978 | 02 | 02.54322 | 09 | 21 | 15.70 | +17 | 36 | 53.4 | 0.2- 1+ 330 |
| 1225 | | 1978 | 10 | 02.61176 | 01 | 20 | 49.09 | +08 | 55 | 47.9 | 0.0 0 330 |
| 1228 | | 1978 | 12 | 24.58823 | 06 | 32 | 39.53 | +26 | 01 | 33.6 | 0.1- 0 330 |
| 1233 | | 1978 | 01 | 30.57430 | 08 | 37 | 24.22 | +15 | 46 | 28.1 | 0.1+ 1- 330 |
| 1234 | | 1978 | 09 | 29.61037 | 01 | 09 | 57.86 | +20 | 58 | 37.1 | 0.1- 0 330 |
| 1243 | | 1978 | 11 | 28.64229 | 04 | 58 | 08.42 | +20 | 27 | 48.4 | 0.1- 0 330 |
| 1244 | | 1978 | 02 | 01.54525 | 08 | 53 | 35.05 | +07 | 43 | 49.0 | 0.0 0 330 |
| 1247 | | 1978 | 12 | 23.63193 | 06 | 52 | 28.98 | +20 | 46 | 07.4 | 0.1- 0 330 |
| 1247 | | 1978 | 12 | 29.65691 | 06 | 47 | 27.61 | +20 | 52 | 37.8 | 0.1- 0 330 |
| 1247 | | 1979 | 01 | 04.64023 | 06 | 42 | 23.24 | +20 | 59 | 04.3 | 0.1- 0 330 |
| 1251 | | 1978 | 01 | 30.57430 | 08 | 30 | 04.86 | +16 | 48 | 58.2 | 0.0 0 330 |
| 1256 | | 1979 | 09 | 26.58547 | 00 | 52 | 51.85 | +10 | 08 | 40.6 | 0.0 0 330 |
| 1256 | | 1979 | 10 | 13.50774 | 00 | 42 | 25.17 | +08 | 52 | 56.5 | 0.0 0 330 |
| 1259 | | 1979 | 09 | 19.57993 | 23 | 06 | 36.57 | -09 | 26 | 10.3 | 0.0 0 330 |
| 1261 | | 1978 | 05 | 01.60412 | 15 | 00 | 19.34 | -15 | 32 | 53.4 | 0.0 0 330 |
| 1261 | | 1978 | 05 | 06.61105 | 14 | 56 | 15.14 | -15 | 19 | 31.0 | 0.0 0 330 |
| 1269 | | 1978 | 10 | 29.63326 | 03 | 15 | 21.95 | +14 | 19 | 37.5 | 0.0 0 330 |
| 1269 | | 1978 | 11 | 03.60118 | 03 | 12 | 12.39 | +14 | 05 | 59.7 | 0.0 0 330 |
| 1269 | | 1978 | 11 | 07.66296 | 03 | 09 | 31.88 | +13 | 54 | 44.6 | 0.0 0 330 |
| 1269 | | 1978 | 11 | 26.64715 | 02 | 57 | 07.84 | +13 | 05 | 44.1 | 0.0 0 330 |
| 1269 | | 1978 | 11 | 30.51520 | 02 | 54 | 50.77 | +12 | 57 | 23.4 | 0.0 0 330 |
| 1275 | | 1979 | 05 | 30.66385 | 17 | 06 | 32.64 | -05 | 05 | 54.1 | 0.0 0 330 |
| 1277 | | 1979 | 12 | 14.67091 | 05 | 25 | 52.98 | +20 | 38 | 19.1 | 0.0 0 330 |
| 1289 | | 1979 | 01 | 19.56444 | 07 | 27 | 37.48 | +19 | 33 | 54.2 | 0.0 0 330 |
| 1291 | | 1979 | 05 | 22.56323 | 15 | 35 | 18.10 | -14 | 09 | 16.0 | 0.3- 0 330 |
| 1295 | | 1978 | 02 | 01.47928 | 07 | 32 | 15.07 | +17 | 52 | 59.9 | 0.1+ 0 330 |
| 1296 | | 1978 | 10 | 30.60896 | 03 | 28 | 33.49 | +18 | 56 | 43.2 | 0.0 0 330 |
| 1296 | | 1978 | 11 | 03.65118 | 03 | 25 | 06.96 | +18 | 34 | 06.8 | 0.0 0 330 |
| 1296 | | 1978 | 11 | 07.71018 | 03 | 21 | 23.44 | +18 | 09 | 52.6 | 0.0 0 330 |
| 1296 | | 1978 | 11 | 27.59611 | 03 | 02 | 35.24 | +16 | 04 | 25.5 | 0.0 0 330 |
| 1296 | | 1978 | 11 | 30.58047 | 03 | 00 | 08.28 | +15 | 47 | 01.5 | 0.0 0 330 |
| 1305 | | 1979 | 02 | 26.66562 | 11 | 15 | 09.84 | +08 | 35 | 29.8 | 0.0 0 330 |
| 1307 | | 1979 | 02 | 28.62602 | 10 | 42 | 53.38 | +00 | 44 | 27.9 | 0.0 0 330 |
| 1312 | | 1979 | 01 | 26.55471 | 08 | 06 | 30.63 | +15 | 58 | 47.3 | 0.0 0 330 |
| 1312 | | 1979 | 02 | 17.60596 | 07 | 50 | 33.08 | +19 | 15 | 10.3 | 0.1- 0 330 |
| 1315 | | 1979 | 09 | 28.58478 | 23 | 25 | 07.13 | +05 | 48 | 44.7 | 0.3- 2- 330 |
| 1319 | | 1978 | 10 | 31.70396 | 04 | 05 | 33.07 | +22 | 10 | 29.2 | 0.0 0 330 |
| 1336 | | 1978 | 11 | 28.58882 | 03 | 55 | 31.12 | +17 | 31 | 16.9 | 0.1- 1- 330 |
| 1336 | | 1978 | 12 | 02.50895 | 03 | 51 | 58.57 | +17 | 24 | 30.6 | 0.1- 0 330 |
| 1336 | | 1978 | 12 | 06.67839 | 03 | 48 | 21.24 | +17 | 17 | 54.3 | 0.2- 0 330 |
| 1336 | | 1978 | 12 | 23.52013 | 03 | 36 | 36.52 | +17 | 01 | 07.6 | 0.1- 1- 330 |
| 1336 | | 1978 | 12 | 29.56733 | 03 | 33 | 52.38 | +17 | 00 | 08.7 | 330 |
| 1345 | | 1979 | 01 | 26.55471 | 08 | 12 | 22.19 | +15 | 50 | 28.6 | 0.0 0 330 |
| 1348 | | 1978 | 11 | 28.70132 | 05 | 40 | 19.38 | +21 | 28 | 09.8 | 0.0 0 330 |
| 1353 | | 1979 | 10 | 11.50219 | 23 | 38 | 13.13 | +04 | 46 | 43.4 | 0.0 0 330 |
| 1365 | | 1979 | 10 | 21.64385 | 02 | 32 | 26.52 | +20 | 49 | 22.4 | 0.0 0 330 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1365 | | 1979 | 10 | 27.72649 | 02 | 26 | 13.44 | +20 | 13 | 16.0 | 0.0 | 0 | 330 |
| 1369 | | 1978 | 05 | 01.68120 | 15 | 17 | 50.49 | -02 | 11 | 29.0 | 0.2- | 0 | 330 |
| 1369 | | 1978 | 05 | 11.56661 | 15 | 10 | 38.31 | -00 | 59 | 10.8 | 0.2- | 1+ | 330 |
| 1369 | | 1979 | 09 | 25.62922 | 00 | 09 | 43.93 | +00 | 29 | 35.3 | 0.1- | 0 | 330 |
| 1382 | | 1978 | 02 | 02.54322 | 09 | 16 | 50.13 | +17 | 36 | 49.3 | 0.2+ | 1- | 330 |
| 1383 | | 1978 | 11 | 27.62076 | 05 | 20 | 20.72 | +23 | 05 | 46.2 | 0.0 | 0 | 330 |
| 1397 | | 1979 | 02 | 27.66700 | 10 | 42 | 58.15 | +13 | 46 | 21.4 | 0.1- | 1+ | 330 |
| 1408 | | 1979 | 09 | 27.62645 | 23 | 46 | 41.03 | +03 | 42 | 59.6 | 0.0 | 0 | 330 |
| 1408 | | 1979 | 10 | 11.50219 | 23 | 38 | 13.07 | +02 | 00 | 52.2 | 0.1- | 1- | 330 |
| 1411 | | 1979 | 03 | 03.61488 | 10 | 56 | 11.19 | -04 | 16 | 11.4 | 0.2+ | 0 | 330 |
| 1424 | | 1978 | 04 | 12.59514 | 13 | 25 | 41.89 | -03 | 46 | 11.9 | 0.0 | 0 | 330 |
| 1425 | | 1979 | 03 | 03.61488 | 11 | 00 | 26.43 | -02 | 18 | 24.8 | 0.0 | 0 | 330 |
| 1425 | | 1979 | 03 | 24.54180 | 10 | 46 | 01.74 | +01 | 41 | 43.1 | 0.0 | 0 | 330 |
| 1426 | | 1978 | 02 | 02.66197 | 10 | 07 | 46.88 | +14 | 44 | 56.2 | 0.0 | 0 | 330 |
| 1434 | | 1978 | 04 | 06.60139 | 12 | 53 | 15.49 | +05 | 27 | 13.7 | 0.1+ | 0 | 330 |
| 1439 | | 1979 | 01 | 19.48875 | 06 | 39 | 55.26 | +28 | 23 | 15.4 | 0.1- | 0 | 330 |
| 1460 | | 1979 | 03 | 01.58226 | 10 | 54 | 35.51 | +19 | 10 | 16.1 | 0.1+ | 0 | 330 |
| 1481 | | 1978 | 12 | 24.58823 | 06 | 25 | 32.51 | +28 | 22 | 29.8 | 0.1- | 0 | 330 |
| 1482 | | 1979 | 09 | 26.63478 | 00 | 31 | 47.64 | -01 | 06 | 47.5 | 0.0 | 0 | 330 |
| 1482 | | 1979 | 10 | 11.55080 | 00 | 20 | 00.27 | -02 | 12 | 51.1 | 0.0 | 0 | 330 |
| 1482 | | 1979 | 10 | 15.53760 | 00 | 17 | 05.36 | -02 | 27 | 33.2 | 0.0 | 0 | 330 |
| 1482 | | 1979 | 10 | 19.48344 | 00 | 14 | 24.24 | -02 | 40 | 15.5 | 0.0 | 0 | 330 |
| 1482 | | 1979 | 10 | 22.54108 | 00 | 12 | 28.71 | -02 | 48 | 46.7 | 0.0 | 0 | 330 |
| 1482 | | 1979 | 10 | 27.63066 | 00 | 09 | 38.52 | -03 | 00 | 03.7 | 0.0 | 0 | 330 |
| 1483 | | 1978 | 01 | 30.52434 | 07 | 44 | 09.03 | +27 | 07 | 45.0 | 0.0 | 0 | 330 |
| 1487 | | 1979 | 03 | 03.66384 | 11 | 40 | 42.17 | +05 | 59 | 59.7 | 0.0 | 0 | 330 |
| 1491 | | 1978 | 02 | 27.59693 | 11 | 04 | 26.97 | +02 | 54 | 54.9 | 0.0 | 0 | 330 |
| 1493 | | 1978 | 02 | 02.54322 | 09 | 10 | 21.72 | +17 | 27 | 54.6 | 0.1- | 0 | 330 |
| 1496 | | 1978 | 12 | 23.60416 | 06 | 58 | 53.48 | +23 | 50 | 23.8 | 0.0 | 0 | 330 |
| 1496 | | 1979 | 01 | 04.61245 | 06 | 44 | 26.45 | +23 | 57 | 25.4 | 0.0 | 0 | 330 |
| 1504 | | 1978 | 10 | 09.68329 | 02 | 39 | 55.58 | -01 | 25 | 18.0 | 0.0 | 0 | 330 |
| 1504 | | 1978 | 10 | 29.57146 | 02 | 21 | 44.76 | -02 | 49 | 15.4 | 0.0 | 1- | 330 |
| 1522 | | 1978 | 10 | 29.63326 | 03 | 16 | 13.65 | +15 | 23 | 31.0 | 0.0 | 0 | 330 |
| 1522 | | 1978 | 11 | 03.60118 | 03 | 11 | 15.06 | +15 | 17 | 02.4 | 0.0 | 0 | 330 |
| 1522 | | 1978 | 11 | 07.66296 | 03 | 06 | 57.11 | +15 | 11 | 14.4 | 0.0 | 0 | 330 |
| 1522 | | 1978 | 11 | 26.64715 | 02 | 47 | 17.41 | +14 | 47 | 38.5 | 0.0 | 0 | 330 |
| 1528 | | 1978 | 05 | 11.56661 | 14 | 56 | 31.51 | +00 | 01 | 37.2 | 0.2+ | 1- | 330 |
| 1539 | | 1979 | 10 | 19.66469 | 02 | 24 | 41.70 | +11 | 36 | 37.0 | 0.0 | 0 | 330 |
| 1541 | | 1978 | 10 | 02.61176 | 01 | 19 | 47.80 | +10 | 39 | 42.5 | 0.1- | 0 | 330 |
| 1544 | | 1979 | 01 | 04.70273 | 07 | 53 | 22.21 | +25 | 33 | 40.8 | 0.1- | 0 | 330 |
| 1544 | | 1979 | 01 | 18.53742 | 07 | 38 | 03.33 | +26 | 28 | 10.6 | 0.0 | 0 | 330 |
| 1544 | | 1979 | 01 | 25.52138 | 07 | 30 | 33.06 | +26 | 47 | 52.0 | 0.0 | 0 | 330 |
| 1545 | | 1978 | 10 | 30.60896 | 03 | 31 | 39.06 | +18 | 44 | 17.0 | 0.0 | 0 | 330 |
| 1545 | | 1978 | 11 | 03.65118 | 03 | 28 | 10.80 | +18 | 36 | 32.5 | 0.0 | 0 | 330 |
| 1545 | | 1978 | 11 | 07.71018 | 03 | 24 | 26.32 | +18 | 27 | 44.4 | 0.0 | 0 | 330 |
| 1545 | | 1978 | 11 | 27.59611 | 03 | 05 | 01.84 | +17 | 37 | 03.2 | 0.0 | 0 | 330 |
| 1545 | | 1978 | 11 | 30.58047 | 03 | 02 | 19.62 | +17 | 29 | 37.7 | 0.0 | 0 | 330 |
| 1553 | | 1978 | 11 | 28.58882 | 03 | 48 | 40.90 | +16 | 07 | 17.9 | 0.0 | 0 | 330 |
| 1553 | | 1978 | 12 | 02.48117 | 03 | 45 | 13.58 | +16 | 00 | 05.3 | 0.0 | 0 | 330 |
| 1553 | | 1978 | 12 | 06.67839 | 03 | 41 | 39.24 | +15 | 53 | 09.4 | 0.0 | 0 | 330 |
| 1553 | | 1978 | 12 | 23.52013 | 03 | 30 | 18.93 | +15 | 38 | 24.5 | 0.1- | 0 | 330 |
| 1553 | | 1978 | 12 | 29.56733 | 03 | 27 | 47.54 | +15 | 39 | 20.3 | | | 330 |
| 1557 | | 1979 | 02 | 27.66700 | 10 | 35 | 22.76 | +14 | 08 | 09.4 | 0.1- | 1+ | 330 |
| 1563 | | 1979 | 05 | 18.67438 | 15 | 34 | 33.76 | -19 | 53 | 55.2 | 0.1- | 0 | 330 |
| 1577 | | 1978 | 12 | 23.63193 | 06 | 53 | 43.72 | +19 | 11 | 23.4 | 0.0 | 0 | 330 |
| 1577 | | 1978 | 12 | 29.65691 | 06 | 46 | 50.21 | +19 | 35 | 40.0 | 0.0 | 0 | 330 |
| 1577 | | 1979 | 01 | 04.64023 | 06 | 39 | 53.58 | +20 | 00 | 26.7 | 0.1- | 0 | 330 |
| 1585 | | 1979 | 02 | 28.57532 | 09 | 46 | 32.64 | +13 | 08 | 25.0 | 0.0 | 0 | 330 |
| 1590 | | 1979 | 02 | 28.62602 | 10 | 48 | 21.04 | +00 | 15 | 06.6 | 0.2- | 1+ | 330 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1594 | | 1979 | 05 | 22.64378 | 16 | 12 | 41.36 | -18 | 57 | 10.5 | 0.0 | 0 | | 330 |
| 1595 | | 1978 | 10 | 03.61315 | 01 | 06 | 44.16 | -00 | 14 | 15.1 | 0.1- | 0 | | 330 |
| 1599 | | 1978 | 10 | 30.60896 | 03 | 27 | 24.24 | +19 | 35 | 21.0 | 0.2- | 1- | | 330 |
| 1599 | | 1978 | 11 | 03.65118 | 03 | 24 | 05.01 | +19 | 33 | 12.4 | 0.3- | 1- | | 330 |
| 1599 | | 1978 | 11 | 07.71018 | 03 | 20 | 34.16 | +19 | 30 | 07.6 | 0.3- | 1- | | 330 |
| 1599 | | 1978 | 11 | 27.59611 | 03 | 03 | 10.53 | +19 | 07 | 21.0 | 0.2- | 1- | | 330 |
| 1599 | | 1978 | 11 | 30.58047 | 03 | 00 | 51.74 | +19 | 03 | 53.0 | 0.2- | 1- | | 330 |
| 1600 | | 1979 | 05 | 18.61812 | 14 | 53 | 03.47 | -08 | 17 | 25.2 | 0.1- | 0 | | 330 |
| 1605 | | 1978 | 04 | 29.63400 | 14 | 39 | 15.90 | -03 | 59 | 55.5 | 0.0 | 0 | | 330 |
| 1613 | | 1979 | 02 | 26.61424 | 10 | 29 | 34.20 | +05 | 18 | 27.5 | 0.0 | 0 | | 330 |
| 1614 | | 1978 | 04 | 29.53399 | 13 | 59 | 14.59 | +04 | 49 | 24.8 | 0.1- | 0 | | 330 |
| 1618 | | 1978 | 10 | 03.61315 | 00 | 53 | 28.59 | +00 | 21 | 57.4 | 0.0 | 0 | | 330 |
| 1628 | | 1979 | 05 | 28.64929 | 16 | 22 | 57.21 | +04 | 02 | 07.7 | 0.0 | 0 | | 330 |
| 1633 | | 1978 | 12 | 24.68610 | 07 | 32 | 46.58 | +21 | 03 | 41.7 | 0.0 | 0 | | 330 |
| 1635 | | 1979 | 10 | 12.52580 | 00 | 38 | 04.09 | +03 | 37 | 56.6 | 0.0 | 0 | | 330 |
| 1635 | | 1979 | 10 | 16.53483 | 00 | 35 | 04.98 | +03 | 16 | 12.5 | 0.0 | 0 | | 330 |
| 1635 | | 1979 | 10 | 21.59108 | 00 | 31 | 33.49 | +02 | 50 | 31.1 | 0.0 | 0 | | 330 |
| 1635 | | 1979 | 10 | 26.57649 | 00 | 28 | 26.93 | +02 | 27 | 45.5 | 0.0 | 0 | | 330 |
| 1637 | | 1979 | 09 | 26.63478 | 00 | 41 | 30.91 | -01 | 14 | 11.0 | 0.0 | 0 | | 330 |
| 1637 | | 1979 | 10 | 11.55080 | 00 | 28 | 36.40 | -01 | 35 | 26.0 | 0.0 | 0 | | 330 |
| 1637 | | 1979 | 10 | 15.53760 | 00 | 25 | 19.01 | -01 | 38 | 58.2 | 0.0 | 0 | | 330 |
| 1637 | | 1979 | 10 | 19.51469 | 00 | 22 | 12.00 | -01 | 41 | 08.4 | 0.0 | 0 | | 330 |
| 1637 | | 1979 | 10 | 22.54108 | 00 | 19 | 57.72 | -01 | 41 | 47.5 | 0.0 | 0 | | 330 |
| 1637 | | 1979 | 10 | 27.63066 | 00 | 16 | 30.82 | -01 | 40 | 54.1 | 0.0 | 0 | | 330 |
| 1638 | | 1978 | 12 | 23.60416 | 07 | 02 | 48.28 | +22 | 15 | 57.2 | 0.0 | 0 | | 330 |
| 1651 | | 1979 | 10 | 19.66469 | 02 | 20 | 05.38 | +10 | 04 | 45.8 | 0.0 | 0 | | 330 |
| 1654 | | 1978 | 09 | 30.58780 | 00 | 18 | 20.68 | -04 | 34 | 45.0 | 0.0 | 0 | | 330 |
| 1659 | | 1979 | 02 | 28.67532 | 11 | 21 | 49.50 | -00 | 11 | 33.6 | 0.0 | 0 | | 330 |
| 1659 | | 1979 | 03 | 24.54180 | 11 | 00 | 32.46 | +00 | 42 | 34.9 | 0.0 | 0 | | 330 |
| 1675 | | 1978 | 04 | 03.54309 | 11 | 38 | 57.02 | +08 | 30 | 28.2 | 0.0 | 0 | | 330 |
| 1677 | | 1979 | 03 | 24.54180 | 10 | 45 | 54.70 | +02 | 33 | 12.6 | 0.0 | 0 | | 330 |
| 1684 | | 1979 | 10 | 19.66469 | 02 | 35 | 03.23 | +10 | 06 | 44.7 | 0.0 | 0 | | 330 |
| 1689 | | 1979 | 05 | 22.56323 | 15 | 48 | 16.14 | -10 | 49 | 56.5 | 0.0 | 0 | | 330 |
| 1693 | | 1978 | 10 | 09.68329 | 02 | 37 | 38.81 | +02 | 06 | 05.0 | 0.0 | 1- | | 330 |
| 1693 | | 1978 | 10 | 29.57146 | 02 | 18 | 33.54 | +01 | 39 | 32.2 | 0.0 | 0 | | 330 |
| 1699 | | 1979 | 01 | 26.55471 | 08 | 12 | 54.16 | +18 | 18 | 50.4 | 0.0 | 0 | | 330 |
| 1702 | | 1978 | 12 | 05.62978 | 03 | 50 | 56.76 | +09 | 46 | 19.6 | 0.1- | 0 | | 330 |
| 1703 | | 1979 | 05 | 22.56323 | 15 | 50 | 54.68 | -13 | 07 | 01.9 | 0.2+ | 0 | | 330 |
| 1706 | | 1978 | 11 | 28.64229 | 05 | 09 | 40.45 | +24 | 21 | 17.1 | 0.2+ | 0 | | 330 |
| 1713 | | 1978 | 10 | 31.70396 | 04 | 01 | 51.70 | +19 | 33 | 36.7 | 0.0 | 0 | | 330 |
| 1714 | | 1979 | 02 | 28.62602 | 10 | 43 | 07.90 | -01 | 02 | 37.3 | 0.0 | 0 | | 330 |
| 1720 | | 1979 | 12 | 12.65564 | 05 | 40 | 30.77 | +22 | 20 | 35.4 | 0.0 | 0 | | 330 |
| 1720 | | 1979 | 12 | 14.67091 | 05 | 38 | 11.40 | +22 | 20 | 11.6 | 0.0 | 0 | | 330 |
| 1720 | | 1979 | 12 | 26.63258 | 05 | 24 | 36.86 | +22 | 16 | 40.5 | 0.0 | 0 | | 330 |
| 1723 | | 1979 | 05 | 30.66385 | 17 | 05 | 53.60 | -07 | 00 | 15.4 | 0.0 | 0 | | 330 |
| 1728 | | 1978 | 01 | 10.55369 | 05 | 51 | 38.75 | +17 | 09 | 06.3 | 0.1- | 0 | | 330 |
| 1732 | | 1979 | 01 | 25.62693 | 08 | 42 | 56.92 | +10 | 45 | 28.1 | 0.0 | 0 | | 330 |
| 1737 | | 1979 | 02 | 28.67532 | 11 | 25 | 01.01 | -01 | 41 | 01.4 | 0.0 | 0 | | 330 |
| 1737 | | 1979 | 03 | 24.59389 | 11 | 04 | 53.99 | -00 | 45 | 35.7 | 0.0 | 0 | | 330 |
| 1741 | | 1978 | 12 | 24.58823 | 06 | 33 | 10.50 | +26 | 07 | 01.3 | 0.0 | 0 | | 330 |
| 1743 | | 1978 | 03 | 10.78986 | 12 | 48 | 25.42 | -06 | 37 | 31.8 | 0.0 | 0 | | 330 |
| 1743 | | 1978 | 04 | 03.59101 | 12 | 31 | 54.40 | -03 | 06 | 54.2 | 0.0 | 0 | | 330 |
| 1754 | | 1978 | 10 | 09.68329 | 02 | 21 | 17.71 | +01 | 57 | 21.0 | | | | 330 |
| 1754 | | 1978 | 10 | 29.57146 | 02 | 09 | 43.47 | +00 | 23 | 17.8 | 0.0 | 0 | | 330 |
| 1764 | | 1978 | 05 | 01.60412 | 15 | 05 | 10.26 | -13 | 53 | 02.4 | 0.0 | 0 | | 330 |
| 1764 | | 1978 | 05 | 06.65897 | 15 | 01 | 14.12 | -13 | 34 | 16.4 | 0.0 | 0 | | 330 |
| 1769 | | 1979 | 10 | 19.59038 | 02 | 09 | 39.41 | +16 | 19 | 53.7 | 0.0 | 0 | | 330 |
| 1769 | | 1979 | 10 | 22.60983 | 02 | 06 | 31.83 | +16 | 05 | 34.8 | 0.0 | 0 | | 330 |
| 1769 | | 1979 | 10 | 26.64108 | 02 | 02 | 18.16 | +15 | 44 | 49.2 | 0.0 | 0 | | 330 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1769 | 1979 | 11 | 19.61726 | 01 | 41 | 48.85 | +13 | 43 | 51.7 | 0.0 | 0 | 330 |
| 1769 | 1979 | 11 | 23.60440 | 01 | 39 | 56.49 | +13 | 29 | 23.2 | 0.0 | 1- | 330 |
| 1774 | 1978 | 11 | 28.70132 | 05 | 23 | 54.79 | +20 | 20 | 26.0 | 0.0 | 0 | 330 |
| 1784 | 1979 | 02 | 26.66562 | 11 | 20 | 38.06 | +06 | 41 | 46.8 | 0.0 | 0 | 330 |
| 1793 | 1978 | 03 | 10.78986 | 12 | 57 | 27.40 | -08 | 11 | 49.3 | 0.0 | 0 | 330 |
| 1793 | 1978 | 04 | 03.59101 | 12 | 38 | 09.71 | -05 | 55 | 06.7 | 0.0 | 0 | 330 |
| 1794 | 1978 | 10 | 30.58400 | 02 | 22 | 36.28 | +15 | 28 | 45.2 | 0.0 | 0 | 330 |
| 1807 | 1978 | 11 | 28.70132 | 05 | 38 | 02.08 | +21 | 06 | 46.0 | 0.0 | 0 | 330 |
| 1813 | 1978 | 10 | 30.58400 | 02 | 24 | 17.62 | +14 | 59 | 20.3 | 0.0 | 0 | 330 |
| 1824 | 1979 | 12 | 13.53133 | 05 | 01 | 12.25 | +25 | 27 | 04.3 | 0.1- | 0 | 330 |
| 1826 | 1978 | 02 | 01.54525 | 08 | 40 | 32.83 | +09 | 38 | 33.7 | 0.0 | 0 | 330 |
| 1830 | 1979 | 10 | 12.57094 | 01 | 40 | 03.09 | +04 | 05 | 09.8 | 0.0 | 0 | 330 |
| 1830 | 1979 | 10 | 18.59490 | 01 | 34 | 13.10 | +03 | 21 | 42.8 | 0.0 | 0 | 330 |
| 1830 | 1979 | 10 | 21.53899 | 01 | 31 | 17.70 | +03 | 01 | 01.7 | 0.0 | 1- | 330 |
| 1830 | 1979 | 10 | 27.67858 | 01 | 25 | 23.34 | +02 | 21 | 31.5 | 0.0 | 0 | 330 |
| 1830 | 1979 | 11 | 19.55892 | 01 | 09 | 23.28 | +00 | 56 | 35.8 | 0.1- | 0 | 330 |
| 1833 | 1978 | 10 | 09.68329 | 02 | 35 | 34.75 | +02 | 09 | 39.7 | 0.1- | 0 | 330 |
| 1833 | 1978 | 10 | 29.57146 | 02 | 19 | 56.03 | -00 | 16 | 14.4 | 0.1- | 1- | 330 |
| 1840 | 1978 | 02 | 02.54322 | 09 | 05 | 27.10 | +20 | 28 | 46.6 | 0.0 | 0 | 330 |
| 1844 | 1978 | 12 | 23.63193 | 06 | 59 | 29.96 | +22 | 44 | 32.0 | 0.0 | 0 | 330 |
| 1844 | 1978 | 12 | 29.62913 | 06 | 54 | 06.66 | +23 | 13 | 30.5 | 0.0 | 0 | 330 |
| 1844 | 1979 | 01 | 04.64023 | 06 | 48 | 29.66 | +23 | 42 | 10.9 | 0.0 | 0 | 330 |
| 1844 | 1979 | 01 | 18.45958 | 06 | 36 | 01.39 | +24 | 43 | 16.2 | 0.0 | 0 | 330 |
| 1844 | 1979 | 01 | 22.56097 | 06 | 32 | 44.33 | +24 | 59 | 27.1 | 0.0 | 0 | 330 |
| 1847 | 1978 | 12 | 24.68610 | 07 | 29 | 39.71 | +20 | 58 | 36.2 | 0.0 | 0 | 330 |
| 1850 | 1979 | 03 | 01.61281 | 11 | 19 | 03.21 | +12 | 14 | 36.3 | 0.0 | 0 | 330 |
| 1856 | 1979 | 10 | 18.59490 | 01 | 26 | 54.15 | +06 | 26 | 48.6 | 0.0 | 0 | 330 |
| 1856 | 1979 | 10 | 21.53899 | 01 | 24 | 05.76 | +06 | 03 | 49.5 | 0.0 | 0 | 330 |
| 1857 | 1978 | 11 | 30.60061 | 03 | 14 | 49.38 | +17 | 28 | 49.5 | 0.0 | 0 | 330 |
| 1857 | 1978 | 12 | 05.57908 | 03 | 11 | 07.49 | +16 | 57 | 14.8 | 0.0 | 0 | 330 |
| 1880 | 1978 | 12 | 23.63193 | 06 | 54 | 23.18 | +20 | 34 | 44.8 | 0.0 | 0 | 330 |
| 1880 | 1978 | 12 | 29.58746 | 06 | 48 | 33.31 | +20 | 50 | 04.7 | 0.1- | 0 | 330 |
| 1880 | 1979 | 01 | 04.61245 | 06 | 42 | 35.51 | +21 | 05 | 24.9 | 0.0 | 0 | 330 |
| 1897 | 1978 | 10 | 31.67618 | 03 | 53 | 33.22 | +18 | 35 | 57.8 | 0.0 | 0 | 330 |
| 1907 | 1978 | 02 | 01.47928 | 07 | 24 | 20.89 | +19 | 10 | 55.5 | 0.0 | 0 | 330 |
| 1909 | 1979 | 05 | 28.59999 | 15 | 45 | 45.48 | -18 | 50 | 16.8 | 0.0 | 0 | 330 |
| 1927 | 1979 | 02 | 27.63020 | 10 | 12 | 45.29 | +31 | 54 | 03.5 | 0.0 | 0 | 330 |
| 1940 | 1979 | 12 | 12.65564 | 05 | 35 | 48.19 | +23 | 33 | 16.1 | 0.0 | 0 | 330 |
| 1940 | 1979 | 12 | 14.67091 | 05 | 33 | 55.95 | +23 | 27 | 45.7 | 0.0 | 0 | 330 |
| 1940 | 1979 | 12 | 26.63258 | 05 | 23 | 03.36 | +22 | 53 | 37.1 | 0.0 | 0 | 330 |
| 1945 | 1979 | 07 | 28.60284 | 20 | 22 | 11.64 | -16 | 51 | 06.5 | 0.0 | 0 | 330 |
| 1948 | 1979 | 03 | 01.50517 | 10 | 07 | 19.61 | +20 | 06 | 44.2 | 0.0 | 0 | 330 |
| 1952 | 1979 | 05 | 22.56323 | 15 | 51 | 36.65 | -13 | 19 | 51.7 | 0.1- | 0 | 330 |
| 1954 | 1979 | 01 | 04.61245 | 06 | 56 | 13.08 | +21 | 12 | 19.1 | 0.1- | 0 | 330 |
| 1955 | 1978 | 11 | 27.62076 | 05 | 09 | 08.85 | +23 | 04 | 35.8 | 0.0 | 0 | 330 |
| 1955 | 1978 | 11 | 28.64229 | 05 | 08 | 13.36 | +23 | 03 | 07.0 | 0.0 | 0 | 330 |
| 1959 | 1979 | 07 | 28.60284 | 20 | 18 | 32.64 | -15 | 25 | 06.0 | 0.1+ | 1+ | 330 |
| 1968 | 1978 | 05 | 01.60412 | 15 | 05 | 09.67 | -13 | 45 | 52.4 | 0.0 | 0 | 330 |
| 1968 | 1978 | 05 | 06.65897 | 15 | 00 | 39.32 | -13 | 36 | 27.6 | 0.0 | 0 | 330 |
| 1986 | 1979 | 12 | 14.67091 | 05 | 29 | 21.62 | +20 | 11 | 56.1 | 0.1+ | 0 | 330 |
| 1990 | 1978 | 01 | 10.55369 | 05 | 58 | 05.12 | +17 | 57 | 50.3 | | | 330 |
| 1994 | 1979 | 12 | 14.64314 | 05 | 19 | 59.44 | +18 | 41 | 27.1 | 0.0 | 0 | 330 |
| 2005 | 1979 | 01 | 19.56444 | 07 | 32 | 17.49 | +20 | 32 | 28.9 | 0.0 | 0 | 330 |
| 2013 | 1978 | 12 | 23.52013 | 03 | 44 | 34.78 | +14 | 24 | 10.8 | | | 330 |
| 2013 | 1978 | 12 | 29.56733 | 03 | 41 | 39.48 | +14 | 46 | 28.1 | | | 330 |
| 2031 | 1979 | 10 | 12.57094 | 01 | 39 | 03.00 | +04 | 24 | 18.2 | 0.0 | 1- | 330 |
| 2031 | 1979 | 10 | 18.59490 | 01 | 34 | 14.62 | +03 | 31 | 18.4 | 0.0 | 0 | 330 |
| 2031 | 1979 | 10 | 21.53899 | 01 | 31 | 50.38 | +03 | 06 | 22.4 | 0.0 | 1- | 330 |
| 2031 | 1979 | 10 | 27.67858 | 01 | 27 | 03.40 | +02 | 19 | 25.0 | 0.1- | 0 | 330 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2038 | | | 1979 | 05 | 18.61812 | 15 | 12 | 21.26 | -07 | 35 | 48.1 | 0.0 | 0 | 330 |
| 2046 | | | 1979 | 10 | 19.66469 | 02 | 19 | 37.49 | +10 | 51 | 04.8 | | | 330 |
| 2058 | | | 1978 | 05 | 01.60412 | 15 | 00 | 29.83 | -13 | 52 | 05.1 | | | 330 |
| 2058 | | | 1978 | 05 | 06.65897 | 14 | 56 | 26.87 | -13 | 36 | 56.7 | | | 330 |
| 2066 | | | 1978 | 04 | 03.54309 | 11 | 34 | 00.48 | +09 | 22 | 33.9 | | | 330 |
| 2180 | | | 1979 | 01 | 26.50679 | 07 | 18 | 51.86 | +10 | 37 | 22.0 | | | 330 |
| 2186 | | | 1979 | 01 | 19.56444 | 07 | 33 | 17.53 | +21 | 06 | 39.3 | | | 330 |
| 2188 | | | 1978 | 02 | 02.60988 | 09 | 52 | 59.57 | +12 | 59 | 08.7 | | | 330 |
| 2199 | | | 1978 | 05 | 11.56661 | 15 | 08 | 12.10 | -00 | 28 | 07.5 | | | 330 |
| 2205 | | | 1978 | 10 | 02.52704 | 00 | 21 | 21.44 | +13 | 32 | 49.9 | | | 330 |
| 2212 | | | 1978 | 10 | 05.62287 | 00 | 06 | 25.52 | -14 | 40 | 46.8 | | | 330 |
| 2355 | | | 1978 | 11 | 30.58047 | 02 | 52 | 25.70 | +16 | 16 | 08.4 | | | 330 |
| 2365 | | | 1979 | 09 | 28.58478 | 23 | 15 | 42.68 | +03 | 53 | 15.1 | | | 330 |
| 2365 | | | 1979 | 10 | 10.46538 | 23 | 07 | 09.87 | +02 | 48 | 52.4 | | | 330 |
| 1955 | WB | | 1978 | 11 | 26.69715 | 03 | 37 | 04.70 | +16 | 18 | 00.3 | | | 330 |
| 1955 | WB | | 1978 | 11 | 30.60061 | 03 | 34 | 03.22 | +15 | 57 | 48.8 | | | 330 |
| 1955 | WB | | 1978 | 12 | 05.57908 | 03 | 30 | 27.34 | +15 | 33 | 24.5 | | | 330 |
| 1965 | LA | | 1979 | 09 | 28.63617 | 01 | 08 | 52.71 | +07 | 59 | 53.0 | | | 330 |
| 1978 | AK | * | 1978 | 01 | 10.55369 | 05 | 57 | 29.50 | +17 | 36 | 28.3 | | | 330 |
| 1978 | AL | * | 1978 | 01 | 10.60439 | 06 | 19 | 09.56 | +25 | 29 | 25.8 | | | 330 |
| 1978 | CN | * | 1978 | 02 | 01.54525 | 08 | 50 | 31.25 | +08 | 39 | 36.1 | | | 330 |
| 1978 | CO | * | 1978 | 02 | 01.54525 | 08 | 53 | 31.75 | +08 | 19 | 40.3 | | | 330 |
| 1978 | CP | * | 1978 | 02 | 02.54322 | 09 | 19 | 54.59 | +18 | 50 | 38.7 | | | 330 |
| 1978 | CQ | * | 1978 | 02 | 02.60988 | 09 | 36 | 56.22 | +13 | 05 | 27.7 | | | 330 |
| 1978 | CR | * | 1978 | 02 | 02.60988 | 09 | 45 | 14.18 | +11 | 21 | 31.8 | | | 330 |
| 1978 | GZ2 | * | 1978 | 04 | 03.54309 | 11 | 30 | 46.86 | +08 | 10 | 55.6 | | | 330 |
| 1978 | GA3 | * | 1978 | 04 | 03.54309 | 11 | 42 | 20.84 | +07 | 14 | 18.8 | | | 330 |
| 1978 | GB3 | * | 1978 | 04 | 06.55278 | 12 | 13 | 21.77 | +17 | 04 | 45.5 | | | 330 |
| 1978 | GC3 | * | 1978 | 04 | 06.55278 | 12 | 25 | 36.49 | +14 | 54 | 53.2 | | | 330 |
| 1978 | HA | * | 1978 | 04 | 29.58538 | 14 | 04 | 43.95 | -10 | 06 | 50.6 | | | 330 |
| 1978 | JE | * | 1978 | 05 | 01.60412 | 14 | 58 | 07.03 | -16 | 18 | 46.9 | | | 330 |
| 1978 | JE | | 1978 | 05 | 06.58328 | 14 | 53 | 45.96 | -15 | 32 | 42.0 | | | 330 |
| 1978 | JF | * | 1978 | 05 | 01.68120 | 15 | 13 | 51.59 | -04 | 54 | 03.7 | | | 330 |
| 1978 | JG | * | 1978 | 05 | 06.61105 | 15 | 09 | 22.81 | -14 | 58 | 06.8 | | | 330 |
| 1978 | JH | * | 1978 | 05 | 06.65897 | 14 | 59 | 34.35 | -11 | 02 | 25.7 | | | 330 |
| 1978 | LB | | 1978 | 05 | 11.56661 | 15 | 07 | 22.48 | +00 | 32 | 36.9 | | | 330 |
| 1978 | SM4 | * | 1978 | 09 | 30.55968 | 00 | 14 | 54.91 | -03 | 30 | 33.3 | | | 330 |
| 1978 | TZ1 | * | 1978 | 10 | 03.61315 | 01 | 06 | 26.97 | +01 | 06 | 41.7 | | | 330 |
| 1978 | TA2 | * | 1978 | 10 | 09.73259 | 03 | 10 | 36.13 | +11 | 06 | 04.0 | | | 330 |
| 1978 | UV | | 1978 | 10 | 28.60826 | 02 | 17 | 07.40 | +11 | 13 | 14.3 | | | 330 |
| 1978 | UV | | 1978 | 11 | 03.54701 | 02 | 11 | 30.24 | +11 | 16 | 19.5 | | | 330 |
| 1978 | UV | | 1978 | 11 | 07.61505 | 02 | 07 | 45.59 | +11 | 19 | 19.6 | | | 330 |
| 1978 | UE2 | * | 1978 | 10 | 28.55618 | 00 | 21 | 35.44 | +07 | 10 | 31.5 | | | 330 |
| 1978 | UF2 | * | 1978 | 10 | 28.60826 | 02 | 19 | 54.25 | +08 | 21 | 04.5 | | | 330 |
| 1978 | UF2 | | 1978 | 11 | 03.54701 | 02 | 13 | 30.86 | +08 | 41 | 27.8 | | | 330 |
| 1978 | UF2 | | 1978 | 11 | 07.61505 | 02 | 09 | 11.64 | +08 | 56 | 25.5 | | | 330 |
| 1978 | UG2 | * | 1978 | 10 | 28.72285 | 03 | 40 | 30.76 | +15 | 59 | 45.0 | | | 330 |
| 1978 | UG2 | | 1978 | 10 | 31.65014 | 03 | 38 | 39.59 | +15 | 44 | 40.9 | | | 330 |
| 1978 | UH2 | * | 1978 | 10 | 28.72285 | 03 | 49 | 47.57 | +16 | 32 | 43.0 | | | 330 |
| 1978 | UH2 | | 1978 | 10 | 29.69333 | 03 | 49 | 06.49 | +16 | 23 | 30.7 | | | 330 |
| 1978 | UH2 | | 1978 | 10 | 31.65014 | 03 | 47 | 39.81 | +16 | 04 | 40.7 | | | 330 |
| 1978 | UH2 | | 1978 | 11 | 03.67549 | 03 | 45 | 16.98 | +15 | 35 | 10.1 | | | 330 |
| 1978 | UH2 | | 1978 | 11 | 07.73241 | 03 | 41 | 52.01 | +14 | 55 | 02.3 | | | 330 |
| 1978 | UJ2 | * | 1978 | 10 | 29.60549 | 03 | 17 | 44.60 | +13 | 22 | 02.5 | | | 330 |
| 1978 | UJ2 | | 1978 | 11 | 03.60118 | 03 | 12 | 13.06 | +13 | 06 | 56.0 | | | 330 |
| 1978 | UJ2 | | 1978 | 11 | 07.63519 | 03 | 07 | 35.43 | +12 | 55 | 05.9 | | | 330 |
| 1978 | UK2 | * | 1978 | 10 | 29.63326 | 03 | 10 | 23.46 | +15 | 53 | 56.9 | | | 330 |
| 1978 | UK2 | | 1978 | 11 | 03.60118 | 03 | 06 | 30.20 | +15 | 36 | 43.6 | | | 330 |
| 1978 | UK2 | | 1978 | 11 | 07.66296 | 03 | 03 | 12.17 | +15 | 22 | 08.2 | | | 330 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1978 | UL2 | * | 1978 | 10 | 29.63326 | 03 | 13 | 24.43 | +13 | 43 | 25.5 | 330 |
| 1978 | UL2 | | 1978 | 11 | 03.57340 | 03 | 09 | 35.23 | +13 | 26 | 44.2 | 330 |
| 1978 | UM2 | * | 1978 | 10 | 29.63326 | 03 | 22 | 59.31 | +14 | 56 | 23.2 | 330 |
| 1978 | UM2 | | 1978 | 11 | 03.60118 | 03 | 19 | 05.53 | +14 | 41 | 31.9 | 330 |
| 1978 | UM2 | | 1978 | 11 | 07.63519 | 03 | 15 | 47.71 | +14 | 29 | 09.9 | 330 |
| 1978 | UN2 | * | 1978 | 10 | 29.63326 | 03 | 29 | 23.20 | +13 | 20 | 31.0 | 330 |
| 1978 | UN2 | | 1978 | 11 | 07.66296 | 03 | 19 | 16.21 | +14 | 07 | 27.6 | 330 |
| 1978 | UO2 | * | 1978 | 10 | 30.53326 | 01 | 29 | 57.23 | +04 | 50 | 16.6 | 330 |
| 1978 | UP2 | * | 1978 | 10 | 30.55623 | 02 | 28 | 07.83 | +16 | 04 | 54.7 | 330 |
| 1978 | UQ2 | * | 1978 | 10 | 30.60896 | 03 | 23 | 06.89 | +17 | 11 | 01.9 | 330 |
| 1978 | UQ2 | | 1978 | 11 | 03.65118 | 03 | 19 | 03.93 | +17 | 16 | 55.9 | 330 |
| 1978 | UQ2 | | 1978 | 11 | 07.71018 | 03 | 14 | 45.22 | +17 | 22 | 09.0 | 330 |
| 1978 | UR2 | * | 1978 | 10 | 30.60896 | 03 | 40 | 40.57 | +18 | 18 | 50.8 | 330 |
| 1978 | UR2 | | 1978 | 11 | 03.65118 | 03 | 36 | 37.57 | +18 | 42 | 05.8 | 330 |
| 1978 | UR2 | | 1978 | 11 | 07.71018 | 03 | 32 | 13.29 | +19 | 04 | 58.0 | 330 |
| 1978 | US2 | * | 1978 | 10 | 31.70396 | 03 | 57 | 40.27 | +18 | 39 | 56.4 | 330 |
| 1978 | WH14 | | 1978 | 10 | 31.70396 | 04 | 07 | 49.22 | +18 | 27 | 11.2 | 330 |
| 1978 | WM14 | * | 1978 | 11 | 26.66937 | 03 | 19 | 06.50 | +13 | 29 | 08.6 | 330 |
| 1978 | WM14 | | 1978 | 11 | 30.60061 | 03 | 16 | 20.52 | +13 | 11 | 41.5 | 330 |
| 1978 | WM14 | | 1978 | 12 | 05.57908 | 03 | 13 | 10.10 | +12 | 51 | 51.7 | 330 |
| 1978 | WN14 | * | 1978 | 11 | 26.69715 | 03 | 31 | 21.59 | +15 | 55 | 34.6 | 330 |
| 1978 | WN14 | | 1978 | 11 | 30.60061 | 03 | 28 | 14.33 | +15 | 47 | 54.2 | 330 |
| 1978 | WN14 | | 1978 | 12 | 05.57908 | 03 | 24 | 33.12 | +15 | 39 | 25.5 | 330 |
| 1978 | WO14 | * | 1978 | 11 | 28.56104 | 03 | 40 | 45.13 | +18 | 37 | 13.9 | 330 |
| 1978 | WP14 | * | 1978 | 11 | 28.56104 | 03 | 49 | 32.18 | +15 | 07 | 57.5 | 330 |
| 1978 | WQ14 | * | 1978 | 11 | 28.56104 | 03 | 51 | 03.46 | +17 | 02 | 02.9 | 330 |
| 1978 | WR14 | * | 1978 | 11 | 28.56104 | 03 | 52 | 26.68 | +15 | 09 | 28.0 | 330 |
| 1978 | WS14 | * | 1978 | 11 | 28.56104 | 03 | 56 | 32.78 | +16 | 02 | 58.0 | 330 |
| 1978 | WT14 | * | 1978 | 11 | 28.58882 | 03 | 49 | 10.04 | +17 | 26 | 57.8 | 330 |
| 1978 | WU14 | * | 1978 | 11 | 28.58882 | 03 | 55 | 01.70 | +14 | 47 | 29.7 | 330 |
| 1978 | WU14 | | 1978 | 12 | 02.48117 | 03 | 51 | 52.88 | +14 | 24 | 14.0 | 330 |
| 1978 | WU14 | | 1978 | 12 | 06.67839 | 03 | 48 | 37.45 | +14 | 00 | 34.5 | 330 |
| 1978 | WV14 | * | 1978 | 11 | 28.64229 | 04 | 57 | 19.80 | +20 | 48 | 50.8 | 330 |
| 1978 | WW14 | * | 1978 | 11 | 28.64229 | 05 | 00 | 11.74 | +24 | 01 | 22.1 | 330 |
| 1978 | WX14 | * | 1978 | 11 | 30.51520 | 02 | 45 | 26.75 | +14 | 04 | 52.4 | 330 |
| 1978 | YE | * | 1978 | 12 | 23.60416 | 06 | 57 | 49.28 | +21 | 07 | 22.3 | 330 |
| 1978 | YE | | 1978 | 12 | 29.65691 | 06 | 50 | 53.30 | +21 | 34 | 18.5 | 330 |
| 1978 | YF | * | 1978 | 12 | 23.63193 | 06 | 52 | 14.56 | +23 | 08 | 43.7 | 330 |
| 1978 | YG | * | 1978 | 12 | 24.68610 | 07 | 22 | 24.97 | +17 | 16 | 40.1 | 330 |
| 1978 | YH | * | 1978 | 12 | 23.63193 | 07 | 07 | 40.10 | +21 | 47 | 59.7 | 330 |
| 1979 | AA | * | 1979 | 01 | 04.67495 | 07 | 49 | 30.26 | +23 | 03 | 34.0 | 330 |
| 1979 | AB | * | 1979 | 01 | 04.70273 | 07 | 45 | 01.65 | +24 | 43 | 25.2 | 330 |
| 1979 | AC | * | 1979 | 01 | 04.70273 | 07 | 46 | 16.54 | +24 | 22 | 06.3 | 330 |
| 1979 | BJ | * | 1979 | 01 | 18.55680 | 08 | 31 | 05.42 | +24 | 28 | 58.2 | 330 |
| 1979 | BJ | | 1979 | 01 | 25.57693 | 08 | 24 | 54.44 | +25 | 13 | 09.4 | 330 |
| 1979 | BK | * | 1979 | 01 | 18.58458 | 08 | 33 | 20.19 | +25 | 47 | 14.4 | 330 |
| 1979 | BL | * | 1979 | 01 | 25.52138 | 07 | 19 | 24.04 | +28 | 00 | 19.9 | 330 |
| 1979 | BM | * | 1979 | 01 | 25.62693 | 08 | 47 | 23.63 | +13 | 06 | 10.0 | 330 |
| 1979 | BN | * | 1979 | 01 | 26.50679 | 07 | 21 | 53.72 | +12 | 51 | 51.4 | 330 |
| 1979 | BO | * | 1979 | 01 | 26.55471 | 08 | 18 | 10.56 | +19 | 00 | 58.0 | 330 |
| 1979 | BO | | 1979 | 02 | 17.60596 | 07 | 58 | 49.14 | +18 | 59 | 04.0 | 330 |
| 1979 | DO | * | 1979 | 02 | 26.61424 | 10 | 25 | 33.29 | +08 | 02 | 52.6 | 330 |
| 1979 | DP | * | 1979 | 02 | 27.66700 | 10 | 30 | 08.74 | +13 | 55 | 32.7 | 330 |
| 1979 | DQ | * | 1979 | 02 | 27.66700 | 10 | 43 | 26.00 | +17 | 13 | 27.1 | 330 |
| 1979 | DR | * | 1979 | 02 | 28.59824 | 10 | 42 | 44.48 | -01 | 23 | 51.7 | 330 |
| 1979 | DS | * | 1979 | 02 | 28.62602 | 10 | 45 | 18.27 | -03 | 16 | 52.0 | 330 |
| 1979 | EC | * | 1979 | 03 | 01.61281 | 11 | 35 | 47.45 | +10 | 34 | 06.7 | 330 |
| 1979 | ED | * | 1979 | 03 | 03.58711 | 11 | 06 | 42.07 | -02 | 34 | 31.6 | 330 |
| 1979 | KA1 | * | 1979 | 05 | 28.59999 | 15 | 55 | 41.86 | -22 | 56 | 15.5 | 330 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1979 | SF | | 1979 | 09 | 27.62645 | 23 | 37 | 41.19 | +04 05 32.8 | 330 |
| 1979 | SD1 | * | 1979 | 09 | 27.62645 | 23 | 45 | 42.08 | +06 11 54.2 | 330 |
| 1979 | SD1 | | 1979 | 10 | 11.47441 | 23 | 35 | 49.96 | +04 25 34.1 | 330 |
| 1979 | SE1 | * | 1979 | 09 | 28.63617 | 01 | 05 | 04.88 | +07 30 49.9 | 330 |
| 1979 | SF1 | * | 1979 | 09 | 28.63617 | 01 | 22 | 19.41 | +07 28 41.4 | 330 |
| 1979 | SG1 | * | 1979 | 09 | 28.68478 | 01 | 09 | 20.08 | +22 22 40.6 | 330 |
| 1979 | TM | * | 1979 | 10 | 11.52302 | 00 | 33 | 23.55 | +01 53 05.1 | 330 |
| 1979 | TM | | 1979 | 10 | 15.50635 | 00 | 30 | 16.98 | +01 32 32.9 | 330 |
| 1979 | TM | | 1979 | 10 | 19.48344 | 00 | 27 | 29.88 | +01 14 26.2 | 330 |
| 1979 | TM | | 1979 | 10 | 22.54108 | 00 | 25 | 36.01 | +01 02 21.7 | 330 |
| 1979 | UQ | | 1979 | 10 | 21.64385 | 02 | 39 | 09.97 | +18 32 10.5 | 330 |
| 1979 | UQ | | 1979 | 10 | 27.69872 | 02 | 33 | 53.36 | +17 55 12.8 | 330 |
| 1979 | UD2 | * | 1979 | 10 | 21.64385 | 02 | 30 | 50.97 | +19 19 09.6 | 330 |
| 1979 | UD2 | | 1979 | 10 | 27.72649 | 02 | 25 | 00.23 | +18 46 23.5 | 330 |
| 1979 | VA | | 1979 | 11 | 18.51066 | 01 | 54 | 13.17 | +24 43 23.3 | 330 |
| 1979 | WO | * | 1979 | 11 | 19.61726 | 01 | 46 | 16.69 | +13 08 25.3 | 330 |
| 1979 | WO | | 1979 | 11 | 23.60440 | 01 | 43 | 48.55 | +13 09 23.7 | 330 |
| 1979 | XM | * | 1979 | 12 | 14.62091 | 04 | 30 | 06.10 | +20 51 27.4 | 330 |
| 1979 | XN | * | 1979 | 12 | 14.67091 | 05 | 22 | 28.36 | +19 08 33.3 | 330 |
| 1979 | XO | * | 1979 | 12 | 14.67091 | 05 | 25 | 20.11 | +22 16 13.5 | 330 |
| 1979 | XP | * | 1979 | 12 | 14.67091 | 05 | 28 | 35.01 | +21 50 54.0 | 330 |
| 1979 | YP | | 1979 | 12 | 12.65564 | 05 | 40 | 17.29 | +22 19 58.9 | 330 |
| 1979 | YP | | 1979 | 12 | 14.67091 | 05 | 38 | 04.04 | +22 18 17.5 | 330 |

