A BIBLIOGRAPHY OF MINOR PLANET BOOKS

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A comprehensive list of books devoted primarily or exclusively to asteroids is given, along with a further selection of books that devote a chapter or section to the subject. Both English and foreign sources are included.

Introduction

Despite having been observed and written about in scientific papers since 1801, asteroids have generally been given short shrift in books. A selection of references of minor planet names and history was given by LoGuirato (1981), but apparently no comprehensive bibliography of minor planet books has ever been published. What follows is such a comprehensive listing: 22 books from 1888 to 1986 that are devoted largely or exclusively to asteroids are noted, along with a sampling of 27 other books containing some asteroid material. Sources in English, Russian, German and Italian are considered. Wherever possible, data includes author, publisher, date and number of pages. A capsule description following this usually includes a grading system ranging from young reader through amateur, advanced, and professional level.

Books devoted largely or exclusively to asteroids:

Kirkwood, Daniel (1888). *The Asteroids.* J. B. Lippincott Co.; 60 pages. First book ever written on asteroids, by the man whose name is associated with the gaps in the asteroid belt. Amateur level.

Leuschner, Armin O. (1910). *Tables of Minor Planets Discovered by James C. Watson.* National Academy of Sciences Vol. 10, 7th Memoir.

Williams, Kenneth P. (1934). *The Calculation of the Orbits of Asteroids and Comets.* Principia Press Inc., Indiana; 214 pages. Classic work on celestial mechanics. Professional level.

Komendatov, N. V. (1935). *On the Determination of the General Perturbations of the Minor Planets.* United Scientific & Technical Publishing House, Moscow; 75 pages. Mathematical treatise on celestial mechanics. Professional level.

McDonald, Sophia L. and Leuschner, Armin O. (1952). *Tables of General Perturbations for a Group of Minor Planets.* Berkeley; 210 pages. Professional level.

Putilin, I. I. (1953). *Minor Planets.* Technical-Theoretical Institute, Moscow; 412 pages. An excellent book in Russian, largely devoted to orbital work but containing a wealth of historical data. Professional level.

Krinov, E. L. (1956). *Dwarf Planets.* State Publication of Technical-Theoretical Literature, Moscow; 31 pages. A brief popular review, in Russian.

Roth, Gunter (1962). *The System of Minor Planets.* Faber & Faber Ltd., London; 128 pages. Written largely from a European perspective for the advanced amateur; well done, with a particularly good historical section.

Knight, David C. (1973). *The Tiny Planets.* William Morrow & Co., N.Y.; 95 pages. An excellent book for the young reader; includes a glossary.

Gehrels, Tom (editor) (1971). *Physical Studies of Minor Planets.* U.S. Govt. Printing Office; 687 pages. Proceedings of the first Tucson asteroid conference. Professional level.

Pilcher, Frederick & Meeus, Jean (1973). *Tables of Minor Planets.* Privately published; 104 pages. An important compilation of facts and figures about asteroids.

Cristescu, Cornelia, Klepczynski, W. J., & Millet, B. (eds.) (1974). *Asteroids, Comets, Meteoric Matter.* Colloquium of the International Astronomical Union; 350 pages. A professional review concentrating on celestial mechanics. Partially in French.

Nourse, Alan E. (1975). *The Asteroids.* Franklin Watts Pub., N.Y.; 59 pages. Excellent introduction for the young reader.

Morrison, David & Wells, William (eds.) (1978). *Asteroids: An Exploration Assessment.* NASA Conf. Pub 2053; 300 pages. Deals mainly with meteorites, mineralogy, and space missions to the asteroids. Professional level.

Gehrels, Tom (ed.) (1979). *Asteroids.* Univ. of Arizona Press; 1181 pages. The largest and most comprehensive work ever published on minor planets, it includes the complete TRIAD file. Professional level.

MIT Students System Project (1979). *Project Icarus.* MIT Press; 162 pages. Not about asteroids *per se*, it describes a hypothetical space mission to prevent the asteroid Icarus from colliding with Earth. Professional level.

Silver, Leon T. & Schultz, Peter H. (eds.) (1982). *Geological Implications of Impacts of Large Asteroids and Comets on the Earth.* Special Paper 190, The Geological Society of America; 528 pages. A professional review, based on papers presented at a meeting in Snowbird, Utah in 1981.

Farinella, P., Paolicchi, P. & Zappala, V. (1983). *Gli Asteroidi* (The Asteroids). Il Castello Collane Tecniche, Milan, Italy; 127 pages. Volume 1 in a series of astronomy books in Italian for the amateur.

Lagerkvist, C.-I. & Rickman, H. (eds.) (1983). *Asteroids Comets Meteors.* Uppsala University, Sweden; 455 pages. Recent European asteroid research is presented in 200 pages of this excellent book. Professional level.

Lagerkvist, C.-I. & Rickman, H. (eds.) (1985). *Asteroids Comets Meteors II.* Uppsala University, Sweden; 620 pages. Another 197 pages of the latest professional research on asteroids in both Europe and North America.

Kessler, J., Grun, E., and Sehnal, L. (eds.) (1985). *Space Debris, Asteroids and Satellite Orbits.* Pergamon Press; 229 pages. Proceedings of two workshops and the COSPAR Commission P meeting, held in June-July, 1984. Professional level.

Cunningham, Clifford J. (1986). *Handbook of Asteroids: The Next Frontier.* Willmann-Bell Inc., Richmond, Virginia. A survey of all aspects of asteroid research. Advanced level.

Some books with chapters on asteroids:

Brewster, David (1811). *Astronomy.* Edinburgh. The first four asteroids are reviewed on pages 126-133.

