★ STAR DUST

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SEIDELMANN FINDS SATURN A DYNAMICS LABORATORY

DR. SEIDELMANN

Dr. P. Kenneth Seidelmann, Director of the U. S. Naval Observatory's Nautical Almanac Office, will discuss the dynamical aspects of the Saturn System at the annual business meeting on 1 May. Only the election of officers will precede the lecture.

When the rings of Saturn were presented edgewise to the Earth in 1980, several groups undertook observations to detect the E ring and inner satellites. Using a coronographic system and a charge-coupled device (CCD) camera, a subset of the Space-Telescope Widefield/Planetary Camera, the Investigation Definition Team observed both the E ring and inner satellites, and discovered a new satellite.

Saturn was found to have extensive ring structure, the E ring extending into the satellite orbits, co-orbiting satellites, satellites at the libration points of other satellite orbits, ring-guardian satellites, and resonance relationships among the various objects and the rings. Truly, the Saturn system is a celestial-mechanics laboratory.

P. Kenneth Seidelmann received from the University of Cincinnati an E.E. degree in 1960, M.S. in 1962, and Ph.D. in dynamical astronomy in 1968. After military service as a research and development coordinator in the Army, He joined the U.S. Naval Observatory in 1965, where he became Director of the Nautical Almanac Office in 1976. He has taught celestial mechanics at Catholic and Maryland Universities. Dr. Seidelmann is a member of the American Astronomical Society, the International Astronomical Union, and several other leading professional societies. He is a Fellow of the American Association for the Advancement of Science and the Royal Astronomical Society.

MAY CALENDAR — *The public is welcome.*

Thursday, April 29, Evening — NCA invited to SPSE dinner, lecture on Space Telescope. See page 35, call Bob McCracken before noon, April 28.

Saturday, May 1, 10:00 AM to 4:00 PM — Astronomy Day celebration. Open house with NCA participation at the Naval Observatory. See page 34.

Saturday, May 1, 6:15 PM — Dinner with the speaker at the Thai Room II, 527 13th Street, NW. Reservations unnecessary.

Saturday, May 1, 8:15 PM — NCA monthly meeting, election. Department of Commerce Auditorium, 14th and E Streets, NW. Dr. Seidelmann speaks.

Tuesday, May 4, 11, 18, 25, 7:30 PM — Telescope-making classes at Chevy Chase Community Center, Connecticut Avenue and McKinley Street, NW. Information: Jerry Schnall, 362-8872.

Friday, May 7, 14, 21, 28, 7:30 PM — Telescope-making classes at American University, McKinley Hall basement. Information: Jerry Schnall, 362-8872.

Friday, May 7, 14, 21, 28, 9:00 PM — NCA 14-inch telescope open nights with Bob Bolster, 6007 Ridgeview Drive, south of Alexandria off Franconia Road between Telegraph Road and Rose Hill Drive. Call Bob at 960-9126.

Saturday, May 22, 9:00 PM — *Exploring the Sky*, presented jointly by NCA and National Park Service. Glover Road south of Military Road, NW, near Rock Creek Nature Center. Planetarium if cloudy. Information: Bob McCracken, 229-8321.

APRIL LECTURE

Dr. Jay T. Bergstralh, Jet Propulsion Laboratory, Pasadena, addressed the April 3 meeting of National Capital Astronomers on the Voyager-2 photopolarimeter project. The experiment, in recording the occultation of Delta Scorpii by Saturn's rings, yielded more detailed structure of the rings than expected, he said.

The difficult thing about this otherwise simple measurement was that the apparatus had been nearly destroyed early in the flight; the diagnosis, replanning, reprogramming, and subsequent successful utilization of the equipment's remaining capabilities provided the emphasis for Bergstralh's talk.

Interposed between the instrument's 6-inch aperture and photomultiplier detector are three aperture wheels: The first has four selectable field stops, the second, ten spectral filters, and the third, a series of polarization analyzera to measure the four Stokes parameters, I, Q, U, and V, respectively, total intensity, horizontal linear, 45-degree linear, and right-circular. A closed position is included for measurement of dark current. The instrument thus fully defines the state of polarization in each of ten spectral bands. Two spare positions with perpendicular linear polarization were also included.

In the fulfillment of its primary mission — analysis of zodiacal light — the instrument was operated almost continuously from soon after launch. After stepping some five million times within the first six months, the palladium contacts became erratic. It is a property of palladium to catalyze the formation of an insulating coating which renders the contacts inoperative.

The CMOS control logic sustained heavy radiation damage at Jupiter flyby which denied access to half of the filter and polarizer positions, including the open position with which total intensity was to be measured. The two spares were accessible; their alternate use provided the intensity information.

By some curious mechanism which Bergstralh did not detail, the response time of the photomultiplier was drastically increased by radiation damage, but could be restored by prolonged exposure to a bright source preceding each measurement, he said. Each such restoration was effective for about four hours, Bergstralh said.

To succeed, the experiment had to be rearranged and reprogrammed. A critical memory block necessary for reprogramming had been destroyed, but the problem was overcome in some way.

The inordinate amount of unplanned time, spacecraft manipulation, and programming required to salvage the experiment was a source of considerable vexation among the other experimenters and project management. With reluctant cooperation, however, it was accompliched in time for the Saturn encounter.

Bergstralh showed the ring photographs and those beautiful high-resolution photometer occultation tracings, and some of their results, that represent the spectacular success of the experiment. rhm

NAVAL OBSERVATORY OPEN HOUSE WITH NCA ON ASTRONOMY DAY

The U. S. Naval Observatory will hold open house with participation by National Capital Astronomers on Astronomy Day, May 1, from 10:00 AM to 4:00 PM.