OBSERVATIONS MADE AT GEISEI (CODE 372) BY T. SEKI AND AT THE YATSUGATAKE OBSERVATORY (CODE 386, MEASURER T. URATA) BY A. TERUNUMA. FROM NIHON-DAIRA OBS. CIRC. NO. 1181 AND 1189.

| Object | Date | UT | R. A. (1950) | Decl. | Mag. | Obs. |
|---|---|---|---|---|---|---|
| 308 | 1981 02 | 23.49028 | 04 42 08.80 | +17 20 02.1 | 13 | 372 |
| 308 | 1981 02 | 23.50625 | 04 42 09.32 | +17 20 03.3 | | 372 |
| 526 | 1981 03 | 05.75278 | 10 32 40.33 | +10 30 52.3 | 15 | 372 |
| 526 | 1981 03 | 05.76458 | 10 32 39.72 | +10 30 55.8 | | 372 |
| 573 | 1981 03 | 05.75278 | 10 32 27.93 | +10 21 11.2 | 16 | 372 |
| 573 | 1981 03 | 05.76458 | 10 32 27.34 | +10 21 14.7 | | 372 |
| 1669 | 1981 01 | 03.62535 | 05 57 04.07 | +24 44 56.2 | | 372 |
| 1669 | 1981 01 | 03.63333 | 05 57 03.74 | +24 44 55.9 | | 372 |
| 1973 SZ2 | 1981 02 | 27.61586 | 10 34 02.29 | +10 17 37.9 | 16.5 | 386 |
| 1973 SZ2 | 1981 02 | 27.65081 | 10 34 00.67 | +10 17 47.4 | | 386 |
| 1973 SZ2 | 1981 03 | 05.75278 | 10 29 23.4 | +10 46 53 | 17 | 372 |
| 1973 SZ2 | 1981 03 | 05.76458 | 10 29 22.8 | +10 47 00 | | 372 |
| 1981 CA | 1981 03 | 15.79417 | 11 27 19.6 | +21 58 06 | 16.5 | 372 |
| 1981 CA | 1981 03 | 15.80876 | 11 27 19.0 | +21 58 12 | | 372 |
| 1981 CA | 1981 04 | 02.58264 | 11 14 57.89 | +22 51 21.1 | 16.5 | 372 |
| 1981 CA | 1981 04 | 06.69271 | 11 12 35.68 | +22 55 49.1 | | 372 |
| 1981 CA | 1981 04 | 06.70590 | 11 12 35.30 | +22 55 50.0 | 17 | 372 |
| 1981 GA | 1981 04 | 06.74549 | 12 37 48.9 | -01 51 20 | 16.5 | 372 |
| 1981 GA | 1981 04 | 06.75799 | 12 37 48.1 | -01 51 15 | | 372 |

OBSERVATIONS MADE AT THE JCPM HAMATONBETSU STATION BY M. TAKEISHI. FROM JCPM HAMATONBETSU STA. REP. NO. 4.

| Object | Date | UT | R. A. (1950) | Decl. | Mag. | Obs. |
|---|---|---|---|---|---|---|
| 100 | 1981 03 | 30.61806 | 12 31 39.61 | +05 08 57.3 | 13.5 | 394 |
| 100 | 1981 03 | 30.65486 | 12 31 37.92 | +05 09 08.4 | | 394 |
| 140 | 1981 03 | 29.53889 | 12 16 55.87 | +03 19 38.7 | 13.5 | 394 |
| 140 | 1981 03 | 29.55278 | 12 16 55.03 | +03 19 38.9 | | 394 |
| 215 | 1981 03 | 30.60903 | 12 16 11.07 | -00 50 02.5 | 14.5 | 394 |
| 215 | 1981 03 | 30.64653 | 12 16 09.21 | -00 49 50.1 | | 394 |
| 1263 | 1981 03 | 30.62709 | 12 43 56.55 | +19 22 15.2 | 15 | 394 |
| 1263 | 1981 03 | 30.66389 | 12 43 54.67 | +19 22 42.7 | | 394 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1508 | 1981 03 30.57639 | 11 37 16.98 | +20 52 20.3 | | 15 | 394 |
| 1508 | 1981 03 30.58889 | 11 37 15.74 | +20 52 05.2 | | | 394 |
| 1567 | 1981 03 30.60000 | 12 15 43.17 | +20 24 00.6 | | 14.5 | 394 |
| 1567 | 1981 03 30.63819 | 12 15 41.29 | +20 24 03.6 | | | 394 |

OBSERVATIONS MADE AT SIDING SPRING BY K. S. RUSSELL AND J. A. DAWE. MEASURED BY S. J. BUS. COMMUNICATED BY J. G. WILLIAMS.

| Object | Date | UT | R. A. (1950) | Decl. | Obs. |
|---|---|---|---|---|---|
| 1981 FD | 1981 03 02.63403 | 12 24 56.60 | +00 13 22.3 | | 413 |
| 1981 FD | 1981 03 02.67917 | 12 24 55.92 | +00 13 20.4 | | 413 |
| 1981 FD | 1981 03 11.66140 | 12 21 50.09 | +00 08 30.9 | | 413 |
| 1981 FD | 1981 03 11.70307 | 12 21 48.84 | +00 08 31.7 | | 413 |

