

PHOTOELECTRIC PHOTOMETRY OPPORTUNITIES NOVEMBER-JANUARY

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The table below lists asteroids which come to opposition during the months of November-January that represent useful targets for photoelectric photometry observations. Observations are needed because the asteroid has either an unknown or ambiguous rotational period or because the asteroid will be observable at a very low phase angle. The table also includes asteroids which are candidates for pole determinations (see the article by Di Martino and Zappalá in issue 12, No. 1) or are targets for radar observations (see the article by Ostro in *MPB* 10, No. 4). The table gives (in order of opposition dates) the asteroid number and name, opposition date, opposition B magnitude (the V magnitude is about 0.8 brighter), the rotational period (in hours), the estimated lightcurve amplitude (in magnitudes), and the designation PER if observations are needed to determine the rotational period. AMB implies that previous period determinations have given ambiguous results and these alternate periods are listed in the table. PHA indicates observations of the phase curve are desired because the asteroid will be at an unusually low phase angle, POL indicates the asteroid is a pole position candidate, and RAD indicates the asteroid is a planned radar target. Question marks are used to denote uncertain or unknown values. An outline of recommended observing procedures is given in *MPB* 11, No. 1, page 7. Also recommended is the book *Solar System Photometry Handbook* (see the review by Tholen in *MPB* 11, No. 4). Ephemerides for all of the asteroids in the table are included in this issue. Some of these may appear on finding charts prepared by Mr. Joseph F. Flowers, Route 4 Box 446, Wilson, NC 27893, USA. These charts are free for a self-addressed stamped envelope.

Asteroid	Opp'n Date	Opp'n B Mag	Per	Amp
19 Fortuna	Nov 21	10.2	7.445	0.25 POL
128 Nemesis	Nov 26	11.8	39.	0.1 PHA
22 Kalliope	Dec 3	11.1	4.148	0.17 PHA+POL
10 Hygiea	Dec 18	11.4	17.495 or 8.75	0.18 AMB
11 Parthenope	Dec 31	11.5	7.63	0.12 PHA
704 Interamnia	Jan 26	11.9	8.727	0.11 POL

Photoelectric Photometry Opportunities

DATE	R.A. (1950)	DEC.	MAG	PHASE
HR	MIN	DEG	B	ANGLE
Minor Planet 10 Hygiea				
Nov 11	6 4.3	25 25.	11.62	11.2
21	5 59.3	25 22.	11.44	8.6
Dec 1	5 52.3	25 17.	11.24	5.7
11	5 44.0	25 8.	10.99	2.4
21	5 35.2	24 57.	10.89	1.2
31	5 26.6	24 42.	11.14	4.5
1987 Jan 10	5 19.1	24 26.	11.35	7.7
20	5 13.4	24 10.	11.52	10.4
30	5 9.7	23 56.	11.69	12.8
Feb 9	5 8.4	23 45.	11.84	14.5

Minor Planet 11 Parthenope				
Dec 1	7 4.6	18 50.	11.49	13.3
11	6 57.5	19 6.	11.30	9.4
21	6 48.3	19 28.	11.07	5.0
31	6 37.7	19 52.	10.80	1.2
1987 Jan 10	6 27.2	20 18.	11.08	4.7
20	6 17.9	20 43.	11.34	9.0
30	6 10.9	21 7.	11.55	12.8
Feb 9	6 6.8	21 28.	11.77	15.9
19	6 5.7	21 48.	11.97	18.4
Mar 1	6 7.5	22 6.	12.16	20.1

Minor Planet 19 Fortuna				
Oct 2	4 8.3	20 34.	11.25	23.8
12	4 10.1	20 28.	10.99	20.6
22	4 8.2	20 10.	10.72	16.5
Nov 1	4 2.7	19 43.	10.44	11.6
11	3 54.5	19 7.	10.16	6.1
21	3 44.8	18 26.	9.77	0.6
Dec 1	3 35.3	17 45.	10.19	5.8
11	3 27.5	17 12.	10.52	11.2
21	3 22.6	16 51.	10.84	15.8
31	3 21.0	16 44.	11.15	19.6
1987 Jan 10	3 22.9	16 51.	11.43	22.5

