★ STAR DUST

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LEPPING TO COMPARE PLANET MAGNETOSPHERES

DR. LEPPING

Dr. Ronald P. Lepping, of Goddard Space Flight Center, will speak on comparative planetary magnetospheres at the November 3 meeting of National Capital Astronomers. He will present further data from the Voyager Jupiter mission and the latest results on the magnetic field of Saturn from the recent Pioneer 11 encounter. His talk will compare the magnetospheric aspects of the known magnetic planets.

Dr. Lepping received the B. S. from Villanova University in 1961, the M. S. from Drexel University in 1964, and the Ph. D. from Rensselaer Polytechnic Institute in 1969. He is an astrophysicist in the Planetary Magnetospheres Branch of NASA's Laboratory for Extraterrestrial Physics.

His previous experience includes teaching at Rensselaer and geomagnetic research at the Naval Air Development Center at Johnsville, Pennsylvania. He has received several honors, grants, and achievement awards from NASA, and has published widely. He is a member of the American Astronomical Society and the American Geophysical Union.

NOVEMBER CALENDAR — *The public is welcome.*

Friday, November 2, 9, 16, 23, 30, 7:30 PM — Telescope-making classes at American University, McKinley Hall basement. Information: Jerry Schnall, 362-8872.

Saturday, November 3, 6:15 PM — Dinner with the speaker at the Thai Room II, 527 13th Street, NW. Reservations unnecessary.

Saturday, November 3, 8:15 PM — NCA monthly meeting at the Department of Commerce Auditorium, 14th and E streets, NW. Dr. Lepping will speak.

Tuesday, November 6, 13, 20, 27, 7:30 PM — Telescope-making classes at the Chevy Chase Community Center, Connecticut Avenue and McKinley Street, NW. Information: Jerry Schnall, 362-8872. NOTE change of day.

Friday, November 9, 16, 23, 8:00 PM — Observing with the NCA 14-inch telescope with Bob Bolster, 6007 Ridgeview Drive, south of Alexandria off Franconia Road between Telegraph Road and Rose Hill Drive. 960-9126.

OCTOBER LECTURE

Dr. David Dunham, of Computer Science Corporation and president of the International Occultation Timing Association, related the history of asteroidal occultation observations at the October 6 meeting of National Capital Astronomers. Emphasizing the observational evidence of asteroidal satellites, he appealed for increased participation in the occultation program.

Dunham began with a brief report on the September lunar grazes which he had announced at the September 6 meeting — the September 12 Hyades passage during which Bolster timed six events; the graze of 70 Tauri, a close double, during which one observer timed seven events within 12 seconds; the Aldebaran graze, which showed possible evidence of a faint envelope; and the graze of 53 Tauri, another very close double, when Dunham observed a single brief occultation of only the primary component, while the next observer, 300 feet south, timed four events by the four highest profile features, only one of which occulted the secondary star. On this graze, Bolster, a quarter-mile south, timed 15 events.

It has recently become possible to predict asteroidal occultation paths with sufficient accuracy for observation. Such events have yielded strong evidence for asteroidal satellites or swarms. Although some doubt the interpretation, many secondary events have been observed both photoelectrically and visually, and one has been photoelectrically confirmed. Dunham reviewed the evidence.

In September 1973 Gordon Taylor predicted an occultation of a 6.2-magnitude star by the asteroid 129 Antigone. At the University of Texas, Dunham organized about a dozen observers across the predicted path. Conditions were poor; the observation failed. He believes, however, that this was the first organized deployment of portable equipment for the observation of a stellar occultation by an asteroid. In the Florida Keys, Povenmire reported a 1-second occultation, although subsequent measurements of Harvard plates indicated the path to have crossed northern South America.

In 1977, the asteroid 6 Hebe occulted 3.6-magnitude γ-Ceti over a path across Mexico City. A 0.5-second occultation was reported from Texas in good agreement with the time of the Mexico City observations. Questioning the possibility of an asteroidal satellite at such a distance, Dunham assumed a reasonable mass for the asteroid and calculated that such a satellite could be bound to the asteroid about twice as strongly as the Moon is to the Earth. A publication which carried an account of the Mexican observation deleted reference to the possible observation of a secondary event.

The shape and size of the asteroid were calculated from the observations.

On May 29, 1978, a 10.8-magnitude occultation by 2 Pallas across Wyoming was widely observed. At the University of Illinois a photoelectric observation recorded a very short light drop to that of the asteroid alone.

A 6.2-magnitude star was occulted 10 days later by 532 Herculina. From measurements of plates taken by William Penhallow 2 days before the event, Dunham predicted that the path would cross California. He telephoned observers along the path, including Lowell Observatory in Arizona, urging observations. Successful observations were reported by T. Bowell at Lowell Observatory, K. Horn, Rosamond, California, and J. McMahon near Boron, California. Besides the main event of about 20 seconds, McMahon reported several very short occultations, all within about 2 minutes of the main event, although he observed for 20 minutes. The longest of these was a very definite 5-second event 90 seconds before the main occultation. Dunham asked Bowell, who was aligned along the path with McMahon, whether he had recorded any secondary events, and was assured that he had not. Upon being pressed to examine the photoelectric record 90 seconds before the event, Bowell did indeed find a very positive 5-second event which agreed with McMahon's observation. For the

GRAZING OCCULTATIONS PLANNED

Dr. David Dunham is organizing observers for the following grazing lunar occultations in November. For further information call Dave at 585-0989.