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

| Object | | Date | UT | R. A. (1950) | Decl. | N | Obs. |
|---|---|---|---|---|---|---|---|
| 1066 | | 1978 08 24.59096 | 21 13 47.64 | -19 50 51.7 | | | 414 |
| 1066 | | 1978 08 24.60308 | 21 13 47.00 | -19 50 51.6 | | | 414 |
| 2118 | | 1978 07 10.68310 | 21 45 54.92 | -16 58 59.5 | | | 414 |
| 2118 | | 1978 07 10.69825 | 21 45 54.47 | -16 59 02.2 | | | 414 |
| 2118 | | 1978 07 27.64075 | 21 34 08.17 | -17 33 54.7 | | | 414 |
| 2118 | | 1978 07 27.65252 | 21 34 07.50 | -17 33 57.1 | | | 414 |
| 2118 | | 1978 07 30.67757 | 21 31 25.26 | -17 41 31.8 | | | 414 |
| 2118 | | 1978 07 30.68935 | 21 31 24.61 | -17 41 33.4 | | | 414 |
| 2356 | | 1978 08 23.61412 | 23 05 37.85 | +04 40 18.5 | | | 414 |
| 2356 | | 1978 08 23.62589 | 23 05 37.40 | +04 40 13.3 | | | 414 |
| 2356 | | 1978 08 24.68711 | 23 04 59.86 | +04 33 38.2 | | | 414 |
| 2356 | | 1978 08 24.69934 | 23 04 59.37 | +04 33 33.3 | | | 414 |
| 2356 | | 1978 08 26.60039 | 23 03 50.94 | +04 21 19.6 | | | 414 |
| 2356 | | 1978 08 26.61216 | 23 03 50.53 | +04 21 15.7 | | | 414 |
| 1978 NR2 | | 1978 07 09.62549 | 20 47 42.03 | -14 01 08.3 | | | 414 |
| 1978 NR2 | | 1978 07 09.64084 | 20 47 41.53 | -14 01 12.4 | | | 414 |
| 1978 NU3 | * | 1978 07 09.62549 | 20 56 24.73 | -13 15 11.3 | | | 414 |
| 1978 NU3 | | 1978 07 09.64084 | 20 56 24.33 | -13 15 17.1 | | | 414 |
| 1978 OB | * | 1978 07 28.61932 | 21 30 22.81 | -19 17 28.2 | | | 414 |
| 1978 OB | | 1978 07 28.63109 | 21 30 22.39 | -19 17 36.9 | | | 414 |
| 1978 OB | | 1978 07 30.63059 | 21 29 19.68 | -19 39 34.2 | | | 414 |
| 1978 OB | | 1978 07 30.64295 | 21 29 19.25 | -19 39 41.6 | | | 414 |
| 1978 OB | | 1978 08 02.63164 | 21 27 36.41 | -20 12 44.1 | | | 414 |
| 1978 OB | | 1978 08 02.64376 | 21 27 35.96 | -20 12 52.9 | | | 414 |
| 1978 OC | * | 1978 07 30.60763 | 20 31 05.60 | -14 49 45.1 | | | 414 |
| 1978 OC | | 1978 07 30.62009 | 20 31 04.79 | -14 49 45.1 | | | 414 |
| 1978 OD | * | 1978 07 30.60763 | 20 32 54.62 | -16 14 44.2 | | 1 | 414 |
| 1978 OD | | 1978 07 30.62009 | 20 32 54.07 | -16 14 49.5 | | | 414 |
| 1978 OE | * | 1978 07 30.60763 | 20 38 54.59 | -14 59 00.1 | | | 414 |
| 1978 OE | | 1978 07 30.62009 | 20 38 53.90 | -14 58 58.7 | | | 414 |
| 1978 OF | * | 1978 07 30.60763 | 20 41 57.94 | -14 46 01.3 | | | 414 |
| 1978 OF | | 1978 07 30.62009 | 20 41 57.17 | -14 46 06.5 | | | 414 |
| 1978 OG | * | 1978 07 30.60763 | 20 42 07.68 | -16 41 26.4 | | 1 | 414 |
| 1978 OG | | 1978 07 30.62009 | 20 42 07.19 | -16 41 29.5 | | | 414 |
| 1978 OH | * | 1978 07 30.60763 | 20 44 20.59 | -15 56 33.2 | | 1 | 414 |
| 1978 OH | | 1978 07 30.62009 | 20 44 20.05 | -15 56 39.6 | | | 414 |
| 1978 PL4 | | 1978 08 23.61412 | 22 54 50.14 | +05 02 23.3 | | | 414 |
| 1978 PL4 | | 1978 08 23.62589 | 22 54 49.43 | +05 02 25.7 | | | 414 |
| 1978 PL4 | | 1978 08 24.68711 | 22 53 53.75 | +05 04 09.7 | | | 414 |
| 1978 PL4 | | 1978 08 24.69934 | 22 53 53.03 | +05 04 12.3 | | | 414 |
| 1978 PL4 | | 1978 08 26.60039 | 22 52 11.21 | +05 06 48.1 | | | 414 |
| 1978 PL4 | | 1978 08 26.61216 | 22 52 10.54 | +05 06 49.6 | | | 414 |
| 1978 PP4 | * | 1978 08 02.68185 | 22 33 20.28 | -07 14 56.6 | | | 414 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1978 | PP4 | | 1978 | 08 | 02.69362 | 22 | 33 | 19.59 | -07 | 15 | 06.2 | 414 |
| 1978 | QX | | 1978 | 07 | 28.69065 | 22 | 44 | 20.47 | -07 | 45 | 49.1 | 414 |
| 1978 | QX | | 1978 | 07 | 28.70589 | 22 | 44 | 19.93 | -07 | 45 | 50.4 | 414 |
| 1978 | QX | | 1978 | 08 | 02.68185 | 22 | 41 | 26.12 | -08 | 00 | 08.6 | 414 |
| 1978 | QX | | 1978 | 08 | 02.69362 | 22 | 41 | 25.59 | -08 | 00 | 10.6 | 414 |
| 1978 | QX | | 1978 | 08 | 22.61270 | 22 | 24 | 06.28 | -09 | 30 | 00.9 | 414 |
| 1978 | QX | | 1978 | 08 | 22.62447 | 22 | 24 | 05.70 | -09 | 30 | 03.6 | 414 |
| 1978 | QT1 | | 1978 | 08 | 23.65983 | 23 | 30 | 39.10 | -01 | 32 | 23.6 | 414 |
| 1978 | QT1 | | 1978 | 08 | 23.67299 | 23 | 30 | 38.50 | -01 | 32 | 26.6 | 414 |
| 1978 | QT1 | | 1978 | 08 | 24.73189 | 23 | 29 | 58.25 | -01 | 36 | 25.7 | 414 |
| 1978 | QT1 | | 1978 | 08 | 24.74367 | 23 | 29 | 57.74 | -01 | 36 | 28.9 | 414 |
| 1978 | QT1 | | 1978 | 08 | 26.64367 | 23 | 28 | 43.21 | -01 | 43 | 55.9 | 414 |
| 1978 | QT1 | | 1978 | 08 | 26.65579 | 23 | 28 | 42.69 | -01 | 43 | 58.4 | 414 |
| 1978 | QW1 | | 1978 | 08 | 23.65983 | 23 | 32 | 21.07 | -01 | 45 | 57.4 | 414 |
| 1978 | QW1 | | 1978 | 08 | 23.67299 | 23 | 32 | 20.33 | -01 | 45 | 57.2 | 414 |
| 1978 | QW1 | | 1978 | 08 | 24.73189 | 23 | 31 | 35.48 | -01 | 47 | 44.6 | 414 |
| 1978 | QW1 | | 1978 | 08 | 24.74367 | 23 | 31 | 34.90 | -01 | 47 | 45.4 | 414 |
| 1978 | QW1 | | 1978 | 08 | 26.64367 | 23 | 30 | 10.49 | -01 | 51 | 27.4 | 414 |
| 1978 | QW1 | | 1978 | 08 | 26.65579 | 23 | 30 | 09.82 | -01 | 51 | 29.4 | 414 |
| 1978 | QX1 | | 1978 | 08 | 23.65983 | 23 | 30 | 52.60 | -00 | 56 | 00.5 | 414 |
| 1978 | QX1 | | 1978 | 08 | 23.67299 | 23 | 30 | 52.16 | -00 | 56 | 04.6 | 414 |
| 1978 | QX1 | | 1978 | 08 | 24.73189 | 23 | 30 | 17.63 | -01 | 03 | 43.8 | 414 |
| 1978 | QX1 | | 1978 | 08 | 24.74367 | 23 | 30 | 17.19 | -01 | 03 | 48.3 | 414 |
| 1978 | QX1 | | 1978 | 08 | 26.64367 | 23 | 29 | 12.97 | -01 | 17 | 51.7 | 414 |
| 1978 | QX1 | | 1978 | 08 | 26.65579 | 23 | 29 | 12.50 | -01 | 17 | 57.0 | 414 |
| 1978 | QJ2 | | 1978 | 08 | 23.65983 | 23 | 36 | 27.48 | -03 | 49 | 31.4 | 2 414 |
| 1978 | QJ2 | | 1978 | 08 | 23.67299 | 23 | 36 | 26.72 | -03 | 49 | 34.1 | 2 414 |
| 1978 | QJ2 | | 1978 | 08 | 24.73189 | 23 | 35 | 47.83 | -03 | 53 | 37.2 | 2 414 |
| 1978 | QJ2 | | 1978 | 08 | 24.74367 | 23 | 35 | 47.42 | -03 | 53 | 41.4 | 2 414 |
| 1978 | QJ2 | | 1978 | 08 | 26.64367 | 23 | 34 | 34.99 | -04 | 01 | 10.4 | 2 414 |
| 1978 | QJ2 | | 1978 | 08 | 26.65579 | 23 | 34 | 34.51 | -04 | 01 | 14.3 | 2 414 |
| 1978 | QL2 | | 1978 | 08 | 23.65983 | 23 | 36 | 26.82 | -03 | 15 | 21.3 | 2 414 |
| 1978 | QL2 | | 1978 | 08 | 23.67299 | 23 | 36 | 26.27 | -03 | 15 | 22.6 | 2 414 |
| 1978 | QL2 | | 1978 | 08 | 24.73189 | 23 | 35 | 53.13 | -03 | 20 | 05.4 | 2 414 |
| 1978 | QL2 | | 1978 | 08 | 24.74367 | 23 | 35 | 52.78 | -03 | 20 | 08.8 | 2 414 |
| 1978 | QL2 | | 1978 | 08 | 26.64367 | 23 | 34 | 50.44 | -03 | 28 | 49.7 | 2 414 |
| 1978 | QL2 | | 1978 | 08 | 26.65579 | 23 | 34 | 50.00 | -03 | 28 | 53.7 | 2 414 |
| 1978 | QO2 | | 1978 | 08 | 26.64367 | 23 | 35 | 53.01 | -04 | 16 | 08.8 | 2 414 |
| 1978 | QO2 | | 1978 | 08 | 26.65579 | 23 | 35 | 52.57 | -04 | 16 | 14.1 | 2 414 |
| 1978 | QC3 | * | 1978 | 08 | 22.65667 | 22 | 38 | 05.95 | -15 | 52 | 30.8 | 414 |
| 1978 | QC3 | | 1978 | 08 | 22.66878 | 22 | 38 | 05.28 | -15 | 52 | 37.6 | 414 |
| 1978 | QC3 | | 1978 | 08 | 23.56356 | 22 | 37 | 26.34 | -16 | 00 | 45.8 | 414 |
| 1978 | QC3 | | 1978 | 08 | 23.57534 | 22 | 37 | 25.82 | -16 | 00 | 50.5 | 414 |
| 1978 | QD3 | * | 1978 | 08 | 22.65667 | 22 | 47 | 12.76 | -17 | 13 | 44.9 | 414 |
| 1978 | QD3 | | 1978 | 08 | 22.66878 | 22 | 47 | 12.15 | -17 | 13 | 48.5 | 414 |
| 1978 | QD3 | | 1978 | 08 | 23.56356 | 22 | 46 | 29.73 | -17 | 17 | 47.6 | 414 |
| 1978 | QD3 | | 1978 | 08 | 23.57534 | 22 | 46 | 29.05 | -17 | 17 | 51.0 | 414 |
| 1978 | QE3 | * | 1978 | 08 | 22.73310 | 23 | 03 | 13.93 | -13 | 06 | 52.3 | 2 414 |
| 1978 | QE3 | | 1978 | 08 | 22.75041 | 23 | 03 | 13.60 | -13 | 06 | 56.0 | 2 414 |
| 1978 | QF3 | * | 1978 | 08 | 23.61412 | 23 | 01 | 16.79 | +04 | 15 | 01.8 | 414 |
| 1978 | QF3 | | 1978 | 08 | 23.62589 | 23 | 01 | 16.40 | +04 | 15 | 00.3 | 414 |
| 1978 | QG3 | * | 1978 | 08 | 23.63628 | 23 | 09 | 26.17 | -23 | 10 | 19.8 | 1 414 |
| 1978 | QG3 | | 1978 | 08 | 23.64806 | 23 | 09 | 25.58 | -23 | 10 | 23.2 | 414 |
| 1978 | QG3 | | 1978 | 08 | 24.70973 | 23 | 08 | 37.41 | -23 | 16 | 11.1 | 414 |
| 1978 | QG3 | | 1978 | 08 | 24.72220 | 23 | 08 | 36.86 | -23 | 16 | 14.5 | 414 |
| 1978 | QG3 | | 1978 | 08 | 26.62220 | 23 | 07 | 09.09 | -23 | 26 | 17.0 | 414 |
| 1978 | QG3 | | 1978 | 08 | 26.63432 | 23 | 07 | 08.59 | -23 | 26 | 20.4 | 414 |
| 1978 | QH3 | * | 1978 | 08 | 23.63628 | 23 | 10 | 09.49 | -22 | 58 | 22.7 | 3 414 |
| 1978 | QH3 | | 1978 | 08 | 23.64806 | 23 | 10 | 09.14 | -22 | 58 | 33.0 | 2 414 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1978 | QH3 | | 1978 | 08 | 24.70973 | 23 | 09 | 37.14 | -23 | 14 | 22.0 | 2 | 414 |
| 1978 | QH3 | | 1978 | 08 | 24.72220 | 23 | 09 | 36.64 | -23 | 14 | 33.3 | 2 | 414 |
| 1978 | QH3 | | 1978 | 08 | 26.62220 | 23 | 08 | 36.99 | -23 | 42 | 27.3 | 2 | 414 |
| 1978 | QH3 | | 1978 | 08 | 26.63432 | 23 | 08 | 36.59 | -23 | 42 | 37.8 | 2 | 414 |
| 1978 | QJ3 | * | 1978 | 08 | 24.59096 | 21 | 11 | 23.85 | -17 | 29 | 33.4 | | 414 |
| 1978 | QJ3 | | 1978 | 08 | 24.60308 | 21 | 11 | 23.24 | -17 | 29 | 39.8 | | 414 |
| 1978 | QK3 | * | 1978 | 08 | 24.68711 | 23 | 02 | 11.62 | +04 | 21 | 33.7 | 1 | 414 |
| 1978 | QK3 | | 1978 | 08 | 24.69934 | 23 | 02 | 11.02 | +04 | 21 | 33.3 | | 414 |
| 1978 | QK3 | | 1978 | 08 | 26.60039 | 23 | 00 | 42.16 | +04 | 19 | 51.4 | | 414 |
| 1978 | QK3 | | 1978 | 08 | 26.61216 | 23 | 00 | 41.62 | +04 | 19 | 51.0 | | 414 |
| 1978 | QL3 | * | 1978 | 08 | 26.64367 | 23 | 30 | 21.35 | -02 | 31 | 31.7 | 1 | 414 |
| 1978 | QL3 | | 1978 | 08 | 26.65579 | 23 | 30 | 20.66 | -02 | 31 | 36.4 | | 414 |
| 1978 | QM3 | * | 1978 | 08 | 26.64367 | 23 | 31 | 31.05 | -03 | 57 | 50.6 | 1 | 414 |
| 1978 | QM3 | | 1978 | 08 | 26.65579 | 23 | 31 | 30.66 | -03 | 57 | 56.8 | | 414 |
| 1978 | QN3 | * | 1978 | 08 | 26.64367 | 23 | 33 | 14.61 | -03 | 41 | 23.6 | 1 | 414 |
| 1978 | QN3 | | 1978 | 08 | 26.65579 | 23 | 33 | 13.93 | -03 | 41 | 28.9 | | 414 |
| 1978 | RF1 | | 1978 | 08 | 24.56499 | 20 | 23 | 23.73 | -17 | 27 | 26.1 | | 414 |
| 1978 | RF1 | | 1978 | 08 | 24.58022 | 20 | 23 | 23.12 | -17 | 27 | 34.7 | | 414 |

Note 1: discoverers de Sanctis and Zappala. 2: near edge of plate. 3 = 1 + 2.

OBSERVATIONS MADE AT MT. JOHN UNIVERSITY OBSERVATORY BY A. C. GILMORE AND P. M. KILMARTIN.

| Object | | Date | UT | R. A. (1950) | | | Decl. | | | Mag. | N | Obs. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1915 | | 1981 01 | 09.54670 | 06 | 25 | 00.93 | -42 | 34 | 19.9 | 18 | 1 | 474 |
| 1915 | | 1981 02 | 03.44838 | 06 | 53 | 23.86 | -43 | 24 | 33.5 | | | 474 |
| 1915 | | 1981 02 | 03.48125 | 06 | 53 | 28.80 | -43 | 24 | 06.5 | | 2 | 474 |
| 2150 | | 1981 02 | 03.51991 | 08 | 05 | 01.85 | -27 | 15 | 28.2 | | | 474 |
| 2150 | | 1981 02 | 03.54560 | 08 | 05 | 00.23 | -27 | 15 | 08.4 | | 2 | 474 |
| 2363 | | 1981 02 | 02.49340 | 07 | 16 | 24.81 | -16 | 44 | 06.9 | | 2 | 474 |
| 2363 | | 1981 02 | 02.52118 | 07 | 16 | 24.13 | -16 | 44 | 01.9 | | | 474 |
| 1975 | TN | 1981 02 | 02.54862 | 09 | 24 | 44.50 | -07 | 00 | 00.1 | | | 474 |
| 1975 | TN | 1981 02 | 02.57153 | 09 | 24 | 43.11 | -06 | 59 | 53.5 | | 2 | 474 |
| 1977 | CA | 1981 02 | 02.61117 | 12 | 47 | 18.01 | -20 | 20 | 10.0 | | 2 | 474 |
| 1977 | CA | 1981 02 | 03.62865 | 12 | 47 | 07.75 | -20 | 43 | 00.7 | | | 474 |
| 1977 | CA | 1981 02 | 03.65093 | 12 | 47 | 07.39 | -20 | 43 | 30.4 | | | 474 |
| 1977 | GA | 1981 02 | 03.57465 | 11 | 45 | 15.78 | -37 | 55 | 31.4 | | | 474 |
| 1977 | GA | 1981 02 | 03.59815 | 11 | 45 | 15.14 | -37 | 55 | 41.6 | | | 474 |
| 1980 | WF | 1981 02 | 08.53057 | 08 | 28 | 21.51 | -14 | 12 | 32.1 | | 2 | 474 |
| 1980 | WF | 1981 02 | 08.55580 | 08 | 28 | 23.52 | -14 | 12 | 07.5 | | | 474 |
| 1981 | GX | * 1981 04 | 02.46111 | 10 | 59 | 43.38 | -36 | 43 | 12.5 | 17 | | 474 |
| 1981 | GX | 1981 04 | 02.48299 | 10 | 59 | 42.44 | -36 | 42 | 48.9 | | | 474 |
| 1981 | GX | 1981 04 | 04.35532 | 10 | 58 | 40.22 | -36 | 11 | 10.8 | | | 474 |
| 1981 | GX | 1981 04 | 04.39861 | 10 | 58 | 38.79 | -36 | 10 | 25.4 | | | 474 |
| 1981 | GX | 1981 04 | 05.35367 | 10 | 58 | 10.10 | -35 | 53 | 45.3 | | | 474 |
| 1981 | GX | 1981 04 | 05.37569 | 10 | 58 | 09.33 | -35 | 53 | 22.9 | | | 474 |

Note 1: correction to MPC 5823. 2: slightly trailed image.

OBSERVATIONS MADE AT BENDESTORF (CODE 506) BY K. RESSEL, BURGSOLMS OBSERVATORY (CODE 554) BY F. FREVERT AND REINTAL OBSERVATORY (CODE 556) BY F. SEILER (WITH ASSISTANCE FROM W. LANDGRAF). COMMUNICATED BY FREVERT.

| Object | Date | UT | R. A. (1950) | | | Decl. | | | Obs. |
|---|---|---|---|---|---|---|---|---|---|
| 216 | 1980 08 | 14.92569 | 23 | 41 | 09.99 | +16 | 01 | 22.5 | 554 |
| 216 | 1980 08 | 14.93403 | 23 | 41 | 09.89 | +16 | 01 | 22.8 | 554 |
| 216 | 1980 08 | 14.93889 | 23 | 41 | 09.83 | +16 | 01 | 23.0 | 554 |
| 216 | 1980 10 | 03.96528 | 23 | 15 | 06.23 | +09 | 51 | 48.8 | 506 |
| 216 | 1980 10 | 03.98750 | 23 | 15 | 05.65 | +09 | 51 | 32.7 | 506 |
| 216 | 1980 10 | 03.99236 | 23 | 15 | 05.49 | +09 | 51 | 28.5 | 506 |
| 216 | 1980 10 | 03.99931 | 23 | 15 | 05.25 | +09 | 51 | 23.1 | 506 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 216 | 1980 | 10 | 15.90625 | 23 | 11 | 09.79 | +07 | 20 | 52.4 | 506 |
| 216 | 1980 | 10 | 15.92500 | 23 | 11 | 09.65 | +07 | 20 | 39.0 | 506 |
| 216 | 1980 | 10 | 15.94792 | 23 | 11 | 09.29 | +07 | 20 | 21.8 | 506 |
| 216 | 1980 | 11 | 09.74861 | 23 | 16 | 03.29 | +03 | 14 | 56.6 | 506 |
| 216 | 1980 | 11 | 09.77917 | 23 | 16 | 04.37 | +03 | 14 | 43.2 | 506 |
| 216 | 1980 | 11 | 09.78750 | 23 | 16 | 04.63 | +03 | 14 | 39.5 | 506 |
| 216 | 1980 | 11 | 09.79722 | 23 | 16 | 04.88 | +03 | 14 | 36.9 | 506 |
| 216 | 1980 | 11 | 09.84444 | 23 | 16 | 06.48 | +03 | 14 | 16.4 | 506 |
| 216 | 1980 | 11 | 09.85833 | 23 | 16 | 06.82 | +03 | 14 | 11.4 | 506 |
| 216 | 1980 | 11 | 09.86528 | 23 | 16 | 07.17 | +03 | 14 | 08.1 | 506 |
| 216 | 1980 | 11 | 09.87292 | 23 | 16 | 07.38 | +03 | 14 | 04.5 | 506 |
| 222 | 1980 | 12 | 12.84271 | 06 | 33 | 50.13 | +23 | 53 | 16.9 | 556 |
| 222 | 1980 | 12 | 12.84965 | 06 | 33 | 49.79 | +23 | 53 | 16.8 | 556 |
| 222 | 1980 | 12 | 12.85660 | 06 | 33 | 49.45 | +23 | 53 | 19.2 | 556 |
| 222 | 1980 | 12 | 12.86354 | 06 | 33 | 49.08 | +23 | 53 | 18.9 | 556 |
| 222 | 1980 | 12 | 12.87049 | 06 | 33 | 48.76 | +23 | 53 | 18.3 | 556 |
| 222 | 1980 | 12 | 12.87743 | 06 | 33 | 48.42 | +23 | 53 | 18.6 | 556 |
| 222 | 1980 | 12 | 12.88437 | 06 | 33 | 48.12 | +23 | 53 | 20.2 | 556 |
| 222 | 1980 | 12 | 12.89132 | 06 | 33 | 47.77 | +23 | 53 | 21.1 | 556 |
| 222 | 1980 | 12 | 31.85625 | 06 | 17 | 36.82 | +24 | 11 | 22.0 | 556 |
| 222 | 1980 | 12 | 31.86319 | 06 | 17 | 36.47 | +24 | 11 | 20.4 | 556 |
| 222 | 1980 | 12 | 31.87014 | 06 | 17 | 36.12 | +24 | 11 | 23.2 | 556 |
| 222 | 1980 | 12 | 31.88403 | 06 | 17 | 35.36 | +24 | 11 | 22.1 | 556 |
| 222 | 1981 | 01 | 24.82535 | 05 | 59 | 30.84 | +24 | 22 | 04.9 | 556 |
| 222 | 1981 | 01 | 24.83924 | 05 | 59 | 30.35 | +24 | 22 | 06.2 | 556 |
| 222 | 1981 | 01 | 24.86007 | 05 | 59 | 29.62 | +24 | 22 | 06.6 | 556 |
| 222 | 1981 | 01 | 30.84757 | 05 | 56 | 23.72 | +24 | 23 | 06.5 | 556 |
| 222 | 1981 | 01 | 30.85451 | 05 | 56 | 23.42 | +24 | 23 | 07.0 | 556 |
| 222 | 1981 | 01 | 30.86840 | 05 | 56 | 23.20 | +24 | 23 | 05.2 | 556 |
| 222 | 1981 | 01 | 30.88229 | 05 | 56 | 22.79 | +24 | 23 | 05.5 | 556 |
| 222 | 1981 | 01 | 31.83958 | 05 | 55 | 57.19 | +24 | 23 | 13.5 | 556 |
| 222 | 1981 | 01 | 31.84653 | 05 | 55 | 57.05 | +24 | 23 | 13.3 | 556 |
| 222 | 1981 | 01 | 31.85347 | 05 | 55 | 56.84 | +24 | 23 | 14.0 | 556 |
| 222 | 1981 | 02 | 01.82708 | 05 | 55 | 32.05 | +24 | 23 | 21.3 | 556 |
| 222 | 1981 | 02 | 01.83403 | 05 | 55 | 32.00 | +24 | 23 | 20.4 | 556 |
| 222 | 1981 | 02 | 01.84097 | 05 | 55 | 31.68 | +24 | 23 | 20.4 | 556 |
| 222 | 1981 | 02 | 01.86181 | 05 | 55 | 31.24 | +24 | 23 | 20.8 | 556 |
| 389 | 1980 | 08 | 14.95833 | 23 | 38 | 41.77 | +09 | 21 | 53.0 | 554 |
| 389 | 1980 | 08 | 14.96667 | 23 | 38 | 41.52 | +09 | 21 | 53.6 | 554 |
| 389 | 1980 | 08 | 14.97569 | 23 | 38 | 41.21 | +09 | 21 | 54.0 | 554 |
| 506 | 1980 | 08 | 14.98958 | 23 | 08 | 43.32 | +07 | 23 | 15.2 | 554 |
| 506 | 1980 | 08 | 15.00000 | 23 | 08 | 42.91 | +07 | 23 | 16.2 | 554 |
| 506 | 1980 | 08 | 15.01042 | 23 | 08 | 42.43 | +07 | 23 | 17.5 | 554 |
| 506 | 1980 | 09 | 10.81042 | 22 | 46 | 32.94 | +07 | 25 | 19.7 | 556 |
| 506 | 1980 | 09 | 10.83264 | 22 | 46 | 31.77 | +07 | 25 | 17.4 | 556 |
| 506 | 1980 | 09 | 10.83819 | 22 | 46 | 31.55 | +07 | 25 | 17.9 | 556 |
| 506 | 1980 | 09 | 10.84375 | 22 | 46 | 31.26 | +07 | 25 | 17.6 | 556 |
| 506 | 1980 | 09 | 10.84931 | 22 | 46 | 30.85 | +07 | 25 | 17.2 | 556 |
| 506 | 1980 | 09 | 12.80625 | 22 | 44 | 48.40 | +07 | 21 | 54.6 | 556 |
| 506 | 1980 | 09 | 12.80833 | 22 | 44 | 48.27 | +07 | 21 | 54.2 | 556 |
| 506 | 1980 | 09 | 12.81042 | 22 | 44 | 48.19 | +07 | 21 | 54.0 | 556 |
| 1639 | 1980 | 10 | 28.77986 | 01 | 43 | 30.50 | +25 | 51 | 12.0 | 556 |
| 1639 | 1980 | 10 | 28.78299 | 01 | 43 | 30.33 | +25 | 51 | 09.7 | 556 |
| 1639 | 1980 | 10 | 28.78819 | 01 | 43 | 30.01 | +25 | 51 | 09.2 | 556 |
| 1639 | 1980 | 10 | 28.80382 | 01 | 43 | 29.11 | +25 | 51 | 06.8 | 556 |
| 1639 | 1980 | 10 | 28.81076 | 01 | 43 | 28.73 | +25 | 51 | 05.1 | 556 |
| 1639 | 1980 | 10 | 28.81944 | 01 | 43 | 28.29 | +25 | 51 | 02.4 | 556 |
| 1685 | 1980 | 07 | 23.95799 | 22 | 30 | 30.59 | +25 | 16 | 17.4 | 554 |
| 1685 | 1980 | 07 | 24.95139 | 22 | 34 | 06.04 | +27 | 22 | 55.5 | 554 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1685 | 1980 | 07 | 25.99132 | 22 | 38 | 09.76 | +29 | 41 | 39.5 | 556 |
| 1685 | 1980 | 07 | 25.99340 | 22 | 38 | 10.32 | +29 | 41 | 56.3 | 556 |
| 1685 | 1980 | 07 | 25.99410 | 22 | 38 | 10.45 | +29 | 42 | 01.9 | 556 |
| 2235 | 1980 | 12 | 30.81806 | 04 | 32 | 52.29 | -00 | 38 | 38.9 | 556 |
| 2235 | 1980 | 12 | 30.82500 | 04 | 32 | 52.18 | -00 | 38 | 38.0 | 556 |
| 2235 | 1980 | 12 | 30.83194 | 04 | 32 | 51.89 | -00 | 38 | 38.5 | 556 |
| 2235 | 1980 | 12 | 30.84583 | 04 | 32 | 51.31 | -00 | 38 | 40.6 | 556 |
| 2235 | 1980 | 12 | 31.83542 | 04 | 32 | 20.41 | -00 | 39 | 00.8 | 556 |
| 2235 | 1981 | 01 | 24.79757 | 04 | 26 | 53.85 | +00 | 08 | 47.0 | 556 |
| 2235 | 1981 | 01 | 24.81146 | 04 | 26 | 53.95 | +00 | 08 | 50.3 | 556 |
| 2235 | 1981 | 01 | 24.81840 | 04 | 26 | 54.01 | +00 | 08 | 51.2 | 556 |
| 2235 | 1981 | 01 | 31.79097 | 04 | 28 | 02.21 | +00 | 38 | 28.8 | 556 |
| 2235 | 1981 | 01 | 31.80486 | 04 | 28 | 02.27 | +00 | 38 | 32.3 | 556 |
| 2235 | 1981 | 01 | 31.81875 | 04 | 28 | 02.58 | +00 | 38 | 36.9 | 556 |
| 2235 | 1981 | 01 | 31.82569 | 04 | 28 | 02.63 | +00 | 38 | 38.7 | 556 |

OBSERVATION MADE AT HAUTE PROVENCE BY F. DOSSIN AND J. SURDEJ.

| Object | | Date | UT | R. A. (1950) | Decl. | Mag. | Obs. |
|---|---|---|---|---|---|---|---|
| 1981 ED | * | 1981 03 | 07.03750 | 11 40 39.48 | +00 33 42.6 | 16 | 511 |

OBSERVATIONS MADE AT CHORZOW BY J. GASIOR, T. MODRZEJOWSKI, M. SZCZEPANSKI, R. SMILOWSKI AND I. WLODARCZYK. FROM ACTA ASTRON. 30, 469, 1980.

| Object | Date | UT | R. A. (1950) | Decl. | Obs. |
|---|---|---|---|---|---|
| 2 | 1978 06 | 03.93736 | 17 12 48.12 | +25 48 10.9 | 553 |
| 2 | 1978 06 | 03.96792 | 17 12 46.46 | +25 48 16.4 | 553 |
| 2 | 1978 06 | 04.01103 | 17 12 44.23 | +25 48 22.3 | 553 |
| 2 | 1978 06 | 16.91596 | 17 01 44.24 | +25 52 44.5 | 553 |
| 2 | 1978 06 | 16.95277 | 17 01 42.31 | +25 52 39.2 | 553 |
| 2 | 1978 06 | 17.00311 | 17 01 39.91 | +25 52 33.9 | 553 |
| 2 | 1978 06 | 30.90694 | 16 51 14.68 | +24 59 41.0 | 553 |
| 2 | 1978 06 | 30.95000 | 16 51 13.02 | +24 59 26.8 | 553 |
| 2 | 1978 06 | 30.99164 | 16 51 11.25 | +24 59 12.8 | 553 |
| 2 | 1978 07 | 02.91160 | 16 49 57.83 | +24 47 43.2 | 553 |
| 2 | 1978 07 | 02.94053 | 16 49 56.66 | +24 47 32.4 | 553 |
| 2 | 1978 07 | 02.96079 | 16 49 55.97 | +24 47 25.0 | 553 |
| 2 | 1978 07 | 30.87795 | 16 40 10.85 | +20 40 05.5 | 553 |
| 2 | 1978 07 | 30.89076 | 16 40 10.75 | +20 39 57.6 | 553 |
| 15 | 1977 12 | 11.04971 | 08 41 30.20 | +19 10 26.1 | 553 |
| 15 | 1977 12 | 12.00440 | 08 41 11.47 | +19 07 22.9 | 553 |
| 15 | 1977 12 | 13.03542 | 08 40 49.02 | +19 04 07.2 | 553 |
| 15 | 1977 12 | 13.04340 | 08 40 48.86 | +19 04 05.5 | 553 |
| 15 | 1978 01 | 15.95119 | 08 12 47.91 | +17 52 29.5 | 553 |
| 15 | 1978 01 | 15.95565 | 08 12 47.45 | +17 52 28.5 | 553 |
| 15 | 1978 01 | 15.99421 | 08 12 44.91 | +17 52 25.5 | 553 |
| 15 | 1978 01 | 16.00119 | 08 12 44.54 | +17 52 25.3 | 553 |
| 15 | 1978 01 | 16.00218 | 08 12 44.39 | +17 52 25.0 | 553 |
| 15 | 1978 01 | 16.00547 | 08 12 44.25 | +17 52 23.7 | 553 |
| 324 | 1978 10 | 08.95102 | 02 57 32.20 | +37 27 59.0 | 553 |
| 324 | 1978 10 | 08.99292 | 02 57 31.17 | +37 28 18.6 | 553 |
| 324 | 1978 10 | 09.03372 | 02 57 30.06 | +37 28 44.6 | 553 |
| 324 | 1978 10 | 10.96551 | 02 56 39.20 | +37 45 40.3 | 553 |
| 324 | 1978 10 | 10.98738 | 02 56 38.43 | +37 45 50.4 | 553 |
| 324 | 1978 10 | 12.97509 | 02 55 36.44 | +38 01 54.6 | 553 |
| 324 | 1978 10 | 13.00113 | 02 55 35.50 | +38 02 05.4 | 553 |
| 324 | 1978 10 | 13.03447 | 02 55 34.18 | +38 02 22.5 | 553 |
| 324 | 1978 11 | 01.91372 | 02 38 29.15 | +39 13 44.2 | 553 |
| 324 | 1978 11 | 01.94983 | 02 38 26.82 | +39 13 41.8 | 553 |
| 324 | 1978 11 | 01.98663 | 02 38 24.45 | +39 13 39.9 | 553 |

OBSERVATIONS MADE WITH THE 1.2-M SCHMIDT AT PALOMAR.

| Object | | Date | UT | R. A. (1950) | Decl. | Mag. | N | Obs. |
|---|---|---|---|---|---|---|---|---|
| 1537 | | 1981 | 02 15.53474 | 14 16 31.56 | -15 42 12.0 | 18 | 1 | 675 |
| 2055 | | 1981 | 02 15.25418 | 10 21 53.70 | +20 36 40.2 | | 1 | 675 |
| 2055 | | 1981 | 02 15.34828 | 10 21 43.76 | +20 36 02.5 | | 1 | 675 |
| 1954 RR | * | 1954 | 09 08.37085 | 00 52 16.75 | -07 31 02.7 | 16 | 2 | 675 |
| 1954 RR | | 1954 | 09 08.40557 | 00 52 15.54 | -07 31 01.3 | | 2 | 675 |
| 1981 FD | | 1981 | 04 06.23264 | 12 08 40.37 | +00 06 34.3 | 17.0 | 3 | 675 |
| 1981 FD | | 1981 | 04 06.28472 | 12 08 39.07 | +00 06 31.2 | | 3 | 675 |
| 1981 FD | | 1981 | 04 07.31181 | 12 08 13.97 | +00 05 39.8 | 17.0 | 3 | 675 |
| 1981 FD | | 1981 | 04 07.36389 | 12 08 12.81 | +00 05 37.1 | | 3 | 675 |
| 1981 FD | | 1981 | 04 07.44375 | 12 08 10.56 | +00 05 33.6 | | 3 | 675 |
| 2540 P-L | * | 1960 | 09 24.46184 | 00 51 32.98 | +04 46 27.9 | | 4 | 675 |
| 2540 P-L | | 1960 | 09 26.37988 | 00 50 09.97 | +04 31 36.0 | | 4 | 675 |
| 2540 P-L | | 1960 | 09 28.43822 | 00 48 38.21 | +04 15 22.1 | | 4 | 675 |
| 2540 P-L | | 1960 | 09 29.39514 | 00 47 54.95 | +04 07 42.8 | | 4 | 675 |
| 2540 P-L | | 1960 | 10 17.31529 | 00 34 08.71 | +01 43 36.6 | | 4 | 675 |
| 2540 P-L | | 1960 | 10 22.26809 | 00 30 42.87 | +01 07 12.2 | | 4 | 675 |
| 2540 P-L | | 1960 | 10 25.30351 | 00 28 47.74 | +00 46 27.5 | | 4 | 675 |
| 2540 P-L | | 1960 | 10 26.35766 | 00 28 09.94 | +00 39 35.3 | | 4 | 675 |
| 4081 P-L | * | 1960 | 09 24.33613 | 00 12 54.58 | +05 56 06.8 | | 4 | 675 |
| 4081 P-L | | 1960 | 09 24.37573 | 00 12 52.65 | +05 55 40.8 | | 4 | 675 |
| 4081 P-L | | 1960 | 09 25.32502 | 00 12 09.73 | +05 44 59.3 | | 4 | 675 |
| 4081 P-L | | 1960 | 09 25.42780 | 00 12 04.76 | +05 43 48.3 | | 4 | 675 |
| 4081 P-L | | 1960 | 09 26.27573 | 00 11 26.73 | +05 34 11.6 | | 4 | 675 |
| 4081 P-L | | 1960 | 09 26.30558 | 00 11 25.21 | +05 33 50.4 | | 4 | 675 |
| 4081 P-L | | 1960 | 09 28.32780 | 00 09 53.50 | +05 10 42.1 | | 4 | 675 |
| 4081 P-L | | 1960 | 10 17.27085 | 23 57 56.49 | +01 42 15.6 | | 4 | 675 |
| 4081 P-L | | 1960 | 10 22.22293 | 23 56 08.17 | +00 57 07.2 | | 4 | 675 |
| 4081 P-L | | 1960 | 10 24.35836 | 23 55 34.69 | +00 39 32.6 | | 4 | 675 |
| 4081 P-L | | 1960 | 10 26.32573 | 23 55 12.03 | +00 24 25.9 | | 4 | 675 |

Note 1: observer J. Gibson. 2: ends of trail on the Palomar Sky Survey, measured by Gibson. 3: observer C. Kowal. 4: observer T. Gehrels, measured by C. J. van Houten and I. van Houten-Groeneveld.