Minor Planet 22 Kalliope				
Nov 1	5 5.5	21 55.	11.30	14.0
11	4 59.5	22 38.	11.10	10.3
21	4 51.1	23 20.	10.88	6.1
Dec 1	4 41.0	23 59.	10.56	1.6
11	4 30.4	24 32.	10.70	3.3
21	4 20.7	25 1.	11.00	7.7
31	4 13.0	25 27.	11.20	11.7
1987 Jan 10	4 8.1	25 52.	11.41	15.0
20	4 6.2	26 17.	11.62	17.6
30	4 7.4	26 44.	11.81	19.6

Minor Planet 128 Nemesis				
Oct 12	4 35.8	18 11.	12.31	18.9
22	4 33.9	18 20.	12.08	15.8
Nov 1	4 29.0	18 25.	11.85	11.9
11	4 21.4	18 29.	11.63	7.6
21	4 12.0	18 31.	11.33	2.8
Dec 1	4 2.0	18 32.	11.33	2.5
11	3 52.7	18 35.	11.68	7.1
21	3 45.3	18 42.	11.94	11.3
31	3 40.5	18 56.	12.21	14.9
1987 Jan 10	3 38.7	19 16.	12.46	17.8

Minor Planet 704 Interamnia				
Dec 11	8 49.2	11 4.	12.07	14.7
21	8 45.2	10 21.	11.89	12.4
31	8 39.0	9 46.	11.70	9.5
1987 Jan 10	8 31.1	9 21.	11.53	6.4
20	8 22.1	9 5.	11.35	3.7
30	8 12.9	8 57.	11.37	3.7
Feb 9	8 4.3	8 56.	11.58	6.3
19	7 57.2	8 59.	11.80	9.3
Mar 1	7 51.9	9 4.	12.01	11.9
11	7 48.9	9 10.	12.22	14.1

ASTEROID NEWS NOTES

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Fifty New Asteroids

Through the August batch of Minor Planet Circulars, 50 asteroids were newly numbered, bringing the total to 3495. Non-main belt objects include the following:

(3347) 1956 SC Hungaria
(3451) 1984 HA1 Trojan
(3483) 1976 YP2 Hungaria

Earth-approaching Asteroid Update

The 1.2-m Schmidt telescope on Palomar Mountain has been completely engaged with the Second Palomar Sky Survey. As you might expect, those deep, wide-field exposures are quite capable of picking up faint fast-moving objects. Of course, those objects would go unnoticed and become lost if nobody took the time to examine the plates shortly after their exposure. Fortunately, E. F. Helin is involved with the new Sky Survey as well as with the planet-crossing asteroid surveys that have in the past utilized both the 1.2-m and 0.46-m Schmidt telescopes at Palomar. Thanks to her efforts, three new earth-approaching asteroids were discovered recently, all with the 1.2-m Schmidt telescope.

1986 LA was discovered by Helin on June 4; the object has an Amor-type orbit. 1986 NA was found by A. Maury on a plate taken by C. Wilson and J. Mueller on July 8; this object also has an Amor-type orbit. Lastly, 1986 PA was discovered by Helin and Wilson on August 2, but this time the asteroid turned out to have an Apollo-type orbit. All three of the new discoveries are rather faint.

In addition to the three objects discovered during the last quarter, the Amor asteroid 1983 RD was recovered by T. Gehrels and J. Scotti using the SpaceWatch Camera on Kitt Peak. 1983 RD is making a very favorable apparition in 1986, reaching its greatest brightness in early October at around $V = 14.2$. Northern hemisphere observers will be hampered by the object's declination of about -30 degrees, however; because the object is heading south, northern hemisphere observers should try their luck tracking down the object before greatest brightness. An ephemeris is provided below.