The Observatory will display the 26-inch Clark refractor, the 6-inch transit circle, the 24-inch reflector, the master clock of the United States, historical exhibits, and weather permitting, sunspots with the 12-inch refractor.

NCA will exhibit a video display of actual occultations recorded on expeditions, demonstrate optical work and testing in the making of telescopes in NCA classes, and illustrate some astronomical applications of computers. The NCA 5-inch Clark refractor will be equipped with a narrow-band filter with which the hydrogen-alpha solar activity will be shown. The NCA 14-inch telescope will be equipped for white-light sunspot viewing. Members' telescopes will also be shown.

Enter the Observatory at the main gate, 34th Street and Massachusetts Avenue, NW. For further information call Bob McCracken, 229-8321.

OCCULTATION EXPEDITION PLANNED

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

UT Date	Time	Place	Vis Mag	Pcnt Sunlit	Cusp Angle	Min Aper
05-31-82	01:27	Kittery, ME	4.2	63	8N	5 cm

NOMINATING COMMITTEE OFFERS SLATE FOR FISCAL 1983

The Nominating Committee, Benson Simon, Chairman; Michael Brabanski, Nancy Byrd, and William Pala, offer the following slate:

President:	Robert H. McCracken	Trustee: Daniel G. Lewis
Vice President:	Joan Bixby Dunham	Trustee: Wolfgang A. Schubert
Secretary:	Stanley G. Cawelti	(Two if McCracken elected, to
Treasurer:	Ruth S. Freitag (Incumbent)	fill 3 years unexpired term)
Sergeant at Arms:	Geoffrey Chester (Incumbent)	

Additional nominations may be made by written petition by ten full members in good standing, submitted to the secretary prior to the May 1 election.

NCA WELCOMES NEW MEMBERS

Dr. Michael F. A'Hearn
4104 Beechwood Road
University Park, MD 20782

Francis O. Allen
PO Box 156
Sandy Spring, MD 20860

Andrew I. Baines
119 Aragona Drive
Fort Washington, MD 20744

Anthony M. Frato
2203 S. 26th Street, #1
Arlington, VA 22206

John W. Godbey
6730 Swarthmore Drive
Alexandria, VA 22307

Kevin Gormley
9200 Shotgun Court
Springfield, VA 22153

Eddie Lengel
1028 N. Daniel Street
Arlington, VA 22201

Morris Liebman
5225 Pooks Hill Road, South 112
Bethesda, MD 20814

David S. Lindsay
6638 Elk Park Court
Alexandria, VA 22310

Douglas L. Megenity
7403 Recard Lane
Alexandria, VA 22307

Jim Scanlon
3600 Devilwood Court
Fairfax, VA 22030

Phillip C. Spiller
6106 Breezewood Court, #201
Greenbelt, MD 20770

Steven T. Strouse
10503 S. Dunmore Drive
Silver Spring, MD 20901

Tony L. Sutton
11509 Idlewood Road
Silver Spring, MD 20906

Lt. Col. Norman Wilson
Box 81, Joy Road
Lusby, MD 20657

SMITHSONIAN GREEN BANK TRIP OFFERED

A June 5-6 weekend trip to tour the facilities of the National Radio Astronomy Observatory at both Green Bank, West Virginia and Charlottesville, Virginia is being offered by Smithsonian Associates. The membership rate, $130.00, is extended also to members of National Capital Astronomers.

Reservations must be made by May 5. For further information, call Nancy Hueper, 229-7328.

EXCERPTS FROM THE IAU CIRCULARS

1. March 11 — Rosino, Iijima, and Ortolani, Asiago Astrophysical Observatory, reported that Nova Aquilae 1982 had dropped to 14th magnitude, perhaps a secondary minimum from which it might recover in a few weeks. The spectrum showed mainly H and He lines, with absorption features indicating an expansion velocity of about 2800 km per second.

2. March 21 — C. Veillet, CERGA, reported making numerous photographic observations of Saturn's satellite 1980 S 6 (Dione B) at the prime focus of the Canada-France-Hawaii 3.6-m reflector. The position of 1980 S 6 relative to Dione agreed with Reitsema's ephemeris.

3. March 29 — M. Wischnjewsky, University of Chile, discovered a possible supernova of 14th magnitude near NGC 1332 in Eridanus.

4. June 30 — A leap second will be added to UTC at the end of the day.

NCA - NCP SUMMER PARK PROGRAMS SCHEDULED

The annual summer park program series, *Exploring the Sky*, presented jointly by National Capital Astronomers and National Park Service, has been scheduled. All programs are on Saturday evenings.

May 22, June 26, July 24, August 14, 9:00 PM; September 25, 8:00 PM; October 23, 7:30 PM.

These public programs are held on Glover Road just south of Military Road, NW, near Rock Creek Nature Center, where the planetarium is used if cloudy.

All who wish to share their telescopes with the public are encouraged to do so. For further information, call Bob McCracken, 229-8321.

NCA INVITED TO SPSE DINNER, LECTURE

The Society of Photographic Scientists and Engineers invites members of National Capital Astronomers to attend a dinner and lecture on Earth-orbiting telescopes and digital image-processing systems by Peter Perry and Barry Turnrose of Computer Sciences Corporation, on 29 April, at the Sheraton Inn, 8727 Colesville Road, Silver Spring, Maryland. A cash bar at 6:00 PM will be followed by dinner at 7:00, and the meeting at 8:00 PM across the street at Computer Sciences, seventh floor.

Dinner (optional) will be $10.00 for SPSE or NCA members, $11.50 for non-members. For dinner reservations and further information call Bob McCracken, 229-8321 (24 hours) before noon 28 April.

WANTED - TELESCOPE

Small, easily portable refractor or folded reflector. Andrew Baines, Fort Washington, Maryland. (301) 839-6882.

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