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

| Object | Date | UT | R. A. (1950) | Decl. | Mag. | Obs. |
|---|---|---|---|---|---|---|
| 296 | 1980 | 10 07.33056 | 00 38 03.90 | +00 16 02.9 | | 675 |
| 296 | 1980 | 10 08.32639 | 00 37 12.74 | +00 10 19.0 | | 675 |
| 296 | 1980 | 10 09.30000 | 00 36 23.26 | +00 04 48.7 | | 675 |
| 296 | 1980 | 10 10.25903 | 00 35 34.80 | -00 00 28.3 | | 675 |
| 496 | 1980 | 10 07.33056 | 00 23 01.68 | +04 42 22.4 | | 675 |
| 496 | 1980 | 10 08.32639 | 00 22 06.65 | +04 34 06.5 | | 675 |
| 496 | 1980 | 10 09.30000 | 00 21 13.39 | +04 25 58.1 | | 675 |
| 496 | 1980 | 10 10.25903 | 00 20 21.75 | +04 18 03.2 | | 675 |
| 1046 | 1980 | 10 07.33056 | 00 38 21.17 | +04 19 41.3 | | 675 |
| 1046 | 1980 | 10 08.32639 | 00 37 30.13 | +04 17 07.8 | | 675 |
| 1046 | 1980 | 10 09.30000 | 00 36 40.50 | +04 14 41.1 | | 675 |
| 1046 | 1980 | 10 10.25903 | 00 35 51.83 | +04 12 15.8 | | 675 |
| 1268 | 1980 | 10 07.33056 | 00 34 32.93 | +05 49 16.2 | | 675 |
| 1268 | 1980 | 10 08.32639 | 00 33 55.47 | +05 45 59.2 | | 675 |
| 1268 | 1980 | 10 09.30000 | 00 33 19.19 | +05 42 46.7 | | 675 |
| 1268 | 1980 | 10 10.25903 | 00 32 43.53 | +05 39 35.4 | | 675 |
| 1462 | 1980 | 10 09.30000 | 00 20 23.99 | +01 47 11.0 | | 675 |
| 1462 | 1980 | 10 10.25903 | 00 19 44.11 | +01 43 05.3 | | 675 |
| 1479 | 1980 | 10 07.33056 | 00 32 43.44 | +01 44 59.7 | | 675 |
| 1479 | 1980 | 10 08.32639 | 00 31 46.50 | +01 42 15.1 | | 675 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1479 | | | 1980 | 10 | 09.30000 | 00 | 30 | 50.96 | +01 | 39 | 35.3 | | | 675 |
| 1479 | | | 1980 | 10 | 10.25903 | 00 | 29 | 56.58 | +01 | 37 | 00.9 | | | 675 |
| 1861 | | | 1980 | 10 | 07.33056 | 00 | 34 | 04.56 | -00 | 31 | 13.3 | | | 675 |
| 1861 | | | 1980 | 10 | 08.32639 | 00 | 33 | 13.73 | -00 | 33 | 02.6 | | | 675 |
| 1861 | | | 1980 | 10 | 09.30000 | 00 | 32 | 24.36 | -00 | 34 | 48.3 | | | 675 |
| 1861 | | | 1980 | 10 | 10.25903 | 00 | 31 | 36.01 | -00 | 36 | 27.9 | | | 675 |
| 2067 | | | 1980 | 10 | 07.33056 | 00 | 30 | 31.31 | +00 | 27 | 41.9 | | | 675 |
| 2067 | | | 1980 | 10 | 08.32639 | 00 | 29 | 54.48 | +00 | 23 | 21.9 | | | 675 |
| 2067 | | | 1980 | 10 | 09.30000 | 00 | 29 | 18.87 | +00 | 19 | 10.0 | | | 675 |
| 2067 | | | 1980 | 10 | 10.25903 | 00 | 28 | 43.98 | +00 | 15 | 03.4 | | | 675 |
| 1980 | TN3 | | 1980 | 10 | 07.33056 | 00 | 31 | 20.13 | +06 | 49 | 33.7 | | | 675 |
| 1980 | TN3 | * | 1980 | 10 | 08.32639 | 00 | 30 | 23.60 | +06 | 48 | 33.4 | | 15 | 675 |
| 1980 | TO3 | * | 1980 | 10 | 08.32639 | 00 | 35 | 40.16 | +02 | 04 | 06.5 | | 18 | 675 |
| 1980 | TP3 | | 1980 | 10 | 07.33056 | 00 | 23 | 44.23 | +04 | 09 | 24.1 | | | 675 |
| 1980 | TP3 | | 1980 | 10 | 08.32639 | 00 | 23 | 01.04 | +03 | 58 | 19.7 | | | 675 |
| 1980 | TP3 | * | 1980 | 10 | 09.30000 | 00 | 22 | 19.68 | +03 | 47 | 31.0 | | 16.5 | 675 |
| 1980 | TP3 | | 1980 | 10 | 10.25903 | 00 | 21 | 39.53 | +03 | 37 | 00.1 | | | 675 |
| 1980 | TQ3 | | 1980 | 10 | 07.33056 | 00 | 26 | 16.11 | +01 | 45 | 40.1 | | | 675 |
| 1980 | TQ3 | | 1980 | 10 | 08.32639 | 00 | 25 | 22.28 | +01 | 40 | 26.8 | | | 675 |
| 1980 | TQ3 | * | 1980 | 10 | 09.30000 | 00 | 24 | 30.65 | +01 | 35 | 26.9 | | 17 | 675 |
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| 1980 | TR3 | | 1980 | 10 | 07.33056 | 00 | 25 | 35.67 | +00 | 47 | 36.6 | | | 675 |
| 1980 | TR3 | | 1980 | 10 | 08.32639 | 00 | 25 | 02.83 | +00 | 33 | 24.0 | | | 675 |
| 1980 | TR3 | * | 1980 | 10 | 09.30000 | 00 | 24 | 31.50 | +00 | 19 | 40.9 | | 17 | 675 |
| 1980 | TR3 | | 1980 | 10 | 10.25903 | 00 | 24 | 01.26 | +00 | 06 | 17.1 | | | 675 |
| 1980 | TS3 | | 1980 | 10 | 07.33056 | 00 | 26 | 08.10 | +00 | 40 | 12.3 | | | 675 |
| 1980 | TS3 | | 1980 | 10 | 08.32639 | 00 | 25 | 34.82 | +00 | 29 | 27.5 | | | 675 |
| 1980 | TS3 | * | 1980 | 10 | 09.30000 | 00 | 25 | 03.05 | +00 | 19 | 05.4 | | 16.5 | 675 |
| 1980 | TS3 | | 1980 | 10 | 10.25903 | 00 | 24 | 32.13 | +00 | 08 | 58.1 | | | 675 |
| 1980 | TT3 | | 1980 | 10 | 07.33056 | 00 | 28 | 03.78 | +05 | 38 | 57.7 | | | 675 |
| 1980 | TT3 | | 1980 | 10 | 08.32639 | 00 | 27 | 02.12 | +05 | 37 | 18.9 | | | 675 |
| 1980 | TT3 | * | 1980 | 10 | 09.30000 | 00 | 26 | 02.50 | +05 | 35 | 43.8 | | 17 | 675 |
| 1980 | TT3 | | 1980 | 10 | 10.25903 | 00 | 25 | 04.27 | +05 | 34 | 10.4 | | | 675 |
| 1980 | TU3 | | 1980 | 10 | 07.33056 | 00 | 28 | 02.25 | +02 | 43 | 49.5 | | | 675 |
| 1980 | TU3 | * | 1980 | 10 | 09.30000 | 00 | 26 | 05.38 | +02 | 40 | 57.1 | | 17.5 | 675 |
| 1980 | TU3 | | 1980 | 10 | 10.25903 | 00 | 25 | 10.01 | +02 | 39 | 40.4 | | | 675 |
| 1980 | TV3 | | 1980 | 10 | 07.33056 | 00 | 29 | 25.43 | +02 | 57 | 37.9 | | | 675 |
| 1980 | TV3 | | 1980 | 10 | 08.32639 | 00 | 28 | 39.32 | +02 | 49 | 52.5 | | | 675 |
| 1980 | TV3 | * | 1980 | 10 | 09.30000 | 00 | 27 | 54.91 | +02 | 42 | 17.3 | | 17.5 | 675 |
| 1980 | TV3 | | 1980 | 10 | 10.25903 | 00 | 27 | 12.15 | +02 | 34 | 59.2 | | | 675 |
| 1980 | TW3 | | 1980 | 10 | 07.33056 | 00 | 32 | 43.42 | +01 | 41 | 31.1 | | | 675 |
| 1980 | TW3 | | 1980 | 10 | 08.32639 | 00 | 31 | 48.18 | +01 | 33 | 41.9 | | | 675 |
| 1980 | TW3 | * | 1980 | 10 | 09.30000 | 00 | 30 | 54.39 | +01 | 26 | 07.0 | | 16.5 | 675 |
| 1980 | TW3 | | 1980 | 10 | 10.25903 | 00 | 30 | 01.97 | +01 | 18 | 42.9 | | | 675 |
| 1980 | TX3 | | 1980 | 10 | 07.33056 | 00 | 32 | 53.27 | +04 | 03 | 55.5 | | | 675 |
| 1980 | TX3 | | 1980 | 10 | 08.32639 | 00 | 32 | 06.97 | +03 | 58 | 18.0 | | | 675 |
| 1980 | TX3 | * | 1980 | 10 | 09.30000 | 00 | 31 | 22.10 | +03 | 52 | 49.3 | | 16.5 | 675 |
| 1980 | TX3 | | 1980 | 10 | 10.25903 | 00 | 30 | 38.21 | +03 | 47 | 27.2 | | | 675 |
| 1980 | TY3 | | 1980 | 10 | 07.33056 | 00 | 33 | 38.68 | +06 | 42 | 04.0 | | | 675 |
| 1980 | TY3 | | 1980 | 10 | 08.32639 | 00 | 32 | 32.78 | +06 | 42 | 20.2 | | | 675 |
| 1980 | TY3 | * | 1980 | 10 | 09.30000 | 00 | 31 | 29.23 | +06 | 42 | 36.1 | | 17 | 675 |
| 1980 | TY3 | | 1980 | 10 | 10.25903 | 00 | 30 | 27.54 | +06 | 42 | 51.8 | | | 675 |
| 1980 | TZ3 | | 1980 | 10 | 07.33056 | 00 | 33 | 19.95 | +06 | 11 | 04.4 | | | 675 |
| 1980 | TZ3 | * | 1980 | 10 | 09.30000 | 00 | 31 | 36.22 | +05 | 57 | 24.8 | | 16 | 675 |
| 1980 | TZ3 | | 1980 | 10 | 10.25903 | 00 | 30 | 46.74 | +05 | 50 | 46.5 | | | 675 |
| 1980 | TA4 | | 1980 | 10 | 08.32639 | 00 | 32 | 55.61 | +02 | 12 | 59.9 | | | 675 |
| 1980 | TA4 | * | 1980 | 10 | 09.30000 | 00 | 31 | 57.57 | +02 | 10 | 01.3 | | 17.5 | 675 |
| 1980 | TA4 | | 1980 | 10 | 10.25903 | 00 | 31 | 00.93 | +02 | 07 | 08.6 | | | 675 |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1980 | TB4 | | 1980 | 10 | 07.33056 | 00 | 33 | 50.43 | +06 | 52 | 06.8 | 675 |
| 1980 | TB4 | | 1980 | 10 | 08.32639 | 00 | 33 | 00.25 | +06 | 44 | 09.1 | 675 |
| 1980 | TB4 | * | 1980 | 10 | 09.30000 | 00 | 32 | 11.52 | +06 | 36 | 28.1 | 16.5 675 |
| 1980 | TB4 | | 1980 | 10 | 10.25903 | 00 | 31 | 23.70 | +06 | 28 | 51.4 | 675 |
| 1980 | TC4 | * | 1980 | 10 | 09.30000 | 00 | 32 | 12.42 | +00 | 07 | 31.0 | 17.5 675 |
| 1980 | TC4 | | 1980 | 10 | 10.25903 | 00 | 31 | 23.29 | +00 | 06 | 14.4 | 675 |
| 1980 | TD4 | | 1980 | 10 | 07.33056 | 00 | 34 | 38.08 | +04 | 27 | 21.6 | 675 |
| 1980 | TD4 | | 1980 | 10 | 08.32639 | 00 | 33 | 37.78 | +04 | 25 | 20.0 | 675 |
| 1980 | TD4 | * | 1980 | 10 | 09.30000 | 00 | 32 | 39.42 | +04 | 23 | 22.5 | 16 675 |
| 1980 | TD4 | | 1980 | 10 | 10.25903 | 00 | 31 | 42.85 | +04 | 21 | 29.3 | 675 |
| 1980 | TE4 | | 1980 | 10 | 07.33056 | 00 | 34 | 24.73 | +04 | 17 | 27.0 | 675 |
| 1980 | TE4 | | 1980 | 10 | 08.32639 | 00 | 33 | 34.21 | +04 | 13 | 24.1 | 675 |
| 1980 | TE4 | * | 1980 | 10 | 09.30000 | 00 | 32 | 45.42 | +04 | 09 | 29.8 | 16.5 675 |
| 1980 | TE4 | | 1980 | 10 | 10.25903 | 00 | 31 | 57.97 | +04 | 05 | 41.7 | 675 |
| 1980 | TF4 | | 1980 | 10 | 07.33056 | 00 | 34 | 30.02 | -00 | 35 | 24.2 | 675 |
| 1980 | TF4 | | 1980 | 10 | 08.32639 | 00 | 33 | 39.19 | -00 | 38 | 49.8 | 675 |
| 1980 | TF4 | * | 1980 | 10 | 09.30000 | 00 | 32 | 49.87 | -00 | 42 | 07.3 | 16.5 675 |
| 1980 | TF4 | | 1980 | 10 | 10.25903 | 00 | 32 | 01.63 | -00 | 45 | 14.4 | 675 |
| 1980 | TG4 | | 1980 | 10 | 07.33056 | 00 | 36 | 02.81 | +02 | 46 | 17.7 | 675 |
| 1980 | TG4 | | 1980 | 10 | 08.32639 | 00 | 34 | 59.10 | +02 | 47 | 53.0 | 675 |
| 1980 | TG4 | * | 1980 | 10 | 09.30000 | 00 | 33 | 57.28 | +02 | 49 | 24.6 | 16.5 675 |
| 1980 | TG4 | | 1980 | 10 | 10.25903 | 00 | 32 | 56.94 | +02 | 50 | 58.2 | 675 |
| 1980 | TH4 | | 1980 | 10 | 07.33056 | 00 | 36 | 46.31 | -00 | 24 | 31.8 | 675 |
| 1980 | TH4 | | 1980 | 10 | 08.32639 | 00 | 35 | 43.90 | -00 | 25 | 31.7 | 675 |
| 1980 | TH4 | * | 1980 | 10 | 09.30000 | 00 | 34 | 44.53 | -00 | 26 | 33.6 | 18 675 |
| 1980 | TH4 | | 1980 | 10 | 10.25903 | 00 | 33 | 46.16 | -00 | 27 | 28.7 | 675 |
| 1980 | TJ4 | | 1980 | 10 | 07.33056 | 00 | 36 | 59.23 | +03 | 09 | 41.2 | 675 |
| 1980 | TJ4 | | 1980 | 10 | 08.32639 | 00 | 36 | 07.20 | +03 | 04 | 25.4 | 675 |
| 1980 | TJ4 | * | 1980 | 10 | 09.30000 | 00 | 35 | 20.15 | +02 | 58 | 03.8 | 17 675 |
| 1980 | TJ4 | | 1980 | 10 | 10.25903 | 00 | 34 | 34.58 | +02 | 51 | 51.7 | 675 |
| 1980 | TK4 | | 1980 | 10 | 07.33056 | 00 | 37 | 42.61 | +02 | 46 | 11.3 | 675 |
| 1980 | TK4 | | 1980 | 10 | 08.32639 | 00 | 37 | 03.58 | +02 | 41 | 30.4 | 675 |
| 1980 | TK4 | * | 1980 | 10 | 09.30000 | 00 | 36 | 25.61 | +02 | 36 | 55.5 | 17 675 |
| 1980 | TK4 | | 1980 | 10 | 10.25903 | 00 | 35 | 48.40 | +02 | 32 | 26.5 | 675 |
| 1980 | TL4 | | 1980 | 10 | 07.33056 | 00 | 39 | 24.25 | +00 | 21 | 05.7 | 675 |
| 1980 | TL4 | | 1980 | 10 | 08.32639 | 00 | 38 | 40.73 | +00 | 16 | 23.7 | 675 |
| 1980 | TL4 | * | 1980 | 10 | 09.30000 | 00 | 37 | 58.35 | +00 | 11 | 52.0 | 17.5 675 |
| 1980 | TL4 | | 1980 | 10 | 10.25903 | 00 | 37 | 16.89 | +00 | 07 | 27.7 | 675 |
| 1980 | TM4 | | 1980 | 10 | 08.32639 | 00 | 40 | 26.30 | +00 | 15 | 25.4 | 675 |
| 1980 | TM4 | * | 1980 | 10 | 09.30000 | 00 | 39 | 27.23 | +00 | 10 | 42.5 | 18 675 |
| 1980 | TM4 | | 1980 | 10 | 10.25903 | 00 | 38 | 29.05 | +00 | 06 | 08.7 | 675 |
| 1980 | TN4 | | 1980 | 10 | 07.33056 | 00 | 41 | 35.17 | +00 | 48 | 20.9 | 675 |
| 1980 | TN4 | | 1980 | 10 | 08.32639 | 00 | 40 | 34.61 | +00 | 43 | 44.8 | 675 |
| 1980 | TN4 | * | 1980 | 10 | 09.30000 | 00 | 39 | 35.98 | +00 | 39 | 20.8 | 17 675 |
| 1980 | TN4 | | 1980 | 10 | 10.25903 | 00 | 38 | 38.31 | +00 | 35 | 02.7 | 675 |
| 1980 | TO4 | * | 1980 | 10 | 09.30000 | 00 | 40 | 18.13 | +05 | 48 | 41.9 | 18 675 |
| 1980 | TO4 | | 1980 | 10 | 10.25903 | 00 | 39 | 26.30 | +05 | 41 | 31.3 | 675 |
| 1980 | TP4 | * | 1980 | 10 | 09.30000 | 00 | 40 | 27.37 | +00 | 53 | 08.9 | 17.5 675 |
| 1980 | TP4 | | 1980 | 10 | 10.25903 | 00 | 39 | 39.11 | +00 | 49 | 44.7 | 675 |
| 1980 | TQ4 | | 1980 | 10 | 07.33056 | 00 | 42 | 17.27 | +01 | 07 | 33.0 | 675 |
| 1980 | TQ4 | | 1980 | 10 | 08.32639 | 00 | 41 | 24.04 | +01 | 09 | 33.3 | 675 |
| 1980 | TQ4 | * | 1980 | 10 | 09.30000 | 00 | 40 | 32.46 | +01 | 11 | 34.1 | 17 675 |
| 1980 | TQ4 | | 1980 | 10 | 10.25903 | 00 | 39 | 42.25 | +01 | 13 | 39.1 | 675 |
| 1980 | TR4 | | 1980 | 10 | 07.33056 | 00 | 42 | 37.87 | +01 | 34 | 17.2 | 675 |
| 1980 | TR4 | | 1980 | 10 | 08.32639 | 00 | 41 | 41.84 | +01 | 32 | 28.8 | 675 |
| 1980 | TR4 | * | 1980 | 10 | 09.30000 | 00 | 40 | 47.32 | +01 | 30 | 44.3 | 17.5 675 |
| 1980 | TR4 | | 1980 | 10 | 10.25903 | 00 | 39 | 54.19 | +01 | 29 | 04.1 | 675 |
| 1980 | TS4 | | 1980 | 10 | 07.33056 | 00 | 49 | 45.01 | +03 | 05 | 19.3 | 675 |
| 1980 | TS4 | | 1980 | 10 | 08.32639 | 00 | 48 | 47.63 | +03 | 01 | 46.5 | 675 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 1980 | TS4 | * | 1980 | 10 | 09.30000 | 00 | 47 | 51.68 | +02 | 58 | 15.8 | 16.5 | 675 |
| 1980 | TS4 | | 1980 | 10 | 10.25903 | 00 | 46 | 56.54 | +02 | 54 | 54.7 | | 675 |
| 1980 | TT4 | | 1980 | 10 | 07.33056 | 00 | 51 | 02.61 | +02 | 23 | 14.7 | | 675 |
| 1980 | TT4 | | 1980 | 10 | 08.32639 | 00 | 50 | 18.91 | +02 | 13 | 39.4 | | 675 |
| 1980 | TT4 | * | 1980 | 10 | 09.30000 | 00 | 49 | 36.51 | +02 | 04 | 21.1 | 16 | 675 |
| 1980 | TT4 | | 1980 | 10 | 10.25903 | 00 | 48 | 55.11 | +01 | 55 | 16.1 | | 675 |
| 1980 | TU4 | | 1980 | 10 | 07.33056 | 00 | 51 | 27.90 | +02 | 35 | 16.3 | | 675 |
| 1980 | TU4 | | 1980 | 10 | 08.32639 | 00 | 50 | 43.40 | +02 | 30 | 20.1 | | 675 |
| 1980 | TU4 | * | 1980 | 10 | 09.30000 | 00 | 49 | 59.94 | +02 | 25 | 30.6 | 17 | 675 |
| 1980 | TU4 | | 1980 | 10 | 10.25903 | 00 | 49 | 17.44 | +02 | 20 | 47.0 | | 675 |
| 1980 | TV4 | * | 1980 | 10 | 09.30000 | 00 | 51 | 35.80 | +02 | 18 | 55.9 | 17.5 | 675 |
| 1980 | TV4 | | 1980 | 10 | 10.25903 | 00 | 50 | 48.39 | +02 | 10 | 09.7 | | 675 |
| 1980 | TW4 | | 1980 | 10 | 07.33056 | 00 | 49 | 24.51 | +01 | 58 | 58.0 | | 675 |
| 1980 | TW4 | | 1980 | 10 | 08.32639 | 00 | 48 | 29.44 | +01 | 56 | 15.8 | | 675 |
| 1980 | TW4 | * | 1980 | 10 | 10.25903 | 00 | 46 | 38.29 | +01 | 50 | 54.3 | 16.5 | 675 |

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. |
|---|---|---|---|---|---|---|
| 4 | 1981 03 | 09.24861 | 10 18 28.45 | +20 52 17.1 | | 688 |
| 4 | 1981 03 | 09.28750 | 10 18 26.26 | +20 52 30.0 | | 688 |
| 4 | 1981 03 | 25.14236 | 10 06 53.29 | +21 49 56.2 | | 688 |
| 4 | 1981 03 | 25.20625 | 10 06 51.11 | +21 50 02.8 | | 688 |
| 4 | 1981 03 | 30.24792 | 10 04 32.57 | +21 55 42.8 | | 688 |
| 4 | 1981 03 | 30.29444 | 10 04 31.42 | +21 55 44.0 | | 688 |
| 24 | 1981 03 | 30.34583 | 12 56 16.29 | -05 31 32.0 | | 688 |
| 24 | 1981 03 | 30.38750 | 12 56 14.39 | -05 31 21.9 | | 688 |
| 24 | 1981 04 | 05.27569 | 12 51 45.05 | -05 04 45.7 | | 688 |
| 24 | 1981 04 | 05.31875 | 12 51 43.01 | -05 04 34.3 | | 688 |
| 24 | 1981 04 | 10.19028 | 12 48 02.10 | -04 42 47.4 | | 688 |
| 24 | 1981 04 | 10.22847 | 12 48 00.29 | -04 42 37.8 | | 688 |
| 53 | 1981 04 | 05.21597 | 12 42 46.33 | +02 11 28.6 | | 688 |
| 53 | 1981 04 | 05.25486 | 12 42 44.23 | +02 11 43.7 | | 688 |
| 61 | 1981 03 | 25.12153 | 07 55 40.66 | +29 15 38.5 | | 688 |
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| 61 | 1981 04 | 05.13194 | 07 57 56.24 | +28 11 17.9 | | 688 |
| 61 | 1981 04 | 05.17014 | 07 57 56.84 | +28 11 03.5 | | 688 |
| 87 | 1981 03 | 25.12153 | 08 01 29.86 | +31 19 05.0 | | 688 |
| 87 | 1981 03 | 25.18542 | 08 01 30.18 | +31 18 59.9 | | 688 |
| 90 | 1981 03 | 25.16250 | 10 23 44.58 | +13 14 10.1 | | 688 |
| 90 | 1981 03 | 25.22639 | 10 23 42.40 | +13 14 20.0 | | 688 |
| 113 | 1981 03 | 30.34583 | 13 18 54.83 | +01 06 08.8 | | 688 |
| 113 | 1981 03 | 30.38750 | 13 18 52.81 | +01 06 26.9 | | 688 |
| 113 | 1981 04 | 05.27569 | 13 13 52.89 | +01 47 20.3 | | 688 |
| 113 | 1981 04 | 05.31875 | 13 13 50.50 | +01 47 37.4 | | 688 |
| 120 | 1981 01 | 03.26944 | 06 11 11.08 | +32 30 51.1 | | 688 |
| 126 | 1981 04 | 05.21597 | 12 31 44.71 | -02 20 51.3 | | 688 |
| 126 | 1981 04 | 05.25486 | 12 31 42.41 | -02 20 39.7 | | 688 |
| 126 | 1981 04 | 07.20486 | 12 29 54.66 | -02 11 21.9 | | 688 |
| 126 | 1981 04 | 07.22847 | 12 29 53.37 | -02 11 15.3 | | 688 |
| 126 | 1981 04 | 09.22292 | 12 28 04.73 | -02 01 57.1 | | 688 |
| 126 | 1981 04 | 09.25764 | 12 28 02.82 | -02 01 47.2 | | 688 |
| 150 | 1981 03 | 30.27153 | 12 03 56.94 | -01 43 00.7 | | 688 |
| 150 | 1981 03 | 30.31736 | 12 03 54.91 | -01 42 46.8 | | 688 |
| 150 | 1981 04 | 01.21181 | 12 02 32.67 | -01 32 47.2 | | 688 |
| 150 | 1981 04 | 01.25069 | 12 02 30.92 | -01 32 35.6 | | 688 |
| 150 | 1981 04 | 05.19236 | 11 59 44.11 | -01 12 14.0 | | 688 |
| 150 | 1981 04 | 05.23611 | 11 59 42.28 | -01 12 00.6 | | 688 |
| 150 | 1981 04 | 09.20556 | 11 57 02.32 | -00 52 14.4 | | 688 |