1983 RD

UT DATE	R.A.	DEC	V
1986 Sep 07	19 28 02.0	-03 45 56	15.0
1986 Sep 12	19 38 53.3	-07 51 30	14.8
1986 Sep 17	19 54 36.3	-12 43 48	14.6
1986 Sep 22	20 16 28.4	-18 21 49	14.5
1986 Sep 27	20 46 02.4	-24 32 12	14.3
1986 Oct 02	21 24 38.4	-30 40 27	14.2
1986 Oct 07	22 12 05.1	-35 51 36	14.2
1986 Oct 12	23 05 02.3	-39 12 21	14.3
1986 Oct 17	23 57 17.7	-40 22 58	14.4
1986 Oct 22	00 43 09.7	-39 44 10	14.6
1986 Oct 27	01 20 13.7	-37 54 06	14.8
1986 Nov 01	01 48 56.3	-35 25 38	15.0

New Asteroid Names

The June batch of MPCs contained 35 new names for numbered asteroids. The one that MPB readers should instantly recognize is (3123) Dunham, named in honor of David Dunham, who has been actively leading the effort to predict and observe occultations of stars by asteroids.

Jay Gunter Retires From *Tonight's Asteroids*

[This News Note contributed by the editor.]

In April 1971 Dr. Jay U. Gunter, a hospital pathologist, began a project which would soon become the publication, *Tonight's Asteroids*. Gunter constructed finding charts for bright asteroids and distributed this publication bi-monthly to over 700 subscribers free for a self-addressed stamped envelope. After 15 years, 100 issues, and 1006 finding charts, Jay has chosen retire from what he modestly describes as a "Project in Amateur Astronomy." His efforts have been recognized by the Astronomical Society of the Pacific which bestowed upon him the 1983 Amateur Achievement Award. Gunter's work is also recognized by minor planet 2136 JUGTA (Jay U. Gunter's *Tonight's Asteroids*). Fortunately, *Tonight's Asteroids* will continue under the hand of Joseph F. Flowers, Jr., Route 4 Box 446, Wilson, NC 27893.

Undoubtedly, many MPB readers (including the editor) were first introduced to observing minor planets by *Tonight's Asteroids* and have benefited greatly from Jay's personal communications. The ALPO Minor Planets Section offers its thanks to Jay Gunter for his considerable efforts in promoting interest in this field. We also offer our best wishes for the years ahead.

THE MINOR PLANET BULLETIN is the quarterly journal of the Minor Planets Section of the Association of Lunar and Planetary Observers. The Minor Planets Section is directed by its Recorder, Prof. Frederick Pilcher, Department of Physics, Illinois College, Jacksonville, IL 62650 USA. The MPB is edited and composed by Dr. Richard P. Binzel, Department of Astronomy, University of Texas, Austin, TX 78712 USA and is distributed by Derald D. Nye, Route 7 Box 511, Tucson, AZ 85747 USA. Bob Werner, Route 1 Box 237A, Solon, Iowa 52333 USA assists with the typesetting. The subscription rate is \$7.00 US a year for surface mail and \$9.00 US a year for overseas air mail. Checks or money orders should be made payable to the "Minor Planet Bulletin". Subscription payments, address changes, or other subscription business should be sent to Mr. Nye. The numbers in the upper-right corner of your mailing label indicate the volume and issue number with which your subscription expires.

Articles for submission to the MPB should be sent to the editor who also serves as the Photoelectric Photometry Coordinator. Authors with access to an Apple Macintosh computer are strongly encouraged to submit their manuscripts on diskette. All authors should follow the guidelines given in "Instructions for Authors" in MPB 13-3. Visual photometry observations, positional observations, any type of observation not covered above, and general information requests should be sent to the Recorder.

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The deadline for the next issue (14-1) is November 1, 1986. The deadline for issue 14-2 is February 1, 1987.