Davis, John (1868). *Elements of Astronomy.* J. B. Lippincott & Co., Philadelphia; 343 pages. Good review of our scant knowledge of the asteroids in the mid-19th century. Popular level.

Lieprov, I. I. (1904). *Secrets of the Heavens.* Moscow. Details the discovery circumstances of the first 300 asteroids. In Russian.

MacPherson, Hector (1911). *The Romance of Modern Astronomy.* Seeby & Co. Ltd. Chapter 9 gives a good survey of asteroids.

Chambers, George F. (1913). *Story of the Solar System.* D. Appleton & Co.; 188 pages. A disparaging look at asteroids in the early 20th century. Popular level.

Alfven, Hans (1954). *On the Origin of the Solar System.* Oxford University Press; 191 pages. Chapter 7 draws parallels between the ring system of Saturn and the asteroid belt. Professional level.

Watson, Fletcher G. (1956). *Between the Planets.* Harvard University Press; 222 pages. Chapters 2 and 3 review the history and physical nature of asteroids. Amateur level.

Ley, Willy (1963). *Watchers of the Skies.* Viking Press Inc., N.Y.; 528 pages. Chapter 13 is a superb historical survey of asteroid discovery. Popular level.

The Flammarion Book of Astronomy (1964). Simon & Schuster, N.Y.; 669 pages. Good section on history, names and orbits. Popular level.

Moore, Patrick (1971). *The New Guide to the Planets.* W. W. Norton Co., N.Y. Chapter 10 reviews minor planets at a popular level.

Kopal, Zdenek (1972). *The Solar System.* Oxford University Press; 152 pages. Chapter 8 primarily considers the orbital properties of asteroids. Amateur level.

McCall, Robert and Asimov, Isaac (1974). *Our World in Space.* New York Graphic Society; 168 pages. Chapter 5 explores the possibilities of colonizing Ceres. Popular level.

Branley, Franklyn M. (1974). *Comets, Meteorites and Asteroids.* Thomas Crowell Co., N.Y. Chapter 2 gives a short overview of asteroids for the young reader.

Duncombe, Raynor L. (ed.) (1979). *Dynamics of the Solar System.* D. Reidel Publishing Co.; 330 pages. Part V includes nine papers on asteroids. Professional level.

Lunan, Duncan (1979). *New Worlds For Old.* William Morrow & Co.; 268 pages. Chapter 8 looks ahead to the exploration and mining of asteroids. Popular level.

Mumford, George (1979). *The Cloudy Night Book.* Sky Publishing Corp.; 115 pages. Designed to occupy astronomers on cloudy nights, it includes a crossword puzzle on page 24 featuring the names of the first 100 asteroids.

Glass, Billy (1982). *Introduction to Planetary Geology.* Cambridge University Press; 469 pages. Chapter 10 deals with asteroids and comets. Professional level.

Levy, David H. (1982). *The Joy of Gazing.* Montreal Centre; 62 pages. Chapter 8 briefly mentions asteroid occultations. Young reader level.

Chapman, Clark (1982). *Planets of Rock and Ice.* Charles Scribner's Sons, N.Y.; 222 pages. Chapter 4 looks at the origin and composition of asteroids. Amateur level.

Fricke, W. and Teleki, G. (eds.) (1982). *Sun and Planetary System.* D. Reidel Pub. Co. Several professional papers.

Markellos, V. V. and Kozai, Y. (eds.) (1983). *Dynamical Trapping and Evolution in the Solar System.* D. Reidel Pub. Co.; 424 pages. Includes sections on asteroids and trapped motion in the three-body problem (Trojans). Professional level.

Genet, Russell M. (1983). *Solar System Photometry Handbook.* Willmann-Bell Inc., Richmond, Virginia. Chapters 1 and 8 cover asteroid photometry and occultations for advanced amateurs.

Hartmann, William K. (1983). *Moon and Planets.* Wadsworth Pub. Co.; 509 pages. Chapter 7 presents a wide-ranging survey of asteroids. Advanced level.

Moore, Patrick (1983). *History of Astronomy 6th revised edition.* Macdonald and Co. Ltd., London; 327 pages. Chapter 17 is an insightful history of asteroid discovery at the popular level.

Hahn, Hermann-Michael (1984). *Between The Planets: Comets, Asteroids, Meteorites.* Franckh'sche Verlagshandlung, West Germany; 208 pages. Written in German by a science journalist, most of the text deals with comets.

Wilford, John Nobel (1985). *The Riddle of the Dinosaur.* Alfred Knopf, N.Y.; 304 pages. The dinosaur extinction debate is well covered in several chapters. Popular level.

Faughnan, B. and Maryniak, G. (eds.) (1985). *Space Manufacturing 5: Engineering with Lunar and Asteroidal Materials.* AIAA, N.Y.; 268 pages. Professional review.

Acknowledgements

Thanks to Tom Gehrels, who provided me with English translations of the books by Putilin and Krinov.

References

LoGuirato, June (1981). "References On Minor Planet Names And History". Minor Planet Bulletin 8, 38-39.

PHOTOELECTRIC PHOTOMETRY OPPORTUNITIES
NOVEMBER-JANUARY

Alan W. Harris
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, CA 91109

Vincenzo Zappalá
Observatorio Astronomico di Torino
10025 Pino Torinese
Italy

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 in 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	0.18	AMB
			or 8.75		
11 Parthenope	Dec 31	11.5	7.83	0.12	PHA
704 Interamnia	Jan 26	11.9	8.727	0.11	POL

Photoelectric Photometry Opportunities

DATE	R.A.(1950) HR MIN	DEC. DEG MIN	MAG B	PHASE 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