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|---|---|---|---|---|---|---|---|---|---|
| 150 | 1981 | 04 | 09.24097 | 11 | 57 | 00.89 | -00 | 52 | 04.1 | 688 |
| 151 | 1981 | 03 | 25.18542 | 08 | 07 | 17.65 | +28 | 38 | 32.2 | 688 |
| 174 | 1981 | 01 | 03.26944 | 06 | 09 | 36.46 | +37 | 10 | 38.8 | 688 |
| 177 | 1981 | 03 | 30.34583 | 12 | 56 | 13.59 | -06 | 57 | 09.7 | 688 |
| 177 | 1981 | 03 | 30.38750 | 12 | 56 | 11.46 | -06 | 56 | 57.6 | 688 |
| 177 | 1981 | 04 | 10.19028 | 12 | 47 | 32.81 | -06 | 05 | 48.2 | 688 |
| 177 | 1981 | 04 | 10.22847 | 12 | 47 | 30.90 | -06 | 05 | 38.4 | 688 |
| 213 | 1981 | 03 | 30.36597 | 14 | 07 | 55.15 | -01 | 47 | 01.4 | 688 |
| 213 | 1981 | 03 | 30.40764 | 14 | 07 | 53.60 | -01 | 46 | 46.7 | 688 |
| 215 | 1981 | 03 | 30.27153 | 12 | 16 | 27.92 | -00 | 51 | 39.0 | 688 |
| 215 | 1981 | 03 | 30.31736 | 12 | 16 | 25.57 | -00 | 51 | 26.0 | 688 |
| 215 | 1981 | 04 | 01.21181 | 12 | 14 | 52.17 | -00 | 42 | 27.7 | 688 |
| 215 | 1981 | 04 | 01.25069 | 12 | 14 | 50.16 | -00 | 42 | 17.0 | 688 |
| 215 | 1981 | 04 | 05.19236 | 12 | 11 | 39.44 | -00 | 24 | 06.4 | 688 |
| 215 | 1981 | 04 | 05.23611 | 12 | 11 | 37.32 | -00 | 23 | 54.4 | 688 |
| 215 | 1981 | 04 | 09.20556 | 12 | 08 | 33.40 | -00 | 06 | 34.5 | 688 |
| 215 | 1981 | 04 | 09.24097 | 12 | 08 | 31.73 | -00 | 06 | 25.0 | 688 |
| 229 | 1981 | 04 | 05.21597 | 12 | 28 | 47.87 | -02 | 07 | 12.8 | 688 |
| 229 | 1981 | 04 | 05.25486 | 12 | 28 | 46.18 | -02 | 07 | 03.7 | 688 |
| 229 | 1981 | 04 | 07.20486 | 12 | 27 | 27.90 | -01 | 59 | 26.6 | 688 |
| 229 | 1981 | 04 | 07.22847 | 12 | 27 | 26.96 | -01 | 59 | 21.5 | 688 |
| 229 | 1981 | 04 | 09.22292 | 12 | 26 | 07.87 | -01 | 51 | 42.5 | 688 |
| 229 | 1981 | 04 | 09.25764 | 12 | 26 | 06.45 | -01 | 51 | 35.0 | 688 |
| 272 | 1981 | 03 | 30.27153 | 12 | 15 | 04.08 | +02 | 25 | 35.1 | 688 |
| 272 | 1981 | 03 | 30.31736 | 12 | 15 | 01.61 | +02 | 25 | 45.8 | 688 |
| 279 | 1981 | 03 | 30.27153 | 12 | 03 | 13.71 | +02 | 46 | 43.9 | 688 |
| 279 | 1981 | 03 | 30.31736 | 12 | 03 | 12.09 | +02 | 46 | 53.0 | 688 |
| 280 | 1981 | 03 | 25.16250 | 10 | 23 | 09.31 | +15 | 29 | 09.3 | 688 |
| 280 | 1981 | 03 | 25.22639 | 10 | 23 | 06.93 | +15 | 29 | 08.0 | 688 |
| 307 | 1981 | 03 | 30.36597 | 14 | 02 | 07.16 | -03 | 21 | 01.0 | 688 |
| 307 | 1981 | 03 | 30.40764 | 14 | 02 | 05.41 | -03 | 20 | 49.4 | 688 |
| 331 | 1981 | 03 | 30.27153 | 12 | 10 | 15.86 | +01 | 50 | 09.0 | 688 |
| 331 | 1981 | 03 | 30.31736 | 12 | 10 | 13.65 | +01 | 50 | 18.8 | 688 |
| 331 | 1981 | 04 | 05.19236 | 12 | 05 | 44.48 | +02 | 09 | 53.1 | 688 |
| 331 | 1981 | 04 | 05.23611 | 12 | 05 | 42.47 | +02 | 10 | 01.5 | 688 |
| 334 | 1981 | 03 | 25.16250 | 10 | 22 | 57.39 | +13 | 16 | 01.2 | 688 |
| 334 | 1981 | 03 | 25.22639 | 10 | 22 | 55.56 | +13 | 16 | 12.2 | 688 |
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| 1981 | GA | | 1981 | 04 | 07.20486 | 12 | 37 | 25.47 | -01 | 47 | 35.3 | 16.8 | 688 |
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| 1981 | GA | | 1981 | 04 | 09.22292 | 12 | 35 | 41.29 | -01 | 31 | 33.9 | 16.8 | 688 |
| 1981 | GA | | 1981 | 04 | 09.25764 | 12 | 35 | 39.22 | -01 | 31 | 16.8 | | 688 |
| 1981 | GB | * | 1981 | 04 | 01.21181 | 12 | 23 | 32.28 | -02 | 30 | 40.9 | 16.2 | 4 688 |
| 1981 | GB | | 1981 | 04 | 01.25069 | 12 | 23 | 30.63 | -02 | 30 | 24.8 | | 688 |
| 1981 | GB | | 1981 | 04 | 05.19236 | 12 | 20 | 55.07 | -02 | 02 | 57.1 | 16.5 | 688 |
| 1981 | GB | | 1981 | 04 | 05.23611 | 12 | 20 | 53.26 | -02 | 02 | 39.2 | | 688 |
| 1981 | GB | | 1981 | 04 | 09.22292 | 12 | 18 | 23.91 | -01 | 35 | 44.8 | 16.8 | 688 |
| 1981 | GB | | 1981 | 04 | 09.25764 | 12 | 18 | 22.47 | -01 | 35 | 32.9 | | 688 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1981 | GC | * | 1981 | 04 | 01.21181 | 12 | 26 | 13.17 | -05 | 23 | 45.3 | 16.5 | 4 688 |
| 1981 | GC | | 1981 | 04 | 01.25069 | 12 | 26 | 10.94 | -05 | 23 | 34.1 | | 688 |
| 1981 | GC | | 1981 | 04 | 05.21597 | 12 | 22 | 52.91 | -05 | 03 | 34.3 | 16.5 | 688 |
| 1981 | GC | | 1981 | 04 | 05.25486 | 12 | 22 | 50.87 | -05 | 03 | 22.7 | | 688 |
| 1981 | GC | | 1981 | 04 | 07.20486 | 12 | 21 | 15.94 | -04 | 53 | 33.6 | 16.5 | 688 |
| 1981 | GC | | 1981 | 04 | 07.22847 | 12 | 21 | 14.80 | -04 | 53 | 26.7 | | 688 |
| 1981 | GC | | 1981 | 04 | 09.22292 | 12 | 19 | 40.18 | -04 | 43 | 32.0 | 16.5 | 688 |
| 1981 | GC | | 1981 | 04 | 09.25764 | 12 | 19 | 38.54 | -04 | 43 | 21.3 | | 688 |
| 1981 | GD | * | 1981 | 04 | 05.29653 | 13 | 27 | 18.28 | -02 | 30 | 10.2 | 17.0 | 4 688 |
| 1981 | GD | | 1981 | 04 | 05.33889 | 13 | 27 | 15.62 | -02 | 29 | 50.5 | | 688 |
| 1981 | GE | * | 1981 | 04 | 05.29653 | 13 | 34 | 26.82 | -00 | 43 | 10.9 | 17.0 | 4 688 |
| 1981 | GE | | 1981 | 04 | 05.33889 | 13 | 34 | 24.29 | -00 | 42 | 54.0 | | 688 |
| 1981 | GF | * | 1981 | 04 | 05.29653 | 13 | 37 | 08.73 | -07 | 21 | 42.5 | 17.0 | 4 688 |
| 1981 | GF | | 1981 | 04 | 05.33889 | 13 | 37 | 06.68 | -07 | 21 | 30.0 | | 688 |
| 1981 | GG | * | 1981 | 04 | 05.29653 | 13 | 42 | 25.07 | -03 | 09 | 36.5 | 16.8 | 4 688 |
| 1981 | GG | | 1981 | 04 | 05.33889 | 13 | 42 | 22.08 | -03 | 09 | 41.3 | | 688 |
| 1981 | GG | | 1981 | 04 | 10.20972 | 13 | 37 | 08.53 | -03 | 19 | 42.8 | 17.0 | 688 |
| 1981 | GG | | 1981 | 04 | 10.24792 | 13 | 37 | 05.85 | -03 | 19 | 47.7 | | 688 |
| 1981 | GH | * | 1981 | 04 | 05.29653 | 13 | 44 | 35.76 | -06 | 20 | 41.2 | 17.0 | 4 688 |
| 1981 | GH | | 1981 | 04 | 05.33889 | 13 | 44 | 33.81 | -06 | 20 | 28.3 | | 688 |
| 1981 | GH | | 1981 | 04 | 10.20972 | 13 | 41 | 00.42 | -05 | 59 | 15.2 | 17.0 | 688 |
| 1981 | GH | | 1981 | 04 | 10.24792 | 13 | 40 | 58.61 | -05 | 59 | 06.1 | | 688 |
| 1981 | GJ | * | 1981 | 04 | 05.29653 | 13 | 46 | 01.84 | -06 | 18 | 46.3 | 15.0 | 4 688 |
| 1981 | GJ | | 1981 | 04 | 05.33889 | 13 | 46 | 00.10 | -06 | 18 | 18.0 | | 688 |
| 1981 | GJ | | 1981 | 04 | 10.20972 | 13 | 42 | 43.38 | -05 | 24 | 23.7 | 15.2 | 2 688 |
| 1981 | GJ | | 1981 | 04 | 10.24792 | 13 | 42 | 41.69 | -05 | 23 | 57.4 | | 688 |
| 1981 | GK | * | 1981 | 04 | 05.29653 | 13 | 50 | 31.32 | -07 | 53 | 40.0 | 16.5 | 4 688 |
| 1981 | GK | | 1981 | 04 | 05.33889 | 13 | 50 | 29.51 | -07 | 53 | 29.8 | | 688 |
| 1981 | GK | | 1981 | 04 | 10.20972 | 13 | 47 | 03.53 | -07 | 36 | 19.9 | 16.8 | 688 |
| 1981 | GK | | 1981 | 04 | 10.24792 | 13 | 47 | 01.67 | -07 | 36 | 12.1 | | 1 688 |
| 1981 | GL | * | 1981 | 04 | 05.21597 | 12 | 28 | 25.67 | +02 | 23 | 36.0 | 16.5 | 4 688 |
| 1981 | GL | | 1981 | 04 | 05.25486 | 12 | 28 | 23.67 | +02 | 23 | 58.5 | | 688 |
| 1981 | GM | * | 1981 | 04 | 05.21597 | 12 | 29 | 00.38 | -00 | 20 | 45.9 | 17.0 | 4 688 |
| 1981 | GM | | 1981 | 04 | 05.25486 | 12 | 28 | 58.58 | -00 | 20 | 30.5 | | 688 |
| 1981 | GM | | 1981 | 04 | 07.20486 | 12 | 27 | 38.90 | -00 | 05 | 41.6 | 17.2 | 688 |
| 1981 | GM | | 1981 | 04 | 07.22847 | 12 | 27 | 37.93 | -00 | 05 | 32.6 | | 688 |
| 1981 | GM | | 1981 | 04 | 09.22292 | 12 | 26 | 18.14 | +00 | 09 | 11.4 | 17.0 | 688 |
| 1981 | GM | | 1981 | 04 | 09.25764 | 12 | 26 | 16.90 | +00 | 09 | 26.8 | | 688 |
| 1981 | GN | * | 1981 | 04 | 05.21597 | 12 | 33 | 09.31 | -03 | 16 | 57.8 | 16.0 | 4 688 |
| 1981 | GN | | 1981 | 04 | 05.25486 | 12 | 33 | 06.77 | -03 | 16 | 50.2 | | 688 |
| 1981 | GN | | 1981 | 04 | 07.20486 | 12 | 31 | 10.55 | -03 | 10 | 17.4 | 16.2 | 688 |
| 1981 | GN | | 1981 | 04 | 07.22847 | 12 | 31 | 09.08 | -03 | 10 | 13.1 | | 688 |
| 1981 | GN | | 1981 | 04 | 09.22292 | 12 | 29 | 12.52 | -03 | 03 | 45.7 | 16.2 | 688 |
| 1981 | GN | | 1981 | 04 | 09.25764 | 12 | 29 | 10.49 | -03 | 03 | 39.5 | | 688 |
| 1981 | GO | * | 1981 | 04 | 05.21597 | 12 | 33 | 45.39 | -00 | 18 | 07.7 | 17.2 | 4 688 |
| 1981 | GO | | 1981 | 04 | 05.25486 | 12 | 33 | 43.35 | -00 | 17 | 53.1 | | 688 |
| 1981 | GO | | 1981 | 04 | 07.22847 | 12 | 32 | 00.99 | -00 | 03 | 49.7 | 17.5 | 688 |
| 1981 | GO | | 1981 | 04 | 09.22292 | 12 | 30 | 20.41 | +00 | 09 | 51.3 | 17.2 | 688 |
| 1981 | GO | | 1981 | 04 | 09.25764 | 12 | 30 | 18.46 | +00 | 10 | 08.1 | | 688 |
| 1981 | GP | * | 1981 | 04 | 05.21597 | 12 | 34 | 25.14 | -04 | 17 | 53.2 | 16.5 | 4 688 |
| 1981 | GP | | 1981 | 04 | 05.25486 | 12 | 34 | 21.34 | -04 | 18 | 13.0 | | 688 |
| 1981 | GP | | 1981 | 04 | 07.20486 | 12 | 31 | 17.31 | -04 | 34 | 12.9 | 16.5 | 688 |
| 1981 | GP | | 1981 | 04 | 07.22847 | 12 | 31 | 15.16 | -04 | 34 | 25.1 | | 688 |
| 1981 | GP | | 1981 | 04 | 09.22292 | 12 | 28 | 12.53 | -04 | 50 | 35.1 | 16.5 | 688 |
| 1981 | GP | | 1981 | 04 | 09.25764 | 12 | 28 | 09.33 | -04 | 50 | 50.8 | | 688 |
| 1981 | GQ | * | 1981 | 04 | 05.21597 | 12 | 38 | 54.97 | -03 | 39 | 16.6 | 16.2 | 4 688 |
| 1981 | GQ | | 1981 | 04 | 05.25486 | 12 | 38 | 52.51 | -03 | 39 | 22.5 | | 688 |
| 1981 | GQ | | 1981 | 04 | 07.20486 | 12 | 36 | 57.73 | -03 | 44 | 00.2 | 16.5 | 688 |
| 1981 | GQ | | 1981 | 04 | 07.22847 | 12 | 36 | 56.33 | -03 | 44 | 04.6 | | 688 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1981 GQ | | 1981 04 09.22292 | 12 35 00.95 | -03 48 56.0 | | | 16.8 | | | 688 |
| 1981 GQ | | 1981 04 09.25764 | 12 34 58.92 | -03 49 01.8 | | | | | | 688 |
| 1981 GR | * | 1981 04 05.21597 | 12 41 09.39 | -03 10 57.4 | | | 17.0 | | 4 | 688 |
| 1981 GR | | 1981 04 05.25486 | 12 41 07.45 | -03 10 42.4 | | | | | | 688 |
| 1981 GR | | 1981 04 07.20486 | 12 39 35.41 | -02 58 18.7 | | | 17.0 | | | 688 |
| 1981 GR | | 1981 04 07.22847 | 12 39 34.45 | -02 58 11.3 | | | | | | 688 |
| 1981 GR | | 1981 04 09.22292 | 12 38 01.43 | -02 45 44.7 | | | 17.2 | | | 688 |
| 1981 GR | | 1981 04 09.25764 | 12 37 59.86 | -02 45 33.3 | | | | | | 688 |
| 1981 GS | * | 1981 04 05.21597 | 12 41 25.85 | -05 12 10.4 | | | 17.0 | | 4 | 688 |
| 1981 GS | | 1981 04 05.25486 | 12 41 23.36 | -05 12 01.1 | | | | | | 688 |
| 1981 GS | | 1981 04 07.20486 | 12 39 28.11 | -05 03 36.0 | | | 17.0 | | | 688 |
| 1981 GS | | 1981 04 07.22847 | 12 39 26.53 | -05 03 29.3 | | | | | | 688 |
| 1981 GS | | 1981 04 09.22292 | 12 37 30.65 | -04 55 02.3 | | | 17.2 | | | 688 |
| 1981 GS | | 1981 04 09.25764 | 12 37 28.59 | -04 54 53.2 | | | | | | 688 |
| 1981 GT | * | 1981 04 05.21597 | 12 43 45.67 | -04 58 17.6 | | | 16.8 | | 4 | 688 |
| 1981 GT | | 1981 04 05.25486 | 12 43 43.87 | -04 57 59.2 | | | | | | 688 |
| 1981 GT | | 1981 04 07.20486 | 12 42 15.20 | -04 41 19.5 | | | 16.8 | | | 688 |
| 1981 GT | | 1981 04 07.22847 | 12 42 14.15 | -04 41 07.3 | | | | | | 688 |
| 1981 GT | | 1981 04 09.22292 | 12 40 44.40 | -04 24 09.3 | | | 17.0 | | | 688 |
| 1981 GT | | 1981 04 09.25764 | 12 40 42.66 | -04 23 50.9 | | | | | | 688 |
| 1981 GU | * | 1981 04 07.20486 | 12 28 13.26 | -05 17 41.1 | | | 16.5 | | 5 | 688 |
| 1981 GU | | 1981 04 07.22847 | 12 28 12.02 | -05 17 32.9 | | | | | | 688 |
| 1981 GU | | 1981 04 09.22292 | 12 26 29.75 | -05 04 56.1 | | | 16.8 | | | 688 |
| 1981 GU | | 1981 04 09.25764 | 12 26 27.93 | -05 04 43.4 | | | | | | 688 |
| 1981 GV | * | 1981 04 07.20486 | 12 31 19.71 | -05 52 23.0 | | | 16.8 | | 4 | 688 |
| 1981 GV | | 1981 04 07.22847 | 12 31 18.47 | -05 52 13.0 | | | | | | 688 |
| 1981 GV | | 1981 04 09.22292 | 12 29 43.50 | -05 40 43.8 | | | 17.0 | | | 688 |
| 1981 GV | | 1981 04 09.25764 | 12 29 41.89 | -05 40 32.3 | | | | | | 688 |
| 1981 GW | * | 1981 04 07.20486 | 12 40 30.01 | -05 13 35.5 | | | 17.0 | | 4 | 688 |
| 1981 GW | | 1981 04 07.22847 | 12 40 28.96 | -05 13 22.9 | | | | | | 688 |
| 1981 GW | | 1981 04 09.22292 | 12 38 39.83 | -04 54 02.9 | | | 17.0 | | | 688 |
| 1981 GW | | 1981 04 09.25764 | 12 38 37.81 | -04 53 41.8 | | | | | | 688 |
| 1981 GY | * | 1981 04 09.20556 | 12 04 05.28 | -05 39 51.8 | | | 16.8 | | 4 | 688 |
| 1981 GY | | 1981 04 09.24097 | 12 04 03.99 | -05 39 31.4 | | | | | | 688 |
| 1981 GZ | * | 1981 04 09.22292 | 12 32 15.75 | -04 44 55.8 | | | 17.2 | | 4 | 688 |
| 1981 GZ | | 1981 04 09.25764 | 12 32 13.68 | -04 44 33.7 | | | | | | 688 |
| 6578 P-L | | 1981 03 30.34583 | 13 12 08.55 | -01 38 06.0 | | | 17.2 | | | 688 |
| 6578 P-L | | 1981 03 30.38750 | 13 12 06.26 | -01 37 49.8 | | | | | | 688 |
| 6578 P-L | | 1981 04 05.27569 | 13 06 51.40 | -01 05 10.5 | | | 17.0 | | | 688 |
| 6578 P-L | | 1981 04 05.31875 | 13 06 48.88 | -01 04 56.5 | | | | | | 688 |
| 6578 P-L | | 1981 04 10.19028 | 13 02 25.10 | -00 39 42.3 | | | | | 1 | 688 |
| 6578 P-L | | 1981 04 10.22847 | 13 02 22.93 | -00 39 32.1 | | | | | | 688 |

Note 1: right ascension uncertain. 2: declination uncertain. 3 = 1 + 2. 4: discoverer Bowell. 5 = 1 + 4. 6 = 2 + 4. 7: discoverer Thomas.

OBSERVATIONS MADE AT THE LINCOLN LABORATORY ETS, NEW MEXICO, UNDER THE DIRECTION OF L. G. TAFF.

| Object | Date | UT | R. A. (1950) | Decl. | Obs. |
|---|---|---|---|---|---|
| 200 | 1981 01 31.24963 | | 09 14 18.5 | +18 10 21 | 704 |
| 200 | 1981 01 31.31818 | | 09 14 13.2 | +18 10 36 | 704 |
| 200 | 1981 01 31.39580 | | 09 14 08.9 | +18 10 38 | 704 |
| 200 | 1981 02 01.29630 | | 09 13 14.6 | +18 12 07 | 704 |
| 200 | 1981 02 01.34171 | | 09 13 11.7 | +18 12 27 | 704 |
| 200 | 1981 02 01.39344 | | 09 13 08.3 | +18 12 33 | 704 |
| 200 | 1981 02 02.22455 | | 09 12 18.8 | +18 13 50 | 704 |
| 200 | 1981 02 02.28730 | | 09 12 14.6 | +18 13 56 | 704 |
| 200 | 1981 02 02.36235 | | 09 12 10.0 | +18 14 14 | 704 |
| 200 | 1981 02 03.20725 | | 09 11 19.3 | +18 15 30 | 704 |
| 200 | 1981 02 05.22632 | | 09 09 17.3 | +18 19 04 | 704 |

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|---|---|---|---|---|---|---|---|---|---|
| 203 | 1981 | 03 | 05.35809 | 11 | 00 | 21.7 | +06 | 44 | 14 | 704 |
| 203 | 1981 | 03 | 05.40758 | 11 | 00 | 18.9 | +06 | 44 | 19 | 704 |
| 203 | 1981 | 03 | 09.28551 | 10 | 56 | 56.0 | +07 | 00 | 56 | 704 |
| 203 | 1981 | 03 | 09.34935 | 10 | 56 | 52.8 | +07 | 01 | 08 | 704 |
| 203 | 1981 | 03 | 09.39512 | 10 | 56 | 50.1 | +07 | 01 | 25 | 704 |
| 214 | 1981 | 02 | 02.41365 | 09 | 11 | 22.4 | +18 | 59 | 55 | 704 |
| 214 | 1981 | 02 | 03.21565 | 09 | 10 | 35.2 | +19 | 02 | 25 | 704 |
| 214 | 1981 | 02 | 05.23291 | 09 | 08 | 34.2 | +19 | 08 | 26 | 704 |
| 287 | 1981 | 01 | 07.21257 | 04 | 30 | 31.2 | +08 | 22 | 49 | 704 |
| 287 | 1981 | 01 | 07.25641 | 04 | 30 | 29.4 | +08 | 22 | 52 | 704 |
| 308 | 1981 | 01 | 07.22745 | 04 | 38 | 07.4 | +15 | 54 | 50 | 704 |
| 308 | 1981 | 01 | 07.26255 | 04 | 38 | 05.9 | +15 | 54 | 54 | 704 |
| 313 | 1981 | 03 | 09.24944 | 10 | 57 | 23.3 | +02 | 17 | 56 | 704 |
| 313 | 1981 | 03 | 09.28788 | 10 | 57 | 21.5 | +02 | 18 | 23 | 704 |
| 313 | 1981 | 03 | 09.34668 | 10 | 57 | 18.8 | +02 | 19 | 15 | 704 |
| 358 | 1981 | 03 | 09.34113 | 11 | 36 | 08.9 | +02 | 32 | 42 | 704 |
| 358 | 1981 | 03 | 09.39277 | 11 | 36 | 06.5 | +02 | 33 | 00 | 704 |
| 360 | 1981 | 02 | 01.30193 | 08 | 51 | 15.0 | +17 | 05 | 28 | 704 |
| 360 | 1981 | 02 | 01.34725 | 08 | 51 | 12.6 | +17 | 05 | 48 | 704 |
| 360 | 1981 | 02 | 01.38964 | 08 | 51 | 09.7 | +17 | 06 | 26 | 704 |
| 360 | 1981 | 02 | 02.21575 | 08 | 50 | 28.9 | +17 | 12 | 50 | 704 |
| 360 | 1981 | 02 | 02.28200 | 08 | 50 | 26.0 | +17 | 13 | 19 | 704 |
| 360 | 1981 | 02 | 02.35725 | 08 | 50 | 21.7 | +17 | 13 | 53 | 704 |
| 360 | 1981 | 02 | 03.20725 | 08 | 49 | 39.6 | +17 | 20 | 18 | 704 |
| 360 | 1981 | 02 | 05.24082 | 08 | 47 | 59.0 | +17 | 35 | 54 | 704 |
| 410 | 1981 | 01 | 07.20192 | 04 | 29 | 55.7 | +17 | 15 | 05 | 704 |
| 410 | 1981 | 01 | 07.25184 | 04 | 29 | 54.9 | +17 | 15 | 07 | 704 |
| 535 | 1981 | 01 | 07.22414 | 04 | 33 | 22.1 | +21 | 44 | 30 | 704 |
| 535 | 1981 | 01 | 07.26106 | 04 | 33 | 21.0 | +21 | 44 | 30 | 704 |
| 543 | 1981 | 01 | 31.39257 | 08 | 26 | 39.8 | +16 | 33 | 50 | 704 |
| 543 | 1981 | 02 | 01.29852 | 08 | 25 | 51.7 | +16 | 34 | 47 | 704 |
| 543 | 1981 | 02 | 01.34469 | 08 | 25 | 49.0 | +16 | 34 | 45 | 704 |
| 543 | 1981 | 02 | 01.39992 | 08 | 25 | 46.1 | +16 | 34 | 52 | 704 |
| 543 | 1981 | 02 | 02.23303 | 08 | 25 | 01.5 | +16 | 35 | 30 | 704 |
| 543 | 1981 | 02 | 02.29140 | 08 | 24 | 58.4 | +16 | 35 | 31 | 704 |
| 543 | 1981 | 02 | 02.36493 | 08 | 24 | 54.1 | +16 | 35 | 42 | 704 |
| 543 | 1981 | 02 | 05.23736 | 08 | 22 | 23.2 | +16 | 37 | 30 | 704 |
| 545 | 1981 | 03 | 05.22964 | 10 | 53 | 39.7 | +04 | 21 | 19 | 704 |
| 545 | 1981 | 03 | 05.29206 | 10 | 53 | 36.4 | +04 | 21 | 25 | 704 |
| 545 | 1981 | 03 | 05.36211 | 10 | 53 | 32.8 | +04 | 21 | 39 | 704 |
| 557 | 1981 | 01 | 07.22980 | 04 | 35 | 36.5 | +23 | 56 | 11 | 704 |
| 557 | 1981 | 01 | 07.26459 | 04 | 35 | 35.6 | +23 | 56 | 00 | 704 |
| 557 | 1981 | 01 | 10.19836 | 04 | 34 | 15.4 | +23 | 48 | 01 | 704 |
| 557 | 1981 | 01 | 10.33737 | 04 | 34 | 11.4 | +23 | 47 | 49 | 704 |
| 580 | 1981 | 01 | 07.24925 | 04 | 37 | 59.7 | +20 | 34 | 54 | 704 |
| 580 | 1981 | 01 | 07.26605 | 04 | 37 | 58.5 | +20 | 34 | 45 | 704 |
| 605 | 1981 | 03 | 05.35480 | 10 | 51 | 37.9 | +07 | 32 | 19 | 704 |
| 605 | 1981 | 03 | 05.40431 | 10 | 51 | 34.9 | +07 | 32 | 20 | 704 |
| 627 | 1981 | 01 | 31.32806 | 08 | 55 | 10.5 | +15 | 30 | 54 | 704 |
| 627 | 1981 | 02 | 01.29096 | 08 | 54 | 22.2 | +15 | 35 | 47 | 704 |
| 627 | 1981 | 02 | 01.33904 | 08 | 54 | 19.5 | +15 | 36 | 08 | 704 |
| 627 | 1981 | 02 | 01.40247 | 08 | 54 | 16.3 | +15 | 36 | 27 | 704 |
| 627 | 1981 | 02 | 02.21901 | 08 | 53 | 32.8 | +15 | 41 | 08 | 704 |
| 627 | 1981 | 02 | 02.22779 | 08 | 53 | 32.3 | +15 | 41 | 08 | 704 |
| 627 | 1981 | 02 | 02.28487 | 08 | 53 | 31.7 | +15 | 40 | 49 | 704 |
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| 627 | 1981 | 02 | 03.21306 | 08 | 52 | 44.9 | +15 | 45 | 50 | 704 |
| 627 | 1981 | 02 | 05.24444 | 08 | 51 | 02.2 | +15 | 56 | 32 | 704 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 656 | | 1981 | 01 | 09.28867 | 07 | 18 | 08.3 | +21 | 28 | 19 | 704 |
| 656 | | 1981 | 01 | 09.30469 | 07 | 18 | 07.6 | +21 | 28 | 18 | 704 |
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| 656 | | 1981 | 01 | 09.37317 | 07 | 18 | 03.6 | +21 | 28 | 27 | 704 |
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| 931 | | 1981 | 01 | 07.20968 | 04 | 34 | 31.3 | +13 | 18 | 36 | 704 |
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| 1642 | | 1981 | 03 | 10.28457 | 10 | 57 | 07.2 | +04 | 26 | 43 | 704 |
| 1642 | | 1981 | 03 | 10.33829 | 10 | 57 | 03.8 | +04 | 26 | 50 | 704 |
| 1724 | | 1981 | 03 | 08.34890 | 11 | 03 | 46.0 | +06 | 38 | 56 | 704 |
| 1724 | | 1981 | 03 | 08.38984 | 11 | 03 | 44.0 | +06 | 39 | 21 | 704 |
| 1745 | | 1981 | 01 | 09.29801 | 05 | 01 | 59.8 | +23 | 33 | 34 | 704 |
| 1745 | | 1981 | 01 | 09.35174 | 05 | 01 | 58.0 | +23 | 33 | 29 | 704 |
| 1745 | | 1981 | 01 | 10.20743 | 05 | 01 | 28.1 | +23 | 33 | 53 | 704 |
| 1745 | | 1981 | 01 | 10.21014 | 05 | 01 | 27.5 | +23 | 33 | 37 | 704 |
| 1745 | | 1981 | 01 | 10.23985 | 05 | 01 | 26.2 | +23 | 33 | 45 | 704 |
| 1746 | | 1981 | 01 | 09.31013 | 05 | 15 | 09.1 | +32 | 11 | 23 | 704 |
| 1746 | | 1981 | 01 | 09.35818 | 05 | 15 | 07.4 | +32 | 11 | 12 | 704 |
| 1746 | | 1981 | 01 | 10.24366 | 05 | 14 | 37.0 | +32 | 08 | 27 | 704 |
| 1746 | | 1981 | 01 | 10.36531 | 05 | 14 | 33.1 | +32 | 08 | 00 | 704 |
| 1793 | | 1981 | 01 | 31.38620 | 08 | 38 | 22.7 | +15 | 33 | 45 | 704 |
| 1918 | | 1981 | 01 | 10.23028 | 04 | 44 | 52.3 | +10 | 03 | 33 | 704 |
| 1980 | SU * | 1980 | 09 | 30.22134 | 00 | 20 | 16.1 | +01 | 50 | 27 | 704 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1980 SU | | 1980 09 30.24837 | 00 20 14.3 | +01 50 36 | | | | | | 704 |
| 1980 SU | | 1980 09 30.27372 | 00 20 12.6 | +01 50 18 | | | | | | 704 |
| 1980 TX4 | * | 1980 10 01.30503 | 00 38 23.4 | +02 29 47 | | | | | | 704 |
| 1981 CH | | 1981 02 06.18382 | 09 09 20.3 | +16 18 47 | | | | | | 704 |
| 1981 CH | | 1981 02 06.24950 | 09 09 13.5 | +16 18 05 | | | | | | 704 |
| 1981 CH | | 1981 02 06.30928 | 09 09 06.4 | +16 17 05 | | | | | | 704 |
| 1981 ED | | 1981 03 09.33793 | 11 39 17.5 | +01 03 44 | | | | | | 704 |

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

| Object | | Date | UT | R. A. (1950) | Decl. | Mag. | N | Obs. |
|---|---|---|---|---|---|---|---|---|
| 215 | | 1981 04 11.12212 | 12 07 08.37 | +00 01 25.7 | | 15 | | 801 |
| 215 | | 1981 04 11.17723 | 12 07 05.91 | +00 01 39.2 | | | | 801 |
| 1537 | | 1981 04 10.29869 | 13 57 50.17 | -13 57 51.3 | | | 1 | 801 |
| 1537 | | 1981 04 11.25388 | 13 57 09.80 | -13 53 55.9 | | | | 801 |
| 2298 | | 1981 04 07.27297 | 12 16 59.25 | -03 11 26.6 | | | | 801 |
| 2298 | | 1981 04 08.23642 | 12 16 10.88 | -03 04 25.7 | | | 2 | 801 |
| 2360 | | 1981 02 06.25029 | 08 57 57.69 | +22 51 53.0 | | | | 801 |
| 2361 | | 1981 03 11.12774 | 08 53 02.83 | +19 55 34.0 | | | | 801 |
| 1929 PC | | 1980 06 14.19294 | 17 50 25.87 | -09 33 04.8 | | | | 801 |
| 1935 TC | | 1981 01 31.32829 | 09 38 04.98 | +23 14 24.9 | | | | 801 |
| 1965 LA | | 1981 02 10.16419 | 07 34 22.35 | +32 42 10.8 | | | | 801 |
| 1974 QE1 | | 1980 12 11.17181 | 04 00 26.07 | +44 02 21.8 | | | | 801 |
| 1978 QT1 | | 1981 04 07.27297 | 12 16 53.94 | -03 24 14.6 | | 16.5 | | 801 |
| 1978 QT1 | | 1981 04 08.23642 | 12 16 11.39 | -03 19 22.4 | | | 2 | 801 |
| 1978 QT1 | | 1981 04 09.30670 | 12 15 24.13 | -03 14 07.4 | | | 2 | 801 |
| 1978 QT1 | | 1981 04 10.26557 | 12 14 42.63 | -03 09 23.6 | | | | 801 |
| 1980 WF | | 1981 02 28.16269 | 08 57 03.77 | -08 05 58.6 | | 19 | 1 | 801 |
| 1981 BC | | 1981 03 28.11634 | 09 08 36.37 | +15 20 19.6 | | | | 801 |
| 1981 CW | | 1981 04 03.03935 | 08 52 46.92 | +28 45 46.8 | | 17 | | 801 |
| 1981 CW | | 1981 04 04.04006 | 08 56 06.58 | +28 30 28.7 | | 17 | | 801 |
| 1981 CW | | 1981 04 07.13781 | 09 06 12.80 | +27 41 32.4 | | | | 801 |
| 1981 CW | | 1981 04 23.08015 | 09 53 57.40 | +23 02 10.9 | | | | 801 |
| 1981 FD | | 1981 04 11.12212 | 12 06 54.63 | +00 01 26.5 | | 17 | | 801 |
| 1981 FD | | 1981 04 11.17723 | 12 06 53.50 | +00 01 21.4 | | | | 801 |
| 1981 FO | * | 1981 03 28.11634 | 09 08 45.99 | +15 26 24.8 | | 17 | | 801 |
| 1981 FP | * | 1981 03 28.23377 | 11 36 06.96 | +02 28 55.2 | | 18 | | 801 |
| 1981 FQ | * | 1981 03 28.23377 | 11 36 18.22 | +02 50 49.2 | | 16.5 | | 801 |
| 1981 FR | * | 1981 03 28.23377 | 11 37 20.01 | +02 42 54.2 | | 18 | | 801 |
| 1981 GA1 | * | 1981 04 10.29869 | 13 58 09.02 | -13 59 15.9 | | 18 | | 801 |
| 1981 GB1 | * | 1981 04 11.25388 | 13 56 20.94 | -14 00 55.6 | | 18 | | 801 |

Note 1: very weak image; ink dot measured. 2: poor conditions.