UT Date	UT Time	Place	Vis Mag	Pcnt Sunlit	Cusp Angle	Min Aper
11-08-79	04:06	Norfolk, VA	6.9	81	14N	10 cm
11-09-79	05:35	Chester, VA	6.8	72	11N	8 cm
11-12-79	11:31	Silver Spring, MD	8.8	42	3S	20 cm
11-25-79	00:01	Ruther Glen, VA	7.0	29	4S	5 cm
11-25-79	00:30	Germantown, MD	8.2	29	3S	8 cm

NCA WELCOMES NEW MEMBERS

Benice, David A.
11403 Hook Road
Reston, VA 22090

Birch, Christin
1615 N. Kenilworth Street
Arlington, VA 22205

Gourmelon, Marie-Madelein
2121 P Street, NW #829
Washington, DC 20037

Moore, Guy W.
224 Nelson Street
Arlington, VA 22201

Strong, Jessie
6904 Edgerton Lane
Springfield, VA 22150

Tuck, Richard E.
6605 Lybrook Court
Bethesda, MD 20034

Wildenhain, W. David
2917 Willston Place #302
Falls Church, VA 22044

THIS MAY BE YOUR LAST *STAR DUST*

The secretary's updated NCA list will be reflected in our mailings. To assure continued receipt of publications be sure your dues are paid. The NCA fiscal year began Septer 1. If you have any question, call Mrs. Trexler, NCA Secretary, 839-3490, or write: 5609 Ottawa Street, Oxon Hill, MD 20021.

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first time, a secondary asteroidal occultation was confirmed by two widely separated observers.

From the observations, 532 Herculina appears to be somewhat elongated, with a mean diameter of 217 km. If the confirmed secondary event resulted from a satellite, the two measured chords indicate a diameter of 46 km, assuming a circular profile.

On December 11, 1978, an occultation by 18 Melpomene was widely observed. Dunham's latest prediction from Lick Observatory plates proved to be within 0.01 arc second, and placed the path directly over Washington, DC, extending from about Quantico to about Baltimore. A large number of observers were deployed across the path, mostly in separated pairs for confirmation. The resulting observations, including three photoelectric records made at the U. S. Naval Observatory, Goddard Space Flight Center, and the University of Maryland, disclosed the 8.4-magnitude star, SAO 114159, to be a close binary. A somewhat widened path and greater number of observations effectively resulted. The shape of Melpomene was well defined to be approximately spherical with a 15-km assymetry in the northern hemisphere. Its diameter was measured to be 135 km.

Again, very brief occultations were widely reported — from Ambler, Pennsylvania to Atlanta, Georgia. The latter was the longest, a photoelectric record of 5.7 seconds by R. Willamon at Fernbank Science Center, but unfortunately

remains unconfirmed by other observers.

Dunham pointed out that while the observational history strongly suggests that asteroids may be accompanied by satellites, perhaps swarms of fragments, general acceptance of the discovery of a satellite requires determination of its orbital elements — a challenge requiring many more observations of the limited number of opportunities. He urges wider participation. He invites those who are interested to call him at (301) 585-0989 (Silver Spring, MD). rhm

EXCERPTS FROM THE IAU CIRCULARS

1. September 20 — Rolf Meier, Ottawa, Canada, discovered a comet (1979i) of 12th magnitude in Draco with a 40-cm f/5 reflector. Orbital elements by Marsden indicate that Comet Meier passed perihelion on October 17 but will remain almost constant in brightness and in a circumpolar region through November.

2. September — Brian Marsden identified object 1974 XS as minor planet 612 Veronika, lost since discovery in 1906. Five other sightings between 1950 and 1973 were then found to have also been of this object.

3. 1979 December 31 — A leap second will be inserted into Coordinated Universal Time (UTC) at the end of the day. rnb

FOR SALE

The following items are for sale or trade: One 6-inch f/5 mirror, uncoated, with diagonal, $16.00. One 6-inch f/7 mirror, uncoated, with diagonal, $16.00. One 8-inch f/7 mirror, uncoated, with diagonal, $21.00. One equatorial head with tapered roller bearings, suitable for 8-inch scope, $30.00. Five 5.6-inch Maksutov systems partially complete (*sic*), $50.00 each. Kenneth T. Kendrick, 612 Lockwood Road, Baltimore, MD 21229, (301) 327-0415.

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Published eleven times yearly for NATIONAL CAPITAL ASTRONOMERS, INCORPORATED, a non-profit, public-service organization promoting interest and education in astronomy and related sciences. President, Mary Ellen Simon. *STAR DUST*: Robert H. McCracken, 5120 Newport Avenue, Washington, DC 20016. Deadline: 15th of preceding month.

FIRST CLASS MAIL