OBSERVATIONS MADE AT THE EUROPEAN SOUTHERN OBSERVATORY. MEASURED BY R. M. WEST.

| Object | | Date | UT | R. A. (1950) | Decl. | Mag. | Obs. |
|---|---|---|---|---|---|---|---|
| 1980 UH | * | 1980 10 30.07900 | 23 38 58.84 | -28 20 30.0 | | | 809 |
| 1980 UH | | 1980 11 01.07423 | 23 39 01.32 | -28 12 13.6 | | 19.5 | 809 |
| 1980 UJ | * | 1980 10 30.07900 | 23 46 30.34 | -28 15 10.0 | | | 809 |
| 1980 UJ | | 1980 11 01.07423 | 23 46 35.25 | -28 06 40.5 | | 17.5 | 809 |
| 1980 UJ | | 1980 11 08.04404 | 23 47 49.79 | -27 26 40.6 | | | 809 |
| 1980 UK | * | 1980 10 30.07900 | 23 49 50.80 | -30 23 09.6 | | | 809 |
| 1980 UK | | 1980 11 01.07423 | 23 49 06.05 | -30 17 26.5 | | 19.0 | 809 |
| 1980 UK | | 1980 11 02.07427 | 23 48 45.74 | -30 14 12.4 | | | 809 |
| 1980 UL | * | 1980 10 30.07900 | 23 51 15.66 | -29 14 23.4 | | | 809 |
| 1980 UL | | 1980 11 01.07423 | 23 51 45.80 | -29 13 21.8 | | 18.5 | 809 |
| 1980 UL | | 1980 11 02.07427 | 23 52 03.66 | -29 12 11.8 | | | 809 |

OBSERVATIONS MADE AT THE EUROPEAN SOUTHERN OBSERVATORY BY H. DEBEHOGNE.
REDUCTION BY G. DE SANCTIS AND V. ZAPPALA.

| Object | Date | UT | R. A. (1950) | Decl. | O - C | | Obs. |
|---|---|---|---|---|---|---|---|
| 12 | 1979 12 | 15.28998 | 05 33 18.34 | +17 04 24.5 | 0.0 | 0 | 809 |
| 12 | 1979 12 | 15.29829 | 05 33 17.73 | +17 04 23.8 | 0.0 | 0 | 809 |
| 12 | 1979 12 | 15.30660 | 05 33 17.20 | +17 04 21.3 | 0.0 | 0 | 809 |
| 12 | 1979 12 | 16.20483 | 05 32 16.84 | +17 01 32.0 | 0.0 | 0 | 809 |
| 12 | 1979 12 | 16.21175 | 05 32 16.36 | +17 01 30.6 | 0.0 | 0 | 809 |
| 12 | 1979 12 | 16.21867 | 05 32 15.87 | +17 01 29.2 | 0.0 | 0 | 809 |
| 42 | 1979 12 | 15.15215 | 04 35 12.82 | +19 41 26.4 | 0.0 | 0 | 809 |
| 42 | 1979 12 | 15.16046 | 04 35 12.26 | +19 41 27.1 | 0.0 | 0 | 809 |
| 42 | 1979 12 | 15.16877 | 04 35 11.72 | +19 41 27.7 | 0.0 | 0 | 809 |
| 48 | 1979 12 | 16.17712 | 05 30 06.51 | +13 34 34.9 | 0.0 | 0 | 809 |
| 48 | 1979 12 | 16.18405 | 05 30 06.10 | +13 34 34.5 | 0.0 | 0 | 809 |
| 48 | 1979 12 | 16.19097 | 05 30 05.72 | +13 34 33.9 | 0.0 | 0 | 809 |
| 60 | 1979 12 | 15.19094 | 04 38 38.37 | +15 41 35.4 | 0.0 | 0 | 809 |
| 60 | 1979 12 | 15.19925 | 04 38 37.87 | +15 41 34.1 | 0.0 | 0 | 809 |
| 60 | 1979 12 | 15.20756 | 04 38 37.37 | +15 41 32.9 | 0.0 | 0 | 809 |
| 67 | 1979 12 | 15.28998 | 05 31 21.47 | +15 03 26.7 | 0.0 | 0 | 809 |
| 67 | 1979 12 | 15.29829 | 05 31 20.94 | +15 03 26.1 | 0.0 | 0 | 809 |
| 67 | 1979 12 | 15.30660 | 05 31 20.38 | +15 03 24.8 | 0.0 | 0 | 809 |
| 67 | 1979 12 | 16.17712 | 05 30 24.99 | +15 01 59.8 | 0.0 | 0 | 809 |
| 67 | 1979 12 | 16.18336 | 05 30 24.52 | +15 01 59.2 | 0.0 | 0 | 809 |
| 67 | 1979 12 | 16.19097 | 05 30 24.07 | +15 01 58.5 | 0.0 | 0 | 809 |
| 75 | 1979 04 | 21.21125 | 13 46 55.44 | -15 11 43.3 | 0.0 | 0 | 809 |
| 75 | 1979 04 | 21.22095 | 13 46 54.83 | -15 11 41.1 | 0.0 | 0 | 809 |
| 75 | 1979 04 | 21.23203 | 13 46 54.19 | -15 11 38.5 | 0.0 | 0 | 809 |
| 75 | 1979 04 | 22.15934 | 13 46 01.39 | -15 08 04.6 | 0.0 | 0 | 809 |
| 75 | 1979 04 | 22.16834 | 13 46 00.88 | -15 08 02.3 | 0.0 | 0 | 809 |
| 75 | 1979 04 | 22.17735 | 13 46 00.33 | -15 08 00.2 | 0.0 | 0 | 809 |
| 75 | 1979 04 | 25.20898 | 13 43 07.49 | -14 56 01.6 | 0.0 | 0 | 809 |
| 75 | 1979 04 | 25.21867 | 13 43 06.91 | -14 55 59.2 | 0.0 | 0 | 809 |
| 75 | 1979 04 | 25.22837 | 13 43 06.36 | -14 55 56.8 | 0.0 | 0 | 809 |
| 75 | 1979 04 | 26.17821 | 13 42 12.45 | -14 52 06.7 | 0.0 | 0 | 809 |
| 75 | 1979 04 | 26.18791 | 13 42 11.88 | -14 52 04.2 | 0.0 | 0 | 809 |
| 75 | 1979 04 | 26.19759 | 13 42 11.31 | -14 52 01.8 | 0.0 | 0 | 809 |
| 306 | 1978 04 | 04.11503 | 11 07 56.51 | +12 17 05.9 | 0.3- | 3+ | 809 |
| 306 | 1978 04 | 04.12334 | 11 07 56.14 | +12 17 08.1 | 0.3- | 3+ | 809 |
| 306 | 1978 04 | 04.13165 | 11 07 55.79 | +12 17 10.7 | 0.3- | 3+ | 809 |
| 336 | 1979 04 | 21.21125 | 13 44 36.52 | -15 38 31.0 | 0.2- | 1+ | 809 |
| 336 | 1979 04 | 21.22095 | 13 44 35.91 | -15 38 26.3 | 0.2- | 1+ | 809 |
| 336 | 1979 04 | 21.23203 | 13 44 35.30 | -15 38 20.6 | 0.2- | 1+ | 809 |
| 336 | 1979 04 | 22.15934 | 13 43 44.01 | -15 30 23.3 | 0.2- | 1+ | 809 |
| 336 | 1979 04 | 22.16834 | 13 43 43.52 | -15 30 18.9 | 0.2- | 1+ | 809 |
| 336 | 1979 04 | 22.17735 | 13 43 43.02 | -15 30 14.4 | 0.2- | 1+ | 809 |
| 336 | 1979 04 | 25.20898 | 13 40 55.89 | -15 03 48.4 | 0.3- | 1+ | 809 |
| 336 | 1979 04 | 25.21867 | 13 40 55.36 | -15 03 43.0 | 0.3- | 1+ | 809 |
| 336 | 1979 04 | 25.22837 | 13 40 54.79 | -15 03 37.7 | 0.3- | 1+ | 809 |
| 336 | 1979 04 | 26.17821 | 13 40 03.29 | -14 55 14.8 | 0.3- | 1+ | 809 |
| 336 | 1979 04 | 26.18791 | 13 40 02.75 | -14 55 09.5 | 0.3- | 1+ | 809 |
| 336 | 1979 04 | 26.19759 | 13 40 02.18 | -14 55 04.5 | 0.3- | 1+ | 809 |
| 542 | 1979 12 | 15.23318 | 05 22 28.47 | +05 18 50.7 | 0.1- | 0 | 809 |
| 542 | 1979 12 | 15.24149 | 05 22 27.96 | +05 18 51.4 | 0.1- | 0 | 809 |
| 542 | 1979 12 | 15.24980 | 05 22 27.52 | +05 18 51.9 | 0.1- | 0 | 809 |
| 542 | 1979 12 | 16.11618 | 05 21 41.43 | +05 19 48.9 | 0.1- | 0 | 809 |
| 542 | 1979 12 | 16.12310 | 05 21 41.05 | +05 19 49.3 | 0.1- | 0 | 809 |
| 542 | 1979 12 | 16.13002 | 05 21 40.67 | +05 19 49.8 | 0.1- | 0 | 809 |
| 548 | 1978 04 | 04.11503 | 11 06 08.97 | +12 09 10.3 | 0.2- | 3+ | 809 |
| 548 | 1978 04 | 04.12334 | 11 06 08.63 | +12 09 11.7 | 0.2- | 3+ | 809 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 548 | 1978 | 04 | 04.13165 | 11 | 06 | 08.31 | +12 | 09 | 12.9 | 0.2- | 3+ | 809 |
| 720 | 1978 | 04 | 02.37951 | 14 | 48 | 36.85 | -16 | 06 | 22.7 | 0.3+ | 2- | 809 |
| 720 | 1978 | 04 | 02.39059 | 14 | 48 | 36.47 | -16 | 06 | 21.3 | 0.3+ | 2- | 809 |
| 720 | 1978 | 04 | 02.40167 | 14 | 48 | 36.11 | -16 | 06 | 20.7 | 0.3+ | 2- | 809 |
| 797 | 1979 | 12 | 15.15215 | 04 | 30 | 29.80 | +19 | 56 | 22.9 | 0.0 | 0 | 809 |
| 797 | 1979 | 12 | 15.16046 | 04 | 30 | 29.29 | +19 | 56 | 21.0 | 0.0 | 0 | 809 |
| 797 | 1979 | 12 | 15.16877 | 04 | 30 | 28.80 | +19 | 56 | 19.3 | 0.0 | 0 | 809 |
| 819 | 1978 | 04 | 08.10687 | 10 | 22 | 27.87 | +07 | 19 | 41.9 | 0.5- | 2+ | 809 |
| 819 | 1978 | 04 | 08.11795 | 10 | 22 | 27.58 | +07 | 19 | 43.0 | 0.5- | 2+ | 809 |
| 819 | 1978 | 04 | 08.12903 | 10 | 22 | 27.22 | +07 | 19 | 43.1 | 0.5- | 2+ | 809 |
| 1029 | 1978 | 04 | 02.37951 | 14 | 48 | 19.07 | -16 | 26 | 49.6 | 0.2- | 1+ | 809 |
| 1029 | 1978 | 04 | 02.39059 | 14 | 48 | 18.67 | -16 | 26 | 48.4 | 0.2- | 1+ | 809 |
| 1029 | 1978 | 04 | 02.40167 | 14 | 48 | 18.33 | -16 | 26 | 48.2 | 0.2- | 1+ | 809 |
| 1080 | 1978 | 04 | 04.20368 | 12 | 35 | 38.53 | -05 | 10 | 15.2 | 0.1- | 1+ | 809 |
| 1080 | 1978 | 04 | 04.21199 | 12 | 35 | 38.01 | -05 | 10 | 13.2 | 0.1- | 1+ | 809 |
| 1080 | 1978 | 04 | 04.22030 | 12 | 35 | 37.58 | -05 | 10 | 10.9 | 0.1- | 1+ | 809 |
| 1146 | 1979 | 12 | 15.23318 | 05 | 24 | 48.93 | +06 | 06 | 56.3 | 0.0 | 0 | 809 |
| 1146 | 1979 | 12 | 15.24980 | 05 | 24 | 48.16 | +06 | 06 | 53.9 | 0.0 | 0 | 809 |
| 1146 | 1979 | 12 | 15.24149 | 05 | 24 | 48.54 | +06 | 06 | 54.9 | 0.0 | 0 | 809 |
| 1146 | 1979 | 12 | 16.11618 | 05 | 24 | 06.62 | +06 | 04 | 49.7 | 0.0 | 0 | 809 |
| 1146 | 1979 | 12 | 16.12310 | 05 | 24 | 06.27 | +06 | 04 | 48.4 | 0.0 | 0 | 809 |
| 1146 | 1979 | 12 | 16.13002 | 05 | 24 | 05.92 | +06 | 04 | 47.5 | 0.0 | 0 | 809 |
| 1275 | 1978 | 04 | 10.16928 | 11 | 47 | 06.60 | -00 | 05 | 45.6 | 0.1- | 1+ | 809 |
| 1275 | 1978 | 04 | 10.17898 | 11 | 47 | 06.22 | -00 | 05 | 40.5 | 0.1- | 1+ | 809 |
| 1275 | 1978 | 04 | 10.18867 | 11 | 47 | 05.89 | -00 | 05 | 36.4 | 0.1- | 1+ | 809 |
| 1363 | 1978 | 04 | 04.20368 | 12 | 40 | 28.32 | -05 | 02 | 40.3 | 0.6+ | 4- | 809 |
| 1363 | 1978 | 04 | 04.21199 | 12 | 40 | 27.89 | -05 | 02 | 37.7 | 0.6+ | 4- | 809 |
| 1363 | 1978 | 04 | 04.22030 | 12 | 40 | 27.52 | -05 | 02 | 35.1 | 0.6+ | 4- | 809 |
| 1442 | 1978 | 04 | 04.20368 | 12 | 35 | 46.08 | -04 | 51 | 08.1 | 0.0 | 0 | 809 |
| 1442 | 1978 | 04 | 04.21199 | 12 | 35 | 45.67 | -04 | 51 | 05.2 | 0.0 | 0 | 809 |
| 1442 | 1978 | 04 | 04.22030 | 12 | 35 | 45.26 | -04 | 51 | 02.6 | 0.0 | 0 | 809 |
| 1775 | 1979 | 12 | 15.23318 | 05 | 25 | 25.39 | +06 | 19 | 29.2 | 0.0 | 0 | 809 |
| 1775 | 1979 | 12 | 15.24149 | 05 | 25 | 24.98 | +06 | 19 | 28.0 | 0.0 | 0 | 809 |
| 1775 | 1979 | 12 | 15.24980 | 05 | 25 | 24.50 | +06 | 19 | 27.3 | 0.0 | 0 | 809 |
| 1775 | 1979 | 12 | 16.11618 | 05 | 24 | 35.98 | +06 | 17 | 50.4 | 0.0 | 0 | 809 |
| 1775 | 1979 | 12 | 16.12310 | 05 | 24 | 35.58 | +06 | 17 | 49.8 | 0.0 | 0 | 809 |
| 1775 | 1979 | 12 | 16.13002 | 05 | 24 | 35.22 | +06 | 17 | 48.8 | 0.0 | 0 | 809 |
| 1793 | 1978 | 04 | 04.20368 | 12 | 37 | 35.58 | -05 | 50 | 45.2 | 0.0 | 0 | 809 |
| 1793 | 1978 | 04 | 04.21199 | 12 | 37 | 35.09 | -05 | 50 | 41.9 | 0.0 | 0 | 809 |
| 1793 | 1978 | 04 | 04.22030 | 12 | 37 | 34.62 | -05 | 50 | 38.5 | 0.0 | 0 | 809 |
| 1821 | 1979 | 04 | 21.21125 | 13 | 50 | 11.13 | -15 | 30 | 43.0 | 0.0 | 0 | 809 |
| 1821 | 1979 | 04 | 21.22095 | 13 | 50 | 10.60 | -15 | 30 | 40.7 | 0.0 | 0 | 809 |
| 1821 | 1979 | 04 | 21.23203 | 13 | 50 | 09.88 | -15 | 30 | 37.2 | 0.0 | 0 | 809 |
| 1821 | 1979 | 04 | 22.15934 | 13 | 49 | 15.14 | -15 | 25 | 49.3 | 0.0 | 0 | 809 |
| 1821 | 1979 | 04 | 22.16834 | 13 | 49 | 14.61 | -15 | 25 | 46.6 | 0.0 | 0 | 809 |
| 1821 | 1979 | 04 | 22.17735 | 13 | 49 | 14.10 | -15 | 25 | 44.2 | 0.0 | 0 | 809 |
| 1821 | 1979 | 04 | 25.20898 | 13 | 46 | 14.66 | -15 | 09 | 33.3 | 0.0 | 0 | 809 |
| 1821 | 1979 | 04 | 25.21867 | 13 | 46 | 14.04 | -15 | 09 | 29.5 | 0.0 | 0 | 809 |
| 1821 | 1979 | 04 | 25.22837 | 13 | 46 | 13.44 | -15 | 09 | 26.3 | 0.0 | 0 | 809 |
| 1821 | 1979 | 04 | 26.17821 | 13 | 45 | 17.53 | -15 | 04 | 14.9 | 0.0 | 0 | 809 |
| 1821 | 1979 | 04 | 26.18791 | 13 | 45 | 16.91 | -15 | 04 | 11.6 | 0.0 | 0 | 809 |
| 1821 | 1979 | 04 | 26.19759 | 13 | 45 | 16.32 | -15 | 04 | 08.2 | 0.0 | 0 | 809 |
| 1984 | 1979 | 12 | 15.28998 | 05 | 32 | 45.10 | +16 | 32 | 50.4 | 0.0 | 0 | 809 |
| 1984 | 1979 | 12 | 15.29829 | 05 | 32 | 44.62 | +16 | 32 | 50.2 | 0.0 | 0 | 809 |
| 1984 | 1979 | 12 | 15.30660 | 05 | 32 | 44.20 | +16 | 32 | 49.7 | 0.0 | 0 | 809 |
| 1984 | 1979 | 12 | 16.20483 | 05 | 31 | 56.80 | +16 | 32 | 04.4 | 0.0 | 0 | 809 |
| 1984 | 1979 | 12 | 16.21175 | 05 | 31 | 56.33 | +16 | 32 | 03.9 | 0.0 | 0 | 809 |
| 1984 | 1979 | 12 | 16.21867 | 05 | 31 | 55.97 | +16 | 32 | 03.1 | 0.0 | 0 | 809 |

OBSERVATIONS MADE AT TOKAI BY T. FURUTA. FROM JAPAN ASTRON. STUDY ASSOC. MINOR PLANET CIRC. SER. II NO. 811 AND NIHONDAIRA OBS. CIRC. NO. 1189.

| Object | | Date | UT | R. A. (1950) | Decl. | Mag. | Obs. |
|---|---|---|---|---|---|---|---|
| 1125 | | 1980 12 | 06.64965 | 06 49 56.67 | +22 28 30.8 | 16 | 879 |
| 1125 | | 1980 12 | 06.67778 | 06 49 55.54 | +22 28 33.4 | | 879 |
| 2342 | | 1980 12 | 06.64965 | 06 49 20.28 | +22 29 21.3 | 17 | 879 |
| 2342 | | 1980 12 | 06.67778 | 06 49 18.98 | +22 29 22.9 | | 879 |
| 1976 | JF2 | 1981 04 | 02.72726 | 14 08 03.54 | +00 51 11.2 | | 879 |
| 1976 | JF2 | 1981 04 | 02.74167 | 14 08 03.07 | +00 51 12.9 | | 879 |
| 1978 | PP2 | 1981 04 | 02.61493 | 11 03 49.3 | +06 04 45 | | 879 |
| 1978 | PP2 | 1981 04 | 02.62830 | 11 03 49.0 | +06 04 49 | | 879 |
| 1978 | QT1 | 1981 04 | 02.65122 | 12 20 25.55 | -03 47 55.4 | | 879 |
| 1978 | QT1 | 1981 04 | 02.67292 | 12 20 24.53 | -03 47 50.2 | | 879 |
| 1980 | WG | 1980 11 | 29.49410 | 02 40 09.21 | +08 35 57.1 | 17 | 879 |
| 1980 | WG | 1980 11 | 29.50810 | 02 40 08.61 | +08 35 55.4 | | 879 |
| 1980 | WG | 1980 11 | 29.52153 | 02 40 07.99 | +08 35 53.5 | | 879 |
| 1981 | CA | 1981 04 | 02.58003 | 11 14 57.91 | +22 51 23.2 | 16.5 | 879 |
| 1981 | CA | 1981 04 | 02.59410 | 11 14 57.47 | +22 51 24.0 | | 879 |
| 1981 | GA * | 1981 04 | 02.69583 | 12 41 24.97 | -02 24 36.2 | 16 | 879 |
| 1981 | GA | 1981 04 | 02.71007 | 12 41 24.52 | -02 24 29.7 | | 879 |
| 1981 | GA | 1981 04 | 06.54896 | 12 37 59.84 | -01 52 53.7 | | 879 |
| 1981 | GA | 1981 04 | 06.56285 | 12 37 58.88 | -01 52 45.5 | | 879 |
| 1981 | GA | 1981 04 | 07.52662 | 12 37 08.51 | -01 45 00.6 | | 879 |
| 1981 | GA | 1981 04 | 07.53993 | 12 37 07.86 | -01 44 51.7 | | 879 |

* * * * *

OBSERVATIONS USED IN ORBIT IMPROVEMENTS.

The following observations have been used in orbit improvements and are now included in the cumulative observation index on magnetic tape. This is a continuation from MPC 5309-5311 but is less comprehensive than the earlier lists because of a recent effort to include on the tape observations of then-unnumbered minor planets prior to the nominal starting date of 1939.

| Object | Date | UT | R. A. (1950) | Decl. | Obs. |
|---|---|---|---|---|---|
| 452 | 1899 12 | 10.23346 | 04 16 44.87 | +19 22 10.0 | 662 |
| 452 | 1899 12 | 27.17913 | 04 04 02.48 | +19 10 29.0 | 662 |
| 452 | 1900 01 | 20.16678 | 03 57 40.87 | +19 24 01.6 | 662 |
| 682 | 1909 06 | 20.93343 | 17 54 11.71 | -03 07 55.9 | 045 |
| 682 | 1909 06 | 21.94113 | 17 53 21.05 | -03 06 11.1 | 045 |
| 682 | 1909 06 | 24.91213 | 17 50 52.17 | -03 02 29.7 | 045 |
| 682 | 1909 06 | 28.95850 | 17 47 35.14 | -03 01 01.6 | 045 |
| 682 | 1909 07 | 05.90280 | 17 42 22.03 | -03 07 41.3 | 045 |
| 682 | 1909 07 | 06.91695 | 17 41 39.98 | -03 09 34.3 | 045 |
| 682 | 1909 07 | 06.93797 | 17 41 38.98 | -03 09 37.4 | 045 |
| 682 | 1909 07 | 08.92050 | 17 40 20.11 | -03 14 01.7 | 045 |
| 682 | 1909 07 | 10.93308 | 17 39 04.68 | -03 19 25.0 | 045 |
| 682 | 1909 07 | 15.97295 | 17 36 19.88 | -03 36 33.2 | 045 |
| 682 | 1909 07 | 16.93480 | 17 35 52.93 | -03 40 22.9 | 045 |
| 682 | 1909 07 | 18.93508 | 17 35 01.10 | -03 48 53.8 | 045 |
| 682 | 1909 07 | 21.94602 | 17 33 55.66 | -04 02 57.8 | 045 |
| 682 | 1909 07 | 22.87147 | 17 33 38.27 | -04 07 32.7 | 045 |
| 682 | 1909 07 | 23.87601 | 17 33 21.58 | -04 12 43.4 | 045 |
| 682 | 1909 08 | 10.85317 | 17 33 17.53 | -06 07 27.0 | 045 |
| 730 | 1912 04 | 11.05299 | 13 53 54.00 | -02 24 20.5 | 045 |
| 730 | 1912 04 | 11.98825 | 13 53 06.87 | -02 20 16.2 | 045 |
| 730 | 1912 04 | 13.99031 | 13 51 22.56 | -02 11 50.0 | 045 |
| 730 | 1912 04 | 15.96752 | 13 49 37.31 | -02 03 51.4 | 045 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 730 | | 1912 | 04 | 17.97709 | 13 | 47 | 49.32 | -01 | 56 | 18.3 | 045 |
| 730 | | 1912 | 04 | 21.99496 | 13 | 44 | 13.52 | -01 | 43 | 12.8 | 045 |
| 730 | | 1912 | 04 | 24.06079 | 13 | 42 | 23.50 | -01 | 37 | 30.8 | 045 |
| 730 | | 1912 | 05 | 03.87932 | 13 | 34 | 32.38 | -01 | 23 | 12.9 | 045 |
| 730 | | 1912 | 05 | 06.98145 | 13 | 32 | 26.90 | -01 | 23 | 21.9 | 045 |
| 1198 | | 1931 | 09 | 14.93759 | 23 | 37 | 32.19 | +06 | 28 | 37.9 | 024 |
| 1198 | | 1931 | 09 | 15.91600 | 23 | 37 | 09.23 | +06 | 25 | 39.1 | 024 |
| 1198 | | 1931 | 09 | 16.91370 | 23 | 36 | 45.65 | +06 | 22 | 23.9 | 024 |
| 1198 | | 1931 | 10 | 03.91552 | 23 | 31 | 38.81 | +05 | 06 | 53.7 | 008 |
| 1198 | | 1931 | 10 | 09.16245 | 23 | 31 | 19.35 | +04 | 42 | 21.1 | 754 |
| 1198 | | 1931 | 10 | 12.15243 | 23 | 31 | 30.93 | +04 | 29 | 23.5 | 754 |
| 1380 | | 1936 | 03 | 16.99162 | 12 | 04 | 45.65 | -00 | 11 | 39.9 | 008 |
| 1380 | | 1936 | 03 | 21.94683 | 12 | 00 | 31.73 | -00 | 01 | 43.9 | 008 |
| 1380 | | 1936 | 03 | 22.95171 | 11 | 59 | 40.06 | +00 | 00 | 17.8 | 008 |
| 1380 | | 1936 | 03 | 25.93868 | 11 | 57 | 06.72 | +00 | 06 | 14.4 | 008 |
| 1380 | | 1936 | 04 | 18.86553 | 11 | 39 | 35.56 | +00 | 38 | 43.6 | 008 |
| 1380 | | 1936 | 04 | 23.92251 | 11 | 37 | 04.98 | +00 | 39 | 39.7 | 008 |
| 1380 | | 1936 | 05 | 11.91944 | 11 | 32 | 44.72 | +00 | 20 | 04.3 | 008 |
| 1380 | | 1938 | 09 | 19.96458 | 00 | 23 | 26.16 | +03 | 25 | 35.6 | 053 |
| 1380 | | 1938 | 09 | 26.98291 | 00 | 17 | 42 | +03 | 09.1 | | 029 |
| 1380 | | 1938 | 09 | 27.01291 | 00 | 17 | 40 | +03 | 09.0 | | 029 |
| 1380 | | 1938 | 09 | 27.23133 | 00 | 17 | 34.03 | +03 | 30 | 09.2 | 754 |
| 1381 | | 1930 | 08 | 20.92576 | 22 | 53 | 38.94 | -09 | 54 | 49.3 | 094 |
| 1381 | | 1930 | 08 | 27.88222 | 22 | 47 | 30.24 | -10 | 12 | 21.9 | 094 |
| 1381 | | 1930 | 09 | 02.97729 | 22 | 41 | 44.16 | -10 | 27 | 38.8 | 094 |
| 1381 | | 1930 | 09 | 20.86569 | 22 | 25 | 58.30 | -10 | 58 | 02.1 | 094 |
| 1381 | | 1930 | 09 | 28.82576 | 22 | 20 | 56.36 | -10 | 59 | 10.1 | 094 |
| 1381 | | 1930 | 10 | 18.73868 | 22 | 17 | 03.36 | -10 | 18 | 54.6 | 094 |
| 1937 | UB | 1937 | 10 | 25.21810 | 02 | 14 | 02.31 | +05 | 44 | 19.5 | 801 |
| 1937 | UB | 1937 | 10 | 26.91875 | 02 | 05 | 41.04 | +06 | 16 | 29.0 | 031 |
| 1937 | UB | 1937 | 10 | 26.94236 | 02 | 05 | 32.05 | +06 | 17 | 08.8 | 031 |
| 1937 | UB | 1937 | 10 | 27.88297 | 01 | 56 | 29.21 | +06 | 58 | 30.0 | 078 |
| 1937 | UB | 1937 | 10 | 27.89336 | 01 | 56 | 20.40 | +06 | 59 | 00.7 | 078 |
| 1937 | UB | 1937 | 10 | 27.90375 | 01 | 56 | 11.59 | +06 | 59 | 31.4 | 078 |
| 1937 | UB | 1937 | 10 | 27.90513 | 01 | 56 | 09.81 | +06 | 59 | 40.1 | 078 |
| 1937 | UB | 1937 | 10 | 27.91552 | 01 | 56 | 00.69 | +07 | 00 | 12.0 | 078 |
| 1937 | UB | 1937 | 10 | 27.92591 | 01 | 55 | 51.61 | +07 | 00 | 42.8 | 078 |
| 1937 | UB | 1937 | 10 | 27.99826 | 01 | 54 | 50.48 | +06 | 58 | 10.6 | 031 |
| 1937 | UB | 1937 | 10 | 28.01910 | 01 | 54 | 39.19 | +06 | 59 | 13.4 | 031 |
| 1937 | UB | 1937 | 10 | 28.89424 | 01 | 36 | 46.22 | +08 | 07 | 15.8 | 024 |
| 1937 | UB | 1937 | 10 | 28.96667 | 01 | 34 | 17.71 | +08 | 15 | 15.0 | 031 |
| 1937 | UB | 1937 | 10 | 28.97744 | 01 | 33 | 59.00 | +08 | 16 | 45.4 | 024 |
| 1937 | UB | 1937 | 10 | 28.98750 | 01 | 33 | 42.30 | +08 | 17 | 42.6 | 031 |
| 1937 | UB | 1937 | 10 | 29.91875 | 00 | 32 | 35.14 | +11 | 38 | 28.9 | 031 |

* * * * *

ORBITAL ELEMENTS OF ONE-OPPOSITION MINOR PLANETS.

The orbit computers and authors of double designations are B = C. M. Bardwell, E = E. Bowell, M = B. G. Marsden, P = O. Kippes, s = C. Shoemaker. For further information see MPC 5833.

| Planet | B(1,0) | Epoch | M | Peri. | Node | Incl. | e | a | Arc | O | N | C |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1975 VK4 | 17.0 | 751104 | 12.69 | 156.64 | 219.57 | 3.46 | 0.2868 | 2.2052 | 5 | 3 | 3 | M |
| 1975 VY4 | 13.5 | 751104 | 26.45 | 244.92 | 129.95 | 4.60 | 0.1899 | 2.7739 | 30 | 3 | 1 | M |
| 1975 VR5 | 15.0 | 751124 | 8.06 | 284.66 | 133.23 | 5.32 | 0.0983 | 2.2201 | 31 | 3 | 1 | M |
| 1975 XL | 13.0 | 751214 | 3.57 | 326.62 | 115.40 | 17.99 | 0.0163 | 2.3857 | 3 | 3 | 3 | M |
| 1978 LB | 12.5 | 780621 | 356.66 | 154.07 | 84.42 | 17.80 | 0.1276 | 3.1825 | 50 | 0 | | M |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1978 | OB | | 780731 | 358.05 | 200.57 | 114.51 | 6.51 | 0.2318 | 2.2575 | 5 | 6 | M |
| 1978 | PL4 | 13.5 | 780820 | 321.51 | 89.93 | 304.01 | 10.91 | 0.1914 | 2.6787 | 17 | 7 | M |
| 1978 | QX | 15.0 | 780731 | 55.06 | 300.06 | 314.47 | 0.81 | 0.1401 | 2.2040 | 39 | 8 | M |
| 1978 | QW1 | 16.0 | 780909 | 23.78 | 344.79 | 327.48 | 2.34 | 0.1917 | 2.1547 | 13 | 8 | M |
| 1978 | QJ2 | 13.0 | 780909 | 47.17 | 257.83 | 27.73 | 1.15 | 0.1633 | 3.1519 | 35 | 9 | M |
| 1978 | QL2 | 13.5 | 780909 | 341.98 | 222.04 | 152.82 | 2.05 | 0.1840 | 3.1275 | 35 | 9 | M |
| 1978 | QO2 | 13.5 | 780909 | 333.21 | 310.34 | 76.29 | 0.97 | 0.1777 | 3.1053 | 32 | 5 | M |
| 1978 | QG3 | | 780820 | 32.17 | 225.22 | 66.12 | 10.35 | 0.1554 | 3.0878 | 3 | 6 | M |
| 1978 | QH3 | | 780820 | 359.82 | 212.25 | 122.21 | 15.27 | 0.2352 | 2.6702 | 3 | 6 | M |
| 1978 | UV | 14.0 | 781108 | 353.03 | 5.47 | 45.77 | 6.47 | 0.2575 | 2.6910 | 10 | 4 | M |
| 1978 | UF2 | | 781108 | 338.55 | 23.91 | 43.50 | 21.76 | 0.1725 | 3.1605 | 10 | 3 | M |
| 1978 | UH2 | | 781108 | 39.71 | 140.09 | 219.40 | 12.53 | 0.1496 | 2.5815 | 10 | 5 | M |
| 1978 | UJ2 | | 781108 | 59.12 | 237.63 | 90.49 | 3.27 | 0.1761 | 2.1582 | 9 | 3 2 | M |
| 1978 | UK2 | | 781108 | 264.56 | 3.80 | 160.52 | 1.40 | 0.2031 | 3.1029 | 9 | 3 2 | M |
| 1978 | UM2 | | 781108 | 205.95 | 103.67 | 107.39 | 2.93 | 0.2033 | 2.9271 | 9 | 3 2 | M |
| 1978 | UQ2 | | 781108 | 1.46 | 355.64 | 50.46 | 7.96 | 0.1363 | 2.4577 | 8 | 3 | M |
| 1978 | UR2 | | 781108 | 349.32 | 15.21 | 50.75 | 16.31 | 0.1692 | 2.7211 | 8 | 3 | M |
| 1978 | WH14 | 13.5 | 781128 | 345.72 | 313.76 | 126.88 | 1.64 | 0.1600 | 3.0434 | 59 | 6 | M |
| 1978 | WM14 | | 781128 | 26.05 | 170.00 | 209.36 | 6.84 | 0.1708 | 3.2204 | 9 | 3 2 | M |
| 1978 | WN14 | | 781128 | 40.58 | 249.51 | 110.62 | 2.47 | 0.1927 | 3.1761 | 9 | 3 2 | M |
| 1978 | WU14 | | 781128 | 328.90 | 242.17 | 222.42 | 10.29 | 0.1614 | 3.1105 | 8 | 3 2 | M |
| 1979 | MQ3 | 16.0 | 790726 | 269.52 | 272.91 | 140.26 | 10.22 | 0.2158 | 2.4632 | 59 | 7 1 | M |
| 1979 | TM | | 791014 | 36.53 | 174.67 | 141.03 | 1.00 | 0.2449 | 2.3869 | 11 | 4 2 | M |
| 1979 | UQ | 16.0 | 791014 | 12.14 | 126.73 | 245.93 | 2.48 | 0.1940 | 2.1904 | 8 | 0 2 | M |
| 1979 | YP | 15.5 | 791213 | 31.36 | 186.25 | 208.55 | 0.65 | 0.2169 | 2.3849 | 16 | 0 | M |
| 1980 | TP3 | 15.0 | 801008 | 9.88 | 161.57 | 195.87 | 7.71 | 0.1387 | 2.3324 | 3 | 4 | B |
| 1980 | TR3 | 16.0 | 801008 | 359.61 | 185.46 | 185.74 | 10.90 | 0.2266 | 2.4407 | 3 | 4 | B |
| 1980 | TS3 | 14.0 | 801008 | 11.40 | 165.14 | 184.11 | 11.58 | 0.2748 | 3.0977 | 3 | 4 | B |
| 1980 | TT3 | 15.5 | 801008 | 341.63 | 34.17 | 0.78 | 6.93 | 0.1219 | 2.3474 | 3 | 4 2 | B |
| 1980 | TX3 | 13.5 | 801008 | 335.81 | 198.96 | 202.39 | 1.47 | 0.1125 | 2.8713 | 3 | 4 | B |
| 1980 | TA4 | 15.0 | 801008 | 67.55 | 280.70 | 18.10 | 5.79 | 0.0434 | 2.3548 | 2 | 3 | B |
| 1980 | TD4 | 15.0 | 801008 | 29.83 | 322.03 | 8.10 | 4.89 | 0.1745 | 2.2451 | 3 | 4 2 | M |
| 1980 | TF4 | 14.0 | 801008 | 336.64 | 359.02 | 51.71 | 3.15 | 0.2611 | 2.6890 | 3 | 4 | B |
| 1980 | TL4 | 14.0 | 801008 | 338.93 | 284.50 | 113.97 | 2.38 | 0.1325 | 3.2098 | 3 | 4 2 | B |
| 1980 | TM4 | 17.5 | 801008 | 326.41 | 19.00 | 58.49 | 2.15 | 0.3417 | 2.1893 | 2 | 3 | B |
| 1980 | TN4 | 14.0 | 801008 | 167.64 | 162.11 | 38.94 | 4.44 | 0.1329 | 2.2548 | 3 | 4 | B |
| 1980 | TU4 | 14.0 | 801008 | 4.91 | 237.24 | 129.78 | 1.92 | 0.1225 | 3.1274 | 3 | 4 2 | B |
| 1980 | TX4 | 14.0 | 801008 | 214.16 | 345.73 | 177.53 | 4.51 | 0.1185 | 2.2436 | 3 | 4 3 | B |
| 1980 | UJ | 15.0 | 801028 | 342.50 | 272.79 | 127.90 | 17.80 | 0.2899 | 2.8234 | 9 | 3 | M |
| 1980 | UK | 14.5 | 801028 | 266.59 | 359.67 | 120.33 | 22.74 | 0.2164 | 2.7308 | 3 | 3 | M |
| 1980 | UL | 15.0 | 801028 | 350.23 | 248.22 | 145.30 | 21.38 | 0.3653 | 2.9712 | 3 | 3 | M |
| 1981 | BC | 16.0 | 810225 | 42.75 | 108.67 | 332.53 | 10.16 | 0.2307 | 2.4192 | 56 | 6 | M |
| 1981 | CA | 11.5 | 810225 | 150.31 | 270.44 | 96.10 | 13.02 | 0.1634 | 3.0946 | 57 | 0 | M |
| 1981 | CH | 15.5 | 810225 | 1.24 | 185.92 | 315.85 | 24.67 | 0.1901 | 2.3519 | 25 | 8 | M |
| 1981 | CY | 14.6 | 810225 | 31.79 | 38.49 | 74.64 | 6.77 | 0.1057 | 2.2708 | 52 | 8 | E |
| 1981 | CB1 | 14.5 | 810225 | 39.64 | 65.81 | 35.84 | 5.66 | 0.1512 | 2.3164 | 52 | 6 | E |
| 1981 | EE | 12.0 | 810317 | 80.17 | 286.19 | 122.40 | 14.72 | 0.2129 | 3.1587 | 21 | 6 | E |
| 1981 | EF | 12.8 | 810317 | 55.50 | 74.12 | 0.10 | 16.29 | 0.2192 | 3.0941 | 21 | 6 | E |
| 1981 | FA | 14.2 | 810317 | 79.37 | 81.20 | 7.61 | 6.72 | 0.1107 | 2.3500 | 10 | 8 | E |
| 1981 | FB | 14.2 | 810317 | 37.72 | 300.61 | 192.48 | 13.39 | 0.1407 | 2.6314 | 10 | 7 | E |
| 1981 | FE | 13.1 | 810317 | 6.09 | 172.36 | 3.00 | 13.01 | 0.0959 | 3.1534 | 10 | 8 | E |
| 1981 | FF | 13.3 | 810317 | 340.25 | 200.12 | 7.70 | 14.15 | 0.1122 | 2.6252 | 10 | 7 | E |
| 1981 | FG | 15.4 | 810317 | 12.27 | 96.30 | 74.17 | 3.30 | 0.1421 | 2.3964 | 11 | 5 | E |
| 1981 | FH | 14.5 | 810317 | 280.02 | 266.46 | 358.35 | 6.54 | 0.0102 | 2.2013 | 10 | 7 | E |
| 1981 | FK | 14.4 | 810317 | 54.14 | 89.54 | 36.02 | 5.09 | 0.0843 | 2.3803 | 11 | 6 | E |
| 1981 | FL | 15.6 | 810317 | 4.97 | 357.34 | 183.56 | 7.82 | 0.1852 | 2.3639 | 11 | 6 | E |
| 1981 | FN | 14.6 | 810317 | 21.77 | 100.73 | 67.48 | 6.91 | 0.0869 | 2.2327 | 11 | 6 | E |
| 1981 | GA | 15.0 | 810406 | 7.66 | 8.73 | 174.71 | 3.22 | 0.0941 | 2.1704 | 7 | 0 | M |
| 1981 | GB | 14.7 | 810317 | 343.32 | 27.90 | 188.30 | 3.27 | 0.3200 | 2.9520 | 8 | 6 | E |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1981 GC | 14.5 | 810317 | 337.43 | 276.56 | 301.45 | 1.36 | 0.1968 | 2.6237 | 8 8 | E |
| 1981 GM | 14.5 | 810406 | 1.88 | 10.80 | 176.96 | 6.74 | 0.1566 | 2.9391 | 4 6 2 | M |
| 1981 GN | 14.7 | 810406 | 350.01 | 190.66 | 14.18 | 3.47 | 0.1126 | 2.2106 | 4 6 | E |
| 1981 GO | 16.0 | 810406 | 358.21 | 39.94 | 154.30 | 2.40 | 0.1247 | 2.1640 | 4 5 2 | M |
| 1981 GP | 16.0 | 810406 | 48.32 | 111.56 | 11.84 | 15.76 | 0.2107 | 1.9550 | 4 6 2 | M |
| 1981 GQ | 14.7 | 810406 | 7.33 | 165.79 | 13.88 | 10.96 | 0.2677 | 2.8473 | 4 6 | E |
| 1981 GR | 14.5 | 810406 | 1.66 | 12.22 | 178.41 | 2.85 | 0.0879 | 2.7341 | 4 6 2 | M |
| 1981 GS | 16.0 | 810406 | 19.96 | 163.65 | 5.02 | 2.34 | 0.1099 | 2.1906 | 4 6 2 | M |
| 1981 GT | 14.7 | 810406 | 331.13 | 42.59 | 194.65 | 5.68 | 0.2095 | 2.6808 | 4 6 | E |
| 1981 GX | 15.5 | 810406 | 42.70 | 243.16 | 253.43 | 20.80 | 0.1076 | 1.9694 | 3 6 2 | M |

Note 1: double designations 1975 VK4 = 1975 VN9 (P), 1975 VY4 = 1975 VX8 (P), 1975 VR5 = 1975 XD4 (P), 1975 XL = 1975 XZ4 (P), 1979 MQ3 = 1979 OA2 (E), 1980 TX4 = 1980 TW3 (s). 2: e assumed. 3 = 1 + 2.

* * * * *

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

The following orbital elements are from NOC 1183-1184 and 1186-1188. The identifications are by T. Urata unless otherwise stated.

### (2369)* 1976 GC8 = 1976 JJ = 1972 LT

Discovered 1976 Apr. 4 by N. S. Chernykh at the Crimean Astrophysical Observatory. The double designation 1976 GC8 = 1976 JJ is by B. G. Marsden (MPC 4927).

Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | | | |
|---|---|---|---|---|---|
| M | 321.82519 | (1950.0) | P | Q | |
| n | 0.21231851 | Peri. | 241.71206 | +0.33148890 | +0.94284490 |
| a | 2.7827710 | Node | 47.68903 | -0.84863836 | +0.31374255 |
| e | 0.0436485 | Incl. | 2.63817 | -0.41222327 | +0.11229025 |
| P | 4.64 | B(1,0) | 13.0 | | |

Residuals in seconds of arc

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 720609 | 095 | 1.6- | 2.9- | 760429 | 808 | 0.2- | 0.7+ | 800211 | 801 | 1.0+ 1.0- |
| 720615 | 095 | 1.4+ | 0.6- | 760502 | 808 | 1.1+ | 0.4- | 800216 | 879 | 1.9- 1.6- |
| 760404 | 095 | 0.4+ | 1.1- | 760502 | 808 | 0.5+ | 0.9+ | 800216 | 879 | 1.2- 0.5- |
| 760428 | 808 | 0.6+ | 0.2+ | 760502 | 095 | 1.3- | 0.8+ | | | |
| 760428 | 808 | 0.5+ | 1.9+ | 800125 | 801 | 0.9+ | 0.3- | | | |

### 1957 AA = 1957 BA = 1929 VX = 1977 KM = 1978 PA4

The key identification 1957 AA = 1978 PA4 is by H. Oishi (JAM 812). The double designation 1957 AA = 1957 BA was found by O. Kippes (MPC 1750).

Epoch 1981 July 15.0 ET = JDE 2444800.5 (J-P)

| | | | | | |
|---|---|---|---|---|---|
| M | 174.53082 | (1950.0) | P | Q | |
| n | 0.25868487 | Peri. | 281.32571 | +0.09756230 | -0.99511257 |
| a | 2.4394368 | Node | 163.05294 | +0.93225783 | +0.08601430 |
| e | 0.1372124 | Incl. | 2.99903 | +0.34839192 | +0.04850274 |
| P | 3.81 | B(1,0) | 13.5 | | |

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

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 291103 | 690(0.22+ 0.06+)X | | 570123 | 012 | 5.2- | 1.0+ | 780809 | 095 | 0.4+ | 0.1+ |
| 570109 | 024 | 2.9+ 0.2- | 770519 | 095 | 0.1+ | 0.1- | 780831 | 095 | 0.7- | 1.1- |
| 570122 | 012 | 1.9+ 1.1- | 770523 | 095 | 0.2- | 0.1- | 780905 | 095 | 0.3+ | 0.8+ |

1978 QB2 = 1953 XM1 = 1970 AE1 = 1971 FV
Epoch 1981 July 15.0 ET = JDE 2444800.5 (J-P)

| | | | | |
|---|---|---|---|---|
| M 184.32973 | (1950.0) | | P | Q |
| n 0.18851105 | Peri. | 204.34478 | +0.99684505 | -0.04170103 |
| a 3.0123981 | Node | 157.72833 | +0.05681355 | +0.96905240 |
| e 0.0934130 | Incl. | 10.26454 | -0.05542719 | +0.24330735 |
| P 5.23 | B(1,0) | 12.5 | | |

Residuals in seconds of arc

| | | |
|---|---|---|
| 531204 031 1.6+ 0.4- | 531209 031 1.1- 1.4+ | 780831 095 0.6- 1.3+ |
| 531206 031 (1.1- 62.8+) | 700107 805 0.1+ 0.2+ | 780905 095 0.7- 1.0+ |
| 531209 031 0.3- 0.2- | 710319 095 0.6+ 2.1+ | 780927 095 0.8+ 0.3- |

1978 QN2 = 1932 CX = 1954 UO = 1966 CG
Epoch 1981 July 15.0 ET = JDE 2444800.5 (J-P)

| | | | | |
|---|---|---|---|---|
| M 130.65085 | (1950.0) | | P | Q |
| n 0.20213841 | Peri. | 98.73220 | +0.28688066 | -0.95790555 |
| a 2.8754403 | Node | 334.58848 | +0.86868806 | +0.26487679 |
| e 0.0413373 | Incl. | 1.44100 | +0.40383231 | +0.11071244 |
| P 4.88 | B(1,0) | 13.0 | | |

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

| | | |
|---|---|---|
| 320214 024(0.12- 0.05+) | 660214 330 0.2- 0.4- | 780905 095 0.3+ 0.1+ |
| 541022 760(37.4+ 53.5+)X | 660224 330 0.3+ 0.5+ | 780927 095 0.0 0.3- |
| 660213 330(0.01- 0.03-) | 780831 095 0.4- 0.4+ | |

1981 CB = 1953 EV = 1972 FJ = 1978 RY3
Epoch 1981 July 15.0 ET = JDE 2444800.5 (J-P)

| | | | | |
|---|---|---|---|---|
| M 350.66391 | (1950.0) | | P | Q |
| n 0.21102039 | Peri. | 48.33069 | -0.88622311 | +0.45626924 |
| a 2.7941773 | Node | 158.43771 | -0.46268494 | -0.86316116 |
| e 0.0755334 | Incl. | 12.59969 | -0.02304877 | -0.21626647 |
| P 4.67 | B(1,0) | 12.5 | | |

Residuals in seconds of arc

| | | |
|---|---|---|
| 530306 024 0.4- 1.7- | 780928 095 0.5- 0.9+ | 810305 372 0.8- 2.3- |
| 720316 095 0.1+ 1.1- | 810209 372 0.2- 1.9+ Y | 810305 372 0.9- 0.1- |
| 720321 095 0.5+ 2.8+ | 810209 372 2.1- 7.6+ Y | 810309 372 1.0+ 2.0- |
| 780903 095 1.4- 0.9+ | 810211 372 0.4- 1.1- | 810309 372 2.4+ 0.9- |
| 780927 095 1.8+ 1.1+ | 810211 372 1.2+ 0.5+ | |

* * * * *

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

(1772) Gagarin
Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | | |
|---|---|---|---|---|
| M 97.83807 | (1950.0) | | P | Q |
| n 0.24513491 | Peri. | 89.30934 | -0.99403917 | -0.04297745 |
| a 2.5285173 | Node | 88.22399 | -0.00054046 | -0.91706937 |
| e 0.10114302 | Incl. | 5.75318 | +0.10902217 | -0.39640472 |
| P 4.02 | B(1,0) | 13.3 | | |

Residuals in seconds of arc

| | | |
|---|---|---|
| 400401 062 1.1+ 1.5+ | 480328 020(31.1+ 11.7-) | 680322 095 4.8- 0.7+ |
| 400403 062 0.7+ 3.4+ | 600327 760 2.5+ 0.0 | 690717 095 0.1- 1.4- |
| 400404 062 1.9- 2.5+ | 600327 760 2.8+ 0.8+ | 781104 801 1.5+ 1.7+ |
| 400412 062 3.7- 0.6+ | 680206 095 3.9- 2.6- | 781202 801 0.1- 0.9- |
| 480313 020(59.1+ 14.0-) | 680220 095 2.0+ 1.3- | 781207 801 2.1- 0.0 |
| 480314 020(17.3+ 25.8+) | 680303 095 0.1+ 0.2- | |

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

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

Periodic Comet Lovas (1980s)
T 1980 Sept. 3.44000 ET

| | | | | |
|---|---|---|---|---|
| q | 1.6756818 | (1950.0) | P | Q |
| n | 0.10874749 | Peri. 72.56994 | +0.56842694 | -0.82019050 |
| a | 4.3470025 | Node 342.32564 | +0.65061615 | +0.49621079 |
| e | 0.6145202 | Incl. 12.29282 | +0.50357665 | +0.28471458 |
| P | 9.06 | | | |

From 14 observations 1980 Dec. 5-1981 Apr. 3.

Comet Meier (1980q)
Epoch 1980 Dec. 27.0 ET = JDE 2444600.5
T 1980 Dec. 9.65467 ET

| | | | | |
|---|---|---|---|---|
| q | 1.5196058 | (1950.0) | P | Q |
| z | 0.0034815 | Peri. 87.96839 | +0.11186228 | -0.90483557 |
| +/- | 0.0000315 | Node 24.73778 | -0.53536732 | -0.40314889 |
| e | 0.9947094 | Incl. 100.98154 | +0.83717898 | -0.13690714 |

From 43 observations 1980 Nov. 6-1981 Mar. 30, mean residual 1".5.

(452) Hamiltonia = 1958 BK = 1973 FZ1 = 1978 GA3

The identifications (452) = 1958 BK = 1973 FZ1 were found by L. K. Kristensen. The identification (452) = 1973 FZ1 was also suggested by E. Bowell. The identification (452) = 1940 EF (MPC 1182) is invalid.
Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | | |
|---|---|---|---|---|
| M | 267.21474 | (1950.0) | P | Q |
| n | 0.20517356 | Peri. 65.88062 | -0.92659412 | -0.37183063 |
| a | 2.8470064 | Node 92.25083 | +0.32133088 | -0.86055019 |
| e | 0.0103743 | Incl. 3.22773 | +0.19537095 | -0.34813122 |
| P | 4.80 | B(1,0) 13.4 | | |

Residuals in seconds of arc

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 991210 | 662 | 2.1+ | 1.8+ | 580119 | 760 | 0.4- | 4.4+ | X | 780403 | 330 | 0.6- | 0.4- |
| 991227 | 662 | 0.8+ | 1.0- | 730330 | 095 | 0.1+ | 1.3+ | | | | | |
| 000120 | 662 | 4.8- | 2.4- | 730331 | 095 | 2.2- | 0.3- | | | | | |

(1221) Amor
Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | | |
|---|---|---|---|---|
| M | 177.35944 | (1950.0) | P | Q |
| n | 0.37029333 | Peri. 26.14575 | -0.95452013 | +0.29636332 |
| a | 1.9206082 | Node 170.91098 | -0.29666721 | -0.93323880 |
| e | 0.4345549 | Incl. 11.89460 | -0.02966287 | -0.20306184 |
| P | 2.66 | B(1,0) 19.3 | | |

From 176 observations 1932-1980, mean residual 2".1.

(1537) Transylvania = A903 VB

The identification and the basis for the 1981 observations are by L. K. Kristensen.
Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | | |
|---|---|---|---|---|
| M | 216.51854 | (1950.0) | P | Q |
| n | 0.18457905 | Peri. 148.68457 | +0.94797910 | -0.31418018 |
| a | 3.0550228 | Node 229.71564 | +0.27639488 | +0.89222399 |
| e | 0.2988486 | Incl. 3.85210 | +0.15792878 | +0.32438737 |
| P | 5.34 | B(1,0) 12.9 | | |

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

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 031028 | 024 | 1.0+ | 1.2+ | 400924 | 053(96.8- | 3.6+)X | 621230 760 | 1.6- 0.4- |
| 031114 | 024 | 1.7- | 1.3+ | 400927 | 053(13.5- | 12.1+)X | 621230 760 | 1.5+ 1.3- |
| 400827 | 053(22.5- | 1.3+)X | | 401004 | 053(19.9+ | 20.5+)X | 810215 675 | 1.4- 0.4- |
| 400904 | 053(18.9- | 38.6-)X | | 401021 | 053 | 2.4+ 1.6- | 810410 801 | (5.8+ 4.6+) |
| 400906 | 053(17.9+ | 4.1-)X | | 401125 | 053(54.0- | 31.9+)X | 810411 801 | 0.8+ 0.3- |
| 400923 | 053(0.03- | 0.00-)X | | 420212 | 053 (8.1+ | 61.1+)X | | |

(2370)* 1965 LA = 1974 OY

Discovered 1965 June 10 by A. R. Klemola at the Yale-Columbia Southern Station, El Leoncito.

Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | | | |
|---|---|---|---|---|---|
| M | 178.41064 | (1950.0) | P | Q | |
| n | 0.22051969 | Peri. | 314.37408 | +0.81431566 | +0.57985388 |
| a | 2.7133416 | Node | 10.27698 | -0.48313000 | +0.70167439 |
| e | 0.1838963 | Incl. | 8.27609 | -0.32167593 | +0.41403203 |
| P | 4.47 | B(1,0) | 11.5 | | |

Residuals in seconds of arc

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 650610 | 808 | 0.8+ | 0.9- Y | 740716 | 808 | 2.2- 2.8- | 740726 808 | 0.2- 2.8- |
| 650626 | 808 | 0.1+ | 0.8- Y | 740717 | 808 | 0.4+ 2.8- | 790928 330 | 0.5- 2.5+ |
| 650628 | 808(13.0- | 4.4-)Y | | 740717 | 808 | 0.0 2.9- | 801214 801 | 1.2+ 2.9+ |
| 650630 | 808 | 0.6- | 2.6+ Y | 740720 | 808 | 1.0+ 2.7- | 810210 801 | 0.5- 1.9+ |
| 650705 | 808 | 0.3- | 1.1+ Y | 740720 | 808 | 0.1+ 2.0- | | |
| 740716 | 808 | 1.3- | 2.7- | 740726 | 808 | 1.2- 3.8- | | |

(2371)* 1975 VR3 = 1952 UG1 = 1954 EY = 1967 RV = 1978 NK2 = 1981 GU

Discovered 1975 Nov. 2 by T. Smirnova at the Crimean Astrophysical Observatory. The identification 1975 VR3 = 1978 NK2 was suggested at the Crimean Astrophysical Observatory. The identification 1975 VR3 = 1981 GU is by E. Bowell.

Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | | | |
|---|---|---|---|---|---|
| M | 64.83004 | (1950.0) | P | Q | |
| n | 0.25837529 | Peri. | 276.64207 | -0.88006820 | -0.47416732 |
| a | 2.4413801 | Node | 235.05574 | +0.44697384 | -0.80916290 |
| e | 0.0133743 | Incl. | 1.77590 | +0.16029458 | -0.34701692 |
| P | 3.81 | B(1,0) | 13.0 | | |

Residuals in seconds of arc

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 521025 | 760(43.5+ | 19.0-)X | | 751107 | 095 | 1.3+ 0.6+ | 810407 688 | 0.1+ 0.2- |
| 540306 | 760 | 0.4+ | 1.8+ | 751201 | 095 | 0.6+ 1.9- | 810407 688 | 0.5+ 0.9- |
| 540306 | 760 | 1.5- | 2.7- | 751203 | 095 | 1.7+ 0.2- | 810409 688 | 0.5- 1.2- |
| 670911 | 095 | 3.0+ | 1.6- | 780706 | 095 | 0.0 1.0- | 810409 688 | 0.4- 1.5- |
| 751102 | 095 | 3.6- | 1.2- | 780808 | 095 | 1.5- 0.3- | | |

(2372)* 1977 RA8 = A906 VD = 1949 QK2 = 1961 XW = 1972 VR1

Discovered 1977 Sept. 13 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | | | |
|---|---|---|---|---|---|
| M | 216.80410 | (1950.0) | P | Q | |
| n | 0.18016556 | Peri. | 320.24183 | +0.52715521 | -0.84843964 |
| a | 3.1047135 | Node | 97.89554 | +0.79130753 | +0.46974006 |
| e | 0.1849392 | Incl. | 2.74944 | +0.30974144 | +0.24391483 |
| P | 5.47 | B(1,0) | 13.0 | | |

Residuals in seconds of arc

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 061111 | 024 | 2.0+ | 1.7+ | 611205 | 012 | 0.9+ 1.1+ | 770919 095 | 0.6+ 0.8+ |
| 061207 | 024 | 3.4- | 0.4+ | 721109 | 095 | 0.8+ 4.7- | 771009 095 | 3.0- 0.2- |
| 490818 | 690 | 2.5+ | 0.2- | 721109 | 095 | (8.3- 7.4-) | | |
| 490820 | 690 | (3.8- | 3.5-) | 770913 | 095 | 0.3+ 0.7- | | |

1978 RU1 = 1976 GB = 1981 FC

The key identification 1978 RU1 = 1981 FC is by E. Bowell.

Epoch 1981 July 15.0 ET = JDE 2444800.5 (J-P)

| | | | | | |
|---|---|---|---|---|---|
| M | 293.34154 | | (1950.0) | P | Q |
| n | 0.20521012 | Peri. | 95.62839 | +0.11994148 | +0.99278070 |
| a | 2.8466740 | Node | 181.26101 | -0.92326904 | +0.11127708 |
| e | 0.0282967 | Incl. | 1.87337 | -0.36494975 | +0.04476481 |
| P | 4.80 | B(1,0) | 14.0 | | |

Residuals in seconds of arc

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 760401 | 095 | 0.5+ | 2.3- | 780912 | 095 | 2.5- | 1.0- | 810330 | 688 | 1.4+ | 0.1- |
| 780901 | 095 | 0.6+ | 1.2- | 780928 | 095 | 1.5+ | 0.0 | 810330 | 688 | 1.4+ | 0.9- |
| 780905 | 095 | 0.8+ | 0.7- | 781004 | 095 | 0.9+ | 0.4+ | 810401 | 688 | 0.5- | 0.1- |
| 780907 | 095 | 1.2- | 2.6- | 781009 | 095 | 0.7+ | 0.3+ | 810401 | 688 | 1.9- | 0.8- |

1980 LA

Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | | | |
|---|---|---|---|---|---|
| M | 81.08406 | | (1950.0) | P | Q |
| n | 0.27891538 | Peri. | 71.47654 | +0.85246406 | +0.36952541 |
| a | 2.3199987 | Node | 265.43674 | -0.49476981 | +0.79872279 |
| e | 0.3027737 | Incl. | 21.77615 | +0.16884270 | +0.47486089 |
| P | 3.53 | B(1,0) | 14.0 | | |

From 17 observations 1980 June 14-Oct. 30, mean residual 1".0.

1980 LB

Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | | | |
|---|---|---|---|---|---|
| M | 24.89122 | | (1950.0) | P | Q |
| n | 0.17729024 | Peri. | 263.60756 | +0.74095416 | -0.23962924 |
| a | 3.1381919 | Node | 108.70137 | +0.38415607 | +0.91747407 |
| e | 0.3376972 | Incl. | 41.47674 | -0.55082760 | +0.31752032 |
| P | 5.56 | B(1,0) | 12.5 | | |

From 15 observations 1980 June 11-Dec. 6, mean residual 1".5.

1980 PA1 = A904 RC

Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | | | |
|---|---|---|---|---|---|
| M | 89.12563 | | (1950.0) | P | Q |
| n | 0.23258507 | Peri. | 353.74456 | +0.75862218 | +0.64355431 |
| a | 2.6186743 | Node | 325.51028 | -0.58968753 | +0.61187081 |
| e | 0.1471395 | Incl. | 10.34006 | -0.27705776 | +0.45983905 |
| P | 4.24 | B(1,0) | 13.0 | | |

Residuals in seconds of arc

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 040912 | 024 | 6.0- | 4.1+ | 800818 | 046 | 0.0 | 0.3- | 800907 | 046 | 1.1+ | 0.1- |
| 040918 | 024 | 5.3+ | 4.7- | 800818 | 046 | 0.4+ | 0.1+ | 800907 | 046 | 0.5- | 0.0 |
| 800814 | 046 | 0.9- | 0.2+ | 800903 | 046 | 0.3+ | 0.2- | 800908 | 046 | 0.8+ | 1.1+ |
| 800815 | 046 | 0.5- | 0.7- | 800903 | 046 | 1.0+ | 0.1- | 800908 | 046 | 0.7- | 1.0+ |
| 800817 | 046 | 1.1- | 0.3+ | 800906 | 046 | 2.9- | 0.4- | 801002 | 688 | 1.3+ | 0.3+ |
| 800817 | 046 | 0.2+ | 0.5- | 800906 | 046 | 0.6- | 0.8- | 801005 | 688 | 0.4+ | 1.0+ |

1981 CW

Epoch 1981 Mar. 17.0 ET = JDE 2444680.5

| | | | | | |
|---|---|---|---|---|---|
| M | 16.15236 | | (1950.0) | P | Q |
| n | 0.38345584 | Peri. | 15.43939 | -0.53503196 | -0.84107313 |
| a | 1.8764017 | Node | 106.96662 | +0.76599771 | -0.52269245 |
| e | 0.3681529 | Incl. | 4.77404 | +0.35635418 | -0.13924288 |
| P | 2.57 | B(1,0) | 17.5 | | |

From 8 observations 1981 Feb. 6-Apr. 23.

1981 FD
Epoch 1981 Apr. 6.0 ET = JDE 2444700.5

| | | | | |
|---|---|---|---|---|
| M | 10.18805 | (1950.0) | P | Q |
| n | 0.16879993 | Peri. 138.43326 | -0.92581964 | -0.37767375 |
| a | 3.2425589 | Node 19.39246 | +0.33388211 | -0.83562127 |
| e | 0.4784701 | Incl. 2.56343 | +0.17714607 | -0.39887294 |
| P | 5.84 | B(1,0) 16.0 | | |

From 18 observations 1981 Mar. 2-Apr. 11.

* * * * *

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

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

(2373)* 1929 PC = 1971 OJ
Discovered 1929 Aug. 4 by M. Wolf at Heidelberg.
Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | | |
|---|---|---|---|---|
| M | 8.35819 | (1950.0) | P | Q |
| n | 0.21100401 | Peri. 214.31876 | +0.99509323 | -0.01679502 |
| a | 2.7943164 | Node 146.23562 | +0.04156285 | +0.96527636 |
| e | 0.1738463 | Incl. 10.10427 | -0.08978861 | +0.26069036 |
| P | 4.67 | B(1,0) 14.5 | | |

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

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 290804 | 024(0.06+ | 0.02+)X | 290813 | 024(0.08+ | 0.01+)X | 710719 | 095 | 2.9- | 3.3+ |
| 290806 | 078 | 0.1+ | 0.1- | 290814 | 024 | 1.2- | 1.4- | 710725 | 095 | 2.8+ | 3.3- |
| 290806 | 078 | 3.1+ | 0.8+ | 290827 | 662 | 0.2- | 0.7+ | 800614 | 801 | 0.6- | 0.4+ |
| 290809 | 662 | 1.1- | 0.8+ | 290827 | 662 | 0.6- | 0.7+ | 800709 | 801 | 0.5+ | 0.8- |
| 290810 | 024(0.07+ | 0.03-)X | 290827 | 024 | 0.4- | 0.7+ | 800813 | 801 | 0.6- | 0.3- |
| 290812 | 024(10.3+ | 2.0-) | 290902 | 024 | 0.1+ | 2.2- | 800911 | 801 | 0.7+ | 0.6+ |

(2374)* 1974 QE1 = 1974 QY1 = 1958 UJ = 1977 DC10
Discovered 1974 Aug. 22 by L. Zhuravleva at the Crimean Astrophysical Observatory.
Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | | |
|---|---|---|---|---|
| M | 89.15089 | (1950.0) | P | Q |
| n | 0.18211586 | Peri. 12.09451 | +0.99843313 | -0.00251882 |
| a | 3.0825080 | Node 347.63385 | -0.03261993 | +0.78549531 |
| e | 0.2142327 | Incl. 15.13104 | +0.04546676 | +0.61886247 |
| P | 5.41 | B(1,0) 12.0 | | |

Residuals in seconds of arc

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 581017 | 760 | 0.1- | 0.1+ | 740914 | 095 | 1.1+ | 0.3- | 801129 | 879 | 0.2- | 0.2+ |
| 581017 | 760 | 0.8- | 1.3+ | 740919 | 095 | 0.3- | 0.5+ | 801211 | 801 | 0.7+ | 1.4+ |
| 740822 | 095 | 1.2- | 0.2- | 740921 | 095 | 1.0+ | 0.6+ | 801231 | 688 | 0.3+ | 2.4- |
| 740823 | 095 | 2.3- | 4.2- | 740923 | 095 | 1.2+ | 0.7+ | 801231 | 688 | 0.5+ | 3.0- |
| 740824 | 095 | 0.3+ | 0.4- | 770219 | 381 | 0.4- | 0.1+ | 810111 | 801 | 0.3+ | 1.0+ |
| 740827 | 095 | 1.2+ | 0.1+ | 770219 | 381 | 0.4+ | 0.2- | 810112 | 801 | 0.2+ | 1.1+ |
| 740911 | 095 | 0.1- | 2.1+ | 801129 | 879 | 1.6- | 0.9+ | | | | |

(2375)* 1975 AA = 1975 AT = 1937 LH = 1947 BK = 1948 JP = 1951 YR = 1954 MN = 1957 YB = 1981 AO
Discovered 1975 Jan. 8 by L. Kohoutek at Bergedorf. The double designation 1975 AA = 1975 AT is by B. G. Marsden (MPC 4576).
Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | | |
|---|---|---|---|---|
| M | 323.03426 | (1950.0) | P | Q |
| n | 0.17477090 | Peri. 103.55866 | -0.79862981 | +0.55061385 |
| a | 3.1682781 | Node 110.36730 | -0.60166794 | -0.73963740 |
| e | 0.2216151 | Incl. 15.01846 | +0.01364245 | -0.38698954 |
| P | 5.64 | B(1,0) 12.0 | | |

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

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 370612 | 012 | 1.2- | 2.3+ | 540626 | 020 | (0.02- | 0.04-) | |
| 370702 | 012 | (30.7- | 14.3-) | 540629 | 020 | (6.8+ | 79.8-) | |
| 370703 | 012 | 2.1+ | 0.6+ | 540703 | 020 | (4.2+ | 0.8-) | |
| 470128 | 754 | 0.3+ | 2.4+ | 540703 | 020 | (25.1+ | 10.7+) | |
| 470128 | 754 | 0.1+ | 1.2+ | 540707 | 020 | (0.06- | 0.04+) | |
| 480506 | 094 | (54.4+ | 21.5+)X | 571225 | 024 | 1.6- | 0.0 | |
| 511223 | 711 | 0.5+ | 4.3+ Y | 750108 | 029 | 0.2- | 1.1- | |
| 511223 | 711 | 2.3- | 0.2+ Y | 750108 | 029 | 0.7+ | 0.5- | |
| 750113 | 095 | 0.1- | 1.6- | | | | | |
| 750116 | 095 | 2.2+ | 0.9- | | | | | |
| 810103 | 688 | 0.0 | 0.4- | | | | | |
| 810103 | 688 | 0.4+ | 0.7- | | | | | |
| 810309 | 688 | 0.6- | 1.3+ | | | | | |
| 810309 | 688 | 0.7- | 0.8+ | | | | | |
| 810325 | 688 | 0.0 | 0.4- | | | | | |
| 810325 | 688 | 0.0 | 0.7- | | | | | |

(2376)* 1977 QG3 = 1937 TK = 1942 PC = 1948 QF = 1954 SC1 = 1959 NC = 1969 ED2 = 1970 LM = 1971 QK = 1974 CA1 = 1975 FF

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

Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | (1950.0) | P | Q |
|---|---|---|---|---|---|
| M | 234.49071 | | | | |
| n | 0.17089492 | Peri. | 291.46053 | +0.99131559 | +0.11736899 |
| a | 3.2160043 | Node | 61.84135 | -0.08118392 | +0.90102303 |
| e | 0.0952067 | Incl. | 3.85746 | -0.10345327 | +0.41759071 |
| P | 5.77 | B(1,0) | 12.0 | | |

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

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 371004 | 094 | (21.2- | 77.1-)X | 590709 | 760 | 0.7- | 1.7- | |
| 420805 | 078 | (61.2+ | 61.6+)X | 690312 | 095 | 0.4+ | 0.1+ | |
| 480825 | 078 | (1.3- | 4.4+)X | 690314 | 095 | 4.5- | 1.8- | |
| 540927 | 760 | (0.04- | 0.00+)X | 700604 | 805 | 1.1+ | 0.8+ | |
| 590704 | 760 | 0.9- | 0.9+ | 710816 | 095 | 3.4+ | 3.7- | |
| 590704 | 760 | 0.8+ | 0.9+ | 740215 | 095 | 3.4+ | 6.1+ | |
| 590709 | 760 | 0.5+ | 0.2+ | 740216 | 095 | 4.4- | 5.0- | |
| 740217 | 095 | 1.8+ | 5.2- | | | | | |
| 750316 | 095 | 0.3- | 3.0- | | | | | |
| 770822 | 095 | 0.2+ | 2.7- | | | | | |
| 770824 | 095 | 0.1- | 1.5- | | | | | |
| 770907 | 095 | 0.4- | 0.1- | | | | | |

(2377)* 1978 QT1 = 1973 QJ

Discovered 1978 Aug. 31 by N. S. Chernykh at the Crimean Astrophysical Observatory.

Epoch 1981 July 15.0 ET = JDE 2444800.5

| | | | (1950.0) | P | Q |
|---|---|---|---|---|---|
| M | 136.37886 | | | | |
| n | 0.20152438 | Peri. | 164.73411 | +0.38612296 | -0.92228372 |
| a | 2.8812724 | Node | 262.54993 | +0.84444120 | +0.36098770 |
| e | 0.0543123 | Incl. | 1.00390 | +0.37125208 | +0.13813263 |
| P | 4.89 | B(1,0) | 13.0 | | |

Residuals in seconds of arc

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 730827 | 095 | 0.6- | 1.2- | 780831 | 095 | 0.4- | 1.3+ | |
| 730831 | 095 | 1.4+ | 2.5- | 780905 | 095 | 1.2- | 1.1+ | |
| 730905 | 095 | 0.4+ | 0.2- | 780927 | 095 | 0.2- | 2.1+ | |
| 780823 | 414 | 0.6+ | 0.1+ | 810330 | 688 | 1.1- | 0.6+ | |
| 780823 | 414 | 0.7- | 0.0 | 810330 | 688 | 1.2+ | 0.2- | |
| 780824 | 414 | 0.6+ | 0.2+ | 810401 | 688 | 1.0- | 1.9+ | |
| 780824 | 414 | 0.0 | 0.3- | 810401 | 688 | 1.8- | 0.3- | |
| 780826 | 414 | 0.6+ | 0.1- | 810402 | 879 | 0.9- | 1.5+ | |
| 780826 | 414 | 0.4+ | 0.4+ | 810402 | 879 | 0.6- | 0.0 | |
| 810405 | 688 | 0.7+ | 3.0- | | | | | |
| 810405 | 688 | 0.3+ | 3.0- | | | | | |
| 810407 | 801 | 0.2+ | 2.0+ | | | | | |
| 810408 | 801 | 3.7+ | 3.7+ | | | | | |
| 810409 | 688 | 1.3+ | 1.4- | | | | | |
| 810409 | 801 | 0.0 | 0.9- | | | | | |
| 810410 | 801 | 1.6- | 0.2- | | | | | |

1981 CX = 1935 EC = 1968 FN = 1969 RP = 1976 UF5

Epoch 1981 July 15.0 ET = JDE 2444800.5 (J-P)

| | | | (1950.0) | P | Q |
|---|---|---|---|---|---|
| M | 357.74650 | | | | |
| n | 0.29950153 | Peri. | 122.32999 | -0.92364005 | +0.37738399 |
| a | 2.2124369 | Node | 79.91697 | -0.37048594 | -0.83449502 |
| e | 0.0627588 | Incl. | 3.89394 | -0.09812861 | -0.40149644 |
| P | 3.29 | B(1,0) | 14.5 | | |

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

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 350308 | 012 | (0.03- | 0.01+)X | 810206 | 688 | 1.1+ | 0.1+ | 810325 | 688 | 1.0- | 0.5+ |
| 680331 | 095 | 2.0+ | 0.9- | 810206 | 688 | 0.8+ | 0.6+ | 810330 | 688 | 1.3+ | 0.9+ |
| 680418 | 095 | 4.0- | 3.2- | 810309 | 688 | 0.0 | 0.2- | 810330 | 688 | 2.0+ | 1.6+ |
| 690908 | 095 | 1.1- | 2.5+ | 810309 | 688 | 0.6- | 0.5+ | | | | |
| 761030 | 095 | 1.1+ | 3.0- | 810325 | 688 | 1.9- | 1.2+ | | | | |

1981 EG = 1976 YH4

Epoch 1981 July 15.0 ET = JDE 2444800.5 (J-P)

| | | | | | |
|---|---|---|---|---|---|
| M | 1.97558 | | (1950.0) | P | Q |
| n | 0.28992364 | Peri. | 121.68575 | -0.95123597 | +0.28313305 |
| a | 2.2608990 | Node | 75.00609 | -0.30804630 | -0.85128838 |
| e | 0.0743773 | Incl. | 7.28075 | -0.01605001 | -0.44175079 |
| P | 3.40 | B(1,0) | 14.5 | | |

Residuals in seconds of arc

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 761218 | 095 | 3.2- | 0.0 | 810309 | 688 | 0.2+ | 0.3+ | 810330 | 688 | 1.1- | 2.5+ |
| 761220 | 095 | 2.2+ | 0.6+ | 810309 | 688 | 0.1- | 0.3+ | 810330 | 688 | 0.2- | 0.4+ |
| 810206 | 688 | 0.1- | 0.6+ | 810325 | 688 | 1.0- | 0.1+ | | | | |
| 810206 | 688 | 0.4- | 1.7+ | 810325 | 688 | 1.5- | 1.5+ | | | | |

2540 P-L = 1978 QV1

The identification is by E. Bowell.

Epoch 1981 July 15.0 ET = JDE 2444800.5 (J-P)

| | | | | | |
|---|---|---|---|---|---|
| M | 143.04080 | | (1950.0) | P | Q |
| n | 0.21667283 | Peri. | 267.18271 | -0.03519912 | -0.99932594 |
| a | 2.7453683 | Node | 184.87125 | +0.95872911 | -0.03082058 |
| e | 0.1889435 | Incl. | 7.05192 | +0.28213383 | -0.01994376 |
| P | 4.55 | B(1,0) | 14.5 | | |

Residuals in seconds of arc

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 600924 | 675 | 0.6- | 0.7- | 601017 | 675 | 0.7+ | 0.3+ | 780831 | 095 | 0.1- | 0.3+ |
| 600926 | 675 | 0.3- | 0.8- | 601022 | 675 | 0.1- | 0.4- | 780905 | 095 | 0.2- | 0.3- |
| 600928 | 675 | 0.1+ | 0.8+ | 601025 | 675 | 0.7+ | 0.3- | | | | |
| 600929 | 675 | 0.2+ | 0.2+ | 601026 | 675 | 0.2+ | 0.5+ | | | | |

4081 P-L = 1980 PF1

The identification is by E. Bowell.

Epoch 1981 July 15.0 ET = JDE 2444800.5 (J-P)

| | | | | | |
|---|---|---|---|---|---|
| M | 80.33858 | | (1950.0) | P | Q |
| n | 0.29474849 | Peri. | 161.90047 | +0.99904622 | -0.01653440 |
| a | 2.2361582 | Node | 199.18281 | +0.00418555 | +0.95753491 |
| e | 0.1459762 | Incl. | 7.06489 | +0.04346407 | +0.28784284 |
| P | 3.34 | B(1,0) | 15.9 | | |

Residuals in seconds of arc

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 600924 | 675 | 0.1- | 0.2+ | 600926 | 675 | 0.4- | 0.7- | 601026 | 675 | 0.7- | 0.8- |
| 600924 | 675 | 0.1- | 0.9+ | 600928 | 675 | 0.2- | 0.1+ | 800806 | 809 | 0.5+ | 0.1+ |
| 600925 | 675 | 0.0 | 0.6+ | 601017 | 675 | 0.5- | 0.6+ | 800807 | 809 | 0.7+ | 0.4+ |
| 600925 | 675 | 0.4+ | 0.4- | 601022 | 675 | 0.3- | 0.2+ | | | | |
| 600926 | 675 | 0.6+ | 0.1+ | 601024 | 675 | 1.0- | 0.1- | | | | |

* * * * *

EPHEMERIDES.

Periodic Comet Bus (1981b) Elements MPC 5897

| Date | ET | R. A. (1950) | Decl. | Delta | r | Elong. | Phase | Mag. |
|---|---|---|---|---|---|---|---|---|
| 1981 | 04 06 | 11 33.16 | +03 00.1 | 1.276 | 2.232 | 157.0 | 10.1 | 16.5 |
| 1981 | 04 16 | 11 29.62 | +03 39.7 | | | | | |
| 1981 | 04 26 | 11 28.59 | +04 01.5 | 1.370 | 2.207 | 136.0 | 18.5 | 16.6 |
| 1981 | 05 06 | 11 30.32 | +04 03.8 | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1981 05 16 | 11 34.78 | +03 46.6 | 1.525 | 2.191 | 118.1 | 24.0 | 16.8 |
| 1981 05 26 | 11 41.73 | +03 11.5 | | | | | |
| 1981 06 05 | 11 50.85 | +02 20.5 | 1.717 | 2.184 | 103.2 | 26.9 | 17.1 |
| 1981 06 15 | 12 01.86 | +01 15.7 | | | | | |
| 1981 06 25 | 12 14.42 | -00 00.3 | 1.929 | 2.187 | 90.4 | 27.7 | 17.3 |
| 1981 07 05 | 12 28.30 | -01 25.3 | | | | | |
| 1981 07 15 | 12 43.29 | -02 57.5 | 2.150 | 2.198 | 79.1 | 27.0 | 17.6 |
| 1981 07 25 | 12 59.21 | -04 34.5 | | | | | |
| 1981 08 04 | 13 15.93 | -06 14.7 | 2.374 | 2.218 | 68.8 | 25.2 | 17.8 |
| 1981 08 14 | 13 33.35 | -07 56.2 | | | | | |
| 1981 08 24 | 13 51.38 | -09 37.2 | 2.594 | 2.247 | 59.0 | 22.7 | 18.1 |
| 1981 09 03 | 14 09.97 | -11 16.3 | | | | | |
| 1981 09 13 | 14 29.05 | -12 51.9 | 2.807 | 2.284 | 49.4 | 19.5 | 18.3 |
| 1981 09 23 | 14 48.57 | -14 22.5 | | | | | |
| 1981 10 03 | 15 08.49 | -15 46.9 | 3.006 | 2.328 | 39.8 | 16.0 | 18.6 |
| 1981 10 13 | 15 28.75 | -17 04.0 | | | | | |
| 1981 10 23 | 15 49.27 | -18 12.8 | 3.186 | 2.378 | 30.1 | 12.1 | 18.8 |

1981 FD — Elements MPC 5978

| Date | ET | R. A. (1950) | Decl. | Delta | r | Elong. | Phase | Mag. |
|---|---|---|---|---|---|---|---|---|
| 1981 04 26 | | 12 05.39 | -00 34.0 | 0.916 | 1.839 | 146.2 | 17.7 | 17.5 |
| 1981 05 06 | | 12 07.92 | -01 15.2 | | | | | |
| 1981 05 16 | | 12 13.19 | -02 09.5 | 1.107 | 1.914 | 129.3 | 24.1 | 18.2 |
| 1981 05 26 | | 12 20.83 | -03 14.9 | | | | | |
| 1981 06 05 | | 12 30.43 | -04 29.1 | 1.346 | 1.999 | 114.9 | 27.4 | 18.8 |
| 1981 06 15 | | 12 41.64 | -05 50.2 | | | | | |
| 1981 06 25 | | 12 54.10 | -07 16.0 | 1.622 | 2.091 | 102.3 | 28.4 | 19.3 |
| 1981 07 05 | | 13 07.59 | -08 44.7 | | | | | |
| 1981 07 15 | | 13 21.90 | -10 15.0 | 1.924 | 2.188 | 90.8 | 27.7 | 19.8 |
| 1981 07 25 | | 13 36.87 | -11 45.2 | | | | | |
| 1981 08 04 | | 13 52.40 | -13 14.4 | 2.241 | 2.289 | 79.7 | 25.9 | 20.1 |

(2376) 1977 QG3 — Elements MPC 5979

| Date | ET | R. A. (1950) | Decl. | Delta | r | Elong. | Phase | Mag. |
|---|---|---|---|---|---|---|---|---|
| 1981 04 26 | | 13 35.47 | -06 41.2 | 2.466 | 3.459 | 168.9 | 3.2 | 16.6 |
| 1981 05 06 | | 13 28.64 | -06 11.3 | | | | | |
| 1981 05 16 | | 13 22.92 | -05 49.2 | 2.559 | 3.448 | 146.6 | 9.3 | 16.9 |
| 1981 05 26 | | 13 18.73 | -05 37.0 | | | | | |
| 1981 06 05 | | 13 16.30 | -05 35.7 | 2.742 | 3.437 | 125.9 | 13.8 | 17.2 |
| 1981 06 15 | | 13 15.74 | -05 45.4 | | | | | |
| 1981 06 25 | | 13 16.98 | -06 05.6 | 2.984 | 3.425 | 107.1 | 16.5 | 17.4 |
| 1981 07 05 | | 13 19.94 | -06 35.4 | | | | | |
| 1981 07 15 | | 13 24.48 | -07 13.7 | 3.253 | 3.412 | 90.2 | 17.3 | 17.6 |
| 1981 07 25 | | 13 30.43 | -07 59.2 | | | | | |
| 1981 08 04 | | 13 37.64 | -08 50.6 | 3.521 | 3.398 | 74.7 | 16.7 | 17.8 |

(1537) Transylvania — Elements MPC 5975

| Date | ET | R. A. (1950) | Decl. | Delta | r | Elong. | Phase | Mag. |
|---|---|---|---|---|---|---|---|---|
| 1981 04 26 | | 13 46.56 | -12 47.9 | 2.927 | 3.929 | 173.8 | 1.6 | 18.0 |
| 1981 05 06 | | 13 39.62 | -12 02.2 | | | | | |
| 1981 05 16 | | 13 33.54 | -11 19.7 | 2.998 | 3.915 | 151.2 | 7.2 | 18.4 |
| 1981 05 26 | | 13 28.72 | -10 43.5 | | | | | |
| 1981 06 05 | | 13 25.42 | -10 15.8 | 3.171 | 3.898 | 129.7 | 11.5 | 18.6 |
| 1981 06 15 | | 13 23.78 | -09 57.9 | | | | | |
| 1981 06 25 | | 13 23.81 | -09 50.1 | 3.411 | 3.879 | 110.1 | 14.2 | 18.8 |
| 1981 07 05 | | 13 25.44 | -09 52.1 | | | | | |
| 1981 07 15 | | 13 28.57 | -10 03.5 | 3.683 | 3.858 | 92.2 | 15.3 | 19.0 |
| 1981 07 25 | | 13 33.07 | -10 23.1 | | | | | |
| 1981 08 04 | | 13 38.80 | -10 50.0 | 3.957 | 3.835 | 75.7 | 14.9 | 19.1 |

(2369) 1976 GC8 Elements MPC 5973

| Date | ET | R. A. (1950) | Decl. | Delta | r | Elong. | Phase | Mag. |
|---|---|---|---|---|---|---|---|---|
| 1981 | 04 26 | 15 44.32 | -19 57.8 | 1.763 | 2.717 | 156.9 | 8.4 | 16.6 |
| 1981 | 05 06 | 15 36.42 | -19 42.0 | | | | | |
| 1981 | 05 16 | 15 27.49 | -19 21.1 | 1.698 | 2.710 | 179.4 | 0.2 | 16.0 |
| 1981 | 05 26 | 15 18.58 | -18 58.1 | | | | | |
| 1981 | 06 05 | 15 10.68 | -18 36.6 | 1.741 | 2.702 | 156.5 | 8.6 | 16.6 |
| 1981 | 06 15 | 15 04.65 | -18 20.1 | | | | | |
| 1981 | 06 25 | 15 00.97 | -18 11.4 | 1.879 | 2.696 | 135.1 | 15.4 | 16.9 |
| 1981 | 07 05 | 14 59.86 | -18 12.1 | | | | | |
| 1981 | 07 15 | 15 01.33 | -18 22.5 | 2.082 | 2.689 | 116.1 | 19.8 | 17.2 |
| 1981 | 07 25 | 15 05.22 | -18 41.9 | | | | | |
| 1981 | 08 04 | 15 11.32 | -19 09.0 | 2.322 | 2.684 | 99.5 | 21.9 | 17.5 |

2540 P-L Elements MPC 5980

| Date | ET | R. A. (1950) | Decl. | Delta | r | Elong. | Phase | Mag. |
|---|---|---|---|---|---|---|---|---|
| 1981 | 04 26 | 16 01.45 | -12 59.5 | 2.170 | 3.103 | 153.3 | 8.4 | 18.8 |
| 1981 | 05 06 | 15 54.09 | -12 15.0 | | | | | |
| 1981 | 05 16 | 15 45.80 | -11 32.3 | 2.123 | 3.127 | 171.6 | 2.7 | 18.6 |
| 1981 | 05 26 | 15 37.38 | -10 54.6 | | | | | |
| 1981 | 06 05 | 15 29.61 | -10 25.0 | 2.189 | 3.149 | 157.4 | 7.1 | 18.8 |
| 1981 | 06 15 | 15 23.18 | -10 05.6 | | | | | |
| 1981 | 06 25 | 15 18.54 | -09 57.4 | 2.356 | 3.170 | 136.4 | 12.8 | 19.2 |
| 1981 | 07 05 | 15 15.94 | -10 00.4 | | | | | |
| 1981 | 07 15 | 15 15.44 | -10 13.7 | 2.596 | 3.188 | 117.0 | 16.5 | 19.5 |
| 1981 | 07 25 | 15 16.97 | -10 35.8 | | | | | |
| 1981 | 08 04 | 15 20.39 | -11 05.2 | 2.878 | 3.205 | 99.5 | 18.2 | 19.7 |

1957 AA Elements MPC 5973

| Date | ET | R. A. (1950) | Decl. | Delta | r | Elong. | Phase | Mag. |
|---|---|---|---|---|---|---|---|---|
| 1981 | 04 26 | 17 12.97 | -18 46.5 | 1.931 | 2.747 | 136.2 | 14.7 | 17.5 |
| 1981 | 05 06 | 17 08.03 | -18 27.7 | | | | | |
| 1981 | 05 16 | 17 00.71 | -18 07.4 | 1.792 | 2.757 | 158.3 | 7.8 | 17.1 |
| 1981 | 05 26 | 16 51.66 | -17 46.8 | | | | | |
| 1981 | 06 05 | 16 41.77 | -17 27.3 | 1.752 | 2.764 | 174.7 | 2.0 | 16.8 |
| 1981 | 06 15 | 16 32.13 | -17 10.7 | | | | | |
| 1981 | 06 25 | 16 23.72 | -16 59.3 | 1.822 | 2.770 | 153.7 | 9.4 | 17.2 |
| 1981 | 07 05 | 16 17.28 | -16 54.5 | | | | | |
| 1981 | 07 15 | 16 13.30 | -16 57.4 | 1.984 | 2.773 | 132.4 | 15.7 | 17.6 |
| 1981 | 07 25 | 16 11.91 | -17 07.9 | | | | | |
| 1981 | 08 04 | 16 13.09 | -17 25.2 | 2.211 | 2.774 | 113.4 | 19.6 | 17.9 |
| 1981 | 08 14 | 16 16.68 | -17 48.2 | | | | | |
| 1981 | 08 24 | 16 22.44 | -18 15.4 | 2.470 | 2.773 | 96.6 | 21.2 | 18.2 |

(2372) 1977 RA8 Elements MPC 5976

| Date | ET | R. A. (1950) | Decl. | Delta | r | Elong. | Phase | Mag. |
|---|---|---|---|---|---|---|---|---|
| 1981 | 04 26 | 17 44.11 | -22 00.3 | 2.931 | 3.648 | 128.9 | 12.4 | 18.4 |
| 1981 | 05 06 | 17 41.02 | -22 00.1 | | | | | |
| 1981 | 05 16 | 17 36.02 | -21 59.5 | 2.725 | 3.637 | 150.1 | 8.0 | 18.2 |
| 1981 | 05 26 | 17 29.42 | -21 58.0 | | | | | |
| 1981 | 06 05 | 17 21.68 | -21 55.4 | 2.616 | 3.625 | 172.6 | 2.1 | 17.8 |
| 1981 | 06 15 | 17 13.46 | -21 51.7 | | | | | |
| 1981 | 06 25 | 17 05.44 | -21 47.5 | 2.621 | 3.611 | 164.4 | 4.3 | 17.9 |
| 1981 | 07 05 | 16 58.30 | -21 43.7 | | | | | |
| 1981 | 07 15 | 16 52.60 | -21 41.3 | 2.736 | 3.595 | 142.4 | 9.9 | 18.2 |
| 1981 | 07 25 | 16 48.70 | -21 41.3 | | | | | |
| 1981 | 08 04 | 16 46.78 | -21 44.3 | 2.937 | 3.578 | 121.9 | 13.9 | 18.4 |
| 1981 | 08 14 | 16 46.93 | -21 50.7 | | | | | |
| 1981 | 08 24 | 16 49.05 | -22 00.0 | 3.189 | 3.560 | 103.3 | 16.0 | 18.6 |